

Deutsche Telekom

THE

2021

FINANCIAL YEAR



LIFE IS FOR SHARING.

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Deutsche Telekom at a glance

billions of €

	Change compared to prior year %	2021	2020	2019	2018	2017	2016	2015	2014	
Revenue and earnings										
Net revenue	7.7	108.8	101.0	80.5	75.7	74.9	73.1	69.2	62.7	
Of which: domestic	%	23.0	24.5	30.5	32.2	32.8	33.7	36.2	39.9	
Of which: international	%	77.0	75.5	69.5	67.8	67.2	66.3	63.8	60.1	
Service revenue ^a	6.6	84.1	78.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
EBITDA	4.9	40.5	38.6	27.1	21.8	24.0	22.5	18.4	17.8	
EBITDA (adjusted for special factors)	6.9	43.2	40.4	28.7	23.3	22.2	21.4	19.9	17.6	
EBITDA AL ^b	2.2	33.9	33.2	23.1	21.6	n.a.	n.a.	n.a.	n.a.	
EBITDA AL (adjusted for special factors) ^b	6.6	37.3	35.0	24.7	23.1	n.a.	n.a.	n.a.	n.a.	
EBITDA AL margin (adjusted for special factors) ^b	%	34.3	34.7	30.7	30.5	n.a.	n.a.	n.a.	n.a.	
Profit (loss) from operations (EBIT)	2.0	13.1	12.8	9.5	8.0	9.4	9.2	7.0	7.2	
Net profit (loss)	0.4	4.2	4.2	3.9	2.2	3.5	2.7	3.3	2.9	
Net profit (loss) (adjusted for special factors)	2.6	5.9	5.7	4.9	4.5	6.0	4.1	4.1	2.4	
Profitability										
ROCE	%	4.1	4.6	5.1	4.7	5.8	5.7	4.8	5.5	
Statement of financial position										
Total assets	6.3	281.6	264.9	170.7	145.4	141.3	148.5	143.9	129.4	
Shareholders' equity	12.3	81.5	72.6	46.2	43.4	42.5	38.8	38.2	34.1	
Equity ratio	%	28.9	27.4	27.1	29.9	30.0	26.2	26.5	26.3	
Net debt	9.9	132.1	120.2	76.0	55.4	50.8	50.0	47.6	42.5	
Relative debt (Net debt/EBITDA (adjusted for special factors))		3.06	2.78	2.65	2.4	2.3	2.3	2.4	2.4	
Cash flows										
Net cash from operating activities	35.5	32.2	23.7	23.1	17.9	17.2	15.5	15.0	13.4	
Cash capex	41.0	(26.4)	(18.7)	(14.4)	(12.5)	(19.5)	(13.6)	(14.6)	(11.8)	
Cash capex (before spectrum investment)	5.9	(18.0)	(17.0)	(13.1)	(12.2)	(12.1)	(11.0)	(10.8)	(9.5)	
Free cash flow (before dividend payments and spectrum investment) ^c	33.2	14.3	10.8	10.1	6.2	5.5	4.9	4.5	4.1	
Free cash flow AL (before dividend payments and spectrum investment) ^{b, c}	40.1	8.8	6.3	7.0	6.1	n.a.	n.a.	n.a.	n.a.	
Net cash (used in) from investing activities	21.0	(27.4)	(22.6)	(14.2)	(14.3)	(16.8)	(13.6)	(15.0)	(10.8)	
Net cash (used in) from financing activities	n.a.	(10.8)	7.6	(7.1)	(3.3)	(4.6)	(1.3)	(0.9)	(3.4)	
Employees										
Average number of employees (full-time equivalents, without trainees)	thousands	(3.1)	217	224	213	216	216	221	226	228
T-Share – key figures										
Earnings per share	€	(1.1)	0.87	0.88	0.82	0.46	0.74	0.58	0.71	0.65
Adjusted earnings per share	€	1.7	1.22	1.20	1.04	0.96	1.28	0.89	0.90	0.54
Dividend per share ^d	€	6.7	0.64	0.60	0.60	0.70	0.65	0.60	0.55	0.50
Dividend payout ^e	billions of €	12.4	3.2	2.8	2.8	3.3	3.1	2.8	2.5	2.3
Adjusted weighted average number of ordinary shares outstanding	millions	1.5	4,813	4,743	4,743	4,742	4,703	4,625	4,553	4,476
ESG KPIs										
Energy consumption ^f	GWh	3.7	13,323	12,843	9,324	9,224	8,943	8,531	8,845	9,092
CO ₂ emissions (Scope 1 and 2) ^g	kt CO ₂ e	(90.2)	247	2,512	1,797	2,354	2,896	4,169	4,364	n.a.

^a The definition of "service revenue" was not applied consistently Group-wide for the years prior to 2020.

^b Comparatives for 2018 were calculated on a pro forma basis for the key performance indicators redefined as of January 1, 2019 following the introduction of the IFRS 16 accounting standard.

^c And before interest payments for zero-coupon bonds and before termination of forward-payer swaps at T-Mobile US (both in 2020).

^d Subject to approval by the relevant bodies and the fulfillment of other legal requirements.

^e Subject to approval by the 2022 shareholders' meeting concerning the dividend payments for the 2021 financial year. For further information, please refer to Note 34 "Dividend per share" in the notes to the consolidated financial statements.

^f Energy consumption, mainly: electricity, fuel, other fossil fuels, district heating for buildings.

^g Calculated according to the market-based method of the Greenhouse Gas Protocol since 2015.

millions

	Change compared to prior year %	2021	2020	2019	2018	2017	2016	2015	2014
Fixed-network and mobile customers									
Mobile customers ^a	2.8	248.2	241.5	184.0	168.4	165.0	156.4	150.5	142.5
Fixed-network lines	(4.7)	26.1	27.4	27.5	27.9	28.5	29.0	29.8	30.8
Broadband customers ^b	(0.7)	21.6	21.7	21.0	18.9	18.4	17.8	17.4	17.1

^a Including T-Mobile US wholesale customers.

^b Excluding wholesale.

The figures shown in this report were rounded in accordance with standard business rounding principles. As a result, the total indicated may not be equal to the precise sum of the individual figures. Changes were calculated on the basis of millions for greater precision.

Sprint has been included in Deutsche Telekom's consolidated financial statements as a fully consolidated subsidiary since April 1, 2020, which means comparability with prior-year figures is partially limited.

To our shareholders

Letter from the Chairman of the Board of Management

**Dear shareholders,
Dear friends of the Company,**

2021 was no easy year for Deutsche Telekom and its employees. The coronavirus has an impact on every part of our daily lives. Our social lives are still overwhelmingly dominated by the pandemic. Our opportunities for social interaction remain limited. The handling of the pandemic has been, and continues to be, full of ups and downs. In summer, we were all glad to be able to return to the office. But as we approached the year-end, we faced the sobering news of a renewed government order on working from home due to rising case numbers.

After so many months of restrictions, it is truly difficult, but we must continue to protect ourselves and the people around us from infection and severe illness by keeping social contact to a minimum and ensuring we are vaccinated.

We were all shaken in 2021 by the catastrophic flooding across parts of North Rhine-Westphalia and Rhineland-Palatinate in mid-July. More than 130 people lost their lives to the severe storms. We offer our deepest condolences to their families and loved ones. Countless more people were hit hard by the events. Houses and entire streets were washed away overnight by the flood waters and debris, wiping out the livelihood of thousands in a matter of minutes.

The sheer scale of the destruction is still visible today. The people affected are facing a clean-up operation of unprecedented dimensions. I saw first-hand the devastation wrought by nature on the affected regions and the extent of the damage caused to private property and to infrastructure. Those images have stayed with me.

It makes me truly proud to see what employees of Deutsche Telekom have achieved under these circumstances. We were on the ground the night of July 15, helping people in the flooded regions. With dedication, compassion, and unbureaucratic support. In the initial wake of the disaster, we donned backpacks and walked the Ahr valley on foot, handing out spare batteries and cell phones. We are still there today, helping where we can. Showing once again that Deutsche Telekom is especially strong in crisis situations. That people can count on us. My thanks go to all colleagues who contributed for their incredible support.

Deutsche Telekom will continue to support people with their rebuilding efforts in the disaster-struck regions. By doing what we do best: Building networks. Restoring infrastructure. Connecting the unconnected. Connecting people. We will stay on site for as long as it takes. We won't stop until everyone is (re-)connected and can #takepart again.

Dear shareholders,

Let's now take a look at the current situation at our Company. First and foremost: We continue our growth course. 2021 was another record year for Deutsche Telekom!

We hit a further milestone in terms of net revenue: After passing the 100-billion-euro mark in the prior year, we gained considerable momentum again in 2021. Our net revenue increased by 7.7 % to EUR 108.8 billion. We also grew organically, i.e., assuming constant exchange rates and a comparable composition of the Group, with a revenue increase of 4.5 %. We thus exceeded our targets and ended the year with a clear message. You could also say we gained ourselves a permanent spot in the Champions League of global telecommunications providers.

In the United States, in our European subsidiaries, and in the German domestic market, we further increased our revenues and posted higher earnings. Adjusted EBITDA AL was up 6.6 %. Free cash flow AL increased by 40.1 % and was thus well into the double-digit growth range. The reasons for these encouraging trends are many and varied.

In the United States, we are making huge strides with realizing the synergies from the merger with Sprint. Today, the employees of two former rival companies work shoulder to shoulder to become the number 1 on the most important mobile communications market worldwide. That is a huge motivation. In 2021, the new T-Mobile US reached a landmark on its journey to the top by taking over the #2 spot in the United States to position itself between the incumbents Verizon and AT&T. The decisive factor in this: More and more people are choosing a contract with T-Mobile US – 5.5 million in the reporting year. That's a new record.

One reason customers choose T-Mobile US is its 5G network, the best in the country. More than 210 million people can use incredibly fast Ultra Capacity 5G in the 2.5 GHz band. Including the lower band frequencies, T-Mobile US' 5G network reaches 94 % of the population in the United States. This by far largest network is also the best basis for continuing to write our success story.

Our plan is to achieve the majority shareholding in T-Mobile US, which will secure us long-term control over the company. The purchase of 45 million T-Mobile US shares from SoftBank was a first step in this direction, and brought us closer to our target stake of over 50 %. It also made SoftBank a major shareholder of Deutsche Telekom AG which is testament to the confidence the world's biggest tech investor has in us. SoftBank sees the vast potential of our share, which is why it has approved the takeover of 225 million shares valued at EUR 20 per share. Going forward, both companies are also set to further intensify their collaboration with a strategic partnership.

For a long time, our ambition was to become the leading European telco. We achieved this goal, reigning uncontested for several years. Today, our stock market value is almost as high as that of Vodafone, Telefónica, and Orange combined. But our industry is changing at a rapid pace. New competitors, like satellite provider Starlink or cloud-based telecommunications provider Rakuten, are challenging our established business model. In parallel, the Silicon Valley internet giants are bringing connectivity solutions to market that work independently of our networks. On top of this, we face growing competition in terms of infrastructure from independent cell tower operators and alternative fiber-optic providers.

Our response to these changes is to set ourselves a new strategic goal: Deutsche Telekom wants to become the world's leading digital telco. We offer our customers tailored products that they can easily put into operation and configure intuitively. And we enable seamless connectivity. Whether customers are mobile consumers, businesses, or Netflix viewers – everyone will receive the best offerings customized to their individual needs.

But there is also far more to being the leading digital telco: For instance, it is about developing software solutions that enhance the flexibility of our products and make them faster to deploy. It is about recognizing and leveraging growth opportunities beyond our core business. It is about migrating information and network technology to the cloud for greater efficiency of operation. It is about better utilizing economies of scale. It is about integrating data analytics and artificial intelligence even deeper to benefit our customers. It is about optimizing our portfolio through targeted acquisitions and disposals to raise our value. And it is about living up to our responsibility to combat climate change by exploiting the potential of the digital transformation. In short: There is much to do if we are to become the world's leading digital telco.

The foundation for this profound change is already in place: Worldwide, almost 300 million people place their trust in Deutsche Telekom. We have just under 250 million mobile customers, plus over 26 million fixed-network lines and 21 million broadband lines.

How do we attract so many people to our products and services? By offering them the best networks. With the highest connection quality accompanied by outstanding service. To this end, our capital expenditure was again at record level in 2021: we poured some EUR 18.0 billion largely into our global infrastructure, EUR 5.5 billion of this in Germany alone. We consider the build-out of our networks to be an integral part of our responsibility to society. Our investments play a vital role in the successful digital transformation. But investments also need to pay off for the companies making them.

Against this backdrop, I take a positive view of the signals sent by policymakers in late 2021 in connection with the network build-out. For one, the idea of moving away from spectrum auctions towards the distribution of frequencies. For another, the proposal to forgo the ex ante regulation of prices for fiber-optic lines on competitor infrastructure and instead to leave them to the free market. Both steps will free up billions in investment leeway for the entire industry. Both steps send the right signals for more digital participation in Germany.

In 2021, our technicians and engineers did a fantastic job of bringing us closer to this goal. We once again doubled the number of FTTH lines (Fiber To The Home) rolled out compared to the prior year, from around 600,000 lines in 2020 to around 1.2 million households passed by our fiber-optic network in 2021. For 2022, we are set to roll out 2 million new FTTH lines, climbing to 2.5 million a year on average in the years to follow. The decisive levers in this regard are our Fiber Factory, a separate entity with over 13,000 colleagues focusing exclusively on the fiber-optic build-out, our T-Cars with their state-of-the-art digital land surveying software, and our smart GGS building and planning tool.

We have forged numerous partnerships for the digitalization of Germany. But we are also willing to strike out in new directions. That is why we are establishing the joint venture GlasfaserPlus together with Australian investor IFM. With GlasfaserPlus, we plan to connect 4 million households Germany-wide to our fiber-optic network by 2028. And to be clear: these 4 million lines are on top of Deutsche Telekom's own build-out schedule. In total, we want to make 12 million FTTH lines available outside of metropolitan areas.

GlasfaserPlus will build these lines primarily in rural areas. More specifically, in towns and municipalities with fewer than 20,000 inhabitants. The company intends to enable over 100,000 fiber-optic lines in the current year. Given the high financial burden involved, we are convinced that choosing a number of different options to realize the fiber-optic build-out is the right way forward.

We stand by our stated target in terms of nationwide fiber-optic coverage for Germany: By 2030, all households and businesses in Germany are to have an FTTH line. GlasfaserPlus will make an important contribution to reaching this goal. But building a nationwide FTTH network is a mammoth task, and one we cannot achieve singlehandedly even with the support of our joint venture. Our competitors must also do their bit.

Our colleagues from other parts of our Company also set new records in 2021. Take our brand value, for example: Today, our magenta “T” is more valuable than ever before. According to market research institute Brand Finance, it is worth USD 51.1 billion. This moves us into 17th place on the global ranking, up from 23rd in 2020. We are one of Germany’s two most valuable brands, second only to Mercedes, and more valuable than international giants such as Disney and AT&T. It makes us extremely proud to be a central fixture of the big league.

This is also reflected in our appeal to global tech pioneers as a cooperation partner. Google’s parent company Alphabet has entered into a long-term partnership with us on a new B2B messaging service, new functions for our premium product MagentaTV One, and more besides. Such a partnership of equals would not have been possible just a few years ago.

Dear shareholders,

The bottom line is this: Our results are outstanding, 2021 was yet another record year for our Company. We delivered. We have laid the important strategic groundwork for our ongoing development. We are financially stronger than at any time in our history. That is all thanks to the over 200,000 Deutsche Telekom employees worldwide.

Our outlook for the coming years remains optimistic. As we announced at last year’s Capital Markets Day, we want to increase revenue in the years 2021 through 2024 by 1 to 2 % on average. Adjusted EBITDA AL is expected to grow on average by 3 to 5 % a year in the same period, and free cash flow on average by around 10 % a year to over EUR 18 billion in 2024. Adjusted earnings per share is to increase to more than EUR 1.75, from EUR 1.22 in 2021.

We also want you to benefit from the success of the financial year just ended. That’s why we are proposing a dividend of EUR 0.64 per dividend-bearing share for 2021 – subject, as always, to approval by the relevant bodies and the fulfillment of other legal requirements.

On a personal note, I would like to finish by saying how delighted I am to have the Supervisory Board’s trust: they have extended my contract ahead of schedule by a further five years. What motivates me above all else is the feedback that reached me from within the Company in this context. Together with our employees I will continue to strive daily to ensure that Deutsche Telekom reaches its goals. And that we transform ourselves into the world’s Leading Digital Telco.

Best regards,

Tim Höttges

Supervisory Board's report to the 2022 shareholders' meeting

The 2021 financial year was characterized by the systematic implementation and further development of the Group strategy and the Group's ongoing transformation in an age of digitalization and technological change. With its updated strategy to transform Deutsche Telekom into the leading digital telco (Leading Digital Telco – Vision 2030), the Company is well-positioned to leverage future opportunities and face challenges head on. In the financial year just ended, the Board of Management closed numerous transactions serving to further optimize and protect the Company's investment portfolio. In the 2021 financial year, business developed well overall. Deutsche Telekom continued to manage the coronavirus pandemic with the requisite discipline. The network build-out was ramped up further and the Company again underscored its ability to perform at the top level throughout the pandemic with special offerings for customers and its strong commitment to service. The Group held its own in the challenging environment despite the rising intensity of competition. Strong results brought the 2021 financial year to a successful close. The Group continues on its course for growth while maintaining its industry-leading position. This financial year, Deutsche Telekom continued to live up to its responsibility to society with wide-ranging action: for instance, its clear stance against online hate speech, its contribution to the digital transformation in the education sector, and its support for flood victims in Germany. The Supervisory Board exercised its functions as an advisory and supervisory body and gave the Board of Management its full support.

Supervisory Board activities in the 2021 financial year

We continually monitored the Board of Management's activities in managing the business and the Group as a whole. Specifically, this supervisory role consisted of ensuring that these activities were lawful, compliant, appropriate, strategically relevant, sustainable, and efficient.

The primary prerequisites for fulfilling this role were the Board of Management's written and oral reports. The Board of Management kept us regularly informed in good time on corporate strategy, planning, business development of the Group and its different segments, the risk situation, risk management, compliance, innovation focuses, and any deviations in the business development from original plans, as well as significant business transactions involving the Company and its major subsidiaries and associates.

The Board of Management fulfilled its duties to inform quickly and in full. The Board of Management's reports met all statutory requirements, the standards of good corporate governance, and the criteria imposed on them by us with regard to both content and scope. In addition to the reports, we requested and received supplementary information. We reviewed, critically analyzed, and verified the plausibility of these reports and other information.

The Rules of Procedure of the Board of Management and Supervisory Board include a list of transactions and measures for which the Board of Management has to obtain approval from the Supervisory Board. We met with the Board of Management to discuss and thoroughly review the business transactions and measures presented to us in the 2021 financial year for approval in line with this document. We approved the transactions and measures submitted for resolution.

The frequency of plenary and committee meetings means that we are in close contact with the Board of Management. The Board of Management also reports on individual issues in writing or in discussions between the meetings. In addition, the Chairman of the Supervisory Board is in contact with the Chairman of the Board of Management at regular appointments at which current business transactions, strategy issues, planning, business development, regulation, the risk situation, risk management, and compliance, as well as other significant events, are discussed.

In the 2021 financial year, eight Supervisory Board meetings, a one-day off-site conference, and 30 meetings of the Supervisory Board committees took place. The overall attendance rate was around 95 %. Each of the Supervisory Board members attended more than 75 % of the meetings of the Supervisory Board and the respective committees on which they sit. Given the coronavirus-induced situation, most members participated virtually. Those members who were unable to attend meetings were generally able to participate nonetheless by submitting their votes in writing or by way of prior briefings on resolutions for decision.

Resolutions were also adopted by way of a written voting procedure.

In the meeting on January 25, 2021, we dealt with the draft proposal on the appointment of the external auditor in 2021 for submission to the 2021 shareholders' meeting. The Company had originally intended to effect a change of external auditor in the 2021 financial year and, to this end, a selection process had been held in 2019 led by the Audit Committee. On the basis of this process, the Audit Committee recommended Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft (EY) and Deloitte GmbH Wirtschaftsprüfungsgesellschaft, indicating a substantiated preference for the former. Due to the unresolved allegations concerning Wirecard raised against EY in the interim, the Audit Committee distanced itself from this recommendation. In lieu of a decision, the Audit Committee recommended postponing the change of auditor until the 2022 financial year and retaining the services of the existing external auditor, PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft (PwC), until such time as a new auditor could be appointed. The Supervisory Board followed this recommendation in its suggestion for the selection of the external auditor for 2021 to the 2021 shareholders' meeting.

In the meeting on February 25, 2021, in the presence of the external auditor, we primarily dealt with the Company's 2020 annual financial statements and consolidated financial statements, the Group management report, which is combined with the management report of Deutsche Telekom AG (combined management report), and the combined non-financial statement contained in the combined management report as a separate section. Our approval of the 2020 annual financial statements was based on the recommendation of the Audit Committee. The same applies to the review of the combined non-financial statement. We agreed to the Board of Management's proposal on the appropriation of net income and approved the agenda for the 2021 shareholders' meeting. Over and above this, we dealt with various remuneration-related matters and approved plans to include ESG targets in the remuneration system. We approved the reappointment of Birgit Bohle as the Board of Management member for Human Resources and Legal Affairs, and of Thorsten Langheim as the Board of Management member for USA and Group Development. The Board of Management reported comprehensively on the current situation and the most important financial and operational KPIs for the Company and its segments. We dealt with the target vision for the B2B business and the topic of corporate responsibility, and approved a spin-off agreement for the Road Charging business area.

In the meeting on May 19, 2021, the Board of Management reported comprehensively on the current situation and the financial and operational KPIs for the Company and its segments in the first quarter of 2021. We dealt once again with remuneration-related matters, the Company's portfolio strategy, the agenda for the Capital Markets Day 2021, the global semiconductor shortage, and the IT Security Act (IT-Sicherheitsgesetz), and resolved on the hedging of the purchase price of T-Mobile US shares. We were also given a brief rundown on developments in customer service in Germany.

In the meeting on September 1, 2021, the Board of Management reported on the current situation and the financial and operational KPIs for the Company and its segments in the second quarter of 2021. We also resolved on an amendment to the Board of Management's schedule of responsibilities, consisting of the transfer of the Corporate Responsibility unit from the Human Resources and Legal Affairs Board of Management department to the department of the Chairman of the Board of Management. We also approved the sale of T-Mobile Netherlands and dealt with the transformation program at Telekom IT. We approved the merger of Telekom Deutschland Multibrand GmbH into Telekom Deutschland GmbH, and approved the appointment of a new member to the supervisory board of T-Systems International GmbH.

At the joint off-site conference with the Board of Management on the following day, we dealt mainly with Deutsche Telekom's strategy and the trends affecting its business. We discussed the further development of the strategy (Leading Digital Telco – Vision 2030) and conferred on individual strategic focal topics. This entailed an in-depth look at the B2C business, the B2B approach, and platform business models. Another central topic was the development of the Group's portfolio.

In our meeting on September 6, 2021, we approved an agreement with SoftBank which increased Deutsche Telekom's stake in T-Mobile US and made SoftBank a new shareholder in Deutsche Telekom AG.

In our meeting on October 4, 2021, we approved the acquisition of spectrum in the United States.

In our meeting on November 2, 2021, we approved the establishment of a joint venture (GlasfaserPlus GmbH) between Telekom Deutschland GmbH and a financial investor for building out fiber-optic lines. We also engaged PwC to perform a substantive audit of the 2021 remuneration report.

In our meeting on December 15, 2021, we dealt with various matters pertaining to the Board of Management and the Supervisory Board, including target achievement for the 2021 financial year and changes to the Supervisory Board's remuneration for proposal to the 2022 shareholders' meeting. We resolved on a change to the Board of Management's remuneration system and its submission to the 2022 shareholders' meeting for approval. Moreover, we canceled Timotheus Höttges' existing service contract effective the end of 2021 and approved a new service contract with effect from January 1, 2022. We resolved on several Supervisory Board nominations to be submitted to the 2022 shareholders' meeting. Furthermore, the Board of Management reported on the current situation and the financial and operational KPIs in the Company and its segments in the third quarter of 2021. We also dealt with the topic of governance at T-Mobile US. A further focus of the meeting was the resolution on the budget and on the annual financing plan for the 2022 financial year. In addition, we acknowledged the medium-term planning for 2022 through 2025. We also discussed the outcome of the selection process for the auditor of the 2022 annual financial statements and consolidated financial statements, including the review of the financial statements for the second and third quarters of the 2022 financial year and the first quarter of 2023. Finally, we adopted resolutions on the German Corporate Governance Code (Declaration of Conformity/independence of the Supervisory Board members).

In our plenary meetings and in the Audit Committee in particular, we also regularly supervised the management of the Company by the Board of Management. As part of this, we made sure that the Board of Management ensured compliance with legal provisions and internal standards and policies supported by the Group-wide compliance organization. We also regularly met with the Board of Management to discuss the Group-wide risk management system that it had introduced. Based on our own reviews and on the audit reports submitted by the external auditor, we came to the conclusion that the internal compliance system and the internal control and risk management system are effective.

Outside of its meetings, the Supervisory Board attended information events to keep up to date on the latest topics and developments.

Organization of the Supervisory Board's activities

To increase the efficiency of our work, and in consideration of the specific requirements we have to fulfill, we have set up the committees listed below, all of which have an equal number of shareholders' and employees' representatives, with the exception of the Nomination Committee. In regard to committee membership, our aim is to achieve regular rotation among the Supervisory Board members. Our objective is also to ensure that the chairperson roles on the committees are occupied by different members. The committee chairpersons regularly reported to us at our plenary meetings on the content and results of committee meetings.

Supervisory Board committees

Committee	Supervisory Board member	Committee	Supervisory Board member
General Committee	Prof. Dr. Ulrich Lehner (Chairman)	Nomination Committee	Prof. Dr. Ulrich Lehner (Chairman)
	Dr. Rolf Bösing		Dr. Rolf Bösing
	Kerstin Marx		Dagmar P. Kollmann
	Frank Sauerland		
Finance Committee	Karl-Heinz Streibich (Chairman)	Mediation Committee	Prof. Dr. Ulrich Lehner (Chairman)
	Dr. Günther Bräunig		Dr. Rolf Bösing
	Constantin Greve		Kerstin Marx
	Nicole Koch		Frank Sauerland
	Dagmar P. Kollmann		
	Karin Topel		
Audit Committee	Dagmar P. Kollmann (Chairwoman)	Technology and Innovation Committee	Lothar Schröder (Chairman)
	Dr. Rolf Bösing		Odysseus D. Chatzidis
	Prof. Dr. Michael Kaschke		Lars Hinrichs
	Petra Steffi Kreusel		Nicole Seelemann-Wandtke
	Kerstin Marx		Karl-Heinz Streibich
	Sibylle Spoo		Margret Suckale
Staff Committee	Frank Sauerland (Chairman)		
	Odysseus D. Chatzidis		
	Harald Krüger		
	Prof. Dr. Ulrich Lehner		
	Kerstin Marx		
	Margret Suckale		

The **General Committee** met ten times in 2021, one meeting of which was held jointly with the Finance Committee. The committee focused mainly on preparing the recommendations for decision for the plenary meetings in regard to all of the decisions on Board of Management and Supervisory Board matters. Board of Management remuneration matters and the reappointment of members to the Board of Management were particular focal points of the committee's activities. The committee reviewed the appropriateness of the Board of Management remuneration as scheduled. Long-term succession planning for the Board of Management was also discussed in the meeting. In this context, the committee considered internal candidates, as well as any potential candidates from outside of the Company, with respect to their qualification profiles and development needs going forward. In the joint meeting with the Finance Committee, the General Committee dealt in particular with the 2022 budget and the medium-term planning for 2022 to 2025.

The **Finance Committee** met three times, of which one meeting was together with the General Committee. Investment planning and focuses were the subject of the meetings. Other general topics included interest and foreign currency management, pension obligations and capital investments, net debt and ratings, and a particular focus on budgeting and medium-term planning at T-Mobile US and DTCP. In the joint meeting with the General Committee, the Finance Committee discussed the 2022 annual financing plan in particular and made a recommendation for decision in this regard to the Supervisory Board.

The **Audit Committee** met seven times in 2021. The external auditor was present at five of the seven meetings. The Audit Committee's area of responsibility is defined by German and European legislation, the German Corporate Governance Code, and its own Rules of Procedure. It includes, in particular, the review of accounting, the monitoring of the accounting process, the effectiveness of the internal control system, risk management and the internal auditing systems, compliance, and data privacy. The Audit Committee also handled matters relating to the audit of the Company's financial statements, in particular selecting and ensuring the independence of the external auditor, and of the additional services provided by the external auditor, the commissioning of the external auditor, the stipulation of the main focuses of the audit, and the agreement on fees. After thorough discussion, the Audit Committee issued a recommendation to the Supervisory Board on its suggestions of the external auditor for the 2021 financial year and the first quarter of 2022 to be nominated by the 2021 shareholders' meeting. The Company had originally intended to effect a change of external auditor in the 2021 financial year and, to this end, a selection process had been held in 2019 led by the Audit Committee. On the basis of this process, the Audit Committee recommended Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft (EY) and Deloitte GmbH Wirtschaftsprüfungsgesellschaft, indicating a substantiated preference for the former. Due to the unresolved allegations concerning Wirecard raised against EY in the interim, the Audit Committee distanced itself from this recommendation. In lieu of a decision, the Audit Committee recommended postponing the change of auditor until the 2022 financial year and retaining the services of the existing external auditor, PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft (PwC), until such time as a new auditor could be appointed. In line with the Supervisory Board's recommendation, the 2021 shareholders' meeting appointed PwC as the external auditor for the 2021 financial year and the first quarter of 2022. In preparation for a change of auditor in the 2022 financial year, in 2021 the Audit Committee resolved to open a new selection process, led by the Audit Committee itself, to find an external auditor for the annual financial statements and consolidated financial statements for the 2022 financial year, including the review of the financial statements for the second and third quarters of the 2022 financial year and the first quarter of 2023. The Audit Committee guided this process and monitored it on a continual basis. At the end of the tendering phase, the Audit Committee submitted a substantiated recommendation, comprising two possible candidates and the Audit Committee's preferred choice, to the Supervisory Board for a candidate to be nominated and proposed to the 2022 shareholders' meeting. Furthermore, the Audit Committee commissioned PwC with a limited assurance engagement on the combined non-financial statement contained as a separate section in the combined management report. In the 2021 financial year, the Audit Committee again held one extraordinary meeting on fundamental issues affecting the Group. At this meeting, the committee dealt in particular with the effectiveness of the reporting system on the internal control, risk management, and internal auditing systems, and on the compliance management system, including the ongoing development of the reporting structure. In 2021, the discussions on risk management focused on the implementation of new requirements ensuing from the updates to IDW audit standard 340. At the same meeting, the Audit Committee also looked at the results of the migration of the Data Privacy, Legal Affairs, and Compliance units to Law & Integrity and the introduction of an agile organizational structure in this unit under the Human Resources and Legal Affairs Board of Management department, as well as the ongoing transformation program in the Audit unit. The Audit Committee discussed information on new requirements and developments in German and EU law, and accounting standards. Moreover, the Audit Committee's work in the reporting year once again centered heavily on the integration of Sprint following the business combination with T-Mobile US, as well as the latest developments in data privacy and data security. Beyond the scheduled meetings, the Audit Committee members attended deep-dive workshops on the implementation of new requirements resulting from the updates to IDW audit standard 340 for the risk management system, and extensively familiarized themselves with complex accounting matters.

Dagmar P. Kollmann, Chairwoman of the Audit Committee, has expert knowledge of accounting and auditing, and is also particularly knowledgeable and experienced in the application of accounting standards and internal control procedures. Petra Steffi Kreusel, Member of the Audit Committee, also has considerable expertise in accounting and auditing. She is independent from the Company, and is not a former member of the Board of Management of Deutsche Telekom AG. Like the members of the full Supervisory Board, the members of the Audit Committee overall are very familiar with the sector in which Deutsche Telekom AG is active.

The **Staff Committee** held four meetings in 2021 and mainly discussed matters relating to headcount planning and qualitative and quantitative staff-requirements planning for the purpose of preparing Supervisory Board resolutions on the 2022 budget. In addition, the committee dealt with topics such as the HR strategy, talent management, diversity, the findings of the employee survey, New Work, and the development of salary structures. The committee obtained an overview of the HR organization, and dealt with a variety of current topics, with a particular focus on the management of the coronavirus crisis.

The **Nomination Committee** met three times in 2021. It dealt in its meetings with succession planning for the Supervisory Board, with a particular focus this year on the matter of a successor to the position of Supervisory Board Chair in 2022.

The **Mediation Committee** to be formed in accordance with § 27 (3) of the Codetermination Act did not meet in 2021.

The **Technology and Innovation Committee** held three meetings in 2021 and dealt with a very broad range of topics from a variety of areas. For example, the committee discussed trends and strategic approaches, supply chain management, preparations for the 2021 Capital Markets Day, and performance indicators in the Technology and Innovation department. The committee also dealt with the current trend radar. The committee supports and promotes innovation and technological developments at infrastructure and product level; it supports the Board of Management with advice on how to tap new growth areas.

Number of meetings attended by the individual members

Supervisory Board member	Meeting	Attendance	Attendance rate %
Prof. Dr. Lehner, Ulrich	Supervisory Board plenary meeting/off-site conference	9/9	100 %
	General Committee	10/10	100 %
	Audit Committee (guest)	1/1	100 %
	Staff Committee	4/4	100 %
	Nomination Committee	3/3	100 %
	Total	27/27	100 %
Sauerland, Frank	Supervisory Board plenary meeting/off-site conference	8/9	89 %
	General Committee	8/10	80 %
	Staff Committee	4/4	100 %
	Total	20/23	87 %
Dr. Bössinger, Rolf	Supervisory Board plenary meeting/off-site conference	7/9	78 %
	General Committee	9/10	90 %
	Audit Committee	6/7	86 %
	Nomination Committee	3/3	100 %
	Total	25/29	86 %
Dr. Bräunig, Günther	Supervisory Board plenary meeting/off-site conference	9/9	100 %
	Finance Committee	3/3	100 %
	Total	12/12	100 %
Chatzidis, Odysseus D.	Supervisory Board plenary meeting/off-site conference	9/9	100 %
	Staff Committee	4/4	100 %
	Technology and Innovation Committee	3/3	100 %
	Total	16/16	100 %
Greve, Constantin	Supervisory Board plenary meeting/off-site conference	9/9	100 %
	Finance Committee	3/3	100 %
	Total	12/12	100 %
Hinrichs, Lars	Supervisory Board plenary meeting/off-site conference	9/9	100 %
	Technology and Innovation Committee	3/3	100 %
	Total	12/12	100 %
Dr. Jung, Helga	Supervisory Board plenary meeting/off-site conference	9/9	100 %
	Total	9/9	100 %
Prof. Dr. Kaschke, Michael	Supervisory Board plenary meeting/off-site conference	7/9	78 %
	Audit Committee	6/7	86 %
	Total	13/16	81 %

Supervisory Board member	Meeting	Attendance	Attendance rate %
Koch, Nicole	Supervisory Board plenary meeting/off-site conference	9/9	100 %
	Finance Committee	3/3	100 %
	Total	12/12	100 %
Kollmann, Dagmar P.	Supervisory Board plenary meeting/off-site conference	7/9	78 %
	Audit Committee	7/7	100 %
	Finance Committee	3/3	100 %
	Nomination Committee	3/3	100 %
	Total	20/22	91 %
Kreusel, Petra Steffi	Supervisory Board plenary meeting/off-site conference	9/9	100 %
	Audit Committee	7/7	100 %
	Total	16/16	100 %
Krüger, Harald	Supervisory Board plenary meeting/off-site conference	9/9	100 %
	Staff Committee	4/4	100 %
	Total	13/13	100 %
Marx, Kerstin	Supervisory Board plenary meeting/off-site conference	9/9	100 %
	General Committee	10/10	100 %
	Audit Committee	7/7	100 %
	Staff Committee	4/4	100 %
	Total	30/30	100 %
Schröder, Lothar	Supervisory Board plenary meeting/off-site conference	9/9	100 %
	Technology and Innovation Committee	3/3	100 %
	Total	12/12	100 %
Seelemann-Wandtke, Nicole	Supervisory Board plenary meeting/off-site conference	9/9	100 %
	Technology and Innovation Committee	2/3	67 %
	Total	11/12	92 %
Spoo, Sibylle	Supervisory Board plenary meeting/off-site conference	8/9	89 %
	Audit Committee	7/7	100 %
	Total	15/16	94 %
Streibich, Karl-Heinz	Supervisory Board plenary meeting/off-site conference	8/9	89 %
	Finance Committee	3/3	100 %
	Technology and Innovation Committee	2/3	67 %
	Total	13/15	87 %
Suckale, Margret	Supervisory Board plenary meeting/off-site conference	9/9	100 %
	Staff Committee	4/4	100 %
	Technology and Innovation Committee	3/3	100 %
	Total	16/16	100 %
Topel, Karin	Supervisory Board plenary meeting/off-site conference	9/9	100 %
	Finance Committee	3/3	100 %
	Total	12/12	100 %

Conflicts of interest on the Supervisory Board

Dr. Rolf Böisinger is a member of the Supervisory Board of Deutsche Telekom AG and, at the same time, State Secretary at the Federal Ministry for Housing, Urban Development and Building. Dr. Günther Bräunig is a member of the Supervisory Board of Deutsche Telekom AG and, until October 31, 2021, was also CEO of the Executive Board at Kreditanstalt für Wiederaufbau (KfW). We are aware that Deutsche Telekom AG is at times involved in legal disputes in which the Federal Republic of Germany is the opposing party. There were no conflicts of interest requiring action with any of the aforementioned members of the Supervisory Board. Should a conflict of interest arise, the Supervisory Board members will discuss how to proceed with the Chairman of the Supervisory Board.

Corporate governance

The Supervisory Board and Board of Management are aware that good corporate governance is an important foundation for corporate success. The provisions of the German Corporate Governance Code are hence reflected in the Company's statutes. The Board of Management and the Supervisory Board last issued their Declaration of Conformity with the German Corporate Governance Code on December 30, 2021.

This Declaration of Conformity can be found on the Deutsche Telekom AG [website](#). It also provides access to the declarations of conformity from previous years.

Apart from the exceptions disclosed therein, Deutsche Telekom complied, and continues to comply, with all recommendations of the Code. For detailed information on corporate governance at Deutsche Telekom, please refer to the Corporate Governance Statement.

The Corporate Governance Statement can be found on the Deutsche Telekom AG [website](#).

Training and development

The members of the Supervisory Board undertake the necessary training and development measures required for their tasks on their own and are supported by Deutsche Telekom AG in doing so with a range of options including information events and workshops – in 2021 with a special focus on the risk management system, complex accounting matters, and cybersecurity. The Company offers new Supervisory Board members a customized program to introduce them to the industry and the situation of the Company. Furthermore, an annual special meeting is held to inform the members of the Audit Committee about the latest changes in the law, new accounting and auditing standards, and any changes in corporate governance issues. The members of the Supervisory Board are also kept up to date about any new requirements for work on the Supervisory Board at the regular Board and committee meetings.

Changes in the composition of the Board of Management

On February 25, 2021, the Supervisory Board resolved to reappoint Birgit Bohle as the Board of Management member for Human Resources and Legal Affairs for the period from January 1, 2022 through December 31, 2026. Also on February 25, 2021, the Supervisory Board resolved to reappoint Thorsten Langheim as the Board of Management member for USA and Group Development for the period from January 1, 2022 through December 31, 2026. Furthermore, on December 15, 2021, the Supervisory Board resolved to cancel Timotheus Höttges' appointment as Chairman of the Board of Management effective December 31, 2021, and to reappoint Mr. Höttges as Chairman of the Board of Management for the period from January 1, 2022 through December 31, 2026.

Changes in the composition of the Supervisory Board

Shareholders' representatives

At the shareholders' meeting on April 1, 2021, Dr. Helga Jung was elected for a further term of office as a member of the Supervisory Board of Deutsche Telekom AG until the end of the 2025 shareholders' meeting. The four-year term aligns with the Supervisory Board's proposal to the shareholders' meeting to reduce the term of office for shareholders' representatives from five years to four years in future.

Employees' representatives

There were no changes in respect of the employees' representatives in the 2021 financial year.

Review of the annual and consolidated financial statements, the non-financial statement, and the 2021 remuneration report

The Board of Management submitted the annual financial statements, the consolidated financial statements, and the Group management report, which is combined with the management report of Deutsche Telekom AG (combined management report), together with its proposal for the appropriation of net income and the Corporate Governance Statement, to us in good time. The combined management report also included a separate section containing the combined non-financial statement for Deutsche Telekom AG and for the Group (combined non-financial statement) for the 2021 financial year.

PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft, Frankfurt/Main (PwC), which was appointed as auditor of the single-entity financial statements and auditor of the consolidated financial statements (external auditor) for the 2021 financial year by the shareholders' meeting on the recommendation of the Audit Committee and proposed for appointment by the entire Supervisory Board, audited the annual financial statements as of December 31, 2021, which were prepared by the Board of Management in accordance with the provisions of the German Commercial Code (Handelsgesetzbuch – HGB), and the combined management report, as well as the consolidated financial statements as of December 31, 2021, which were prepared in accordance with IFRS as adopted by the EU and the additional requirements of German commercial law pursuant to § 315e (1) HGB, and the combined management report, and issued an unqualified audit opinion for each document. Moreover, PwC performed a limited assurance engagement on the combined non-financial statement for the 2021 financial year prepared by the Board of Management in respect of the disclosures required by law and issued an unqualified opinion in accordance with ISAE 3000.

The external auditor also confirmed in writing to the Audit Committee and the Supervisory Board together with the submission of the audit reports on February 15, 2022 that there are no circumstances that may give rise to doubts about the external auditor's impartiality. In the Supervisory Board meeting on February 23, 2022, the Audit Committee informed us about its monitoring of the external auditor's independence while taking account of the non-audit services provided, and of its conclusion that the auditor continues to meet the independence requirements.

The external auditor submitted its reports on the nature and extent as well as the result of its audits (audit reports) to us. The documentation on the aforementioned financial statements, the external auditor's audit reports, and the Board of Management's proposal for the appropriation of net income were made available to the members of the Supervisory Board in good time. The same applies to the combined non-financial statement and the Corporate Governance Statement.

We conducted our own in-depth review of the documents submitted by the Board of Management and the external auditor's audit reports. In preparation, the Audit Committee had conducted a thorough review of the aforementioned documents. The annual financial statements, the consolidated financial statements, and the combined management report, as well as the Board of Management's proposal for the appropriation of net income, were explained in detail by the Board of Management to the members of the Audit Committee at its meeting on February 22, 2022. The members of the Board of Management also answered the committee members' questions. Moreover, the external auditor also attended this meeting and reported on its audit, in particular the key audit areas, defined in agreement with the Audit Committee and the Supervisory Board, and the main findings of its audit, and explained its audit report. The external auditor did not identify any material weaknesses in the internal control system at Group level, in the risk management system, or in the accounting process. The members of the Audit Committee acknowledged and critically reviewed the audit report and audit opinion, and discussed them, as well as the audit itself, with the external auditor. The review included questions about the nature and extent of the audit and about the audit findings. The Audit Committee satisfied itself that the audit and the audit reports were compliant. In particular, its members had assured themselves that the audit reports and the audit conducted by the external auditor met the legal requirements. The Audit Committee agrees with the external auditor that there were no material weaknesses, in particular with regard to the accounting process, in the internal control or risk management systems at Group level. Furthermore, the Audit Committee adopted the approach described above with respect to the audit report and audit opinion on the combined non-financial statement and conducted a review of both. The Audit Committee recommended that we approve the results of the audit conducted by the external auditor and, since it had no objections to the documents submitted by the Board of Management, that we approve the annual financial statements and the consolidated financial statements; it also recommended that we not raise any objections against the combined management report or the combined non-financial statement, and that we support the Board of Management's proposal for the appropriation of net income.

We performed the final review of the annual financial statements, the consolidated financial statements, and the combined management report, as well as the Board of Management's proposal for the appropriation of net income, on February 23, 2022, taking into account the report and recommendations of the Audit Committee and the external auditor's audit reports. The Board of Management attended this meeting, explained the documents they had submitted, and answered our questions. The external auditor also attended this meeting and reported on its audit and the main findings of its audit, explained its audit reports, and answered our questions, in particular relating to the nature and extent of the audit and the audit findings. Based on this and the report presented by the Audit Committee, we were satisfied that the audit and the audit report were compliant. Hence, we approved the findings of the audit by the external auditor. The same applies to the combined non-financial statement contained in the combined management report.

Based on the final outcome of our review of the annual financial statements, the consolidated financial statements, the combined management report, and the combined non-financial statement, as well as the Board of Management's proposal for the appropriation of net income, no objections need be raised. The same applies to the Corporate Governance Statement even insofar as it has not been audited by the external auditor. We followed the Audit Committee's recommendation and approved the annual financial statements and the consolidated financial statements.

The approval of the Supervisory Board constitutes formal adoption of the annual financial statements.

The Supervisory Board's assessment of the position of the Company and the Group is the same as that which the Board of Management presented in its combined management report. It followed the Audit Committee's recommendation and approved these documents. The same applies to the combined non-financial statement.

When dealing with the budget and medium-term planning on December 15, 2021, we conducted an in-depth examination of financial and investment plans, discussing in particular the development of earnings, free cash flow, the equity ratio, and balance sheet ratios. The Board of Management's proposal concerning the appropriation of net income was examined by the Audit Committee on February 22, 2022, and by the Supervisory Board on February 23, 2022. The external auditor was present at both meetings. We approved and supported the Board of Management's proposal to pay out shareholder remuneration of around EUR 3,182 million and to carry forward around EUR 2,705 million to unappropriated net income.

The remuneration report for the 2021 financial year was prepared by the Board of Management and Supervisory Board in accordance with § 162 (1) sentence 1 of the Stock Corporation Act (Aktengesetz – AktG) and audited separately by the external auditor. In addition to the formal statutory review of the existence of disclosures pursuant to § 162 (1) and (2) AktG, PwC was commissioned by the Supervisory Board to conduct an assurance engagement on the remuneration report for the financial year from January 1, 2021 to December 31, 2021, including related disclosures, to obtain reasonable assurance regarding its compliance, in all material respects, with the provisions of § 162 AktG, for which PwC issued an unqualified opinion in accordance with IDW audit standard 490.

We would like to thank the members of the Board of Management, all employees, and the works committees for their commitment and dedication in the 2021 financial year.

Bonn, February 23, 2022
The Supervisory Board

Prof. Dr. Ulrich Lehner
Chairman

Members of the Board of Management of Deutsche Telekom AG in 2021

Timotheus Höttges

Chairman of the Board of Management since January 1, 2014

Seats on the supervisory boards of other companies:

- Mercedes-Benz Group AG, Stuttgart (formerly Daimler AG, Stuttgart) (since 7/2020)^a
- Mercedes-Benz AG, Stuttgart (since 10/2021)
- FC Bayern München AG, Munich (2/2010 to 8/2021)
- Henkel AG & Co. KGaA, Düsseldorf (4/2016 to 9/2021)^a

Member of the supervisory boards of subsidiaries, associates, and joint ventures:

- Telekom Deutschland GmbH, Bonn (4/2005 to 6/2021), Chairman of the Supervisory Board (7/2009 to 6/2021)
- T-Mobile US, Inc., Bellevue, United States, Chairman of the Board of Directors (since 4/2013)^a

Adel Al-Saleh

Board member responsible for T-Systems since January 1, 2018

Member of comparable supervisory bodies of business enterprises in Germany or abroad:

- BT Group plc, London, United Kingdom, Member of the Board of Directors (since 5/2020)^a

Birgit Bohle

Board member responsible for Human Resources and Legal Affairs, and Labor Director since January 1, 2020

Member of the supervisory boards of subsidiaries, associates, and joint ventures:

- Deutsche Telekom Services Europe SE, Bonn (since 10/2019)
- Telekom Deutschland GmbH, Bonn (since 1/2019)
- T-Systems International GmbH, Frankfurt/Main (since 6/2021)

Srini Gopalan

Board member responsible for Germany since November 1, 2020

Member of the supervisory boards of subsidiaries, associates, and joint ventures:

- Deutsche Telekom Service GmbH, Bonn, Chairman of the Supervisory Board (since 11/2020)
- Deutsche Telekom Technik GmbH, Bonn, Chairman of the Supervisory Board (since 11/2020)

Dr. Christian P. Illek

Board member responsible for Finance since January 1, 2019

Member of the supervisory boards of subsidiaries, associates, and joint ventures:

- BuyIn SA/NV, Brussels, Belgium, Member of the Board of Directors (since 12/2018)
- Deutsche Telekom Services Europe SE, Bonn (since 8/2019), Chairman of the Supervisory Board (since 11/2019)
- Telekom Deutschland GmbH, Bonn (since 6/2021), Chairman of the Supervisory Board (since 6/2021)
- T-Mobile US, Inc., Bellevue, United States, Member of the Board of Directors (since 1/2019)^a
- T-Systems International GmbH, Frankfurt/Main (5/2015 to 6/2021), Chairman of the Supervisory Board (11/2016 to 6/2021)

Thorsten Langheim

Board member responsible for USA and Group Development since January 1, 2019

Seats on the supervisory boards of other companies:

- FC Bayern München AG, Munich (since 9/2021)

Member of the supervisory boards of subsidiaries, associates, and joint ventures:

- Deutsche Telekom Capital Partners Management GmbH, Hamburg, Chairman of the Investment Committee (since 6/2015)
- T-Mobile US, Inc., Bellevue, United States, Member of the Board of Directors (since 6/2014)^a

Dominique Leroy

Board member responsible for Europe since November 1, 2020

Member of comparable supervisory bodies of business enterprises in Germany or abroad:

- Koninklijke Ahold Delhaize N.V., Zaandam, Netherlands, Member of the Supervisory Board (4/2015 to 4/2021)^a
- Compagnie de Saint-Gobain, Courbevoie, France, Member of the Board of Directors (since 11/2017)^a

Member of the supervisory boards of subsidiaries, associates, and joint ventures:

- Hellenic Telecommunications Organization S.A. (OTE S.A.), Marousi, Athens, Greece (since 11/2020)^a
- T-Mobile US, Inc., Bellevue, United States, Member of the Board of Directors (since 11/2020)^a
- T-Mobile Polska S.A., Warsaw, Poland (since 11/2020), Chairwoman of the Supervisory Board (since 11/2020)

^a Listed on the stock exchange

Claudia Nemat

Board member responsible for Technology and Innovation since January 1, 2017

Seats on the supervisory boards of other companies:

- Airbus Defence and Space GmbH, Ottobrunn (since 5/2016)

Member of comparable supervisory bodies of business enterprises in Germany or abroad:

- Airbus Group SE, Leiden, Netherlands, Member of the Board of Directors (since 5/2016)^a

Member of the supervisory boards of subsidiaries, associates, and joint ventures:

- Deutsche Telekom IT GmbH, Bonn, Chairwoman of the Supervisory Board (since 6/2017)
- Deutsche Telekom Security GmbH, Bonn (since 8/2020), Deputy Chairwoman of the Supervisory Board (since 9/2020)
- T-Systems International GmbH, Frankfurt/Main (since 4/2020), Chairwoman of the Supervisory Board (since 6/2021)

^a Listed on the stock exchange

Members of the Supervisory Board of Deutsche Telekom AG in 2021

Prof. Dr. Ulrich Lehner

Member of the Supervisory Board since April 17, 2008

Chairman of the Supervisory Board since April 25, 2008

Member of the Shareholders' Committee of Henkel AG & Co. KGaA, Düsseldorf, until April 16, 2021

Seats on the supervisory boards of other companies:

- Porsche Automobil Holding SE, Stuttgart (since 11/2007)^a

Dr. Rolf Bösing

Member of the Supervisory Board since June 1, 2018

State Secretary at the Federal Ministry for Housing, Urban Development and Building, Berlin

– No other seats –

Dr. Günther Bräunig

Member of the Supervisory Board since March 21, 2018

CEO of the Executive Board of KfW, Frankfurt/Main, until October 31, 2021

Seats on the supervisory boards of other companies:

- Deutsche Pfandbriefbank AG, Unterschleißheim (since 8/2009), Chairman of the Supervisory Board (since 8/2014)^a
- Deutsche Post AG, Bonn (since 3/2018)^a

Odysseus D. Chatzidis

Member of the Supervisory Board since January 3, 2018

Chairman of the European Works Council of Deutsche Telekom AG, Bonn

– No other seats –

Constantin Greve

Member of the Supervisory Board since November 20, 2018

Chairman of the Central Works Council of Deutsche Telekom AG, Bonn

– No other seats –

Lars Hinrichs

Member of the Supervisory Board since October 1, 2013

CEO of Cinco Capital GmbH, Hamburg

Seats on the supervisory boards of other companies:

- Xempus AG, Munich (formerly xbAV AG), Munich, Chairman of the Supervisory Board (since 1/2016)

Dr. Helga Jung

Member of the Supervisory Board since May 25, 2016

Former Member of the Board of Management of Allianz SE, Munich

Seats on the supervisory boards of other companies:

- Allianz Deutschland AG, Munich (since 3/2016)
- Allianz Global Corporate & Specialty SE, Munich, Deputy Chairwoman of the Supervisory Board (since 5/2013)
- Allianz Lebensversicherungs-AG, Stuttgart, Deputy Chairwoman of the Supervisory Board (since 4/2020)
- Allianz Versicherungs-AG, Munich (since 11/2019)

Prof. Dr. Michael Kaschke

Member of the Supervisory Board since April 22, 2015

Former CEO & President of Carl Zeiss AG, Oberkochen, and Chairman of the Supervisory Board of the Karlsruhe Institute of Technology (KIT), Karlsruhe

Seats on the supervisory boards of other companies:

- Carl Zeiss Meditec AG, Jena, Chairman of the Supervisory Board (3/2010 to 5/2021)^a
- Henkel AG & Co. KGaA, Düsseldorf (since 4/2008)^a
- Ottobock SE & Co. KGaA, Duderstadt (since 6/2021), Deputy Chairman of the Supervisory Board (since 9/2021)
- Robert Bosch GmbH, Stuttgart (since 4/2016)

Member of supervisory boards in Germany required to be formed by law outside of business enterprises:

- Karlsruhe Institute of Technology (KIT), Karlsruhe, corporation under public law (not a commercial enterprise within the meaning of § 100 (2) sentence 1 no. 1 AktG), Chairman (since 12/2019)

^a Listed on the stock exchange

Nicole Koch

Member of the Supervisory Board since January 1, 2016

Chairwoman of the Works Council of Deutsche Telekom Privatkunden-Vertrieb GmbH, Bonn

Member of the supervisory boards of subsidiaries, associates, and joint ventures:

- Deutsche Telekom Privatkunden-Vertrieb GmbH, Bonn (since 6/2004)

Dagmar P. Kollmann

Member of the Supervisory Board since May 24, 2012

Entrepreneur, member of several supervisory boards and advisory boards as well as the Monopolies Commission

Former CEO of Morgan Stanley Bank, Frankfurt/Main

Former Member of the Board of Directors of Morgan Stanley Bank International Limited, London, United Kingdom

Seats on the supervisory boards of other companies:

- Citigroup Global Markets Europe AG, Frankfurt/Main, Chairwoman of the Supervisory Board (since 11/2021)
- Deutsche Pfandbriefbank AG, Unterschleißheim, Deputy Chairwoman of the Supervisory Board (8/2009 to 10/2021)^a
- KfW IPEX-Bank GmbH, Frankfurt/Main (5/2012 to 3/2021)

Member of comparable supervisory bodies of business enterprises in Germany or abroad:

- Coca Cola European Partners plc, London, United Kingdom (since 5/2019)^a
- Paysafe Holdings UK Limited, London, United Kingdom (since 3/2021)^a
- Unibail-Rodamco SE, Paris, France, Member of the Supervisory Board (since 5/2014)^a

Petra Steffi Kreusel

Member of the Supervisory Board since January 1, 2013

Senior Vice President, Customer & Public Relations at Deutsche Telekom Business Solutions GmbH, Bonn

Group Officer for Digital Education and School at Deutsche Telekom AG, Bonn

Chairwoman of the Executive Staff Representation Committee of Deutsche Telekom Business Solutions GmbH, Bonn

Deputy Chairwoman of the Group Executive Staff Representation Committee of Deutsche Telekom AG, Bonn

Member of the supervisory boards of subsidiaries, associates, and joint ventures:

- Deutsche Telekom Business Solutions GmbH, Bonn (since 8/2020)

Harald Krüger

Member of the Supervisory Board since May 17, 2018

Former Chairman of the Board of Management of Bayerische Motoren Werke AG, Munich

Seats on the supervisory boards of other companies:

- Deutsche Lufthansa AG, Cologne (since 5/2020)^a

Kerstin Marx

Member of the Supervisory Board since May 1, 2020

Chairwoman of the Group Works Council at Deutsche Telekom AG, Bonn

Member of the supervisory boards of subsidiaries, associates, and joint ventures:

- Deutsche Telekom Business Solutions GmbH, Bonn (since 8/2020)

Frank Sauerland

Member of the Supervisory Board since November 20, 2018

Deputy Chairman of the Supervisory Board since March 27, 2020

Head of the Collective Bargaining Policy Committee, TC/IT National Committee at the ver.di National Executive Board, Berlin

Member of the supervisory boards of subsidiaries, associates, and joint ventures:

- Telekom Deutschland GmbH, Bonn (since 12/2016), Deputy Chairman of the Supervisory Board (since 1/2017)

Lothar Schröder

Member of the Supervisory Board since June 22, 2006

Trade Union Secretary, former member of the ver.di National Executive Board, Berlin

Seats on the supervisory boards of other companies:

- Vereinigte Postversicherung VVaG, Stuttgart (since 6/2008)
- VPV Holding AG, Stuttgart (since 6/2018)
- VPV Lebensversicherungs-AG, Stuttgart (since 10/2015)

^a Listed on the stock exchange

Nicole Seelemann-Wandtke

Member of the Supervisory Board since July 5, 2018

Deputy Chairwoman of the Works Council of the Consumers unit of Telekom Deutschland GmbH, Bonn

– No other seats –

Sibylle Spoo

Member of the Supervisory Board since May 4, 2010

Lawyer, Trade Union Secretary at the ver.di Federal Administration, Berlin, until December 31, 2021

– No other seats –

Karl-Heinz Streibich

Member of the Supervisory Board since October 1, 2013

President of acatech – Deutsche Akademie der Technikwissenschaften (National Academy of Science and Engineering), Berlin

Seats on the supervisory boards of other companies:

- Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft in München, Munich (since 4/2019)^a
- Siemens Healthineers AG, Erlangen (since 3/2018)^a
- Software AG, Darmstadt, Chairman of the Supervisory Board (since 6/2020)^a

Margret Suckale

Member of the Supervisory Board since September 28, 2017

Former Member of the Board of Executive Directors of BASF SE, Ludwigshafen

Seats on the supervisory boards of other companies:

- DWS Group GmbH & Co. KGaA, Frankfurt/Main (since 3/2018)^a
- HeidelbergCement AG, Heidelberg (since 8/2017)^a
- Infineon Technologies AG, Neubiberg (since 2/2020)^a

Karin Topel

Member of the Supervisory Board since July 1, 2017

Chairwoman of the Works Council of Deutsche Telekom Technik GmbH, Bonn, Technical Branch Office Eastern District

– No other seats –

^a Listed on the stock exchange

The T-Share

		2021	2020	2019
XETRA closing prices				
Share price on the last trading day	€	16.30	14.96	14.57
Year high	€	18.92	16.63	16.25
Year low	€	14.70	10.83	14.10
Trading volume				
German exchanges	billions of shares	2.3	3.4	2.5
Market capitalization on the last trading day	billions of €	81.3	71.2	69.4
Weighting of the T-Share in major stock indexes on the last trading day				
DAX 40	%	4.0	4.5	4.5
Dow Jones EURO STOXX 50®	%	1.7	1.9	1.8
T-Share – key figures				
Earnings per share	€	0.87	0.88	0.82
Dividend per share ^a	€	0.64	0.60	0.60
Total number of ordinary shares at the reporting date ^b	millions	4,986	4,761	4,762

^a Subject to approval by the relevant bodies and the fulfillment of other legal requirements.

^b Including treasury shares held by Deutsche Telekom AG.

Development of international indexes

After a restrained 2020, which was strongly impacted by the coronavirus pandemic, the stock markets proved rather strong in 2021, despite the ongoing pandemic situation.

The most important barometer of the German stock market, the DAX, rose by 15.8 % over the course of the trading year. The Dow Jones even closed out the year up 27.7 % on a total return basis, i.e., including reinvested dividends.

The Dow Jones EURO STOXX 50® likewise ended 2021 on a high, up 23.3 %. Only the Japanese Nikkei performed rather weaker, up by just 1.2 %.

T-Share performance

The European telecommunications sector also benefited from the general upturn: The industry's barometer, the Dow Jones STOXX® Europe 600 Telecommunications, had increased 15.5 % by the end of the year.

In this environment, the T-Share closed the year at EUR 16.30, up by 9.0 %. The lowest price recorded during the year was EUR 14.70 on January 29, 2021, while the highest price of EUR 18.92 was recorded on August 18, 2021.

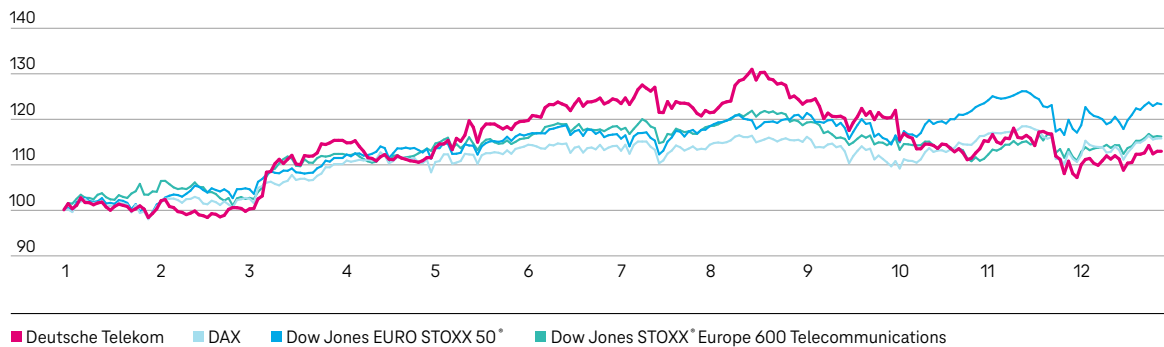
On a total return basis – and thus comparable with the DAX – our share ended the year 2021 up 12.9 %.

Dividend

The Board of Management and Supervisory Board of Deutsche Telekom AG will propose to the shareholders' meeting on April 7, 2022 the distribution of a dividend of EUR 0.64 per dividend-bearing share.

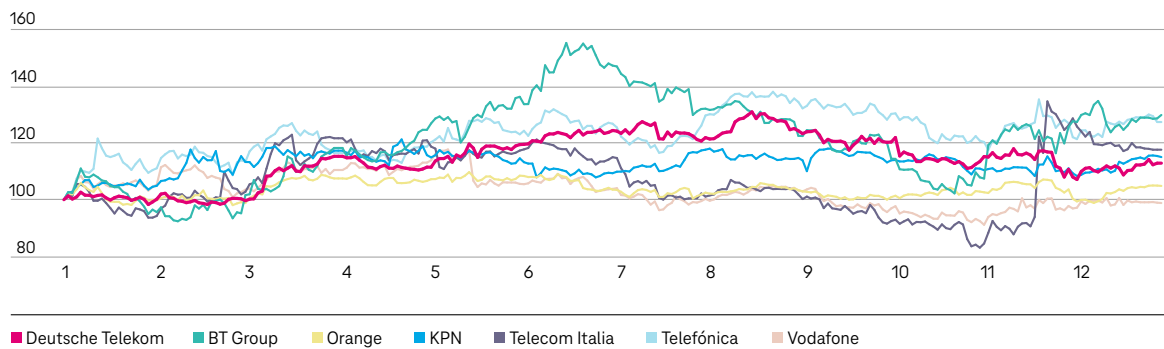
T-Share as compared to DAX, Dow Jones EURO STOXX 50®, and Dow Jones STOXX® Europe 600 Telecommunications

January 1 to December 31, 2021 (based on total shareholder return^a)



T-Share as compared to other European telecommunications companies

January 1 to December 31, 2021 (based on total shareholder return^a)



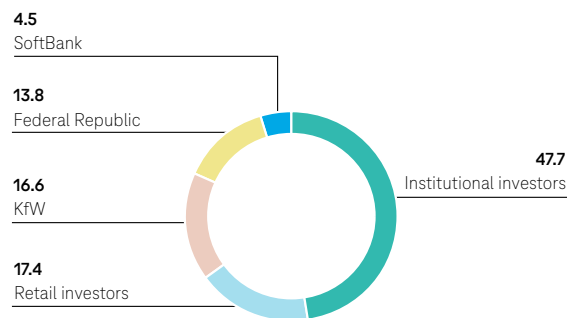
^a Total shareholder return measures the development in the value of a shareholding over a specific period. It takes into account dividends paid during the investment period along with any changes in share price.

Shareholder structure

The Federal Republic's shareholding, including that of Kreditanstalt für Wiederaufbau (KfW), decreased from 31.9 % to 30.4 % in 2021. This slight decrease is due to the capital increase carried out through issuance of 225 million new shares in the third quarter of 2021. Deutsche Telekom used the new shares to purchase 45.4 million shares in T-Mobile US from SoftBank. In return, SoftBank became a shareholder in Deutsche Telekom AG with a stake of 4.5 %. The capital increase was also the main factor behind the slight year-on-year reductions in the proportions of both institutional investors, to 47.7 %, and retail investors, to 17.4 %. As a result, the percentage of shares in free float stands at around 65 % of the share capital.

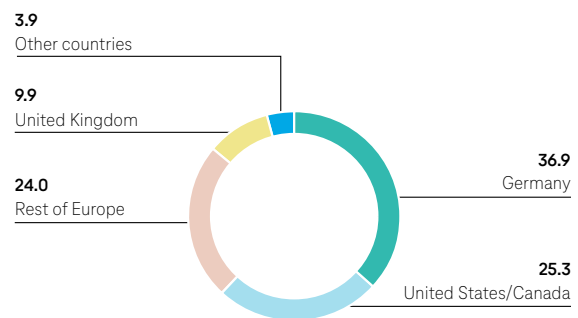
Shareholder structure

% (as of December 31, 2021)



Geographical distribution of free float

% (as of December 31, 2021)



Highlights in the 2021 financial year

For further information on these and other events, please refer to our [media information](#).

Developments at senior management level

In its meeting on December 15, 2021, the Supervisory Board of Deutsche Telekom AG resolved to propose Dr. Frank Appel, CEO of Deutsche Post AG, as the new **Chairman of the Supervisory Board**. Dr. Appel will stand for election at the shareholders' meeting of Deutsche Telekom AG on April 7, 2022 as Prof. Ulrich Lehner's successor. For reasons of age, Prof. Lehner will not be standing for a further term of office. Deutsche Telekom is also setting the course for continuity with regard to the position of the **Chairman of the Board of Management**: Tim Höttges will stay on as CEO of Deutsche Telekom for a further five years.

For further information, please refer to our [media report](#).

Business and other transactions

Fiber-optic build-out through joint venture with IFM. On November 5, 2021, Deutsche Telekom announced that IFM Global Infrastructure Fund – advised by IFM Investors – will acquire a stake of 50 % in GlasfaserPlus GmbH, a fiber-optic build-out entity. The agreed purchase price for the 50 % stake in our subsidiary amounts to EUR 0.9 billion, half of which is to be settled upon conclusion of the transaction, and the remainder once progress has been made in the build-out. The newly established joint venture is to build out an additional 4 million gigabit-capable FTTH lines in rural and development areas between 2022 and 2028. This transaction underpins Deutsche Telekom's aim of being the leading company for the fiber-optic build-out in Germany. Following its approval by the European Commission on January 25, 2022, the transaction is expected to be completed before the end of the first quarter of 2022.

Strategic measures to secure control of T-Mobile US in the long term. On September 6, 2021, Deutsche Telekom took strategic action to increase its stake in T-Mobile US in a move that secures the existing control over the U.S. subsidiary and full consolidation in the long term:

Under the deal signed between Deutsche Telekom and SoftBank on September 6, 2021, the objective of which is to **increase Deutsche Telekom's stake in T-Mobile US**, Deutsche Telekom acquired a total of around 45.4 million T-Mobile US shares from SoftBank on September 28, 2021. SoftBank received in return 225 million new shares in Deutsche Telekom AG by way of a capital increase against contribution in kind utilizing the 2017 Authorized Capital, excluding subscription rights for existing shareholders, making it a shareholder in Deutsche Telekom AG with a stake of around 4.5 %. The transaction increases Deutsche Telekom's stake in T-Mobile US by 3.6 percentage points, bringing it to 46.8 %. Deutsche Telekom is also weighing plans to further increase its stake in T-Mobile US by investing up to USD 2.4 billion (around EUR 2.1 billion) in the purchase of additional shares through the exercise of further fixed-price and variable options. This investment is to be financed from a portion of the net cash proceeds of around EUR 3.8 billion from the **planned sale of T-Mobile Netherlands**. On September 6, 2021, Deutsche Telekom and Tele2 agreed to sell our subsidiary T-Mobile Netherlands to WP/AP Telecom Holdings IV. The transaction is subject to approval by the authorities as well as other closing conditions. The transaction is expected to be completed in the first quarter of 2022.

Deutsche Telekom expects its total stake in T-Mobile US to be around 48.4 % upon completion of these two transactions. The exact percentage is based on the precise number of shares to be acquired, which in turn depends, in half, on the average market price of T-Mobile US. Deutsche Telekom and SoftBank have also agreed a new strategic partnership that will position Deutsche Telekom as a major European partner in the SoftBank ecosystem.

Acquisition of Shentel. On May 28, 2021, a purchase agreement was signed between T-Mobile US and Shentel for the acquisition of assets and liabilities directly associated with the wireless telecommunications operation of Shentel. The transaction was consummated on July 1, 2021. The purchase price was USD 1.9 billion (EUR 1.6 billion).

Sale of Telekom Romania Communications. On November 6, 2020, OTE concluded an agreement with Orange Romania concerning the sale of its 54 % stake in Telekom Romania Communications, which operates the Romanian fixed-network business, to Orange Romania. The transaction was approved by the authorities and then consummated on September 30, 2021. The purchase price is EUR 296 million.

Combination of the cell tower business in the Netherlands and creation of an infrastructure fund. On January 21, 2021, Deutsche Telekom, Cellnex Telecom, and the newly established independently managed investment company Digital Infrastructure Vehicle (DIV) signed an agreement to merge Deutsche Telekom's and Cellnex's respective Dutch subsidiaries for mobile infrastructure. Following approval of the deal by the national competition authority, the Dutch cell tower company T-Mobile Infra was sold to DIV effective June 1, 2021 and subsequently contributed into Cellnex Netherlands.

Reassignments between the operating segments. Effective January 1, 2021, Deutsche Telekom reassigned the responsibility for business and profit and loss for Deutsche Telekom IoT GmbH from the Systems Solutions operating segment to the Germany operating segment. Also effective January 1, 2021, Deutsche Telekom transferred its Austrian cell tower business from the Europe operating segment to the Group Development operating segment, and Deutsche Telekom IT (DT IT) Russia, DT IT Slovakia, and DT IT Hungary from the Germany operating segment to the Group Headquarters & Group Services segment.

For further information on these business transactions and others, please refer to the section “[Group organization](#)” in the combined management report and the sections “[Other transactions that had no effect on the composition of the Group](#),” “[Changes in the composition of the Group and other transactions](#),” and Note 36 “[Segment reporting](#)” in the notes to the consolidated financial statements.

Capital Markets Day 2021

In May 2021, we presented our medium-term strategy and the financial outlook at our Capital Markets Day in Bonn. Our forecast for growth through to 2024 remains at a consistently high level: We expect revenue to grow annually by 1 to 2 % on average and adjusted EBITDA AL by 3 to 5 % on average. Free cash flow AL is to reach more than EUR 18 billion by 2024. We will continue to invest large amounts, with most of these capital expenditures going into building out our network infrastructure (optical fiber and 5G). The dividend will continue to track the development in adjusted earnings per share. This figure is set to rise from the 2020 level of EUR 1.20 to more than EUR 1.75 by 2024. Subject to approval by the relevant bodies, 40 to 60 % of adjusted earnings per share is to be paid out. The dividend floor introduced in November 2019 of EUR 0.60 per share still applies. Based on the strong development of business in 2021, our Board of Management plans to pay out a dividend of EUR 0.64 per share, up from EUR 0.60 for the 2020 financial year, subject to the necessary approvals.

For further information on our Capital Markets Day 2021, please refer to our [Investor Relations website](#).

T-Mobile US Analyst Day

Marking almost one year since the merger with Sprint, on March 11, 2021 T-Mobile US updated analysts on the status of the business integration and shared its medium-term financial targets. For example, by March 2021 the company was already ahead of the planned time frame for realizing the synergies from the business combination announced with the transaction in April 2018. Our U.S. subsidiary also provided an update on the 5G network build-out following the national spectrum auction, where it invested in C-band frequencies to add to its Ultra Capacity 5G. T-Mobile US additionally announced its plans to expand its footprint to include smaller and rural target markets, the enterprise customer segment, and home broadband.

Rating

In June 2021 the rating agency Moody’s upgraded the rating outlook for **Deutsche Telekom AG**. The Moody’s rating is now Baa1 with a stable outlook.

In August 2021, the “big three” rating agencies all upgraded their ratings for our subsidiary **T-Mobile US**: Moody’s from Ba2 to Ba1, Standard & Poor’s from BB to BB+, and Fitch from BB+ to BBB-.

Cyberattack on T-Mobile US

In August 2021 T-Mobile US confirmed that their systems had been subject to a criminal cyberattack that compromised data of millions of their customers, former customers, and prospective customers. With the assistance of outside cybersecurity experts, T-Mobile US located and closed the unauthorized access to their systems and identified customers whose information was impacted and notified them, consistent with state and federal requirements. T-Mobile US also undertook a number of other measures to demonstrate their continued support and commitment to data privacy and protection. The forensic investigation is now complete and T-Mobile US believes they now have a full view of the extent of the attack.

Litigation

In November 2021, Deutsche Telekom AG presented the Frankfurt/Main Higher Regional Court with a settlement concept in connection with the prospectus liability proceedings on the third public offering. Under the concept, Deutsche Telekom is to make firm settlement offers to all eligible plaintiffs.

For further information on pending and closed litigation, please refer to the section “[Risk and opportunity management](#)” in the combined management report.

Investments in networks

Awarding of 5G spectrum. In the United States and the countries of our Europe operating segment, a number of 5G spectrum award proceedings were held in the reporting year, at which T-Mobile US and our national companies in Hungary, Croatia, and Romania were each able to successfully secure spectrum. With these spectrum acquisitions we can now forge ahead with the rapid build-out of our network infrastructure and bring more services, including 5G, to our customers. The build-out goes on continuously.

For further information on spectrum awards, please refer to the section “[The economic environment](#)” in the combined management report.

Network build-out in Germany. We continued to build out our network infrastructure in Germany throughout the reporting year. At the end of 2021, our 5G network covered over 90 % of households. More than 63,000 antennas at around 20,000 sites are transmitting 5G. In over 140 cities, 5G is now available in the powerful 3.6 GHz band. 3,600 antennas at 1,200 sites deliver high-speed 5G for growing numbers of users. We also added to our LTE network in 2021, increasing coverage of households to 99 % as of December 31, 2021. At the end of June 2021, 3G was permanently retired with the shutdown of this older technology. We are refarming the released spectrum for the significantly better performing LTE/4G and 5G technologies.



In the fixed network, the fiber-optic build-out took center stage. At the end of 2021, our fiber-optic network extended over a total distance of around 650,000 kilometers. Since the start of 2021, we have rolled out fiber-optic lines (FTTH) to around 1.2 million more households. The total number of households passed by our fiber-optic network had increased to around 3.4 million by the end of 2021. In the reporting year, we also announced ambitious targets to roll out FTTH in cities across Germany, including Berlin, Hamburg, Frankfurt/Main, Düsseldorf, and Stuttgart. For example, we began rolling out optical fiber in Munich in October 2021, while in Bautzen (Saxony) we have already covered some 60,000 households and businesses in 55 municipalities across the district. By 2024 we are set to connect a total of approximately 10 million households Germany-wide to our fiber-optic network. We give equal priority to building out to rural areas as we do to urban centers, and are planning to bring optical fiber to a total of 8 million rural households by 2030. Together with the Australian investor IFM, the fiber-optic build-out company GlasfaserPlus is to add a further 4 million households in rural areas to this target.

Network build-out in the United States. By the end of 2021, T-Mobile US had further expanded its 5G network leadership, delivering 5G speeds to broad swaths of the United States with the largest national 5G network. The 5G network of our U.S. subsidiary now covers more than 310 million people via the 600 MHz band and over 210 million people with Ultra Capacity 5G in the 2.5 GHz band and millimeter-wave (mmWave) spectrum. T-Mobile US has thus not only met, but exceeded, its original target of bringing Ultra Capacity 5G to 200 million people by the end of 2021. T-Mobile US plans to reach 300 million people with Ultra Capacity 5G by the end of 2023.

Network build-out in Europe. In the countries of our Europe segment, too, we continued to press ahead with the network build-out in the reporting year. As of the end of 2021, our national companies covered 28.9 % of the population in our European footprint with 5G. Indeed, in Greece, 69 % of the population benefit from the advantages of 5G technology. As of December 31, 2021, we covered 98.2 % of the population in our European countries with LTE, reaching a total of around 109 million people. At the end of September 2021, T-Mobile Polska shut down its 3G network to refarm the released spectrum for the better performing LTE/4G and 5G services.

We also made good progress with the build-out of our fixed network in 2021. We have made fiber-optic lines available to a further 1.4 million households in our Europe segment since the start of 2021. At the end of 2021, a total of 27.9 %, or around 7.0 million households, thus had the option to subscribe to a direct connection to our high-speed fiber-optic network with speeds reaching up to 1 Gbit/s. By 2024, we are set to increase fiber-optic coverage in our Europe operating segment to 40 %, or 10 million households. Our Greek subsidiary OTE plans to significantly ramp up investments in the accelerated build-out of the broadband fixed network. This will serve not only to meet the requirements for the digital transformation in Greece over the coming years, but will also bring fiber-optic lines (FTTH) to 3 million households and businesses. Our FTTH lines were available to 480,000 households in Croatia by the end of 2021.

Corporate responsibility and employees

Crisis management.   As a critical infrastructure company, we make an important contribution to society through the reliable provision and restoration of telecommunications services. This holds particularly true in respect of the restoration of telecommunications infrastructure following the occurrence of natural disasters and crisis situations, such as the catastrophic flooding experienced across North Rhine-Westphalia and Rhineland-Palatinate in July 2021, as well as the maintenance of operational capability during the coronavirus pandemic. In circumstances such as these, it is imperative that we take special action to enable businesses to remain operational, to offer support, and to protect our customers and employees.

For further information, please refer to the sections “Corporate responsibility and non-financial statement” and “Employees” in the combined management report.

Digital innovations for climate goals. In July 2021, T-Systems and Shell Gas & Power Developments signed a memorandum of understanding to advance digital innovation as both companies accelerate their transitions to net-zero emissions. Under the terms of the agreement, the two companies will collaborate on innovations and services to accelerate Shell’s digital transformation, and work together to identify opportunities to co-invest and participate in new business models focused on the decarbonization of society. Shell’s role will include supplying renewable energy to our subsidiary T-Mobile US, and in turn T-Systems will install more than 10,000 electric vehicle charging stations in Germany for Shell over the next three years.

For further information, please refer to our [media report](#).

Making the cloud greener. In April 2021, T-Systems launched a research project at the Biere data center in Saxony-Anhalt. Together with the Fraunhofer IFF in Magdeburg, T-Systems experts are developing measures for improved sustainability in the operation of data centers. The long-term goal: a data center that is energy self-sufficient thanks to an intelligent interplay of regenerative generation, storage, and flexible consumers. On the one hand, this reduces the load on the power grid. On the other, increased self-sufficiency strengthens the resilience of the data center.

For further information, please refer to our [media report](#).

Innovations

T-Mobile US and Deutsche Telekom continue their mission to fuel 5G innovation. Since November 2021, T-Mobile US is the exclusive 5G launch partner in North America for Qualcomm Technologies' new Snapdragon Spaces™ XR Developer Platform. In addition, via the T-Mobile Accelerator, T-Mobile US, Deutsche Telekom, and others will work directly with start-ups and developers using Snapdragon Spaces to build immersive 5G experiences for augmented reality (AR) glasses across gaming, entertainment, and other industries starting in spring 2022. To help build an ecosystem for extended reality (XR) applications on the basis of the Snapdragon Spaces platform, all participants will cooperate directly to develop, test, and bring to market new products and services. In October 2021, T-Labs, our centralized research and development unit, and T-Mobile US teamed up to launch T-Challenge, a worldwide competition for start-ups, developers, researchers, and designers. Their goal: to develop 5G and XR technology solutions to transform the retail experience and fuel new innovations in how consumers shop across all retail channels.

Digital X 2021. On September 7 and 8, 2021 we hosted the Digital X 2021 world expo on all things digital in the heart of Cologne. In a packed program covering five stages and over 100 popular Cologne locations, including restaurants, bars, hotels, and co-working spaces, the city showcased the topics of digital transformation and sustainability for business and society. Talks and workshops presented digital solutions in areas ranging from artificial intelligence and 5G, to the Internet of Things, virtual/augmented reality, and cloud computing. The overriding goal: to create excitement and enthusiasm for digitalization. More than 300 enterprises presented solutions for the digital transformation.

For further information, please refer to our [media report](#).

MWC 2021: Telekom Tech Grounds. As part of Mobile World Congress 2021 on June 28 and 29, 2021, we hosted a new digital conference format called Telekom Tech Grounds, with the theme "Exploring human-centered technology." The conference showcased the ways in which technological solutions can contribute to a future-ready society. At the conference, together with Ericsson and Samsung Electronics, we announced the successful realization of **5G end-to-end network slicing**. This is the world-first implementation of multi-vendor 5G end-to-end (E2E) network slicing with a commercially available 5G device. We also announced the switch-on of our **O-RAN Town** in Neubrandenburg. O-RAN Town will deliver Open RAN-based 4G and 5G services at up to 25 sites. The first sites are in operation and integrated into the live network of Telekom Deutschland. The winners of the hubraum Network Sustainability Awards 2021 were also honored at Telekom Tech Grounds.


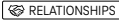
Hannover Messe. T-Systems presented its new artificial intelligence (AI) offering for the first time at Hannover Messe in April 2021. AI Solution Factory bundles the development, testing, introduction, and operation of AI solutions for production and logistics. It is a modular kit of hardware, software, connectivity, and security. T-Systems also premiered its Campus Edge Framework. The offering combines network solutions such as 5G with infrastructure and services from Amazon Web Services to create managed solutions. T-Systems orchestrates and integrates all edge computing components and, if desired, relieves customers of administration, maintenance, and contract management. Other topics included Catena X, security, SAP, digital supply chains, and how data can reduce the carbon footprint.

For further information, please refer to our [media report](#).



For further information on our innovations, please refer to the section "[Technology and innovation](#)" in the combined management report.

Cooperation, partnerships, and major contracts

Contract with Deutsche Rentenversicherung. In October 2021, Deutsche Rentenversicherung extended our contract on the secure operation of its communications networks. The deal is worth a figure in the triple-digit million range and means we will continue to operate the pension insurance provider's existing voice, data, and mobile network infrastructure on the basis of state-of-the-art, forward-looking technologies with the highest security standards. Deutsche Rentenversicherung transmits millions of datasets containing the social data of all German citizens over its network.



Sovereign cloud for Germany.   In September 2021, T-Systems and Google announced their partnership to provide a next-generation cloud solution: the T-Systems Sovereign Cloud powered by Google Cloud. The two companies plan to build a new cloud solution that allows customers to host their sensitive workloads whilst continuing to leverage the scalability, innovativeness, and reliability of public cloud services. A number of safeguards will address the strict compliance requirements applicable, for example, to public-sector institutions. T-Systems is to enable these mechanisms with a set of services based on the Google Public Cloud, including encryption, audits, and identity management. T-Systems will be in charge of operating the cloud and managing the services. The solution will initially be available to customers in the DACH region (Germany, Austria, and Switzerland) in various industries, including healthcare, automotive, public transport, and the public sector.

For further information, please refer to our [media report](#).



T-Systems enters into partnerships for sustainable mobility.   In December 2021, T-Systems and Goal Systems announced a partnership aiming to support the digital transformation of providers for public passenger and freight transport with holistic offerings. This project is a response to the drastic changes and challenges faced by the industry, including the expansion of e-mobility, with the reduction of CO₂ as a primary goal, as well as the development of more flexible transport concepts. In November 2021, T-Systems and Frequentis signed a partnership agreement under which they will pool their aviation expertise in pursuit of the far-reaching digitalization of airports. The aim is to achieve more efficient processes in the passenger area and airport logistics on the basis of integrated systems and digitalized processes. These innovations will also serve as a lever to reduce CO₂ emissions.



High-speed communication for IAA MOBILITY 2021. To mark the opening of IAA in August 2021, we expanded our existing partnership with Messe München for mobile and fixed-network communications to offer visitors an entirely new trade fair experience. With the exhibitor area of IAA extending over large parts of Munich for the first time this year, fiber-optic lines were laid and 29 new 5G sites set up to create a brand-new mobility platform.


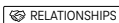
For further information, please refer to our [media report](#).



For a seamless mobile network along rail tracks in Germany.   Together with Deutsche Bahn, we intend to substantially improve mobile reception on trains. In future, passengers using our mobile network are to be able to make calls and surf the internet on all routes without interruption. By 2026 at the latest, coverage gaps along all railway lines in long-distance and regional services are to be eliminated. Both companies have agreed to jointly invest a sum in the hundreds of millions that will allow us to build out our mobile network along Deutsche Bahn's railway lines, close any gaps, and significantly increase the network's performance.

For further information, please refer to our [media report](#).

T-Mobile US and Zyter partner to deliver virtual healthcare solutions.   In April 2021, T-Mobile US and Zyter announced a preferred partnership to deliver virtual healthcare solutions – including telehealth, remote patient monitoring, and digital collaboration for care teams – to more healthcare organizations and their patients across the United States. Together, the two companies are making virtual care more accessible to more people, which serves to improve patient outcomes and reduce readmission rates.

Extension of fiber-optic partnership with NetCologne.   In February 2021, Deutsche Telekom and NetCologne extended their long-running partnership from 2013 with an agreement to continue working together for a further ten years. Beyond the continued use of VDSL, the partners have also set the course for granting mutual network access to gigabit-capable fiber-optic infrastructure in the future. The goal is to maximize network utilization and secure additional investments in the future fiber-optic build-out.

Extension of the fixed-network partnership with 1&1.   Deutsche Telekom and 1&1 Versatel will continue to work closely together in the fixed network: both companies signed a ten-year extension to their strategic partnership in mid-February 2021. The corresponding contract covers the further use of VDSL and lays the groundwork for the use of fiber to the home/building. This fixed-network partnership safeguards the utilization of our networks and drives forward the fiber-optic build-out in Germany. In return, 1&1 can offer its customers a future-oriented product portfolio on our fast network.

Network infrastructure sharing with Telefónica.   Deutsche Telekom and Telefónica are set to jointly close several hundred “gray spots” in 4G network coverage under an agreement signed in November 2021. The partners will share active network technology at the sites. Unlike previous joint projects, such as radio mast site-sharing or the operator agreement to close “white spots,” separate wireless technology or antennas do not have to be additionally installed with this approach.

For further information, please refer to our [media report](#).

5G partnerships and campus networks. In close partnership with Deutsche Telekom, Deutsche Messe in Hanover gradually transformed its exhibition grounds in 2021 into a highly innovative multifunctional campus. We ensure 5G campus network coverage over a total area of more than 1.4 million square meters. T-Systems and Ericsson also pooled their expertise in 2021 to offer their respective customers integrated campus network solutions. The partnership is based on Ericsson’s campus network infrastructure and our edge computing capabilities. In addition, in January 2021, T-Mobile US announced five-year, multi-billion-dollar agreements with both Ericsson and Nokia to continue advancing and expanding the nation’s largest 5G network. In December 2021, T-Mobile US, 5G Open Innovation Lab, and CoMotion at the University of Washington (UW) announced a collaboration that will enable hardware start-ups to develop, test, and roll out new products, services, and prototypes powered by T-Mobile US’ Ultra Capacity 5G. With the new 5G network deployed at CoMotion Labs on the UW campus, the facility is now the first 5G-equipped incubator in the region of Washington, focused on supporting the growth of the hardware start-up ecosystem.


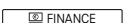
Openness and diversity in the radio access network. In January 2021, Deutsche Telekom, Orange, Telefónica, and Vodafone Group signed a joint letter of intent expressing their individual commitment to the implementation and deployment of Open Radio Access Network (Open RAN) solutions. Open RAN takes advantage of new open virtualized architectures, software, and hardware to build more agile and flexible mobile networks in the 5G era. The four operators will work together with existing and new ecosystem partners, industry bodies, and European policy makers to ensure Open RAN quickly reaches competitive parity with traditional RAN solutions.

For further information, please refer to our [media report](#).

Open lab “i14y” created. In November 2021, the open lab “i14y” began operation with the aim of accelerating the disaggregation of networks and the development of Open RAN. The Berlin-based lab is run by a consortium of partners and has been funded by the German Federal Ministry for Transport and Digital Infrastructure. The testing and integration work done at the i14y lab will be crucial to developing the collaboration and the standards required for this open, disaggregated approach. Besides Deutsche Telekom, the consortium is made up of BISDN, Capgemini Engineering, EANTC, Fraunhofer HHI, highstreet technologies, Nokia, Rohde & Schwarz, Telefónica Deutschland, TU Berlin, and Vodafone Deutschland.

For further information, please refer to our [media report](#).

Products, rate plans, and services



New smart solutions for inner-city mobility.   We showcased innovative mobility concepts at ITS World Congress 2021 in Hamburg to demonstrate how technologies such as 5G, edge computing, sensor technology, cloud computing, and artificial intelligence can contribute to greater sustainability and safety – from cars that can quickly find a free parking space, to better quality, more reliable public transport, collision warning technology designed to keep cyclists safer on the roads, to reduced emissions through the networking of vehicles in and around the Port of Hamburg, and the introduction of intelligent urban tolling.



For further information, please refer to our [media report](#).

E-governance via the smart city app. Telekom Deutschland’s Citykey app is the new digital companion for daily city life. Citizens can access digital government services, entertainment and events calendars, and tourism services all via the app. It’s an easier way to book appointments with the city, fill out official forms, see the latest news and information, report faulty infrastructure, and much more besides. Towns, cities, and municipalities can use the app to quickly and cost-effectively digitalize their services and actively involve users in configuring content.

A new B2B concept in Telekom Shops. Since July 2021, self-employed business customers and small and medium-sized enterprises have been able to access our entire solutions portfolio in around 190 Telekom Shops across Germany. These include traditional fixed-network and mobile offerings alongside home working and IT solutions, such as hardware, Microsoft 365, Magenta Business POS, Cloud PBX, and security services. Specially trained customer advisors are now also taking appointments for external site visits in the vicinity of the shops, e.g., on-site visits at the customer’s premises. The new, integrated B2B concept can be experienced first-hand in-store, including at our recently renovated flagship store in Cologne.

MagentaEINS Unlimited. We have extended the range of our MagentaEINS FMC products. With MagentaEINS Unlimited, customers benefit from a fixed and mobile contract of their choice from Deutsche Telekom with unlimited data across Germany and including 5G at home and on the move. The product bundles can also be extended to include further family members via corresponding partner cards. We have created a separate mobile rate plan for the new Unlimited packages: MagentaMobil EINS offers unlimited voice minutes and texts in all German networks. MagentaEINS Unlimited combines mobile connectivity with our fixed-network product MagentaZuhause in a choice of sizes: L, XL, XXL, or Giga.

Digital Home Service. Our Digital Home Service was launched in April 2021 for all applications in the digital home. The service helps customers optimize their home Wi-Fi and set up computers, tablets, smartphones, and MagentaTV. The service package also answers all questions relating to smart home applications, firewalls, and suitable virus protection. In November 2021, we launched our 5G Indoor Booster to improve 5G network coverage inside buildings for a disruption-free customer experience. Also in November we introduced a hybrid solution to enable more bandwidth for home networks. The fixed-mobile solution is based on the Speedport Smart 4 router in combination with an outdoor 5G receiver. We rigorously took sustainability into account when planning and designing these routers. The resulting considerable reduction in use of natural resources and in CO₂ emissions, plus the avoidance of plastic waste, helps protect the environment.   Our Android-based MagentaTV One Box, which can also be used with any other internet service provider, was launched in December 2021.

T-Mobile US' next Un-carrier move: #5GforAll. In April 2021, T-Mobile US rang in the #5GforAll era with a sweeping set of initiatives including a free 5G phone upgrade. Now, everyone in America can trade in any mobile phone and get a 5G smartphone for free. All of the around 60 million customers of our U.S. subsidiary's competitors still on limited data plans and/or with limited 5G access can upgrade to unlimited data with access to T-Mobile US' full 5G network for the same price – or less – than their existing plans. T-Mobile US also launched T-Mobile Home Internet, a simple and fast Wi-Fi broadband solution over the mobile network. The T-Mobile Hometown promise is a commitment that extends over the next few years to bring 5G to rural America, hire 7,500 new employees in small towns and rural communities, and provide USD 25 million in grants for community development projects.  

T-Mobile US business customer campaign. In March 2021, T-Mobile US launched WFX Solutions – a new suite of services for business maximizing the benefits of its 5G network. The products T-Mobile Enterprise Unlimited, T-Mobile Home Office Internet, and T-Mobile Collaborate help businesses and their employees with mobile and home working.

Awards

In the reporting year we once again received numerous accolades for our networks, our products and service, our HR work and CR reporting, and our innovations. The illustration below shows the main awards received.

Major awards in 2021

Q1	Q2	Q3	Q4
<p>Climate A List and DJSI The non-profit organization CDP and the Dow Jones Sustainability Index once again list Deutsche Telekom as a leading company when it comes to climate protection.</p> <p>Umlaut speed test Measurements by the independent Umlaut consultant company confirm T-Mobile US' 5G network is the fastest in the United States.</p> <p>Brand Finance Global 500 Deutsche Telekom is once again ranked the most valuable European telecommunications brand and at USD 51.1 billion reached an all-time brand-value high.</p> <p>Tested Smart Home Product certificate AV-TEST gives the stamp of approval to our smart home products Home Base 2 and Speedport Smart 3 in their data privacy and security check (01/2021).</p> <p>J.D. Power Customer Care Study 2021 T-Mobile US ranks #1 for the 21st time in the Wireless Customer Care Mobile Network Operator Performance study by the analysts at J.D. Power.</p> <p>Potentialpark ranking 2021 Deutsche Telekom's careers website is rated Germany's best corporate website for potential applicants with the #1 spot in the category Digital Talent Attraction.</p> <p>Top50 Most Valuable German Brands The BrandZ study once again names Deutsche Telekom as Germany's second most valuable brand with a value of USD 47.1 billion.</p>	<p>Connect hotline test of mobile providers For the third time in succession, both Deutsche Telekom and Magenta Telekom in Austria win Connect magazine's mobile hotline test with a verdict of "very good" (issue 05/2021).</p> <p>CHIP mobile network test CHIP magazine awards Magenta Telekom a top verdict of "very good" in a test of Austria's mobile networks.</p> <p>CHIP fixed-network test Deutsche Telekom wins outright with an overall score of 1.5 and is the only provider to receive a verdict of "very good" (issue 05/2021).</p> <p>Ookla & Umlaut 5G network tests The independent consulting companies Ookla and Umlaut rank T-Mobile US' 5G network the fastest and most reliable in the United States.</p> <p>"Favorite employer" in Kurier ranking For the third time in succession, a study by the Kurier publishing house names Magenta Telekom one of Austria's most valued companies and Magenta Telekom receives the seal of quality.</p> <p>Connect readers' choice 2021 Connect readers vote Magenta Telekom Austria's favorite mobile network operator for the eighth time in succession (issue 05/2021).</p> <p>ÖGVs mobile provider shop test Magenta Telekom wins a peer test of mobile provider shops by the Austrian organization for consumer studies with the #1 spot in all test categories: Ambiance, Advice, and Service (test 04/2021).</p>	<p>Connect fixed-network test Deutsche Telekom takes the #1 spot in Connect magazine's nationwide fixed-network provider test with the best fixed-network offering in Germany and a verdict of "very good" (issue 08/2021).</p> <p>ABI Research 5G enterprise ranking Deutsche Telekom is rated the best mobile provider for 5G enterprise offerings in an international study by ABI Research.</p> <p>Ookla & Umlaut 5G network test The independent consulting companies Ookla and Umlaut once again rate T-Mobile US' 5G network best in class for speed, availability, and latency.</p> <p>J.D. Power Customer Care Study 2021 For the 22nd time in succession, T-Mobile US is ranked the mobile provider with the best customer service in the United States in the study by the analysts at J.D. Power.</p> <p>ESG Reporting Awards 2021 Deutsche Telekom's CR report wins outright in the category Best Sustainability Reporting: Technology & Telecoms.</p> <p>Ookla speedtest awards Magenta Telekom receives the award for fastest fixed-network internet access in Austria.</p> <p>Connect service test Connect magazine rates the fixed-network hotline and the MeinMagenta app from Magenta Telekom in Austria as best in class. Deutsche Telekom also wins the peer test of broadband provider hotlines in Germany with a verdict of "very good" (issue 10/2021).</p>	<p>Investor Relations Prize 2021 The German investor relations association DIRK once again ranks Deutsche Telekom the #1 DAX 40 company for its outstanding investor relations work.</p> <p>Smartphone Magazin mobile network test Deutsche Telekom's mobile network wins Smartphone Magazin's 2022 network test and is the only provider to receive an overall verdict of "excellent."</p> <p>Computer Bild's top digital assistant 2021 Computer Bild and Statista name Frag Magenta the best German service chatbot in the category Telecommunications.</p> <p>CSR Reporting Awards Deutsche Telekom wins two golds for its sustainability reporting: German Online Communications Award and the 2021 PR Report Award.</p> <p>Plastics Recycling Awards Europe 2021 Deutsche Telekom's Speed Home WLAN mesh repeater wins outright in the category Automotive, Electrical or Electronic Product.</p> <p>Umlaut fixed-network test Our subsidiary Hrvatski Telekom's fixed network is rated the best on the Croatian market by independent consulting company Umlaut.</p> <p>ÖGVs B2B internet provider test Magenta Telekom wins outright with its lowest-price rate plans, the best portfolio for small and medium-sized companies, and the best website transparency (test 11/2021).</p>
<p>CSR Benchmark 2021 NetFederation rates Deutsche Telekom's sustainability communication best in class in its benchmark study.</p>	<p>Tutela report Mobile crowdsourcing company Tutela rates Deutsche Telekom's mobile network Germany's #1 with the highest scores in all 6 test categories.</p> <p>Azubi Communication Study 2021 Potentialpark and Ausbildung.de award Deutsche Telekom's online communication second place in their study.</p> <p>German Stevie Awards 2021 T-Systems wins silver at these prestigious business awards in the Human Resources "Team of the Year" category for its agile transformation program.</p> <p>ABSL Award Deutsche Telekom Services Europe Romania is runner-up in the ABSL Awards in the category Business Innovation with its HireVue recruitment tool.</p> <p>German Brand Awards Deutsche Telekom is Best of the Best in the categories Brand Innovation of the Year and Brand Experience of the Year and is awarded eight prizes in this prestigious competition.</p> <p>Umlaut's best in test For the seventh time in succession, Umlaut awards Cosmote's mobile network in Greece a verdict of "best in test" for best overall performance.</p> <p>German Media Prize 2021 Deutsche Telekom's No Hate Speech campaign to combat hate speech and cyberbullying in the digital world wins the blue-ribbon category National Media Strategy.</p>	<p>PCMag 5G network test T-Mobile US ranked as the leader in 5G on the basis of test drives through the United States.</p> <p>Umlaut 5G network test The independent consulting company Umlaut rates T-Mobile US' 5G network #1 for speed and availability in several metropolitan areas.</p> <p>Ookla & Umlaut mobile network test Subsidiary Hrvatski Telekom again wins both mobile network tests in Croatia carried out by the two independent consulting companies.</p> <p>Ookla mobile network test The mobile network of our Greek subsidiary OTE is rated best in test for download speeds by independent consulting company Ookla.</p> <p>Queb HR Innovation Awards Federal association Queb names Deutsche Telekom's virtual school internship an outstanding innovation in the category Business.</p> <p>Connect Netztest For the third time in a row, Magenta Telekom in Austria wins Connect magazine's fixed-network broadband test with a verdict of "very good" (issue 11/2021).</p> <p>Effie Germany Awards 2021 Deutsche Telekom's No Hate Speech campaign takes bronze in the category Doing Good.</p> <p>WELL Health-Safety Rating T-Mobile US is the first-ever mobile communications company to receive the "WELL Health-Safety rated" seal in its office buildings.</p>	<p>Best of Consulting Awards 2021 T-Systems wins Wirtschaftswoche magazine's consultant check in the category Organisation and, with Detecon, has Germany's best business consulting projects.</p> <p>AWS Premier Consulting Partner T-Systems reaches the top tier as an Amazon Web Services Premier Consulting Partner based on its experience and high quality with AWS Cloud.</p> <p>Connect network test Connect magazine rates Deutsche Telekom's mobile and 5G networks best in test with a verdict of "very good." Magenta Telekom is named Austria's best mobile provider for the fourth time in succession with a verdict of "outstanding" (issue 01/2022).</p> <p>CHIP mobile network test Deutsche Telekom wins overall for the 12th time and ranks #1 in all four test categories with a verdict of "very good" (issue 01/2022).</p> <p>Computer Bild mobile network test Deutsche Telekom's German mobile network rated best in test with an overall score of 1.4 (issue 25/2021).</p> <p>Germany's best training provider 2021 Capital magazine awards 5 stars to Deutsche Telekom as a leading training provider in 2021 for trainee courses and dual study programs.</p> <p>HR Excellence Awards Deutsche Telekom wins gold in the category Trainee and University Marketing with its virtual school internship and gold in the category Change Management with its People Lead Voting project.</p>

Sustainable Development Goals

In 2015, the member states of the United Nations adopted 17 Sustainable Development Goals (SDGs). We want to make concrete contributions to achieving these goals along our entire value chain. We have set ourselves ambitious climate goals, among other targets. We achieved our goal of making the Deutsche Telekom network a green network by the end of 2021. By the end of 2025, we aim to reach climate neutrality across the Company, and by 2040 at the latest, we intend to no longer leave any carbon footprint at all. The importance of our climate goals to us is also demonstrated by our performance management and incentive system using variable remuneration for members of the Board of Management of Deutsche Telekom AG, introduced in 2021 (SDG 13). But as a shaper of digitalization, we also believe we have a responsibility to support people in successfully navigating the internet and living together in accordance with democratic rules. That is why we not only provide technical access and data privacy and security (SDG 9), but also promote media literacy (SDG 4). We continued our #TAKEPART – No Hate Speech campaign in 2021, and expanded it to include the priority focus Gaming – Where the Fun Ends (SDG 16).

For further information, please refer to the section [“Corporate responsibility and non-financial statement.”](#)



Our contributions to achieving the SDGs have also had a positive effect on our own Company. In order to highlight these contributions, we have divided them into five areas: Finance, Structure, Relationships, Employees, and Environment.

Deutsche Telekom's value contributions



FINANCE



STRUCTURE



RELATIONSHIPS



EMPLOYEES



ENVIRONMENT

As a responsible employer, we greatly value employee participation and a working environment that is fair and respectful; we encourage diversity and support our employees on their journey toward the digital working world. In this way, we contribute towards achieving SDGs 5 (Gender equality), 8 (Decent work and economic growth), and 10 (Reduced inequalities) – and this also has a positive impact on cooperation within our Company (Employees). By building out our broadband network, we are making an active contribution to creating high-quality infrastructure, promoting innovation (SDG 9), and strengthening our infrastructure (Structure). And by consistently improving energy efficiency as we expand our network and by sourcing 100 % of our electricity from renewable energies, we contribute towards SDG 13 and make our own business activities more environmentally friendly (Environment). Our growing range of sustainable products and solutions increases this effect and enables our customers to reduce CO₂ emissions and conserve other resources (SDGs 12, 14, 15). Our smart cities solutions also promote a sustainable way of life (SDG 11). At the same time, these offerings enable us to generate revenue (Finance). Our commitment to an internet free of hate and to more civil courage online contributes to a peaceful, inclusive society based on the rule of law (SDG 16) and is associated with new cooperation relationships (SDG 17) for us (Relationships).

To clearly highlight the contribution our products, services, and activities make towards the individual sustainability development goals and our value chain, we have marked the relevant passages of the following pages with the respective SDG and value contribution symbols.

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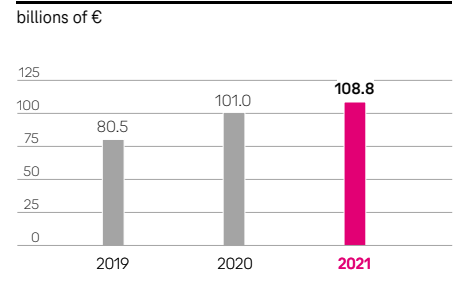
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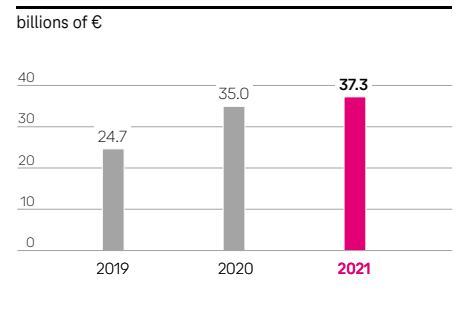
Net revenue

- Net revenue increased by 7.7 % to EUR 108.8 billion. In organic terms, too, revenue increased by EUR 4.7 billion or 4.5 %. Service revenue increased by EUR 5.2 billion or 6.5 % to EUR 84.1 billion.
- Our United States segment recorded revenue growth of 11.7 %. In organic terms, revenue increased by 5.8 % year-on-year due to higher service and terminal equipment revenues.
- In our Germany and Europe segments, we increased revenue by 1.6 % and 0.4 % respectively, on account of strong business performance. In organic terms, revenue in Europe was up by as much as 2.4 %.
- Revenue in our Systems Solutions segment decreased year-on-year by 3.4 %, due primarily to the decline in traditional IT infrastructure business, in line with expectations.
- In the Group Development segment, revenue increased by 9.8 % year-on-year on the back of operational and structural growth at T-Mobile Netherlands and GD Towers. In organic terms, revenue increased by 4.6 %.



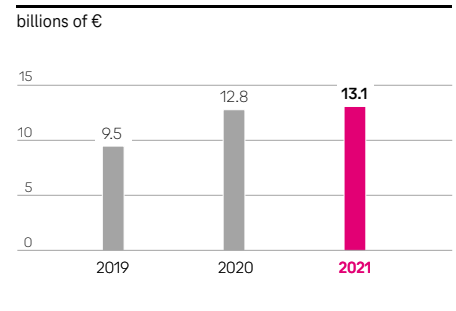
EBITDA AL (adjusted for special factors)

- Adjusted EBITDA AL grew by 6.6 % to EUR 37.3 billion with all operating segments contributing to this positive trend. In organic terms, our adjusted EBITDA AL increased by EUR 0.7 billion or 1.9 %.
- Adjusted EBITDA AL rose sharply by 8.1 % in the United States, in part as a result of the business combination with Sprint. In organic terms, adjusted EBITDA AL remained on a par with the prior-year level. Adjusted core EBITDA AL, which we use as an indicator of earnings not distorted by the negative effects of the planned withdrawal from the terminal equipment lease model, increased by EUR 2.5 billion or 14.7 %.
- Germany and Europe posted growth in adjusted EBITDA AL of 3.6 % and 2.5 % respectively, driven by high-value revenue growth and enhanced cost efficiency.
- In our Systems Solutions segment, adjusted EBITDA AL grew by 2.5 %. Efficiency effects from our transformation program and increased revenue in the growth areas exceeded the decline in the traditional IT infrastructure business.
- Group Development posted substantial growth in adjusted EBITDA AL of 18.7 %. This was driven primarily by revenue growth at T-Mobile Netherlands and GD Towers, and efficient management of costs.
- At 34.3 %, the Group's adjusted EBITDA AL margin decreased slightly against the prior-year level. The margin was 39.4 % in Germany, 35.2 % in Europe, and 33.2 % in the United States.



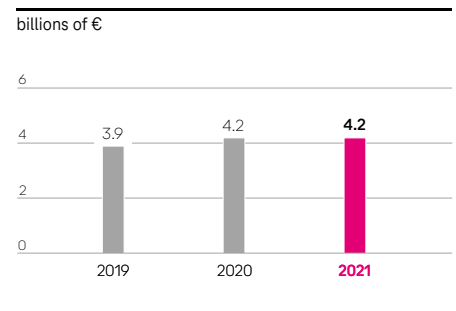
EBIT

- EBIT increased by EUR 0.3 billion or 2.0 % to EUR 13.1 billion.
- EBITDA AL was negatively affected by special factors of EUR 3.4 billion compared to expenses of EUR 1.8 billion in the prior year. Expenses of EUR 2.6 billion were recorded in connection with the business combination of T-Mobile US and Sprint. These related to acquisition and integration costs, as well as the restructuring costs for realizing cost efficiencies. The sale of the Dutch cell tower business resulted in a gain on deconsolidation of EUR 0.2 billion. Expenses in connection with staff restructuring measures were down year-on-year by EUR 0.6 billion. Reversals of impairment losses of EUR 1.7 billion had been recognized in the prior year and mainly related to the partial reversal of impairment losses on spectrum licenses at T-Mobile US, which increased the carrying amount.
- Depreciation, amortization, and impairment losses were EUR 1.7 billion higher than in the prior year due in particular to the first-time inclusion of Sprint for the full year. The reduction in the useful life of leased network technology for cell sites resulted in an increase in depreciation and amortization of EUR 0.8 billion.



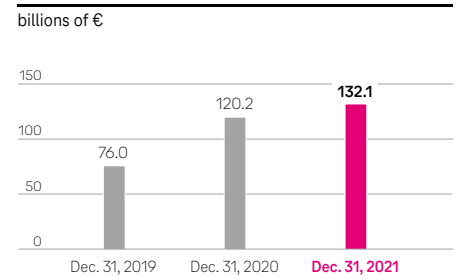
Net profit

- Net profit remained stable at EUR 4.2 billion.
- Loss from financial activities increased by EUR 1.0 billion to EUR 5.1 billion, partly in connection with an increase in finance costs due to the assumption of Sprint's financial liabilities. Other financial income/expense decreased by EUR 0.5 on a net basis in connection with the measurement of derivatives and the measurement of provisions and liabilities.
- Tax expense came to EUR 1.8 billion compared with EUR 1.9 billion in the prior year.
- Profit attributable to non-controlling interests decreased by EUR 0.7 billion to EUR 1.9 billion.
- Adjusted earnings per share amounted to EUR 1.22 compared with EUR 1.20 in the prior year.



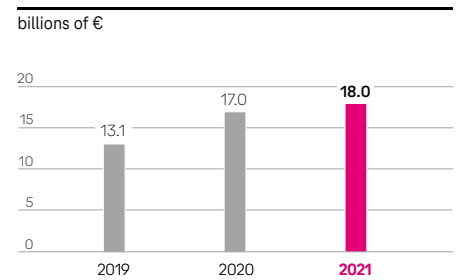
Net debt

- Net debt increased by EUR 11.9 billion to EUR 132.1 billion compared with the end of 2020.
- This increase was attributable in particular to the acquisition of spectrum (EUR 8.4 billion), primarily in the United States; exchange rate effects (EUR 6.9 billion); and additions of lease liabilities (EUR 5.3 billion). Dividend payments – including to non-controlling interests – (EUR 3.1 billion) and the acquisition of Shentel (EUR 1.9 billion) further increased net debt.
- Free cash flow of EUR 14.3 billion had a reducing effect.



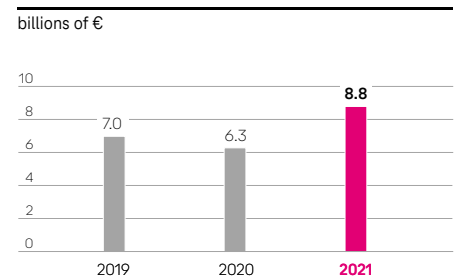
Cash capex (before spectrum investment)

- Cash capex (before spectrum investment) increased by EUR 1.0 billion to EUR 18.0 billion.
- This increase is largely attributable to the first-time inclusion of Sprint for the full year and the ongoing 5G network build-out in the United States. In Germany and Europe we continued to invest in the provision of broadband and fiber-optic technology and in 5G as part of our integrated network strategy.
- Cash capex (including spectrum investment) increased by EUR 7.7 billion to EUR 26.4 billion. In the reporting year, the United States segment acquired FCC spectrum licenses for a total amount of EUR 8.3 billion. Another EUR 0.1 billion was paid for spectrum in the Europe segment. The prior-year figure included EUR 1.7 billion for the acquisition of mobile spectrum licenses, which primarily related to the United States, Europe, and Group Development segments.



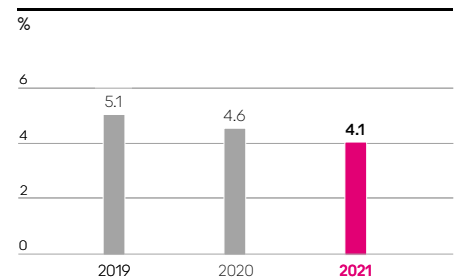
Free cash flow AL (before dividend payments and spectrum investment)^a

- Free cash flow AL (before dividend payments and spectrum investment) increased by EUR 2.5 billion year-on-year to EUR 8.8 billion.
- Net cash from operating activities increased by EUR 4.7 billion. This was attributable in particular to the sustained positive performance of the operating segments, especially in the United States including Sprint.
- Apart from the EUR 1.0 billion higher cash capex (before spectrum investment), the increase was partially offset in particular by an advance payment for the lease of cell sites made by T-Mobile US in September 2021 and higher interest payments, mainly as a result of the financial liabilities assumed and the restructuring carried out in connection with the acquisition of Sprint, and the related increase in financing. Higher income tax payments also had an increasing effect on free cash flow AL.



ROCE

- Return on capital employed (ROCE), which continues to be impacted by the integration costs in connection with the business combination with Sprint, decreased by 0.5 percentage points to 4.1%. This was due to stronger percentage growth in average operating assets (NOA) than in net operating profit after taxes (NOPAT).
- The increase in NOA was mainly driven by the acquisition of additional spectrum licenses at T-Mobile US and our consistently high investment volume.
- NOPAT was up slightly year-on-year. This development is largely attributable to higher integration costs in connection with the business combination of T-Mobile US and Sprint. In the prior year, NOPAT had been positively affected by the partial reversal of impairment losses on spectrum licenses, which had increased the carrying amount.



For further information, please refer to the section [“Development of business in the Group.”](#)

For further information on the level of achievement of our main financial and non-financial key performance indicators, please refer to the relevant section [“Development of business in the Group – Comparison of the Group’s expectations with actual figures.”](#)



^a Before interest payments for zero-coupon bonds and before termination of forward-payer swaps at T-Mobile US (both in 2020).

Group organization



Business activities

With 248 million mobile customers, 26 million fixed-network lines, and 22 million broadband customers, we are one of the leading integrated telecommunications companies worldwide. We offer our consumers fixed-network/broadband, mobile, internet, and internet-based TV products and services, as well as ICT solutions for our business and corporate customers. We have an international focus and are represented in more than 50 countries. With 216,528 employees worldwide (as of December 31, 2021), we generated revenue of EUR 108.8 billion in the 2021 financial year. 77.0 % of the Group's net revenue is generated outside of Germany.

Fixed-network business includes all voice and data communications activities based on fixed-network and broadband technology. This includes the sale of terminal equipment and other hardware, as well as the sale of services to resellers. Our mobile communications business offers mobile voice and data services to consumers and business customers; in addition, we sell mobile devices and other hardware. We also sell mobile services to resellers and to companies that buy network services and market them to third parties (mobile virtual network operators, or MVNOs). Drawing on a global infrastructure of data centers and networks, we operate information and communication technology (ICT) systems for multinational corporations and public-sector institutions.

Our responsible corporate governance and business success are based on our shared corporate values and our **Guiding Principles**.  

For further information about our Guiding Principles, please refer to the section "[Employees](#)."

Our **identity** describes the mission of Deutsche Telekom: Why are we here, what does our Company stand for, and what is our purpose? It defines our corporate purpose and describes what we at Deutsche Telekom stand for: We want to be a sustainably growing company that delights its customers, creates value for its investors, and in which employees enjoy their work. Our network is fast, reliable, secure, and should be easily accessible for everyone. In addition, it has been operated throughout the Group with electricity from 100 % renewable sources since 2021.   But, we are more than just another company that provides society with infrastructure. We want to connect people and make their lives permanently easier and more enriched. This is our mission. We are a close and trusted companion to the customer; transparent, fair, and open to dialog. We identify innovative products at an early stage and develop them in collaboration with our partners. It is our contribution to social togetherness. Our identity reflects all of this. We want everyone to #TAKEPART as is summarized in one short purpose statement: We won't stop until everyone is connected.

Segment structure

Our financial reporting aligns with our Group strategy and is divided into five operating segments plus the Group Headquarters & Group Services segment, each of which we describe in detail below.

Our **Germany** operating segment comprises all fixed-network and mobile business activities for consumers and business customers, including separate sales entities in Germany to allow a customer-centric sales approach. As a pioneer of digitalization, the segment offers its customers a tailored service and product portfolio that is designed to be innovative while at the same time secure and simple. The Germany operating segment also focuses on the wholesale business to provide telecommunications services for carriers. The bundling of customer service activities places a further focus on customer satisfaction and quality assurance. Build-out of the mobile and fixed networks is managed by the Technology business unit in this segment.

Our **United States** operating segment combines all mobile activities in the U.S. market. T-Mobile US provides service, devices, and accessories across its flagship brands. In addition, we sell devices to dealers and other third-party distributors for resale. T-Mobile US is the second largest provider (customer related) in the United States. The positive business development has been built on the back of the various Un-carrier initiatives launched in the last few years. T-Mobile US also supercharged upon completion of the business combination with Sprint on April 1, 2020. As the supercharged Un-carrier, T-Mobile US is on a mission to build America's best 5G network, offering customers unrivaled coverage and capacity. We also offer a wide selection of wireless devices, including smartphones, wearables, tablets, and other mobile communication devices, which are manufactured by various suppliers. T-Mobile US also provides products that are complementary to its wireless communications services, including device protection, high-speed internet, and wireline communication services.

Our **Europe** operating segment comprises all fixed-network and mobile operations of the national companies in Greece, Hungary, Poland, the Czech Republic, Croatia, Slovakia, Austria, North Macedonia, and Montenegro. We are an integrated provider of telecommunications services in these countries. With the approval of the responsible authorities, on September 30, 2021 OTE consummated the sale of its 54 % stake in Telekom Romania Communications to Orange Romania. Consequently, our focus in Romania is on mobile operations. Besides traditional B2C fixed-network and mobile business, most of our national companies also offer ICT solutions for business customers.

As a leading provider of IT services to businesses in German-speaking countries, our **Systems Solutions** operating segment offers a focused B2B product and solution portfolio under the T-Systems brand. With its horizontal offerings for advisory services, cloud computing, and digitalization solutions, T-Systems addresses the most attractive growth areas in the information technology market. Data sovereignty and security solutions are at the core of the product options, supplemented with strategic partnerships. Focused vertical offerings penetrate deep into the value chains of selected industries (automotive, healthcare, public sector, and transportation). We have been implementing a comprehensive transformation program since 2018, part of which has been to realign both our organization and our workflows, and make adjustments to our capacities. We now have four portfolio units: Cloud Services (Public Cloud, SAP AO, Managed Infrastructure Services & Private Cloud), Digital Solutions (including SAP SI), Security, and Advisory (with Detecon as an integrated consulting provider). The Road Charging portfolio unit was hived off as Road User Services GmbH to ease the path to local partnerships.

Our **Group Development** operating segment actively manages entities, subsidiaries, and equity investments to grow their value while giving them the entrepreneurial freedom they need to promote their continued strategic development. This approach led to the creation of GD Towers within the Group Development segment. Following the sale of the Dutch cell tower business in the reporting year, GD Towers has exclusively looked after the German and Austrian cell tower businesses since the second quarter of 2021. On September 6, 2021, we signed an agreement to sell T-Mobile Netherlands. The transaction is expected to be completed in the first quarter of 2022. The investment management group DTCP; Comfort Charge, which is a provider of e-mobility charging infrastructure; and the Group functions of Mergers & Acquisitions and Strategic Portfolio Management are also assigned to Group Development.

Group Headquarters & Group Services comprises all Group units that cannot be allocated directly to one of the operating segments, and also reports on our Board of Management department for Technology and Innovation. As the organization that sets the direction and provides impetus, it defines strategic aims for the Group, ensures they are met, and becomes directly involved in selected Group projects. Group Services provides services to the entire Group; in addition to typical services provided by Deutsche Telekom Services Europe, such as financial accounting, human resources services, and operational procurement, Group Services also includes placement services provided by our personnel service provider, Vivento. It is in charge of securing external employment opportunities for employees, predominantly in the public sector. Further units are Group Supply Services (GSUS) for our real estate management and our strategic procurement, and Telekom MobilitySolutions, which is a full-service provider for fleet management and mobility services.

Our Technology and Innovation Board of Management department unites the cross-segment technology, innovation, IT, and security functions of our Germany, Europe, and Systems Solutions operating segments. These include Deutsche Telekom IT, which focuses on the Group's internal IT projects, and our central innovation unit, Product Innovation and Customer Experience (PIC), which works closely with our operating segments to drive topics such as digitalization, big data, software-defined networks, voicification, virtualization, and cloud services. Our Innovation Hub (IHUB) pools all of the expertise required for future innovation projects in an agile working environment to ensure we stay flexible and innovative. In the newly created Technology Delivery International (TDI) unit, we pool expertise to position ourselves as a strong partner to the technology units in our national companies and develop, produce, operate, and scale platforms and services across borders from a single source. In the reporting year this still included International Technology and Service Delivery (ITS), which harmonizes the planning, development, and operation of products, services, and platforms across our national companies in Europe taking account of technological and commercial aspects. Strategy & Technology Innovation (S&TI) ensures efficient and customer-centric research and innovation with a focus on mobile and fixed-network communications. Group Security (GSC) is responsible for developing and transforming the Group-wide security strategy.

Changes to the segment and organizational structure in 2021

In the reporting year, the following changes and/or additions to the segment structure were recorded from the Group's point of view:

Strategic measures to secure control of T-Mobile US in the long term. On September 6, 2021, Deutsche Telekom took strategic action to increase its stake in T-Mobile US in a move that secures the existing control over the U.S. subsidiary and full consolidation in the long term:

Under the deal signed between Deutsche Telekom and SoftBank Group (SoftBank) on September 6, 2021, the objective of which is to **increase Deutsche Telekom's stake in T-Mobile US**, Deutsche Telekom acquired a total of around 45.4 million T-Mobile US shares from SoftBank. To this end Deutsche Telekom exercised, on September 23, 2021, a portion of the stock options it had received from SoftBank in June 2020 to purchase shares in T-Mobile US. SoftBank received in return 225 million new shares in Deutsche Telekom AG from the 2017 Authorized Capital, excluding subscription rights for existing shareholders. The capital increase against contribution in kind amounted to EUR 576 million. The capital increase of Deutsche Telekom AG was carried out with effect upon entry into the commercial register on September 28, 2021. As a result of this transaction, SoftBank has become a shareholder in Deutsche Telekom AG with around 4.5 % of the outstanding shares. In connection with the exercise of the existing stock options, the weighted average price for the total around 45.4 million T-Mobile US shares acquired as part of this share swap calculates to around USD 118 per T-Mobile US share. For the 225 million Deutsche Telekom shares that were received by SoftBank and which are subject to a lock-up until 2024, the two companies agreed a value of EUR 20 per share. This capital increase against contribution in kind brings the number of outstanding shares of Deutsche Telekom AG up from 4,761 million shares to 4,986 million shares. Upon its completion, the transaction raised Deutsche Telekom's stake in T-Mobile US by 3.6 percentage points to 46.8 %. The percentage of T-Mobile US shares for which Deutsche Telekom can exercise voting rights, including an agreement concluded with SoftBank in connection with the acquisition of Sprint, amounted to 52.0 % as of December 31, 2021. The aim is to support SoftBank in their efforts to take a seat on Deutsche Telekom AG's Supervisory Board. Deutsche Telekom and SoftBank have also agreed a new strategic partnership that will position Deutsche Telekom as a major European partner in the SoftBank ecosystem.

Deutsche Telekom is also weighing plans to invest up to USD 2.4 billion (around EUR 2.1 billion) of the proceeds from the **planned sale of T-Mobile Netherlands**, which was agreed on September 6, 2021, to exercise further fixed-price and variable stock options to purchase T-Mobile US shares. These depend, in half, on the average share price of T-Mobile US, and a fixed price has been set for the other half. This would further increase Deutsche Telekom's stake in T-Mobile US by approximately 1.6 percentage points, depending on the number of shares to be acquired. Deutsche Telekom expects its total stake to be around 48.4 % upon completion of these two transactions.

For further information on the agreed sale of T-Mobile Netherlands, please refer to the section "[\(Expected\) changes to the segment and organizational structure in 2022.](#)"

Acquisition of Shentel. On May 28, 2021, a purchase agreement was signed between T-Mobile US and Shenandoah Personal Communications Company (Shentel) – a local provider of mobile network products in certain regions of some U.S. states – for the acquisition of assets and liabilities directly associated with the wireless telecommunications operation of Shentel. The transaction was consummated on July 1, 2021 after obtaining the necessary approvals from the regulatory authorities and satisfying the other closing conditions. The purchase price was USD 1.9 billion (EUR 1.6 billion).

Sale of Telekom Romania Communications. On November 6, 2020, OTE concluded an agreement with Orange Romania concerning the sale of its 54 % stake in Telekom Romania Communications (TKR) – at the time assigned to the Europe operating segment – which operates the Romanian fixed-network business, to Orange Romania. The transaction was approved by the authorities and then consummated on September 30, 2021. The purchase price is EUR 296 million. The net gain on deconsolidation resulting from the sale is immaterial from a Group perspective. TKR's 30 % stake in Telekom Romania Mobile Communications was acquired by OTE on September 9, 2021 as previously agreed for a purchase price of EUR 59 million.

Combination of the cell tower business in the Netherlands and creation of an infrastructure fund. On January 21, 2021, Deutsche Telekom, Cellnex Telecom (Cellnex), the newly established independently managed investment company Digital Infrastructure Vehicle II (DIV), and others signed an agreement to merge Deutsche Telekom's and Cellnex's respective Dutch subsidiaries for passive mobile infrastructure into Cellnex Netherlands (Cellnex NL). Following approval of the deal by the national competition authority, the Dutch cell tower company T-Mobile Infra – at the time assigned to the Group Development operating segment – was sold to DIV effective June 1, 2021 and subsequently contributed into Cellnex NL. Deutsche Telekom received cash proceeds of EUR 0.4 billion. The gain on disposal of EUR 0.3 billion breaks down as follows: EUR 0.2 billion was included in other operating income in the reporting year and EUR 0.1 billion will be recognized pro rata in subsequent periods through the sale-and-leaseback transactions described below. Immediately prior to the sale, T-Mobile Infra also paid Deutsche Telekom AG a dividend of EUR 0.3 billion. Deutsche Telekom obtained a 37.65 % stake in the new Cellnex NL, which is indirectly included in the consolidated financial statements through the investment in DIV and accounted for using the equity method. T-Mobile Netherlands will continue to have full access to the contributed passive mobile infrastructure by means of a long-term agreement at arm's length conditions. The lease component included in the agreement fulfills the conditions of a sale-and-leaseback transaction. Right-of-use assets in the amount of EUR 0.3 billion and lease liabilities in the amount of EUR 0.4 billion were recognized in this context as of June 1, 2021.

Reassignment of the Internet of Things (IoT) growth area. Effective January 1, 2021, Deutsche Telekom reassigned the responsibility for business and profit and loss for Deutsche Telekom IoT GmbH from the Systems Solutions operating segment to the B2B unit in the Germany operating segment. The Group subsidiary is responsible for the IoT business of Deutsche Telekom. This reassignment puts us in a position to serve the IoT market more quickly and thus to strengthen Deutsche Telekom's position on this growth market. Prior-year comparatives in both of the segments affected (development of operations, customer development, headcount development, and order entry) were adjusted retrospectively.

Transfer of the Austrian cell tower business. As of January 1, 2021, Deutsche Telekom transferred its Austrian cell tower business from the Europe operating segment to GD Towers in the Group Development operating segment to enhance efficiency in the management of the cell tower business. In addition, GD Towers will increase its efforts to expand third-party business, increase profitability, and develop growth areas. Prior-year comparatives in both of the segments affected have not been adjusted.

Reorganization of DT IT. As of January 1, 2021, Deutsche Telekom IT (DT IT) Russia, DT IT Slovakia, and DT IT Hungary were reassigned from the Germany operating segment to the Group Headquarters & Group Services segment. Prior-year comparatives in both of the segments affected have not been adjusted.

(Expected) changes to the segment and organizational structure in 2022

Agreed sale of T-Mobile Netherlands. On September 6, 2021, Deutsche Telekom and Tele2 agreed to sell our subsidiary T-Mobile Netherlands, which is assigned to the Group Development operating segment – to WP/AP Telecom Holdings IV, a private equity consortium advised by Apax Partners and Warburg Pincus. The transaction brings to a close the review of strategic options regarding T-Mobile Netherlands announced at the Capital Markets Day 2021. The preliminary sale price is based on an enterprise value of EUR 5.1 billion. The cash proceeds – based on our shareholding of 75 % – are expected to be around EUR 3.8 billion. Deutsche Telekom is weighing plans to invest a portion of the cash proceeds from the sale to further increase its stake in T-Mobile US. The transaction is subject to approval by the authorities as well as other closing conditions. The assets and liabilities of T-Mobile Netherlands as of December 31, 2021 are reported in our consolidated statement of financial position as “held for sale.” The transaction is expected to be completed in the first quarter of 2022.

Fiber-optic build-out through joint venture with IFM. On November 5, 2021, Deutsche Telekom announced that IFM Global Infrastructure Fund – advised by IFM Investors – will acquire a stake of 50 % in GlasfaserPlus GmbH, a fiber-optic build-out entity. The agreed purchase price for the 50 % stake in the subsidiary, which is assigned to the Germany operating segment, amounts to EUR 0.9 billion, half of which is to be settled upon conclusion of the transaction, and the remainder once progress has been made in the build-out. The newly established joint venture is to build out an additional 4 million gigabit-capable FTTH lines in rural and development areas between 2022 and 2028. This transaction underpins Deutsche Telekom's aim of being the leading company for the fiber-optic build-out in Germany. As a consequence of the agreed sale of the 50 % stake in the company and the concomitant future loss of control of the company on completion of the transaction, the assets and liabilities of GlasfaserPlus as of December 31, 2021 are recognized in the consolidated statement of financial position as “held for sale.” On completion of the transaction, the stake in the joint venture will be included in the consolidated financial statements using the equity method. Following its approval by the European Commission on January 25, 2022, the transaction is expected to be completed before the end of the first quarter of 2022.

Group strategy

From Leading European Telco to Leading Digital Telco

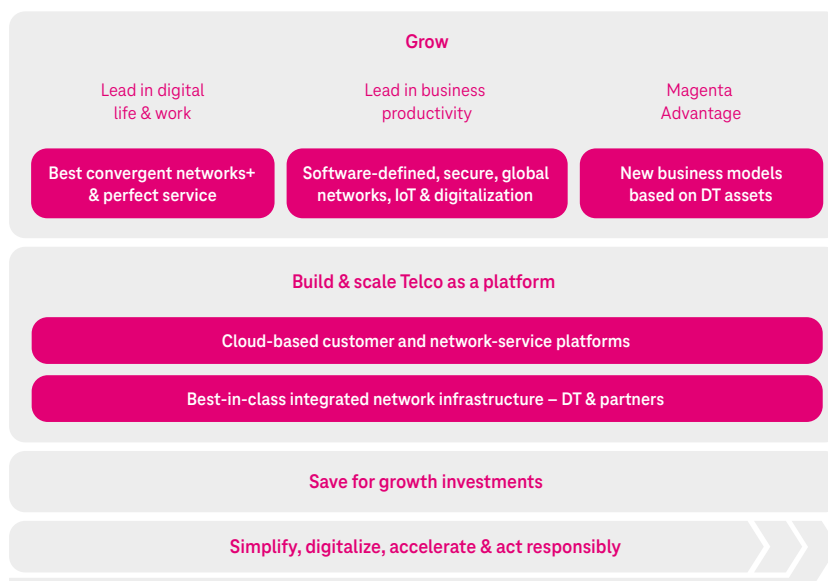
Since 2014, we have been aligning all of our corporate activities with our Leading European Telco strategy – with the aim of becoming Europe's leading telecommunications provider. This strategy has been tremendously successful for us. Deutsche Telekom is Europe's leading telecommunications company by a clear margin: in terms of market capitalization, revenue, and earnings (as of December 31, 2021). And our Group continues to grow, as confirmed by our most important financial performance indicators and customer development on both sides of the Atlantic. We raised our full-year guidance for 2021 three times in the course of the year, despite the coronavirus pandemic. And last but not least, at 79 %, understanding and support of our strategy among the workforce is at an all-time high (employee survey, November 2021). In short, over the past seven years we have found the right balance: rigorously implementing our Group strategy on the one hand, while in parallel anticipating changes in our ecosystem early on and adapting the strategy with pinpoint precision to new market conditions as and when necessary. We find ourselves in an extremely positive situation, but rather than use it as an opportunity to relax, we see it as the perfect launchpad to leverage our strong position and prepare Deutsche Telekom for future demands. After all, the telecommunications industry faces change on an almost unprecedented scale. Digitalization is the main catalyst for a number of key trends:

- Digitalization is shaping demand among consumers and business customers alike: Consumers want their product and service experiences to be fully customized to their personal needs, context-sensitive, and to work seamlessly. For business customers, requirements are driven by the new way of working: digital, hybrid, and app-centric. They expect secure connectivity as well as flexible service and product models that integrate easily and securely into workflows – and all from a single source and “as-a-service.”
- We are seeing companies from other industries pushing onto the market with lean, software-defined production models. Providers such as Google, Microsoft, and Amazon Web Services are expanding into the global connectivity field and increasingly providing network functions in their cloud environments. More and more, they are positioning themselves as vendors of connectivity services not only to telcos, but also as partners for business customers.
- Alternative network providers and technologies (e.g., satellite connectivity) are gaining in relevance and can be both a risk (in terms of substitution of parts of our core business) and opportunity for us (e.g., network coverage in sparsely populated areas). The connectivity market continues to fragment further, bringing ever-greater complexity. Especially among business customers with international footprints, demand is growing for a one-stop shop offering global network orchestration and a network customized to individual business cases. At the same time, the parallel build-out of broadband and mobile infrastructure (optical fiber and 5G) calls for telecommunications companies to commit to high investments and find innovative approaches to implementation, for instance by using third-party infrastructure or partnering with investors.
- Sustained economic globalization, world population growth, and increasing use of digital technologies all put a strain on the available resources. It is thus imperative that we find a sustainable, more ecological way of doing business and act with a greater focus on social responsibility.
- The acquisition of new skills and expertise is another vital aspect of digital transformation. The challenge here lies in quickly building up a critical mass of digital talent. Flexible work models, global recruitment processes, and responsible corporate action are gaining relevance.

In light of these trends, we aim to transform ourselves from our position as Leading European Telco into the **Leading Digital Telco**. With our unique footprint on both sides of the Atlantic, we are already excellently positioned in the Western tech sphere to achieve this. We are a global enterprise with a considerable presence in Europe, European roots and values, and an extremely strong business in the United States. Our goal is clear: We want to align ourselves long-term with the needs of our customers and transform ourselves into a digital company to hold our own against new competitors and continue our growth course. Our future growth is based on three pillars: “Lead in digital life & work,” “Lead in business productivity,” and “Magenta Advantage.” Building and operating the best convergent networks remains at the core of our strategy and is an important driver for our growth areas. We realize our aim to lead in technology by investing not only in network infrastructure, but also in establishing cloud-based service platforms in line with our strategy: “Build & scale Telco as a platform.” We leverage our international footprint to generate synergies across the Group and to carry weight alongside the global tech giants.

The two areas of operation, “Save for growth investments” and “Simplify, digitalize, accelerate & act responsibly,” support our growth target and provide the guidelines for our actions. Our Group strategy does not aim to micromanage all local units, but to provide a strategic framework and to utilize local strengths (networks, competitive standing).

Group strategy: Leading Digital Telco



Strategic areas of operation

Lead in digital life & work: Best convergent networks+ & perfect service

Our aspiration is to offer customers the best network experience, anytime, anyplace – whether at home or at work, our network should work seamlessly and across all technologies. That's why we market fixed-network and mobile communications in **convergent products** (fixed-mobile convergence (FMC)). By the end of the reporting year, some 5.3 million customers in Germany had opted for MagentaEINS; that is over 200 thousand more than in the prior year. The national companies of our Europe operating segment won around 840 thousand new customers for MagentaOne and similar FMC offerings in 2021. To continue on this path of growth, we work continuously to improve our convergent portfolio. We took another step in this direction with the launch of our new MagentaEINS Unlimited offering, available throughout Germany. Customers who subscribe to this service enjoy unlimited data at home and on the go, and can flexibly add family members to the product bundle via one or more of our Community Card EINS SIM cards, enabling them to also benefit from unlimited data. We also increasingly offer home broadband products in the United States, on the basis of our leading mobile network. In pursuit of our goal to become the leading digital telecommunications company, we want to offer more than simply the best connectivity: What really counts is the **network experience**. For this reason we offer our customers additional services that turn our network leadership aspiration into a first-hand experience. We reached some key milestones in this regard in the reporting year. Our MagentaTV product has been repositioned throughout our entire European footprint to aggregate linear television, including extensive features, with access to content from the biggest video-on-demand providers, and exclusive content. In 2021, we further enhanced the TV experience, entering into new partnerships with major content providers in Germany (including DAZN), and launching our new MagentaTV Entertain rate plan, which is available as an ISP-neutral option, i.e., with internet from any provider, and includes RTL+ and Disney+. Our national companies in Europe rolled out an Android-based TV platform with a Deutsche Telekom-specific user interface to deliver an even more personalized user experience (in Greece, Slovakia, and the Czech Republic). The addition of almost 140 thousand TV customers in Germany and, on an organic basis, around 210 thousand in our European subsidiaries shows that we are on the right track. Of equally high priority for us is ensuring seamless product integration across our portfolio. This led in 2021 to us launching our own operating system for the digital household, called Magenta HomeOS. In interaction with Deutsche Telekom services (television, smart home, routers, MagentaCloud, voice control functions) and partner services, Magenta HomeOS acts as a “connector” to open up entirely new use cases. To start with, customers can share Wi-Fi access with guests via a QR code, check and restart their home network via a TV, or display photos from the MagentaCloud on their TV screen.

Perfect **customer service**, supported by digitalization, continues to be another powerful lever to help set us apart from the competition. For this reason, we launched several quality enhancement initiatives in the reporting year. These include, in Germany, the Digital Home Service (phone or on-premise assistance to help with all home network-related topics, such as Wi-Fi, television, smart home, etc.). Moreover, we resolve 54.7 % of customer inquiries at the first contact. Above and beyond this, in our national companies in Europe we further optimized the OneApp platform to deliver a digital sales and service experience. Following its successful market launch in all countries, the platform has improved the customer experience (e.g., customers can set up and manage their router via the app and use the integrated chat function to talk to staff or service bots) and enabled us to monetize our offerings (e.g., in-app coupons and loyalty program, new customers can conclude prepaid and postpaid contracts). Several awards validate our efforts in this regard, including the Connect service tests (outright winner of the hotline and service app tests in Germany and Austria, issues 05/2021 and 10/2021). In the United States, too, we are reaping the rewards of our focus on customer-centricity: numerous surveys rank T-Mobile US ahead of its competitors for service quality (e.g., the J.D. Power study rated T-Mobile US the mobile carrier with the best customer service in the United States for the 22nd time in succession).

We measure **customer satisfaction** using the globally recognized TRI*M method. We use the results of this performance indicator to improve our customer contact processes, and our products and services. At the same time, we determine the loyalty of our customers towards Deutsche Telekom. The results are presented as a performance indicator, the TRI*M index, which ranges between minus 66 and plus 134 points. At the end of the reporting year, the score for the Group (excluding T-Mobile US) came in at plus 73.4 points versus an adjusted value of 72.7 points at the start of the year (both determined on a comparable basis). Our goal for the coming years is to achieve a further improvement in customer satisfaction.

Lead in business productivity: Software-defined, secure, global networks, IoT & digitalization

In the reporting year, we once again maintained our market-leading position (in terms of revenue) as a provider of telecommunications services for **business customers** in the Germany operating segment and posted growth slightly above the level reached last year. Secure, reliable global connectivity is essential to the advancing digitalization of critical processes in companies and industry associations. We remain a dependable partner to German industry thanks to our product portfolio of international communications solutions that combine the strengths of our national network infrastructure with our international networks. We also continued to post growth in IT revenue from business customers in our Germany operating segment (up 5.4 % compared with 2020), mainly from pushing digitalization in small and medium-sized enterprises. In our national companies in Europe, revenue with business customers remained stable year-on-year in organic terms, primarily on the back of stable development in our mobile business. IT business declined year-on-year. Demand for our productivity, cloud, smart cities and security solution portfolio continued to grow.

Going forward, we want to remain the partner of choice for multinational corporations with cross-border **connectivity needs**, and to this end are investing in robust, global fixed-network and mobile connectivity and providing a one-stop shop for connectivity through the orchestration of our own networks and those of our partners. In the medium term, we want to respond to changing customer needs with end-to-end, cloud-based, modular network services and dynamically adapt our networks. Application programming interfaces (APIs) will even make it possible in future to automatically manage individual network parameters in real time. To this end, over the coming years we plan to radically overhaul our own network and IT landscape, transforming it into a modular, software-defined production environment with integration capabilities for customized app and IT landscapes.

As major topics like the **Internet of Things (IoT)** and **cybersecurity** become more relevant, security and network solutions (network, IT, and cloud computing) are beginning to merge into highly secure, end-to-end solutions. Security functions which were once purchased separately are increasingly becoming part of the connectivity product itself, like new-generation firewalls that are already integrated into some SD-WAN solutions, and SASE suites that deliver SD-WAN in combination with cloud security from a single source. We will continue to develop the core elements of our B2B portfolio, comprising our MPLS (Multiprotocol Label Switching; dedicated IP-VPN solutions) and SD-WAN products, as a whole to take account of network and security aspects. Security is an integral component of every one of our products and services (e.g., campus networks, IoT) – and that goes for every link in the communication chain: from the user via the terminal equipment, Wi-Fi/mobile communications/LAN, to access networks and corporate networks, transport networks, and data centers. “Security by Design” is our goal here – from development and operation to management of the network services by us and our customers. [SDG 16](#) [STRUCTURE](#)

Our business with “traditional” IT outsourcing services for international corporate customers has been in decline for a number of years now, mainly due to persistent intense competition. It is for this reason that our **Systems Solutions operating segment** has been undergoing a profound transformation since 2018. For our **corporate customers**, we are pursuing a “Leading European vertical full-service player” strategy. Specifically, we are focusing our systems solutions business on value creation aligned with core customer needs in respect of digitalization (advisory services, cloud computing, and digital solutions). For selected industries (automotive, healthcare, public sector, and public transport), we will increase our offer of vertical, industry-specific solutions based on our expertise. The focus here is on profitable growth.

Magenta Advantage: New business models based on DT assets

In our core business, we create essential values and skills not found in other companies. We call these the “Magenta Advantage.” For example, we have over 248 million mobile customers across our entire footprint and are a strong pay-TV provider in Europe with around 8 million customers. In our B2B segment, our long-standing relationships give us access to the biggest companies across all industries worldwide. Looking ahead, we want to better leverage our assets and skills, not only in our core business, but also to scale new digital business models. The past has already shown us how the Magenta Advantage helps to build value in new business. One example in this context is 1nce (a Deutsche Telekom investment). The cloud-based IoT connectivity solution developed by 1nce outside of Deutsche Telekom, based on our M2M connectivity, now gives us access to entirely new segments and secures our position in the IoT environment in the long term. Moving forward, we want to use the Magenta Advantage more systematically and on a broader basis – in the interests of our customers, partners, and Deutsche Telekom. For example, we want to use the digital reach of our sales and service apps to give our customers access to exclusive digital partner services and tap new revenue sources. For smaller companies and start-ups in particular, access to our customer base is extremely valuable when they want to grow fast in heavily fragmented markets. We are plowing our energies first of all into creating the right conditions within our Company: building APIs and more to simplify partner integration and establishing our OneApp across our entire footprint for even greater reach. Genuine value added for customers is only possible with personalized suggestions that match up with their needs and interests. To make this possible, we need to expand our capabilities in the fields of data analysis and segmentation. The core of our brand promise, “Reliability, security, and trust,” remains the same and protecting our customers’ data and privacy is still our top priority. Another important component is our strategic partnership with SoftBank. SoftBank is a global investment holding with stakes in numerous leading start-ups from a wide range of industries. In the reporting year, we reached initial partnership agreements with three portfolio companies (TIER Mobility, Revolut, GoStudent) and launched the first successful pilot projects in selected national companies in Europe.

Build & scale Telco as a platform [SDG 9](#) [STRUCTURE](#)

Our growth areas are based on our networks and our technology, which together form the core of our value creation. That is why we are systematically building out and interlinking our fixed and mobile networks so that we can offer our customers the fastest possible connection at top quality, anytime, anyplace. Group-wide we invested around EUR 18.0 billion (not including spectrum investment) primarily in building and operating networks, with around EUR 5.5 billion of this figure earmarked for Germany alone. This makes us the biggest investor among all of our German competitors. In pursuit of outstanding quality and an even quicker and more efficient network build-out, we are also striking out in new directions, for example, with the use of artificial intelligence (AI) to ensure infrastructure is built out in line with demand, as well as exploring partnerships and joint ventures. Integrated management improves the capacity utilization of our infrastructure and increases efficiency in operations and maintenance.

Fiber optic-based **fixed networks** are the basis for the best integrated network experience. With fiber-optic lines to over 7.0 million households, virtually all of our national companies in Europe are leading the fiber-optic build-out: In Greece, for example, we have the largest fiber-optic network nationwide, with FTTH available to more than 560,000 households and businesses, and in Slovakia we offer FTTH to almost 950,000 households. At the end of 2021, our fiber-optic network in Germany consisted of around 650,000 kilometers of fiber-optic cable. In 2021, we thus made fiber-optic lines (FTTH) available to around 1.2 million more households. Looking ahead, we are set to substantially increase the pace of the fiber-optic build-out further. By 2030, every household and every business in Germany is to have a fiber-optic line. Telekom Deutschland will build the majority of these. By the end of 2024, we are set to make around 10 million fiber-optic lines available. We have also entered into partnerships with other companies, helping further our goals (e.g., founding the joint venture Glasfaser NordWest together with EWE, and the open access cooperation with M-net). We give equal priority to building out to rural areas as we do to urban centers, and are planning to bring optical fiber to a total of 8 million rural households by 2030. Together with the Australian investor IFM, the fiber-optic build-out company GlasfaserPlus is to add a further 4 million households in rural areas to this target. But our competitors also need to play their part. Deutsche Telekom is building out the network on the basis of open access. The new networks are open for use by competitors. Our efforts are paying off. In Germany, we took the #1 spot again in 2021 for the best fixed-network offering (Connect, issue 08/2021) and the best fixed-network internet provider (CHIP, issue 05/2021). In the third quarter of 2021, Magenta Telekom in Austria won the award for fastest fixed-network internet access (Ookla speedtest awards) and was rated best-in-test for fixed-network broadband internet for the third time in succession (Connect, issue 11/2021).

In **mobile communications**, we set ourselves apart from our competitors with the outstanding quality of our network. We operate over 90,000 mobile communications antennas across Germany covering 99 % of households with LTE. Our national companies in Europe cover 98.2 % of the population, or around 109 million people, with LTE. With the **fifth-generation mobile communications standard (5G)**, we are creating a highly reliable mobile network with extremely low latency and high data throughput. Over 63,000 antennas now transmit 5G across Germany, with over 90 % of households already being able to use this next-generation mobile standard. The goal is to achieve 90 % geographic coverage in Germany by the end of 2025. As of the end of 2021, our national companies covered 28.9 % of the population in our European footprint with 5G. In Croatia, Hrvatski Telekom is spearheading the expansion of 5G networks and services with a total of over 600 5G base stations in operation and a 5G network already covering 48 % of the population. With the purchase of additional spectrum at the August 2021 auction, our Croatian subsidiary has created the necessary conditions to further consolidate its 5G leadership. T-Mobile Polska operated 3,500 5G base stations across Poland at the end of 2021. With a view to refarming the released spectrum for the faster and better performing LTE/4G and 5G services, companies including T-Mobile Polska and Telekom Deutschland shut down 3G spectrum in the reporting year.

We have regularly come out on top in independent network tests. Our German network once again won the “big three” network tests in 2021: by Connect (issue 01/2022), CHIP (issue 01/2022), and Computer Bild, issue 25/2021). Magenta Telekom was voted Austria’s most popular mobile network operator in 2021 for the eighth time in succession by Connect readers (issue 05/2021) and received the top verdict of “very good” in the CHIP mobile network test. We also won awards for the mobile networks of our national companies in Greece (Ookla) and once again in Croatia (Umlaut, Ookla). In the United States, we have the fastest and most reliable 5G network with the best coverage (Umlaut 5G network test, Ookla 5G network test, PCMag 5G network test). We currently cover more than 310 million people via the 600 MHz band, and over 210 million people with Ultra Capacity 5G in the 2.5 GHz band and millimeter wave (mmWave) spectrum. This is thanks in large part to our superior spectrum position from the business combination with Sprint.

Going forward, we will continue to invest heavily in building out 5G infrastructure. For this, we need conditions to be in place that are both fair and reliable. Our goal is to use the **best-in-class integrated network infrastructure** for our products and services. To this end, we complement our own infrastructure with that of strategic partners and also consider alternative access networks (wireline, cable, optical fiber, 4G/5G, satellites, HAPS, etc.). Our partnership with Eutelsat marks the first of many steps in this direction, and has enabled us to offer satellite-based broadband internet in Germany since the end of 2021. The technology for this is provided by Eutelsat’s Konnect satellite, via which households in remote areas or with limited access can benefit from powerful networks. The delivery of connectivity and services based on our own and our partners’ infrastructure is reliant on technology- and domain-agnostic orchestration capabilities. These are found in a separate technical control layer above the actual infrastructure, which allows us to manage the “network of networks.” We are modernizing our NT/IT architecture to ensure the necessary orchestration capabilities are in place. Our focus is on leveraging the full potential of network automation, cloudification and disaggregation to make our production considerably faster, more flexible and more cost-efficient. Disaggregation, or the separation of hardware and software, makes it possible to add new vendors. Today, more than 90 % of all suppliers in our infrastructure are large, traditional companies. Going forward, we want to significantly increase the proportion of smaller, more innovative suppliers, enabling us to integrate innovations into our networks more quickly and flexibly and thus also making them available to our customers.

We are adapting our production platform to meet the customer needs of the future, by building a **cloud-based, scalable, modular platform** and opening up access to selected parts of this platform to third parties (e.g., service providers and app developers) via open interfaces (APIs). Our goal is to make connectivity, services, and data (e.g., location data, connection conditions, and user behavior) combinable with new applications as needed. The benefits of this architecture include shorter development cycles, faster exploitation of revenue potential, more automated and significantly more cost-effective production, scalability across business units and borders, and a substantially better customer experience by virtue of personalized digital interactions.

Supporting areas of operation

Save for growth investments

Future growth requires adequate investment. To this end, we are investing in our own innovativeness as well as integrating successful new developments from outside our Company. Thanks to our strict cost discipline, we generate the funds we need to finance this investment and safeguard our competitiveness. For us, the goal of becoming Leading Digital Telco also means being the leading telecommunications provider in terms of efficiency. The digital transformation is key to further enhancing cost efficiency throughout our entire value chain: from the customer interface, to our production processes, through to the management of our own infrastructure and supply chains. We will therefore systematically continue on this path of cost transformation.



We take a value-oriented approach to managing our **investment portfolio**. Business areas that cannot be adequately developed within the Group are disposed of. Consequently, we completed the sale of the 54 % stake in Telekom Romania Communications, which operates the Romanian fixed-network business, to Orange in the reporting year. But we also believe that value orientation means realizing value when the time is right and the conditions attractive. In this context, after reviewing strategic options, we agreed with WP/AP Telecom Holdings IV in the reporting year to sell our subsidiary T-Mobile Netherlands. We had pursued a clear strategy aimed at increasing T-Mobile Netherlands' value and positioned the company as a challenger in the market. We thus transformed it into one of Europe's fastest-growing mobile communications companies (based on EBITDA AL). The sale was agreed based on an enterprise value of EUR 5.1 billion, which roughly corresponds to adjusted EBITDA AL of the last twelve months multiplied by a factor of 8.7. The transaction is subject to approval by the authorities as well as other closing conditions. Equally, we bolster our growth ambitions by means of equity investments and acquisitions. In this context, we agreed a share swap with SoftBank in the reporting year that increased Deutsche Telekom's stake in T-Mobile US to 46.8 %. We are also weighing plans to invest a portion of the proceeds from the planned sale of T-Mobile Netherlands to further increase our stake in T-Mobile US. We expect the total stake to be around 48.4 % upon completion of these two transactions. This is in line with our strategic decision to increase our stake in T-Mobile US to more than 50 % and secure the existing control over the U.S. subsidiary in the long term. This marks a further milestone in our U.S. success story, where we also posted strong operational growth in the reporting year: We further consolidated our position as #2 on the U.S. mobile communications market in terms of customer numbers, adding 5.5 million new customers in 2021 alone. Moreover, the realization of synergies from the business combination with Sprint is also surpassing expectations. In the reporting year, T-Mobile US realized synergies of USD 3.8 billion versus the USD 2.9 to 3.2 billion originally planned.

Simplify, digitalize, accelerate & act responsibly

Simplicity in our offers and in our organization makes the digital transformation of our core business easier. In this way, we increase our **implementation speed** – both in the interaction with customers and in the implementation of new, strategic initiatives. This is why we want to become simpler, more digital, and ultimately more agile.

There are two main thrusts to our pursuit of **simplicity**. First, we want to offer our customers intuitive products and simple rate plans, like MagentaEINS Unlimited, or MagentaTV Entertain. Going forward, we want to significantly further reduce product complexity. Our ambition is for our services to be available around the clock via a single click. Thanks to an IP migration which has been successfully concluded, we can now remotely perform setup and maintenance work to the line in increasingly more households – depending on the router. The technical provisioning of nine out of ten broadband lines is already successful on the first attempt. Second, we want our internal operation to be as efficient as possible, i.e., in terms of time and costs. We are making promising progress with the introduction of greater agility into our IT activities. For example, in the last three years we have more than tripled the development speed for new software or software-driven products in Germany. Today we have an average time-to-market in Germany of 2.7 months, and in Europe of just 1.5 months. We want to cut these times even further and achieve a time-to-market of one month in Europe and two in Germany by 2024. Above and beyond this, we will continue to scrutinize our organization, processes, and decision-making procedures and further optimize them in future, wherever possible.

The **digitalization** of our core business is helping us to improve customer experience and increase our efficiency. Our sales and service apps are now firmly established in Germany and Europe as key digital customer interfaces and we have worked to continually add more services. Our European national companies interact with more than 64 % of customers digitally, via the service app. The MeinMagenta app in Germany now has a penetration rate of over 65 %. Another factor that plays into an outstanding and, above all, personalized experience is a 360° view of our customers across all channels, both online and offline. Magenta View is our front-end platform for all employees with direct customer contact, delivering all necessary customer data from a single source. At the end of the reporting year, over 10,000 colleagues in Germany were already benefiting from Magenta View. Long term, our plan is to digitalize virtually all value creation stages in their entirety. To this end, we are systematically expanding our expertise in innovative technologies like artificial intelligence. Data-based analyses are already helping us to maintain our hardware more proactively, understand customer needs better, and manage our networks more efficiently. The advancing digitalization is also influencing our own approach to collaboration. We had already successfully introduced mobile working even before the coronavirus pandemic struck, and in 2020 together with the employees' representatives adopted a "Manifesto on the new way of working." Our goal is to optimize our collaborative activities by combining the best of both worlds (mobile and on-site working). And because it is important to give our employees guidance as they navigate the world of virtual and hybrid working, we also offer targeted training opportunities. In 2021, for instance, we delivered over 31,000 training sessions on tools designed to improve virtual collaboration. Among our employees, acceptance for digital tools has risen further: 86 % feel that digital tools support them in daily collaborative work (+4 % compared with the pulse survey in November 2020).

However, simplicity and digitalization also call for new **organizational forms, expertise, and a cultural change**. We took action to further improve our customer centricity, which included reorganizing customer service with the Team of Experts approach in Germany and the United States. The assignment of the teams of customer service experts to a geographic region has two major benefits: first, it brings us even closer to the customer, and, second, the interdisciplinary teams allow us to provide help faster than before. However, in the digital age we need to build up new skills that will enable us to meet current and future challenges. In 2021, we offered more "Explorer journeys" – programs addressing specific innovation topics – than ever, with the goal of equipping as many employees as possible with the skills that will be needed in the future. Around 6,000 employees signed up for programs in 2021 on topics such as big data, digital marketing, artificial intelligence, or software development. With our Youlearn initiative – aimed at entrenching self-paced learning in our everyday working life – we continued to drive forward our employees' options for upgrading their skills. What is more, we provide our employees with a high-quality training service in the form of Percipio (an intelligent learning platform also dubbed the "Netflix of learning") and Coursera (a provider of digital further-training courses offered by top-ranking universities). The more than 180,000 Percipio registrations since the third quarter of 2019 show that our efforts have been worthwhile. Providing a state-of-the-art learning environment and protecting the health and well-being of our employees is central to our role as an employer committed to responsible action. Our coronavirus vaccination campaign was very well received, with a total of 45,500 appointments taken up for first, second, and mix-and-match vaccinations. Also in the reporting year we introduced the option for employees to increase their participation in the Company's success via the Shares2You employee share program. All employees at participating Group companies have the opportunity to invest in Deutsche Telekom AG shares once a year. We match every two shares purchased with one free share. More than 36,000 employees took part in the Shares2You program in 2021. That our efforts are paying off is validated by our employee satisfaction levels: The question on Mood is comparable to the former question on Satisfaction and, as before, remains at the very high level of 80 %.  

In parallel, we fulfill our **responsibility** to society by systematically aligning our core business processes with the principle of sustainability. We have expanded our existing climate strategy to include a new Group program: Our aim with #GreenMagenta is to make a meaningful contribution toward protecting the climate and conserving resources. We have taken back over 2.2 million devices either to refurbish or to send directly for recycling, so that we and our customers actively help conserve resources and protect the climate. Moreover, in 2020 we introduced a sustainability standard for our packaging, removing single-use plastics in favor of recyclable materials and environmentally friendly colorings. All new Telekom-branded (or "T-branded") devices and already more than 60 % of the new packaging for smartphones that we source from our suppliers meet these criteria. Since 2021, 100 % of our electricity requirements for all Group units have been met from renewable sources. We plan to become twice as energy efficient by 2024, based on the data volume in the network in relation to the power consumed in this context. To help us achieve this goal, we are decommissioning legacy platforms – including PSTN, migrating to more efficient technology – such as the switch from 3G to 5G, using highly efficient data centers, and deploying AI. From a long-term perspective, we will also achieve savings from the migration from copper to fiber-optic technology. These measures will enable us to maintain stable power consumption in Germany and Europe through 2024, despite rapidly rising data volumes, growing numbers of active network components, and the further densification of our networks. Above and beyond this, we are supporting a responsible approach to digitalization. Our #GoodMagenta label denotes projects, programs, and initiatives that make a positive contribution to social and societal challenges in the digital world, for instance, our campaigns for civil courage online (#TAKEPART – No hate speech) and digital democracy projects (dabei-geschichten.telekom.com/en/home/).

Our strategy is expressed succinctly in our goal to become the **Leading Digital Telco**:

- We want to be a **leader** in terms of digital living and working, and in the implementation of advances in productivity for our business customers. Because only when we lead can we grow and meet the demands of our investors in the long term.
- We want to better utilize our existing assets and skills not only in our core business, but also to **develop** new, digital business models (**Magenta Advantage**).
- The key technical driver for our growth areas is “Telco as a platform”: the **best integrated network infrastructure** – provided by us and by partners – as well as cloud-based customer and network-service platforms. The basis for this is and remains our ongoing commitment to building out the fiber-optic and 5G networks.
- We promote continued growth by carefully managing our **financial resources** and **systematically transforming** the Company to be simple, digital, and agile in every sense.
- We play a responsible and active role in **society**. We are a partner, not just at a societal level, but also at a political one, and we work in the interests of ensuring the open, forward-looking development of all countries in which we are active.

SDG 8 RELATIONSHIPS

Management of the Group

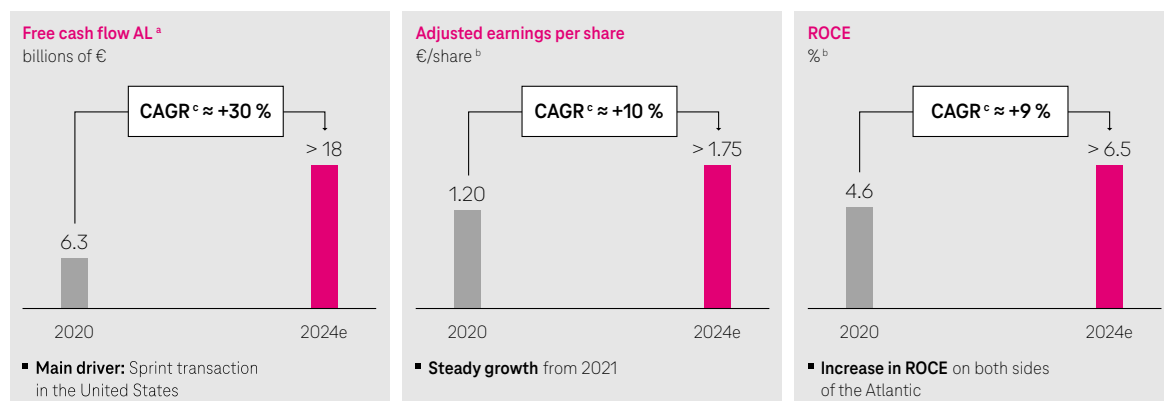
We are committed to the concept of value-oriented corporate governance. We want to strike a balance between the contrasting expectations of our stakeholders so that sufficient funding is available for an attractive dividend, deleveraging, responsible staff restructuring, and new investment in a positive and sustainable customer experience.

- **Shareholders** expect an appropriate, reliable return on their capital employed.
- **Providers of debt capital** expect an appropriate return and that Deutsche Telekom is able to repay its debts.
- **Employees** expect jobs that are secure, prospects for the future, and that any necessary staff restructuring will be done in a responsible manner.
- **“Entrepreneurs within the enterprise”** expect sufficient investment funding to be able to shape Deutsche Telekom’s future business and develop products, innovations, and services for the customer.
- **Society** expects us to do everything within our power to protect the environment, encourage a fair and democratic co-existence, and shape the digital transformation in a responsible manner. SDG 17 RELATIONSHIPS

Finance strategy

We announced our finance strategy for the years 2021 through 2024 at the [Capital Markets Day](#) in May 2021. Deutsche Telekom continues to pursue an attractive and reliable finance strategy. Through 2024, we want to further accelerate our forecast for growth from the past few years.

For the period from 2021 to 2024, our planning is based on the following level of ambition:



Dividend: between 40 and 60 % of adjusted earnings per share

Dividend floor: € 0.60 per share

^a Before dividend payments and spectrum investment.

^b Assuming constant exchange rates.

^c Compound annual growth rate.

We also expect revenue to increase by an average of 1 to 2 % per year and adjusted EBITDA AL by an average of 3 to 5 %.

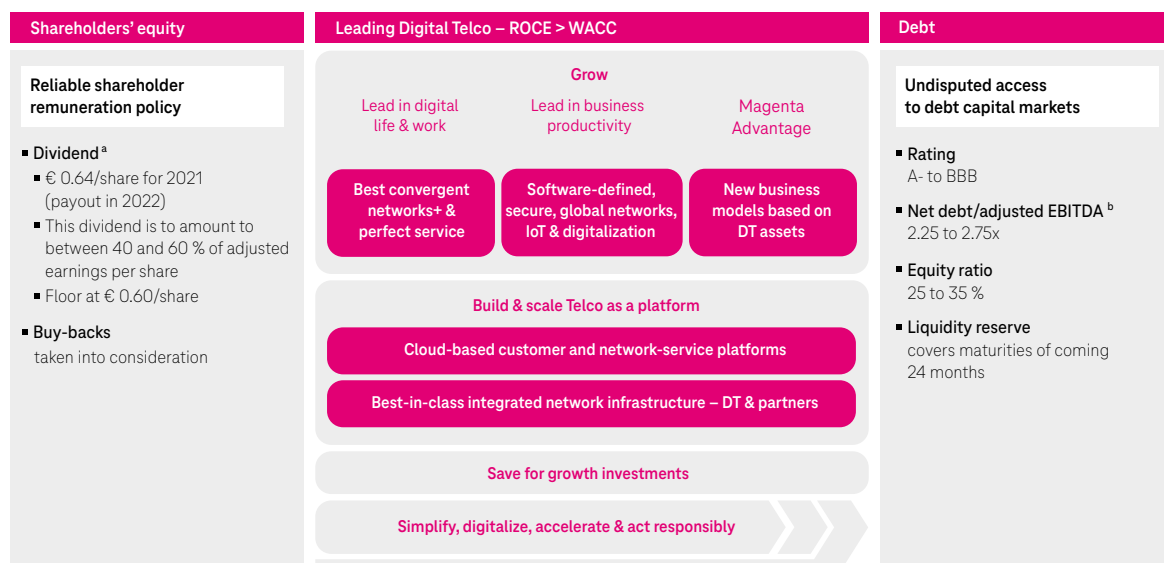
Another part of our finance strategy is to achieve our target financial ratios – relative debt (ratio of net debt to adjusted EBITDA) and equity ratio – along with a liquidity reserve that covers our maturities of the coming 24 months at least. With these clear statements we intend to maintain our rating in a corridor from A- to BBB and safeguard undisputed access to the capital market.

There is a sustainable dividend policy for shareholders, which is subject to approval by the relevant bodies and the fulfillment of other legal requirements. Starting from the 2021 financial year, the amount of the dividend is based on a dividend payout ratio of 40 to 60 % of adjusted earnings per share, with a lower limit fixed at EUR 0.60 per dividend-bearing share. For the 2021 financial year, we intend to propose a dividend of EUR 0.64 for each dividend-bearing share. This equates to 52.46 % of adjusted earnings per share. We thus offer our shareholders both an attractive return and planning reliability. As in previous years the dividend for the 2021 financial year will once again be paid out without deduction of capital gains tax.

We will also take share buy-backs into consideration.

Total capital expenditure is also to remain high in the next few years. The scope for investment is to be used to further roll out our broadband infrastructure and to accelerate the transformation of the Company. In mobile communications, the infrastructure build-out will focus on the LTE and 5G standards and, in the fixed network, mainly on our accelerated fiber-optic build-out. The finance strategy supports the transformation of our Group into the Leading Digital Telco. In order to generate a sustainable increase in value, we intend to earn at least our cost of capital. We plan to meet this target by optimizing the utilization of our non-current assets on the one hand, and pursuing strict cost discipline and profitable revenue growth on a sustainable basis, on the other.

Our finance strategy through 2024



^a Subject to approval by the relevant bodies and the fulfillment of other legal requirements.

^b Deviation from the target range for a short period as a result of the business combination of T-Mobile US and Sprint until year-end 2024.

Performance management system

In order to set and achieve our strategic goals more effectively, we pursue a Group-wide, value-oriented performance management approach. We use a specific set of performance indicators to reliably and transparently measure success. The following tables and information provide an overview of our key financial and non-financial performance indicators.

Financial performance indicators

		2021	2020	2019	2018	2017
ROCE	%	4.1	4.6	5.1	4.7	5.8
Net revenue	billions of €	108.8	101.0	80.5	75.7	74.9
Service revenue ^a	billions of €	84.1	78.9	n.a.	n.a.	n.a.
Profit (loss) from operations (EBIT)	billions of €	13.1	12.8	9.5	8.0	9.4
EBITDA AL (adjusted for special factors) ^b	billions of €	37.3	35.0	24.7	23.1	n.a.
Earnings per share (adjusted for special factors)	€	1.22	1.20	1.04	0.96	1.28
Free cash flow AL (before dividend payments and spectrum investment) ^{b, c}	billions of €	8.8	6.3	7.0	6.1	n.a.
Cash capex (before spectrum investment)	billions of €	(18.0)	(17.0)	(13.1)	(12.2)	(12.1)
Rating (Standard & Poor's, Fitch)		BBB, BBB+	BBB, BBB+	BBB+	BBB+	BBB+
Rating (Moody's)		Baa1	Baa1	Baa1	Baa1	Baa1

^a The definition of "service revenue" was not applied consistently Group-wide for the years prior to 2020.

^b Comparatives for 2018 were calculated on a pro forma basis for the key performance indicators redefined as of January 1, 2019 following the introduction of the IFRS 16 accounting standard.

^c Before interest payments for zero-coupon bonds and before termination of forward-payer swaps at T-Mobile US (both in 2020).

Profitability

We have incorporated sustainable growth in enterprise value into our medium-term aims and implemented it as a separate key performance indicator (KPI) for the entire Group. Return on capital employed (**ROCE**) is a key performance indicator at Group level. ROCE is the ratio of operating result after depreciation, amortization and impairment losses plus imputed taxes (net operating profit after taxes, NOPAT) to the average value of the assets tied up in the course of the year (net operating assets, NOA).

Our goal is to achieve or exceed the return targets imposed on us by providers of debt capital and equity on the basis of capital market requirements. We measure return targets using the weighted average cost of capital (WACC).

NOPAT is an earnings indicator derived from the income statement, taking an imputed tax expense into consideration. It does not include cost of capital.

NOA includes all assets that make a direct contribution to revenue generation. These include all elements on the asset side of the consolidated statement of financial position that are essential to the rendering of services. To this is added operating working capital, calculated from trade receivables, inventories, and trade and other payables. The figure for "other provisions" is deducted as no return target exists for this.

Revenue and earnings

Revenue corresponds to the value of our operating activities. Absolute revenue depends on how well we are able to sell our products and services on the market. The development of our revenue is an essential indicator for measuring the Company's success. New products and services as well as additional sales activities are only successful if they increase revenue. **Service revenue** is the revenue that is generated by services (i.e., revenue from fixed-network and mobile voice calls – incoming and outgoing calls – as well as data services) plus roaming revenue, monthly basic charges and visitor revenue, as well as revenue generated from the ICT business. Service revenue is an important indicator for the successful implementation of the growth strategy of the Group and essentially comprises high-value – i.e., predictable and/or recurring – revenues from Deutsche Telekom's core activities.

A reconciliation of net revenue disclosed in the consolidated financial statements, including its breakdown into revenue categories, to the "service revenue" financial performance indicator can be found in the following table:

billions of €		2021
Net revenue		108.8
Revenue from the sale of goods and merchandise		(19.6)
Revenue from the use of entity assets by others		(4.1)
Revenue from the rendering of services		85.1
+/- Reconciliation to service revenue as financial performance indicator		
Adjustment of revenue from the rendering of services ^a		(2.2)
Adjustment of revenue from the sale of goods and merchandise ^b		0.3
Adjustment of revenue from the use of other entity assets by others ^c		0.9
Service revenue		84.1

^a The definition of "service revenue" does not include, in particular: revenues from valued-added services, revenues from application and contract services, and other non-recurring/variable revenues.

^b Relates to revenues from the sale of hardware in connection with the ICT business.

^c Primarily relates to revenues from wholesale business (e.g., in connection with unbundled local loops (ULL) and co-location spaces).

We measure our operating earnings performance on the basis of **adjusted EBITDA AL**, i.e., EBITDA adjusted for depreciation of right-of-use assets, for interest expenses on recognized lease liabilities, and for special factors. And EBITDA is calculated as **EBIT** (profit/loss from operations) before depreciation, amortization and impairment losses on intangible assets, property, plant and equipment, and right-of-use assets. Both metrics indicate the short-term operational performance and the success of individual business areas. Special factors have an impact on the presentation of operations, making it more difficult to compare performance indicators with corresponding figures for prior periods. For this reason, we adjust our performance indicators to provide transparency. Without this adjustment, statements about the future development of earnings are only possible to a limited extent. The further inclusion of unadjusted EBIT/EBITDA AL as performance indicators means special factors are also taken into account. This promotes a holistic view of our expenses. In addition to these absolute indicators, we also use the EBIT and EBITDA AL margins to show how these indicators develop in relation to revenue. This makes it possible to compare the earnings performance of profit-oriented units of different sizes.

For the calculation of EBITDA AL, EBIT, and net profit/loss adjusted for special factors, please refer to the section [“Development of business in the Group.”](#)

Adjusted earnings per share is calculated as adjusted net profit divided by the time-weighted number of all ordinary shares outstanding, which is determined by deducting the weighted average number of treasury shares held by Deutsche Telekom AG.

Financial flexibility

Free cash flow AL (before dividend payments and spectrum investment) is calculated as net cash from operating activities less net cash outflows for investments in intangible assets (excluding goodwill) and property, plant and equipment, as well as the principal portion of repayment of lease liabilities – excluding finance leases at T-Mobile US. Free cash flow AL is a key yardstick for providers of debt capital and equity. It measures the potential for further developing our Company, for generating organic growth, and for the ability to pay dividends and repay debt.

Cash capex (before spectrum investment) relates to cash outflows for investments in intangible assets (excluding goodwill) and property, plant and equipment, which are relevant for cash outflows as a component of free cash flow.

A **rating** is an assessment or classification of the creditworthiness of debt securities and their issuer according to uniform criteria. The assessment of creditworthiness by ratings agencies affects access to the capital markets and to the international finance markets, and refinancing costs. As part of our finance policy, we have defined a target range for our ratings. We believe that with a rating between A- and BBB (Standard & Poor's, Fitch) or between A3 and Baa2 (Moody's) we essentially have the necessary entry to the capital markets to generate the required financing.

Non-financial performance indicators

		2021	2020	2019	2018	2017
Customer satisfaction (TRI*M index)		73.4	72.2	67.3	67.7	68.6
Employee satisfaction (engagement score) ^a		77	4.0	4.0	4.1	4.1
Energy consumption ^{b, c}	GWh	13,323	12,843	9,324	9,224	8,943
CO ₂ emissions (Scope 1 and 2) ^{c, d}	kt CO ₂ e	247	2,512	1,797	2,354	2,896
Fixed-network and mobile customers						
Mobile customers ^e	millions	248.2	241.5	184.0	178.4	168.4
Fixed-network lines	millions	26.1	27.4	27.5	27.9	27.9
Broadband customers ^{f, g}	millions	21.6	21.7	21.0	20.2	18.9
Systems Solutions						
Order entry ^h	millions of €	4,174	4,564	4,740	6,776	5,241

^a Engagement score determined on the basis of the employee surveys carried out in 2021, 2019, and 2017. In 2021, we changed from a scale of 1 to 5 for the engagement score (previously the “commitment index”) to a scale of 0 to 100.

^b Energy consumption, mainly: electricity, fuel, other fossil fuels, district heating for buildings.

^c Information for the previous years (2017 to 2020) was taken from the non-financial statements for the years in question, which were reviewed in the form of a limited assurance engagement. This information was not part of the statutory audit of Deutsche Telekom's consolidated financial statements and combined management report.

^d Calculated according to the market-based method of the Greenhouse Gas Protocol.

^e Including T-Mobile US wholesale customers.

^f Excluding wholesale.

^g Starting in the second quarter of 2018, we no longer report the number of broadband lines from a technical perspective. Instead, we report the number of broadband customers. The figures for 2017 were adjusted retrospectively.

^h Order entry for the 2019 financial year was adjusted retrospectively in connection with the realignment of the B2B telecommunications business.

We want our customers to be satisfied – or even delighted – as satisfied customers act as multipliers for our Company’s success. As a responsible, service-oriented company, the needs and opinions of our customers are of great importance to us, and we want them to stay with our Company in the long term. For this reason we measure **customer retention/satisfaction** in our companies using the globally recognized TRI*M method. The results of systematic surveys are expressed by an indicator known as the **TRI*M index**. To underscore the significance of customer retention/satisfaction for our operating business, the performance of Board of Management members and eligible managers is now also being tracked and incentivized by means of the long-term variable remuneration (Long-Term Incentive Plan). This KPI, as one of four target parameters, has been relevant for Variable II since 2010, as well as for the Long-Term Incentive Plan which was launched in 2015, and in which the Board of Management has participated since 2021. We take the TRI*M indexes calculated for the operating entities (excluding T-Mobile US) as an approximation of the respective entities’ percentage of total revenue to create an aggregate TRI*M Group value. This allows Board members and eligible managers to benefit from the development of customer retention/satisfaction across the Group.

For further information on customer satisfaction, please refer to the section [“Group strategy.”](#)

Our employees want to contribute to the further development of the Company and identify with it. We want to pursue open dialog and productive exchange with our employees. New working models and state-of-the-art communication options, as well as regular employee surveys, help us to accomplish this. The most important feedback instruments across the Group (excluding T-Mobile US) for assessing **employee satisfaction** include regular employee surveys and the pulse survey carried out twice a year. In our Company, we measure the employee satisfaction performance indicator using the **engagement score** – derived from the results of the last employee survey. The questionnaire and the measurement model were reviewed in the context of the 2021 employee survey and were updated based on feedback and the latest research findings. As part of this process, we changed the scale used for the engagement score (formerly the “commitment index”) to 1 to 100, instead of the 1 to 5 we had previously used. In view of the major significance of employee satisfaction for the success of the Company, the performance of Board of Management members and eligible managers is now also being tracked and incentivized by means of the long-term variable remuneration (Long-Term Incentive Plan). Employee feedback, as one of four target parameters, has been relevant for Variable II since 2010, as well as for the Long-Term Incentive Plan which was launched in 2015, and in which the Board of Management has participated since 2021. This allows Board of Management members and eligible managers to benefit from the development of employee satisfaction across the Group.

For further information about employee satisfaction, please refer to the section [“Employees.”](#)

Climate change and the destruction of the environment are existential threats to the world. Companies must therefore significantly increase their energy and resource efficiency and restrict their absolute energy consumption. This issue is ever more relevant for providers of information and communications technology (ICT). There is a general expectation on the ICT sector to continue building out the telecommunications network while, at the very least, keeping basic consumption stable in the medium term or even reducing it going forward. For over 20 years, Deutsche Telekom has recorded environmental, social, and governance (ESG) data and performance indicators, which are used first and foremost to calculate our Group-wide ESG KPIs, on the basis of which we measure and manage our CR performance. The non-financial performance indicator **energy consumption** is a record of the energy consumed in connection with the operation of our actual business model. We constantly monitor progress regarding our medium-term goal to keep energy consumption at least stable, and can make adjustments where necessary. To this end, we invest in measures and programs to conserve energy from all sources. At the same time, this goal plays into how we optimize and innovate for our future infrastructure, and calls for the use of innovative technology components. In living up to our responsibility to conserve resources and protect the climate, we also run various initiatives that aim to reduce the CO₂ emissions generated as part of our business activities. These initiatives include the sustained use of 100 % green electricity, optimizing power consumption in our buildings, and gradually transitioning our Group fleet vehicles from fossil fuels to zero- or low-emission power sources. We measure our progress in this regard on the basis of the **CO₂ emissions** (Scope 1 and 2) non-financial performance indicator. Given the major significance of these two ESG targets, since 2021 the performance of Board of Management members has also been tracked and incentivized by means of the annual variable remuneration.

For further information on these and other ESG KPIs, please refer to the section [“Corporate responsibility and non-financial statement.”](#)

As one of the leading providers of telecommunications and information technology worldwide, the development of our Group – and thus also our financial performance indicators – is closely linked to the development of **customer figures**. Acquiring and retaining customers are thus essential to the success of our Company. We have different ways of measuring the development of our customer figures according to the business activity in our operating segments: Depending on the activities of each segment, we measure the number of mobile customers and/or the number of broadband customers and fixed-network lines.

In our Systems Solutions operating segment, we use **order entry** as a non-financial performance indicator. We define and calculate order entry as the total of all amounts resulting from customer orders received in the financial year. Order entry in the form of long-term contracts is of great significance to the Group in order to estimate revenue potential. In other words, order entry is an indicator that provides a high degree of planning reliability.

Impact of the coronavirus pandemic on our business and our key performance indicators

The global economy recovered from the coronavirus crisis in 2021, however, economic development continues to be impacted by its aftermath. The coronavirus pandemic affected our business activities and financial performance indicators in several of our business areas, impacting on revenues and earnings. For example, temporary travel restrictions have resulted in lower roaming and visitor revenues in our operating segments, while our terminal equipment business felt the bite of temporary shop closures. At the same time, we recorded an increase in the volume of voice calls, both in mobile communications and in the fixed network, and higher demand for mobile data as a result of hybrid working.

Our non-financial performance indicators also revealed in the reporting year that the coronavirus pandemic had a formative effect on how we collaborate. We successfully built on our experience in recent months and put proactive measures in place that have been reflected in our employees' outstanding performance and record levels of employee satisfaction (engagement score). Our customer numbers profited in the reporting year from the re-opening of shops after the imposition of coronavirus-induced temporary closures both in the previous year and in early 2021. This was reflected in the development of customer numbers in our operating segments.

Based on experience so far, the coronavirus pandemic is expected to only impact our business to a limited extent going forward.

The economic environment

Macroeconomic development

In 2021, the global economy recovered from the coronavirus-induced crisis, although economic development is still feeling the reverberations. The decline in the number of new infections and the fast progress made with the vaccination rollout led to a strong upswing in consumer spending in the advanced economies in spring of 2021. Despite this, the delivery and capacity bottlenecks that began to materialize at the start of 2021 led to disruptions in global value chains and slowed industrial output in many countries. Rising global demand, coupled with delivery constraints on the supply side, is driving a dramatic spike in producer and consumer prices.

The International Monetary Fund (IMF) projects a 5.9 % increase in world economic output for 2021. The economies of our core markets, too, have recovered from the effects of the coronavirus pandemic. GDP in Germany increased by 2.7 % year-on-year, although growth slowed significantly towards the end of 2021 owing to delivery bottlenecks, supply shortages, and the fresh wave of infections. Rising producer prices, delivery bottlenecks, and higher consumer spending drove soaring inflation across many parts of the world in the second half of 2021.

The Bitkom-ifo-Digitalindex, calculated on the basis of the business situation and expectations, brightened substantially in the first half of 2021 before tapering off to some extent in the second half. The business climate in the ICT sector remained relatively buoyant compared with the economy as a whole.

In the United States, the economy grew by 5.7 % in the reporting year, already returning to its pre-pandemic level in the second quarter of 2021. The substantial increase in consumer spending was the major driver of this growth. The U.S. labor market recovered in 2021 from the coronavirus-induced slump, although unemployment rates remained at a higher level than before the crisis. Consumer prices rose sharply year-on-year in 2021, mainly due to delivery bottlenecks, higher energy prices, and rising rents. In response to the strengthening economic activity, the U.S. Federal Reserve tapered its bond-buying at the end of 2021, signaling a likely rise in interest rates in the near future. Despite higher numbers of new coronavirus cases in some countries, the national economies of our Europe operating segment also posted substantial growth in economic output and declining non-employment rates. The central banks of Hungary, the Czech Republic, and Poland have raised interest rates in an effort to curtail high inflation.

The following table shows the GDP growth rate trends and the unemployment/non-employment rates in our most important markets. The unemployment rate for Germany and the non-employment rates for the other countries are presented in conformance with ILO standards.

	GDP for 2019 compared with 2018	GDP for 2020 compared with 2019	GDP estimate for 2021 compared with 2020	Unemployment/ non-employment rate in 2019	Unemployment/ non-employment rate in 2020	Estimated unemployment/ non-employment rate in 2021
Germany	1.1	(4.6)	2.7	5.0	5.9	5.7
United States	2.3	(3.4)	5.7	3.7	7.7	5.5
Greece	1.8	(9.0)	7.1	17.9	17.6	15.3
Romania	4.2	(3.7)	7.0	3.9	5.0	5.0
Hungary	4.6	(4.7)	7.4	3.3	4.1	4.1
Poland	4.7	(2.5)	4.9	3.3	3.2	3.3
Czech Republic	3.0	(5.8)	3.0	2.0	2.6	2.7
Croatia	3.5	(8.1)	8.1	6.6	7.5	6.7
Netherlands	2.0	(3.8)	4.0	3.4	3.8	3.5
Slovakia	2.6	(4.4)	3.8	5.8	6.7	6.8
Austria	1.5	(6.7)	4.4	4.8	6.0	5.0

Source: Eurostat, European Commission, national authorities. Last revised: January 2022.

Telecommunications market

Demand for high-speed broadband – over the fixed and mobile networks – remains high. According to estimates by Analysys Mason, data traffic over the fixed network grew by 25 % worldwide in 2021 and mobile data traffic by 37 %. The coronavirus pandemic in particular brought home the fundamental role that resilient, high-performing broadband infrastructure plays in the digital transformation. Numerous countries have announced ambitious build-out targets. In March 2021, the European Commission published new connectivity targets under which all households in the European Union (EU) should have a gigabit-capable line and all populated areas should be covered by 5G by 2030. According to a study by Boston Consulting Group, investments totaling EUR 300 billion will be needed to make this goal a reality.

Digitalization and broadband infrastructure are also major factors in the coronavirus stimulus packages. In February 2021, agreement was reached within the EU on the creation of the Recovery and Resilience Facility allocated with EUR 672.5 billion as the central pillar of the NextGenerationEU recovery plan. At least 20 % of the funds flowing to member states are earmarked for digital transition projects. Further numerous funding initiatives at national level were launched to support the broadband build-out and the digital transformation. For example, in November 2021 the United States Congress passed a comprehensive infrastructure subsidies program, which will provide USD 65 billion for broadband infrastructure deployments and aims to boost demand for broadband services.

The telecommunications industry continues to be characterized by intense competition. Consumers benefit from a greater range of products to choose from. In the fixed network, established telecommunications companies are competing intensively with cable network operators, city network operators, and resellers, who predominantly make use of regulated wholesale products. Financial investors are increasingly providing money for the build-out of regional and supra-regional fiber-optic networks. In addition, internet companies with over-the-top (OTT) communication services are further intensifying the competitive pressure. Moreover, three or four mobile carriers operate in each of our markets using their own network infrastructure. On top of this, we are seeing MVNOs becoming established in many markets using the network infrastructure of traditional mobile network operators.

Germany

In the Bundesnetzagentur's Activity Report, published in December 2021, the agency reported year-on-year growth in revenue from telecommunications services, pay TV, and IT services in Germany in the reporting year, mainly driven by the first signs of economic recovery following the negative impact of the coronavirus pandemic. The increase in revenue was predominantly due to the growth in mobile telecommunications services. Revenue from fixed-network services, including television, also increased, although at a slower rate.

According to the Bundesnetzagentur, the number of broadband lines in Germany had risen by 0.8 % to 36.5 million by the end of the first half of 2021. For 2022, Analysys Mason forecasts further growth of 2.2 % in the number of broadband lines. High-bandwidth lines are increasingly marketed in cable and VDSL/vectoring networks. The offerings in this area are supported by fiber-optic lines and innovative hybrid connection technologies. The availability of high bandwidths in Germany and the large choice of HD content and video-on-demand services are stimulating customer growth in IPTV business. Providers are recording growth in broadband revenue driven by rising customer numbers in addition to higher revenues per customer for broadband products and triple-play bundles comprising telephony, a broadband line, and TV service. The trend for convergent product bundles comprising fixed-network and mobile offerings (FMC) also continued.

Service revenue in the German mobile communications market increased slightly compared with 2020, driven mainly by the uninterrupted upswing in data usage, which grew by 54 % (source: Analysys Mason). This additional demand for higher-value rate plans and devices offset revenue declines from dwindling international roaming traffic owing to weaker international travel, as well as regulatory effects and sustained high price pressure and intense competition. Mobile data usage continues to increase strongly on the back of growing use of products such as mobile video apps. The availability of next-generation 5G mobile technology also expanded rapidly in 2021. The percentage of voice and data rate plans is rising steadily. Traditional voice and text messaging services are increasingly being replaced by free IP messaging services like WhatsApp and social networks like Facebook. Connected products such as smartphones and tablets, as well as other connected wearables such as watches and fitness trackers, are growing ever more popular, pushing up demand for high-speed mobile broadband, large data volumes, and extra SIM cards in the rate plan portfolios.

Digitalization is continuing apace, and as a result there is also growing demand by the industry for more connectivity to allow machines and production sites to be networked and to tap efficiencies in value chains. Extensive IT and cloud solutions, as well as intelligent approaches to M2M communication are needed in order to meet these demands.

United States

In the United States, the ongoing coronavirus pandemic has led to continued demand for broadband services, both in fixed and mobile services. Broadband adoption in the retail sector benefited from over USD 10 billion in pandemic-related funding for consumers, schools, and libraries. The pandemic has also accelerated the adoption of digital services, leading to increased demand for enterprise ICT services.

To meet rising demand, operators are investing heavily in both fixed and mobile networks in urban, suburban and, increasingly, in rural areas. As part of their infrastructure expansion, telecommunications providers have announced plans to significantly invest in fiber-optic networks. AT&T announced in early 2021 that it planned to increase its fiber-optic footprint by an additional 3 million customer locations across more than 90 metro areas. Verizon, as well, plans to continue fiber deployments as do smaller providers. Frontier, a fixed-line provider, aims to cover 10 million premises by 2025, up from 6 million originally planned. Similarly, in 2021, regional provider Windstream began a program for the rollout of fiber to the premises (FTTP).

Wireless providers, too, have continued to heavily invest in the deployment of 5G networks in the United States. All three national mobile operators – AT&T, T-Mobile US, and Verizon – claim 5G wireless connections across the United States. At year-end 2021, T-Mobile US announced that its own 5G network covered 310 million people via the 600 MHz band, and over 210 million people with Ultra Capacity 5G in the 2.5 GHz band and millimeter wave (mmWave) spectrum. AT&T said in July 2021 that its 5G network reached more than 250 million people across the country. Verizon's low-band mobile 5G service covers more than 230 million people in the United States. Operators are also increasingly offering fixed wireless services in competition with established cable operators and internet service providers (ISP) and in areas where traditional broadband connections are not available. Of the large providers, Verizon and T-Mobile US, in particular, are investing in 5G fixed wireless, with T-Mobile US' offering being available to more than 30 million households nationwide and Verizon's in 62 cities across the United States. Additional facilities-based competition could come from DISH, which continues to build its 5G network. The U.S. Federal Communications Commission (FCC) obligations require DISH to offer 5G broadband service to at least 20 % of the U.S. population and to deploy a core network by no later than June 14, 2022. The FCC continued to allocate spectrum for 5G deployments, including licenses in the 3.5 GHz band and in the 3.7 GHz band. Another auction for 100 MHz of spectrum in the 3.45 to 3.55 GHz band started in early October 2021 and was completed at the end of January 2022. A further auction of spectrum in the 2.5 to 2.7 GHz band is expected to take place in 2022.

The expansion of infrastructure in the United States will benefit from additional government subsidies programs over the coming years. This includes the Rural Digital Opportunity Fund (RDOF): The FCC plans to provide USD 20.4 billion for broadband infrastructure deployments in unserved and underserved areas of the United States over the next ten years. A Phase 1 auction was completed in September 2020 and will provide USD 9.2 billion in build-out support in unserved areas. The timeline for the Phase 2 auction has yet to be determined. Further support will come in the amount of USD 65 billion allocated by legislation passed by the U.S. Congress in September 2021. Congress has appropriated USD 42.45 billion to be allocated in grants to states to support broadband infrastructure, mapping, and adoption. A further USD 14.2 billion will be used to make broadband adoption more affordable. USD 2.75 billion will be allocated toward digital equity and inclusion programs.

Europe

Early in the reporting year, the traditional telecommunications markets in our Europe segment were affected in particular by the coronavirus pandemic, which resulted, among other effects, in a year-on-year decline in mobile roaming revenues due to travel restrictions. Full and partial lockdowns in our footprint countries over the course of the year led to the temporary closure of shops and other measures. Public life moved online to a large extent driving a corresponding increase in demand for broadband and TV services. According to Analysys Mason, fixed-network business (excluding systems solutions business) reflected this trend with slight growth and was able to offset the decline in revenues from voice telephony. Mobile business also performed slightly better than in the prior year, with revenues also up overall year-on-year.

Market players in our European footprint continued their merger acquisition activities in the reporting year on a level equaling that seen prior to the outbreak of the coronavirus crisis. For instance, in Greece the United Group acquired Forthnet/Nova and is also expected to acquire Wind Hellas in the first half of 2022. In Poland, the Iliad Group acquired Play and is expected to acquire UPC PL in the first half of 2022. In Hungary, Digi announced plans to sell its Hungarian fixed-network, mobile, and pay TV business to the Hungarian ICT group, 4iG. In Romania, Orange acquired OTE's 54 % stake in Telekom Romania effective September 30, 2021. Activities relating to the acquisition of spectrum licenses were restrained on the markets in the reporting year. However, the activities of the cell tower businesses picked up pace. For example, the Polish companies Play and Polkomtel both reached agreements on cell tower business with Cellnex.

Convergent bundle offerings consisting of fixed-network and mobile services (FMC) are now established in our markets and consistently post high growth rates. Analysys Mason expects the number of FMC customers and revenues to grow year-on-year, underpinned by further acquisitions in selected European markets such as Greece or Croatia on the one hand, and on the other by the further development of existing retail offerings to address specific target groups, such as Proximus in Belgium, and innovative advantage bundles, such as MagentaOne in our national companies. These integrated convenience packages are enjoying sustained strong growth in our companies and frequently address the majority of consumers, which is having a positive impact on customer satisfaction, churn rates, and revenue growth.

Subscription-based streaming services such as Netflix and Prime Video still only have limited potential for substituting traditional pay TV in the markets of our Europe operating segment. Analysys Mason puts the share at around just 10 %. This is attributable to two effects: Firstly, the prices for these services are not (or only marginally) adapted to the local purchasing power, i.e., the price levels are generally the same internationally. Secondly, successful offerings, like Disney+, are either unavailable in most of our markets or only offer partial language content localization, thus narrowing their appeal to smaller sections of the population. Despite this, the appeal of this business model, which will continue to develop in our markets, is evidenced by the year-on-year trend: according to Analysys Mason, revenues with streaming services in Europe and the customer base both posted strong growth.

For the second year in succession, our B2B operations in Europe felt the effects of the pandemic. The lockdowns and major restrictions that dominated the first half of 2021 were followed in the second half of the year by delivery bottlenecks and supply shortages, which led to uncertainty in a disproportionately large number of industries. The success of business in Europe is now showing clear signs of heavy reliance on other continents and a need for dependable logistics. This led to some investments being pushed back to the next financial year as a matter of precaution. Despite this, demand grew in 2021 for solutions for mobile working and collaborating, video-conferencing systems, and more cost-efficient system landscapes in the cloud or IoT world. In virtually all European markets, public-sector employees were supplied with equipment for mobile working. Large companies also followed the trend in 2021 for future-proofing their system landscapes, e.g., with Microsoft Azure and similar solutions. A large number of small and medium-sized businesses began digitalizing their data back-up processes and ramping up their presence in the digital economy via online marketing and web shops.

Systems Solutions

In the information technology (IT) industry in our core market of Western Europe, the volume that can be addressed by our Systems Solutions operating segment and the T-Systems brand increased by 4.3 % in the reporting year to EUR 157 billion. The effects of the global pandemic have positively affected IT customer spending. Many companies launched digitalization projects; for instance, home workstations were set up to enable employees to work remotely in virtually all industries.

In Germany, in terms of IT services, demand has grown further for public cloud services and cybersecurity services, as has the importance of digitalization (including Industry 4.0) and machine-to-machine communication (M2M). The security market addressed by T-Systems grew by 11.9 % in 2021. The health sector also developed positively, posting double-digit growth rates in areas including telehealth and the healthcare cloud. By contrast, growth in demand slowed in the market segments for traditional infrastructure, project business, and SAP services.

Competitive and price pressure persisted in all submarkets of our Systems Solutions operating segment. This was due on the one hand to competitors from traditional IT services business, such as IBM, Atos, and Capgemini, and on the other to cloud providers such as Amazon Web Services, Microsoft, and Google. Prices were eroded further by providers of services that are delivered primarily offshore (e.g., Tata Consultancy Services, Infosys, Wipro).

Group Development

The environment of our Group Development operating segment is largely dominated by the markets served by our companies T-Mobile Netherlands, Deutsche Funkturm (DFMG), and Magenta Telekom Infra (MTI) in Austria.

The Dutch mobile communications market served by T-Mobile Netherlands continued to be marked by high price and competitive pressure. The Netherlands is ahead of much of Europe with its bundling of fixed-network and mobile products into convergent offerings (FMC). The dominance of KPN and VodafoneZiggo in fixed-network business kept the pressure on mobile product pricing high due to the FMC trend.

DFMG is the biggest provider of passive wireless infrastructure for mobile communications and broadcasting in Germany. Despite the coronavirus pandemic, the market again saw increased demand for cell sites in the 2021 financial year, due on the one hand to the fact that network operators plan to close gaps in coverage, and on the other to the fact that demand for mobile data services is growing, which calls for a further increase in the density of mobile networks.

MTI is the second-largest provider of passive wireless infrastructure for mobile communications and broadcasting in Austria. The densification of the Austrian market continued throughout 2021, driven by rising demand for mobile data services and the fulfillment of coverage obligations by the network providers.

Major regulatory decisions

Our business activities are largely subject to national, European, and U.S. regulation, which is associated with extensive powers to intervene in our product design and pricing, particularly in Europe. We were again subject to extensive regulation in our mobile and fixed-network businesses in 2021.

Regulation

Commitment agreements entered into force. The agreements with Telefónica and Vodafone concerning their long-standing cooperation in the fixed network were extended in the fourth quarter of 2020 in the form of new commitment agreements to replace the former quota-based agreements under what had become known as the “contingent model.” Long-term agreements were also signed with 1&1 and NetCologne in the first quarter of 2021. Since there were no regulatory objections to the agreements on the part of the Bundesnetzagentur, they entered into force effective April 1, 2021. Beyond the continued use of VDSL, the agreement also set the course for the use of the FTTH fiber-optic networks to be continuously built out by Deutsche Telekom in the years to come. This has established a solid foundation on which to take forward cooperation in the fixed network over the next 10 years.

European Commission set termination rates from July 1, 2021. On April 22, 2021, the European Commission published a Delegated Act setting single maximum Union-wide mobile (MTR) and fixed-network (FTR) termination rates. The Act will reduce MTRs to a uniform level of 0.2 eurocents/min. by 2024 using a phased approach. A uniform level of 0.07 eurocents/min. was set for FTRs from January 1, 2022, prior to which updated price caps still applied from July 1, 2021 (varied by member state).

European Electronic Communications Code (EECC) transposed into national law. The Telecommunications Modernization Act (Telekommunikationsmodernisierungsgesetz – TKMoG) entered into force in Germany on December 1, 2021. The reform of the German Telecommunications Act (Telekommunikationsgesetz – TKG) became necessary to transpose the provisions of the EECC into national law. The biggest changes affect the rules on consumer protection, the regulation of very high capacity networks (including FTTH), spectrum policy, and the rules on universal service. TKMoG will also remove the right of property owners to pass on cable TV service costs to tenants via the service charges included in rental agreements. The rules on contract terms and contract extensions were modified in favor of the consumer, with customers now being able to cancel contracts on a monthly basis after reaching the minimum contract term. Other changes affect the existing rights of retail customers to a price reduction in the event of defective performance – a modification that has now also been incorporated into the TKG. The deadlines for fault clearance have been further tightened. In terms of wholesale regulation of companies with a dominant market position, the amended TKG will ease regulations regarding the build-out of FTTH networks. The previous universal service is being replaced by an entitlement to fast telecommunications services. The thresholds for this will have to be laid down in an ordinance that has the force of law. One important change is the abolishment, effective June 30, 2024, of the privilege for property owners to pass on cable TV and internet service fees as ancillary rental costs to tenants. The fiber-optic build-out will be financed using new instruments, such as the fiber-optic provisioning charge for tenants capped at EUR 60 per year for 5 or 9 years, a cost apportionment added to the basic rent excluding service charges, or the existing rules on network usage charges. This step will also reduce the costs for network operators of using in-house networks. The EECC has already been transposed into the national laws of Greece, Austria, Slovakia, the Czech Republic, and Hungary (with varying deadlines for entry into force, in particular with respect to customer protection provisions). The legislative process is still pending in Croatia, the Netherlands, Poland, and Romania.

Bundesnetzagentur presents draft decision for FTTH network regulation. On October 11, 2021, the Bundesnetzagentur presented its draft decision on the future regulation of access to Deutsche Telekom's copper and fiber-optic network. The draft contains proposals for easing FTTH network regulation, which would put an end to "ex ante" and access regulation. Non-discriminatory access will instead be secured under the Equivalence of Input (EoI) principle enshrined in the new Telecommunications Act (Telekommunikationsgesetz – TKG). Under the new system, wholesalers would have access to the same material and human resources as Deutsche Telekom's sales teams. The Bundesnetzagentur further proposes to abolish the traditional "ex-ante" regulation of layer 2 (VDSL) products and tie charges to a disclosure obligation. The draft decision also includes the requirement for Deutsche Telekom to grant access to cable ducts and operational support systems. The period for responses to the draft decision ended on November 15, 2021. The Bundesnetzagentur is expected to notify the European Commission of the draft in the first quarter of 2022.

German court overturns approval under merger control law for the joint venture Glasfaser NordWest. Telekom Deutschland and EWE founded the joint venture Glasfaser NordWest in 2020. The aim of the joint venture is to provide up to 1.5 million households and business locations with fast internet. If the Düsseldorf Higher Regional Court's decision of September 22, 2021 becomes final, the case will be referred back to the Bundeskartellamt for a new decision on approval and any further conditions. The joint venture can continue building out FTTH in the interim. The Bundeskartellamt, EWE, and Telekom Deutschland have lodged a complaint against the decision of the Düsseldorf Higher Regional Court to not allow an appeal.

Bundesnetzagentur's security catalog classes operators of public telecommunications networks for the first time as having an increased risk potential. On August 25, 2021, the Bundesnetzagentur determined new security requirements for operators of public telecommunications networks. Under the IT Security Act 2.0 (IT-Sicherheitsgesetz 2.0) critical components are subject to special legal requirements, such as mandatory certification.

For further information on the Bundesnetzagentur's TKG security catalog, please refer to the section ["Risks and opportunity management – Risks and opportunities relating to regulation."](#)

European roaming regulation. In December 2021, the European Commission, the Council, and the European Parliament agreed to extend the current roaming regulation until 2032. The Roam like at Home principle introduced in 2017, which allows consumers to make calls at domestic terms and conditions and use data volumes within the European Union, will thus apply for a further ten years. New rules were also added on transparency, and the new regulation will ensure that the quality of roaming services is not lower than mobile services at home. New, lower price caps through 2031 are being set for inter-operator rates for corresponding wholesale services, to be re-examined in 2024/2025. Earlier discussions on possible steps to tighten regulation on voice calling and text messaging (SMS) between EU member states were not included in the draft. The regulation is expected to come into force as of July 1, 2022.

Awarding of spectrum

The assignment phase of the C-band auction (3.7 to 4.2 GHz) in the United States ended on February 17, 2021. On February 24, 2021, the FCC announced the number of licenses obtained by participating companies. Verizon paid around USD 45 billion for 3,511 licenses, AT&T over USD 23 billion for 1,621 licenses, and T-Mobile US USD 9.3 billion for 142 licenses. A total of 280 MHz was sold at the C-band auction. The new license holders must make relocation payments over the next three years to cover the transfer of licenses from the former holders. The payments T-Mobile US will have to make are expected to amount to USD 1.2 billion. In Hungary, proceedings to re-award 900 and 1,800 MHz spectrum licenses that are due to expire in 2022 were held on January 28, 2021 and concluded the same day. Magyar Telekom acquired 2x 8 MHz and 2x 20 MHz in the respective bands for a total price of EUR 123 million (when translated into euros). On August 12, 2021, Hrvatski Telekom in Croatia acquired spectrum in the 700; 3,400 to 3,800; and 26,000 MHz bands for a total purchase price of EUR 17.4 million. In Romania, the regulatory authority confirmed the extension of Telekom Romania Mobile Communications' 2,100 MHz usage rights for 2022 until the end of 2031 following payment of a one-time fee in the amount of EUR 25 million; the formalities were completed by the end of 2021. The remainder of the 800; 2,600; and 3,400 to 3,800 MHz spectrum in Romania was awarded in December 2021. For harmonization purposes with other sub-bands, short service lives of only around 4 to 7 years were assigned to these frequencies. Hence, no spectrum was purchased by the three Romanian market incumbents, including Telekom Romania Mobile Communications.

As previously, Poland has made no further announcements regarding a new start date for the postponed auction for 3,400 to 3,800 MHz. The process is being held up by incomplete legislative procedures. A further four 80 MHz licenses, capped at 80 MHz, are expected to be awarded by way of an SMRA. All further details of the auction are pending. Romania is planning the award of 5G spectrum in the 700 MHz and 1,500 MHz bands, which is expected to take place in the second half of 2022. The Slovakian regulatory authority is preparing to allocate the 3,400 to 3,800 MHz band, which will not become available for mobile broadband usage before 2024, however. A public consultation was held and the decision made to postpone the award until the first half of 2022. In the meantime, the previously unused 2,600 MHz TDD band (50 MHz) has been added to the spectrum award planning. In the United States, the 3,450 MHz auction began on October 5, 2021, at which the FCC was offering aggregate spectrum of 100 MHz in the 3,450 to 3,550 MHz band. The assignment phase ended on January 4, 2022. The winning bids totaled over USD 22.5 billion, thus surpassing the reserve price of USD 14.7 billion. T-Mobile US paid USD 2.9 billion to secure itself a total of 199 licenses. In Germany, the usage rights for 800; 1,800; and 2,600 MHz are due to expire at the end of 2025. According to its current consultation, the Bundesnetzagentur still sees a considerable need for clarification on a range of issues. Licenses are not expected to be awarded before 2024.

The following table provides an overview of the main ongoing and planned spectrum awards and auctions as well as license extensions. It also indicates spectrum to be awarded in the near future in various countries.

Main spectrum awards

	Expected start of award procedure	Expected end of award procedure	Frequency ranges (MHz)	Award procedure	Updated information
Croatia	Q4 2022	Q1 2023	800/900/1,800/2,100/2,600 1,500/3,400-3,800/26,000	Details tbd	800-2,600 MHz: extension expected. 1,500 MHz, unsold residual spectrum in 3,400-3,800 MHz and 26,000 MHz only if there is market interest.
Poland	Q1 2022	Q2 2022	3,400-3,800	Auction (SMRA ^a), 4 blocks of 80 MHz, capped at 80 MHz	New start delayed further due to political discussions on national security guidelines (Cyber Security Act).
Poland	Q3 2022	Q4 2022	700/2,100/26,000	Auction, details tbd	Plans for all bands still unclear due to discussions on award models, 700 MHz border coordination talks with Russia at a standstill.
Romania	H2 2022	H2 2022	700/1,500	Auction, details tbd	
Slovakia	Q2 2022	H2 2022	3,400-3,800/2,600 (TDD)	Auction (SMRA ^a), Terms of use tbd, capped at 100 MHz	Second consultation to finalize the rules ended in Q4 2021. Decision is still outstanding. Auction expected to start in Q2 2022.
Czech Republic	Q3 2023	Q1 2024	900/1,800/2,100	Extension expected	TMCZ's 900/1,800 MHz GSM license and 2,100 MHz UMTS license will expire in 2024.
United States	H1 2022	H1 2022	2,500-2,700	Auction, details tbd	Public consultation in progress.

^a SMRA: simultaneous (electronic) multi-round auction with ascending, parallel bids for all available frequency bands.

Development of business in the Group

Statement of the Board of Management on business development in 2021

Bonn, February 15, 2022

We continued our growth course in all segments in 2021, such that we can look back on a successful financial year. Measured in terms of customer numbers, we further consolidated our position on the U.S. mobile market, adding 6.7 million customers in the reporting year. We have reached key milestones to secure control of T-Mobile US in the long term and, on this side of the Atlantic too, significant transactions have been closed and reorganizations completed. The synergies arising from the business combination of T-Mobile US and Sprint are impacting on our results faster and with greater effect than previously expected. In Europe, our integrated products are enjoying strong demand and we are making good progress in the network build-out, especially in 5G and optical fiber. In our home market, too, we have received great recognition for our performance in terms of service, network build-out, and our integrated products. It is and remains important to us to fulfill our responsibility to society at all times and in all places – especially during the coronavirus pandemic or the catastrophic flooding in summer 2021.

We also kept an eye on our ambitious climate goals. Since 2021, our customers have been surfing on Deutsche Telekom's green network, and our own energy consumption for all Group units has been covered entirely by electricity from renewable energy sources. To underscore the major significance of our sustainability targets in the Group, a performance management and incentivization system was introduced in 2021 using annual variable remuneration for members of the Board of Management.

We achieved our most important corporate targets in 2021 and even exceeded some of them, as can be seen from our key financial figures and our customer development. We raised our full-year guidance for 2021 three times in the course of the year, despite the coronavirus pandemic. Net revenue increased by 7.7 % to EUR 108.8 billion. Service revenue was up 6.5 % to EUR 84.1 billion. This is the result of the high popularity of our mobile and broadband offerings in particular. In the U.S. business, T-Mobile US once again recorded strong customer additions, especially in postpaid business, which is also reflected in revenue development. In Systems Solutions, however, order entry fell short of expectations. Declines in both traditional IT infrastructure business and SAP business were only partially offset by the strong upward trends in our growth areas.

Adjusted EBITDA AL grew by 6.6 % to EUR 37.3 billion. The main reason for this increase is a sound operational development, driven by revenue growth and further enhanced cost efficiency. Excluding the effect from the planned withdrawal from the terminal equipment lease model in the United States, adjusted core EBITDA AL increased by 10.1 % year-on-year. EBIT increased by 2.0 % to EUR 13.1 billion, despite significant negative special factors that affected it. These mainly related to acquisition and integration costs as well as restructuring costs to realize cost efficiencies from the business combination with Sprint. By contrast, lower expenses for staff restructuring and a gain on deconsolidation from the sale of the Dutch cell tower business had a positive effect. Depreciation, amortization, and impairment losses were higher than in the prior year, due in particular to the first-time inclusion of Sprint for the full year.

Loss from financial activities increased by EUR 1.0 billion year-on-year due in part to negative remeasurement effects in connection with derivatives. Net profit remained stable at EUR 4.2 billion. Adjusted net profit increased by 2.6 % to EUR 5.9 billion. Adjusted earnings per share increased to EUR 1.22.

ROCE decreased year-on-year to 4.1 %, largely due to higher integration costs in connection with the business combination of T-Mobile US and Sprint. Furthermore, the prior-year figure had been positively impacted by the reversal of impairment losses previously recognized for spectrum licenses at T-Mobile US.

Net debt increased from EUR 120.2 billion to EUR 132.1 billion. This is primarily attributable to the key investments in spectrum licenses, mainly in connection with the C-band auction in the United States segment. But net debt was also increased as a result of additions of lease liabilities, the acquisition of Shentel, and currency transaction effects.

The trends in the industry, in particular on the European telecommunications markets, remain challenging due to ongoing competitive pressure and strict regulatory requirements. In order to succeed in the future, we continue to invest heavily in the key to our success: our network infrastructure and our technology. In 2021, we made Group-wide investments (before spectrum) of EUR 18.0 billion, with a focus on the parallel build-out of our broadband and mobile infrastructure (optical fiber and 5G). Including the spectrum payments, this figure was EUR 26.4 billion in the reporting year. And, as announced, we are increasing our investment volume again. Despite this, we are still a solid investment-grade company with access to the international capital markets. The rating agency Moody's even upgraded our rating outlook in June 2021. Our free cash flow AL (before dividend payments and spectrum investment) increased by 40.1 % to EUR 8.8 billion.

At our [Capital Markets Day](#) in May 2021, we presented the financial strategy and our targets through 2024, which anticipate constant EPS growth. Through 2024, we want to further accelerate our forecast for growth from the past few years. We pursue a sustainable dividend policy for our shareholders. We intend to pay a dividend of 40 to 60 % of adjusted earnings per share. And we are sticking by a minimum dividend of EUR 0.60 per share: For the 2021 financial year, we will propose a dividend of EUR 0.64 per dividend-bearing share. This year, the dividend will once again be paid out without any deduction of capital gains tax, and we expect this to be also the case in the years to come. After a restrained 2020, the stock markets proved rather strong in 2021, despite the ongoing pandemic situation. The T-Share closed 2021 up 9.0 %. On a total return basis, it was up by as much as 12.9 %.

We aim to transform ourselves from our position as Leading European Telco into the Leading Digital Telco. Our goal is clear: We want to align ourselves long-term with the needs of our customers and systematically transform ourselves into a simple, digital, and in every way agile company to hold our own against new competitors and continue our growth course. Building and operating the best convergent networks remains at the core of our strategy and is an important driver for our growth areas. We realize our aim to lead in technology by investing not only in network infrastructure, but also in establishing cloud-based service platforms. We leverage our international footprint to generate synergies across the Group and to carry weight alongside the global tech giants. We apply our expertise – the Magenta Advantage – to develop new business models.

Business combination of T-Mobile US and Sprint

Sprint has been included in Deutsche Telekom's consolidated financial statements as a fully consolidated subsidiary since April 1, 2020. As a result of the change in the composition of the Group during the year, the remeasured assets and liabilities were recognized as of this date, and all income and expenses generated from the date of first-time consolidation are included in Deutsche Telekom's consolidated income statement. This continues to impact on the comparability of the presentation of the results of operations and financial position over time.

Reassignment of the Internet of Things (IoT) growth area

Effective January 1, 2021, Deutsche Telekom reassigned the responsibility for business and profit and loss for Deutsche Telekom IoT GmbH from the Systems Solutions operating segment to the business customer unit in the Germany operating segment. Prior-year comparatives in both of the segments (development of operations, customer development, headcount development, and order entry) were adjusted retrospectively.

For further information on the reassignment of the IoT business, please refer to the sections "[Group organization](#)" and "[Segment reporting](#)" in the notes to the consolidated financial statements.

Comparison of the Group's expectations with actual figures

In the 2020 Annual Report, we outlined expectations for the 2021 financial year for our financial and non-financial key performance indicators anchored in our management system. The following tables summarize the pro forma figures for 2020, the results expected for the reporting year, and the actual results achieved in 2021. The performance indicators that we also forecast in the 2020 Annual Report and their development are presented in the individual sections.

Comparison of the expected financial key performance indicators with actual figures

		Pro forma figures for 2020	Expectations for 2021	Results in 2021
ROCE	%	4.6	decrease	4.1
Net revenue	billions of €	106.7	slight increase	108.8
Service revenue	billions of €	83.3	increase	84.1
Profit (loss) from operations (EBIT)	billions of €	13.5	slight decrease	13.1
EBITDA AL (adjusted for special factors) ^a	billions of €	37.6	around 38	37.3
Earnings per share (adjusted for special factors)	€	1.20	slight decrease	1.22
Free cash flow AL (before dividend payments and spectrum investment) ^{a, b}	billions of €	6.6	around 8.5	8.8
Cash capex (before spectrum investment)	billions of €	(17.8)	(18.4)	(18.0)
Rating (Standard & Poor's, Fitch)		BBB, BBB+	from A- to BBB	BBB, BBB+
Rating (Moody's)		Baa1	from A3 to Baa2	Baa1

^a Contrary to the forecasts published in the 2020 combined management report (2020 Annual Report), we adjusted the guidance for 2021 for EBITDA AL (adjusted for special factors) and free cash flow AL (before dividend payments and spectrum investment) during the course of the year (Interim Group Reports as of March 31, 2021, June 30, 2021, and September 30, 2021).

^b Before interest payments for zero-coupon bonds and before termination of forward-payer swaps at T-Mobile US (both in 2020).

The comparison shown in the table of the pro forma figures for 2020 and the expectations formulated on this basis for 2021 with the results actually generated for 2021 is not like-for-like, i.e., these figures are not based on comparable exchange rates. The results generated on a like-for-like basis are set out below.

Our business performance was once again characterized by positive growth rates for our key performance indicators. We met or significantly exceeded our expectations. In organic terms, i.e., adjusted for exchange rate effects and changes in the composition of the Group, we recorded not just moderate growth, but a substantial increase of 4.5 % in revenue, with significant organic growth of 3.5 % in service revenue as well. Adjusted for exchange rate effects and changes in the composition of the Group, adjusted EBITDA AL increased by 1.9 %, despite the gradual withdrawal from the terminal equipment lease business model in the United States. With negative exchange rate effects being taken into account, adjusted EBITDA AL was well ahead of our latest guidance of around EUR 38 billion. In line with our strong operational performance, adjusted earnings per share exceeded our expectation, at EUR 1.22. At EUR 8.8 billion, free cash flow AL (before dividend payments and spectrum investment) clearly exceeded our latest guidance of around EUR 8.5 billion, even without negative exchange rates being taken into account. For cash capex (before spectrum investment), we met our guidance on a like-for-like basis with the prior year. ROCE decreased, as expected, due to the integration costs arising in connection with the business combination of T-Mobile US and Sprint.

Comparison of the expected non-financial key performance indicators with actual figures

		Pro forma figures for 2020	Expectations for 2021	Results in 2021
Customer satisfaction (TRI*M index)		72.2	slight increase	73.4
Employee satisfaction (engagement score) ^a		4.0	stable trend	77
Fixed-network and mobile customers				
Germany				
Mobile customers	millions	48.5	increase	53.2
Fixed-network lines	millions	17.6	stable trend	17.5
Retail broadband lines	millions	14.1	increase	14.5
United States				
Postpaid customers	millions	81.4	increase	87.7
Prepaid customers	millions	20.7	increase	21.1
Europe				
Mobile customers	millions	45.6	slight increase	45.8
Fixed-network lines	millions	9.1	stable trend	7.8
Broadband customers	millions	7.0	increase	6.4
Systems Solutions				
Order entry	billions of €	4.6	stable trend	4.2

^a Engagement score as per the 2021 employee survey. In 2021, we changed from a scale of 1 to 5 for the engagement score (previously the "commitment index") to a scale of 0 to 100.

We are also well on track with our non-financial performance indicators. In the Germany and United States operating segments, our customer numbers developed in line with expectations or even exceeded them. In our home market, we recorded, as expected, customer additions of around 5 million especially in mobile communications. In the United States operating segment too, we once again recorded strong growth in postpaid customers: The number of customers increased by 5.5 million, thereby exceeding our already high expectations. Our Europe operating segment recorded a stable, or in some cases a declining trend in customer numbers compared with the guidance level. This is mainly due to the sale of Telekom Romania Communications as of September 30, 2021, which was not yet taken into account in the guidance for 2021 stated in the 2020 Annual Report. Order entry in our Systems Solutions operating segment fell short of our expectations. This development was mainly due to a decline in both traditional IT infrastructure business and SAP business, which was only partially offset by the strong upward trends in our growth areas.

Employee satisfaction held steady at the high level of 77 points in 2021, after revising the measurement model on a like-for-like basis. At the end of the reporting year, customer satisfaction came in at 73.4 points compared with an adjusted baseline figure of 72.7 points at the start of the year. Following changes to the revenue shares contributed by each country and in order to create an equivalent basis for comparing the Group's expectations with actual figures, we recalculated the baseline figure for 2021 on the basis of the new structures these changes entailed. The new baseline thus diverges from the figure of 72.2 reported as of December 31, 2020. The Germany and Systems Solutions operating segments contributed to the positive development with improvements in customer loyalty. Our aim for the next few years is to further improve customer satisfaction for Germany and Europe; in Systems Solutions, we want to stabilize the already high level.

For further information on the trends in our main financial and non-financial performance indicators, please refer to the relevant passages in this section as well as in the section "Development of business in the operating segments."

Results of operations of the Group

Net revenue, service revenue

In 2021, we generated net revenue of EUR 108.8 billion, which was 7.7 % or EUR 7.8 billion up on the prior-year level. In organic terms, i.e., assuming a comparable composition of the Group in the prior year and excluding exchange rate effects, revenue developed positively, with growth of EUR 4.7 billion or 4.5 %. For a comparison on an organic basis, net revenue in the prior-year period was raised by EUR 5.5 billion to account for effects of changes in the composition of the Group – primarily from the acquisition of Sprint, the disposal of Sprint's prepaid business to DISH and the acquisition of Shentel in the United States operating segment – and net exchange rate effects of EUR -2.3 billion were taken into account. Service revenue in the Group increased by EUR 5.2 billion or 6.5 % year-on-year to EUR 84.1 billion.

Contribution of the segments to net revenue

millions of €

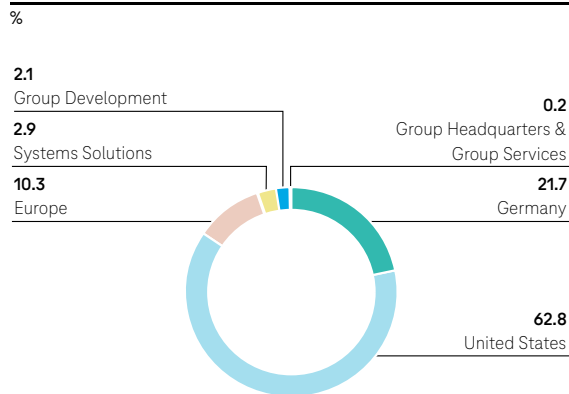
	2021	2020	Change	Change %	2019
Net revenue	108,794	100,999	7,795	7.7	80,531
Of which: service revenue ^a	84,057	78,893	5,164	6.5	n.a.
Germany	24,164	23,790	374	1.6	23,750
United States	68,359	61,208	7,151	11.7	40,420
Europe	11,384	11,335	49	0.4	11,587
Systems Solutions	4,019	4,159	(140)	(3.4)	4,411
Group Development	3,165	2,883	282	9.8	2,797
Group Headquarters & Group Services	2,515	2,556	(41)	(1.6)	2,627
Intersegment revenue	(4,812)	(4,932)	120	2.4	(5,061)

^a The definition of "service revenue" was not applied consistently Group-wide for the years prior to 2020.

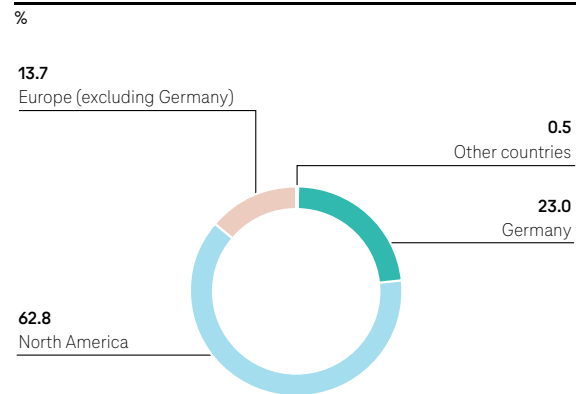
Our United States operating segment in particular contributed to the positive revenue trend with an increase of 11.7 %. In organic terms, i.e., in particular assuming the inclusion of Sprint for the full year in the prior year and constant exchange rates, revenue increased by 5.8 % year-on-year due to both higher service revenues and higher terminal equipment revenues. Revenue in our home market of Germany was up on the prior-year level, increasing by 1.6 %. This was mainly driven by an increase in revenue in the fixed-network core business, primarily due to broadband business, and in mobile service revenues. Our Europe operating segment recorded revenue growth of 0.4 %. In organic terms, i.e., in particular adjusted for the sale of the Romanian fixed-network business and assuming constant exchange rates, revenue increased by 2.4 %. Organic growth was mainly driven by the strong performance of the mobile business, especially the increase in mobile service revenues with higher margins, slight increases in roaming and visitor revenues, and higher revenues from terminal equipment sales. Fixed-network service revenues developed slightly better. Revenue in our Systems Solutions operating segment was down 3.4 % year-on-year. This decrease was mainly driven by the expected decline in traditional IT infrastructure business, due in part to deliberate business decisions such as the reduction in end-user services. By contrast, our growth areas grew significantly, especially public cloud, digital solutions, and road charging. Revenue in our Group Development operating segment increased by 9.8 %. In organic terms, i.e., adjusted for the sale of the Dutch cell tower business, the transfer of the Austrian cell tower business, as well as the acquisition of the Dutch MVNO and SIM provider Simpel, revenue increased by 4.6 %. This revenue increase resulted from the operational and structural growth of our two business units T-Mobile Netherlands and GD Towers, which includes DFMG and the Austrian cell tower business.

For further information on revenue development in our segments, please refer to the section "[Development of business in the operating segments.](#)"

Contribution of the segments to net revenue^a



Breakdown of revenue by region



^a For further information, please refer to Note 36 "Segment reporting" in the notes to the consolidated financial statements.

At 62.8 %, our United States operating segment provided by far the largest contribution to net revenue of the Group and in particular thanks to the acquisition of Sprint was up 2.2 percentage points above the level in the prior year. In this connection, the proportion of net revenue generated internationally also increased significantly from 75.5 % to 77.0 %.

Adjusted EBITDA AL, EBITDA AL

Adjusted EBITDA AL increased year-on-year by EUR 2.3 billion or 6.6 % to EUR 37.3 billion in 2021. In organic terms, adjusted EBITDA AL increased by EUR 0.7 billion or 1.9 %. For a comparison on an organic basis, adjusted EBITDA AL in the prior-year period was raised by EUR 2.5 billion to account for effects of changes in the composition of the Group – primarily from the acquisition of Sprint and the disposal of Sprint's prepaid business to DISH in the United States operating segment – and net exchange rate effects of EUR -0.9 billion were taken into account. Adjusted core EBITDA AL, which is distinguished by excluding revenue from terminal equipment leases in the United States from adjusted EBITDA AL, thereby presenting operational development undistorted by the withdrawal from the terminal equipment lease business, increased by EUR 3.2 billion or 10.1 % to EUR 34.5 billion.

Contribution of the segments to adjusted Group EBITDA AL

	Proportion of adjusted Group EBITDA AL		2020	Proportion of adjusted Group EBITDA AL	Change	Change %	2019
	2021	%					
EBITDA AL (adjusted for special factors) in the Group	37,330	100.0	35,017	100.0	2,313	6.6	24,731
Germany	9,520	25.5	9,188	26.2	332	3.6	9,026
United States	22,697	60.8	20,997	60.0	1,700	8.1	11,134
Europe	4,007	10.7	3,910	11.2	97	2.5	3,910
Systems Solutions	286	0.8	279	0.8	7	2.5	307
Group Development	1,307	3.5	1,101	3.1	206	18.7	1,033
Group Headquarters & Group Services	(440)	(1.2)	(429)	(1.2)	(11)	(2.6)	(650)
Reconciliation	(47)	(0.1)	(28)	(0.1)	(19)	(67.9)	(29)

All operating segments made a positive contribution to this development. Adjusted EBITDA AL of our United States operating segment increased significantly as a result of the business combination of T-Mobile US and Sprint, among other factors. In organic terms, i.e., adjusted for the effect of the acquisition of Sprint and assuming constant exchange rates, adjusted EBITDA AL stood at the prior-year level. The aforementioned higher service and equipment revenues had a positive effect. This was offset by negative effects of the planned withdrawal from the terminal equipment lease model in the United States and higher operational expenses – primarily in connection with the acquisition of Sprint. Adjusted core EBITDA AL, i.e., the earnings measure undistorted by the withdrawal from the terminal equipment lease business, increased by EUR 2.5 billion or 14.7 % to EUR 19.9 billion. Our Germany operating segment contributed to the increase thanks to high-value revenue growth and improved cost efficiency with 3.6 % higher adjusted EBITDA AL. Adjusted EBITDA AL in our Europe operating segment increased by 2.5 %. In organic terms, i.e., adjusted for the sale of the Romanian fixed-network business and the transfer of the Austrian cell tower business, and assuming constant exchange rates, adjusted EBITDA AL increased by 5.4 %. In addition to the positive revenue effects, savings in indirect costs also contributed to this development. Adjusted EBITDA AL in our Systems Solutions operating segment also increased by 2.7 %. Efficiency effects from our transformation program and effects from increased revenue in our growth areas exceeded the decline in earnings in the traditional IT infrastructure business. Adjusted EBITDA AL in our Group Development operating segment increased by 18.7 % year-on-year; in organic terms, it grew by 13.5 %. This growth was attributable to the positive revenue trend at T-Mobile Netherlands, the acquisition of Simpel, and efficient cost management at T-Mobile Netherlands. The GD Towers business posted consistent growth on the back of rising volumes and was further strengthened by the transfer of the Austrian cell tower business.

EBITDA AL increased by EUR 0.7 billion or 2.2 % year-on-year to EUR 33.9 billion, with special factors changing from EUR -1.8 billion to EUR -3.4 billion. Expenses incurred in connection with staff-related measures decreased from EUR 1.3 billion in the prior-year period by EUR 0.6 billion to EUR 0.7 billion. Part of this decrease was attributable to the reversal of other provisions for personnel costs, which had been recognized by OTE in 2010 and 2011 in connection with an additional payment to the Greek social insurance fund, as a result of proceedings concluded in September 2021. Net expenses of EUR 2.5 billion were recorded as special factors under effects of deconsolidations, disposals, and acquisitions. EUR 2.6 billion of the expenses mainly related to acquisition and integration costs as well as restructuring costs to realize cost efficiencies from the business combination of T-Mobile US and Sprint. In this context, EUR 0.8 billion related to a reduction in the useful life of leased network technology for cell sites in the United States. In the prior year, net expenses of EUR 1.7 billion had been recorded as special factors under effects of deconsolidations, disposals, and acquisitions. EUR 1.5 billion of these also mainly related to the business combination with Sprint. In addition, in the Group Development operating segment, EBITDA AL was influenced by net positive special factors of EUR 0.2 billion, which related to the gain on deconsolidation due to the sale of the Dutch cell tower business. Reversals of impairment losses of EUR 1.7 billion had been recognized in the prior year and mainly related to the partial reversal of impairment losses on spectrum licenses at T-Mobile US, which increased the carrying amount. Other special factors affecting EBITDA AL in the prior year amounted to EUR 0.5 billion and mainly related to expenses incurred in the United States operating segment in connection with the coronavirus pandemic.

For further information on the development of (adjusted) EBITDA AL in the segments, please refer to the section [“Development of business in the operating segments.”](#)

A reconciliation of the definition of EBITDA with the “after leases” indicator (EBITDA AL) can be found in the following table:

millions of €					
	2021	2020	Change	Change %	2019
EBITDA	40,539	38,633	1,906	4.9	27,120
Depreciation of right-of-use assets ^a	(5,547)	(4,530)	(1,017)	(22.5)	(3,181)
Interest expenses on recognized lease liabilities ^a	(1,099)	(925)	(174)	(18.8)	(796)
EBITDA AL	33,893	33,178	715	2.2	23,143
Special factors affecting EBITDA AL	(3,437)	(1,839)	(1,598)	(86.9)	(1,589)
EBITDA AL (adjusted for special factors)	37,330	35,017	2,313	6.6	24,731

^a Excluding finance leases at T-Mobile US.

EBIT

Group EBIT increased from EUR 12.8 billion to EUR 13.1 billion, up EUR 0.3 billion or 2.0 % against the prior year. This increase is partly due to the effects described under adjusted EBITDA AL and EBITDA AL. At EUR 27.5 billion, depreciation, amortization and impairment losses were EUR 1.7 billion higher than in the prior year. This increase is attributable, among other factors, to the first-time inclusion of Sprint for the full year. Furthermore, in the United States operating segment, a reduction in the useful life of leased network technology for cell sites following the business combination of T-Mobile US and Sprint increased depreciation of the corresponding right-of-use assets by EUR 0.8 billion. Impairment losses decreased from EUR 0.8 billion to EUR 0.3 billion. Of the prior-year figure, a total of EUR 0.5 billion had related to the Systems Solutions operating segment and the Group Headquarters & Group Services segment, and EUR 0.2 billion to the Europe operating segment. Of the impairment losses recognized in the reporting year, EUR 0.2 billion related to the Systems Solutions operating segment and the Group Headquarters & Group Services segment. This was a consequence of several factors, including the ad hoc impairment testing carried out in the Systems Solutions cash-generating unit in the prior year. In addition, despite the marginal improvement in the business outlook, the increase in the cost of capital in the reporting year prompted further impairment losses to be recognized on non-current assets in the Systems Solutions cash-generating unit at the end of 2021.

For further information on depreciation, amortization and impairment losses, please refer to Note 27 "Depreciation, amortization and impairment losses" in the notes to the consolidated financial statements.

Profit before income taxes

Profit before income taxes decreased by EUR 0.8 billion or 8.7 % to EUR 7.9 billion. Loss from financial activities increased from EUR 4.1 billion to EUR 5.1 billion, with finance costs increasing by EUR 0.4 billion to EUR 4.6 billion, mainly due to the financial liabilities assumed in connection with the acquisition of Sprint and the related restructuring and increase in financing. In this connection, between April 2020 and the end of 2021, existing T-Mobile US bonds were repaid prematurely and new bonds were issued in their place at more favorable terms and conditions. Other financial income/expense decreased by EUR 0.5 billion year-on-year, resulting in other financial expense of EUR 0.4 billion. On the one hand, gains/losses from financial instruments decreased by EUR 1.2 billion to a loss of EUR 0.6 billion, due in part to negative measurement effects resulting, among other factors, from embedded derivatives at T-Mobile US and from a forward transaction to hedge the price of acquiring T-Mobile US shares in the future. By contrast, net positive measurement effects resulted from the amortization and subsequent measurement of the stock options received from SoftBank in June 2020 to purchase shares in T-Mobile US. On the other hand, the interest component from the measurement of provisions and liabilities increased, in particular in the Group Headquarters & Group Services segment, by EUR 0.7 billion.

Net profit, adjusted net profit

At EUR 4.2 billion, net profit remained at the prior-year level. Tax expense decreased by EUR 0.1 billion to EUR 1.8 billion. Profit attributable to non-controlling interests decreased from EUR 2.6 billion to EUR 1.9 billion. This mainly relates to our United States operating segment. Excluding special factors, which had a negative overall effect of EUR 1.7 billion on net profit, adjusted net profit amounted to EUR 5.9 billion, up 2.6 % against the prior year.

The following table presents the reconciliation of net profit to the figures adjusted for special factors:

millions of €	2021	2020	Change	Change %	2019
Net profit (loss)	4,176	4,158	18	0.4	3,867
Special factors affecting EBITDA AL	(3,437)	(1,839)	(1,598)	(86.9)	(1,589)
Staff-related measures	(717)	(1,268)	551	43.5	(913)
Non-staff-related restructuring	(22)	(32)	10	31.2	(81)
Effects of deconsolidations, disposals and acquisitions	(2,542)	(1,655)	(887)	(53.6)	(462)
Reversals of impairment losses	0	1,655	(1,655)	(100.0)	0
Other	(156)	(539)	383	71.1	(132)
Special factors affecting net profit	1,751	283	1,468	n.a.	510
Impairment losses	(258)	(656)	398	60.7	(368)
Profit (loss) from financial activities	(139)	(25)	(114)	n.a.	(4)
Income taxes	1,064	730	334	45.8	461
Non-controlling interests	1,084	234	850	n.a.	421
Special factors	(1,686)	(1,557)	(129)	(8.3)	(1,081)
Net profit (loss) (adjusted for special factors)	5,862	5,715	147	2.6	4,948

Earnings per share, adjusted earnings per share

Earnings per share is calculated as net profit divided by the adjusted weighted average number of ordinary shares outstanding, which totaled 4,813 million as of December 31, 2021. This resulted in earnings per share of EUR 0.87, compared with EUR 0.88 in the prior year. Adjusted earnings per share, adjusted for special factors affecting net profit, amounted to EUR 1.22 compared with EUR 1.20 in the prior year.

Special factors

The following table presents a reconciliation of EBITDA AL, EBIT, and net profit to the respective figures adjusted for special factors:

millions of €						
	EBITDA AL 2021	EBIT 2021	EBITDA AL 2020	EBIT 2020	EBITDA AL 2019	EBIT 2019
EBITDA AL/EBIT	33,893	13,057	33,178	12,804	23,143	9,457
Germany	(588)	(588)	(752)	(805)	(458)	(458)
Staff-related measures	(471)	(471)	(676)	(676)	(423)	(423)
Non-staff-related restructuring	(12)	(12)	(18)	(18)	(38)	(38)
Effects of deconsolidations, disposals and acquisitions	(3)	(3)	(18)	(18)	0	0
Impairment losses	0	0	0	(52)	0	0
Other	(102)	(102)	(40)	(40)	3	3
United States	(2,637)	(2,692)	(370)	(370)	(544)	(544)
Staff-related measures	(16)	(16)	(32)	(32)	(17)	(17)
Non-staff-related restructuring	0	0	0	0	0	0
Effects of deconsolidations, disposals and acquisitions	(2,621)	(2,618)	(1,522)	(1,522)	(527)	(527)
Impairment losses	0	(58)	0	0	0	0
Reversals of impairment losses	0	0	1,604	1,604	0	0
Other	0	0	(420)	(420)	0	0
Europe	11	11	(188)	(374)	(141)	(461)
Staff-related measures	83	83	(181)	(181)	(111)	(111)
Non-staff-related restructuring	(1)	(1)	0	0	0	0
Effects of deconsolidations, disposals and acquisitions	(39)	(39)	(6)	(6)	(23)	(23)
Impairment losses	0	0	0	(186)	0	(320)
Reversals of impairment losses	0	0	50	50	0	0
Other	(32)	(32)	(51)	(51)	(8)	(8)
Systems Solutions	(213)	(393)	(209)	(582)	(304)	(332)
Staff-related measures	(148)	(148)	(167)	(167)	(149)	(149)
Non-staff-related restructuring	(3)	(3)	(3)	(3)	(4)	(4)
Effects of deconsolidations, disposals and acquisitions	(39)	(39)	0	0	(11)	(11)
Impairment losses	0	(180)	0	(373)	0	(27)
Other	(24)	(24)	(39)	(39)	(141)	(141)
Group Development	173	173	(43)	(43)	97	97
Staff-related measures	(8)	(8)	(11)	(11)	(19)	(19)
Non-staff-related restructuring	0	0	0	0	(1)	(1)
Effects of deconsolidations, disposals and acquisitions	184	184	(30)	(30)	111	111
Impairment losses	0	0	0	0	0	0
Other	(3)	(3)	(2)	(2)	4	4
Group Headquarters & Group Services	(182)	(203)	(277)	(322)	(237)	(237)
Staff-related measures	(157)	(157)	(201)	(201)	(195)	(195)
Non-staff-related restructuring	(7)	(7)	(11)	(11)	(38)	(38)
Effects of deconsolidations, disposals and acquisitions	(23)	(23)	(78)	(78)	(13)	(13)
Impairment losses	0	(21)	0	(44)	0	0
Other	5	5	14	14	9	9
Group	(3,437)	(3,692)	(1,839)	(2,496)	(1,589)	(1,959)
Staff-related measures	(717)	(717)	(1,268)	(1,268)	(913)	(913)
Non-staff-related restructuring	(22)	(22)	(32)	(32)	(81)	(81)
Effects of deconsolidations, disposals and acquisitions	(2,542)	(2,538)	(1,655)	(1,655)	(462)	(462)
Impairment losses	0	(258)	0	(656)	0	(370)
Reversals of impairment losses	0	0	1,655	1,655	0	0
Other	(156)	(156)	(539)	(539)	(132)	(132)

millions of €						
	EBITDA AL 2021	EBIT 2021	EBITDA AL 2020	EBIT 2020	EBITDA AL 2019	EBIT 2019
EBITDA AL/EBIT (adjusted for special factors)	37,330	16,749	35,017	15,300	24,731	11,416
Profit (loss) from financial activities (adjusted for special factors)		(4,998)		(4,103)		(2,192)
Profit (loss) before income taxes (adjusted for special factors)		11,752		11,197		9,223
Income taxes (adjusted for special factors)		(2,879)		(2,659)		(2,454)
Profit (loss) (adjusted for special factors)		8,873		8,538		6,770
Profit (loss) (adjusted for special factors) attributable to						
Owners of the parent (net profit (loss)) (adjusted for special factors)		5,862		5,715		4,948
Non-controlling interests (adjusted for special factors)		3,011		2,823		1,822

Net assets of the Group

Condensed consolidated statement of financial position

millions of €					
	Share of total assets/ liabilities and shareholders' equity				
	Dec. 31, 2021	%	Dec. 31, 2020	Change	Dec. 31, 2019
Assets					
Cash and cash equivalents	7,617	2.7	12,939	(5,322)	5,393
Trade receivables	15,299	5.4	13,523	1,776	10,846
Intangible assets	132,647	47.1	118,066	14,581	68,202
Property, plant and equipment	61,770	21.9	60,975	795	49,548
Right-of-use assets	30,777	10.9	30,302	475	17,998
Current and non-current financial assets	8,888	3.2	9,640	(752)	7,250
Deferred tax assets	7,906	2.8	7,972	(66)	2,704
Non-current assets and disposal groups held for sale	4,856	1.7	1,113	3,743	97
Other assets	11,867	4.2	10,387	1,480	8,634
Total assets	281,627	100.0	264,917	16,710	170,672
Liabilities and shareholders' equity					
Current and non-current financial liabilities	111,466	39.6	107,108	4,358	66,349
Current and non-current lease liabilities	33,133	11.8	32,715	418	19,835
Trade and other payables	10,452	3.7	9,760	692	9,431
Provisions for pensions and other employee benefits	6,134	2.2	7,684	(1,550)	5,831
Current and non-current other provisions	9,463	3.4	9,033	430	6,663
Deferred tax liabilities	19,809	7.0	17,260	2,549	8,954
Liabilities directly associated with non-current assets and disposal groups held for sale	1,365	0.5	449	916	29
Other liabilities	8,336	3.0	8,358	(22)	7,349
Shareholders' equity	81,469	28.9	72,550	8,919	46,231
Total liabilities and shareholders' equity	281,627	100.0	264,917	16,710	170,672

Total assets amounted to EUR 281.6 billion as of December 31, 2021, up by EUR 16.7 billion against December 31, 2020. This increase is mainly attributable to investments in intangible assets for spectrum acquisition in the United States operating segment. Positive exchange rate effects and effects of changes in the composition of the Group, mainly from the first-time inclusion of Shentel, acquired by T-Mobile US, also increased the carrying amount. This effect was offset in part by a decline in cash and cash equivalents.

Cash and cash equivalents decreased by EUR 5.3 billion year-on-year to EUR 7.6 billion.

For further information, please refer to Note 35 "Notes to the consolidated statement of cash flows" in the notes to the consolidated financial statements.

Trade receivables increased by EUR 1.8 billion to EUR 15.3 billion. The increase was primarily driven by higher receivables under the Equipment Installment Plan and growth in customer numbers in the United States operating segment. The carrying amount also increased in the Germany and Europe operating segments due to the reporting date. Exchange rate effects, primarily from the translation from U.S. dollars into euros, also increased receivables. Lower receivables in the Group Development operating segment, primarily as a result of the reclassification of T-Mobile Netherlands' assets to non-current assets and disposal groups held for sale in connection with the agreed sale, had an offsetting effect.

Intangible assets and property, plant and equipment increased by EUR 15.4 billion to EUR 194.4 billion in total, EUR 8.4 billion of which resulted from the acquisition of mobile spectrum in the United States operating segment, primarily in connection with the conclusion of the FCC C-band auction in the United States. T-Mobile US purchased 142 licenses for around EUR 7.8 billion (USD 9.3 billion) in the auction and made initial "relocation payments" of EUR 0.2 billion to relocate incumbent licensees. Furthermore, in the Europe operating segment, licenses were acquired for a total of EUR 0.3 billion, including in the Czech Republic and Hungary. Capital expenditure to upgrade and build out the network and acquire mobile terminal equipment in our United States operating segment and in connection with the broadband/fiber-optic build-out and mobile infrastructure in the Germany and Europe operating segments also increased the carrying amount. Exchange rate effects of EUR 10.4 billion and effects of changes in the composition of the Group of EUR 1.6 billion, mainly from the first-time inclusion of Shentel, acquired by T-Mobile US, also increased the carrying amount. Depreciation, amortization and impairment losses reduced the net carrying amounts by EUR 21.3 billion in total. The reclassification of assets to non-current assets and disposal groups held for sale reduced the carrying amounts by EUR 3.1 billion. These reclassifications mainly resulted from the agreed sale of T-Mobile Netherlands and the agreed sale of the 50 % stake in GlasfaserPlus GmbH. In addition, disposals decreased the carrying amounts by EUR 1.7 billion.

For further information on the acquisition of Shentel and the agreed sale of T-Mobile Netherlands, please refer to the section "[Changes in the composition of the Group and other transactions](#)" in the consolidated financial statements.

Compared with December 31, 2020, **right-of-use assets** increased by EUR 0.5 billion to EUR 30.8 billion. The carrying amount was increased by additions of EUR 5.5 billion, including as a result of a sale and leaseback transaction concluded after the combination of the cell tower business in the Netherlands and the set-up of an infrastructure fund. The carrying amount was also increased by exchange rate effects of EUR 2.1 billion, primarily from the translation of U.S. dollars into euros, and effects from changes in the composition of the Group of EUR 0.3 billion, mainly in connection with the acquisition of Shentel. The carrying amount was decreased by depreciation, amortization and impairment losses of EUR 6.2 billion. This included a EUR 0.8 billion increase in depreciation and amortization due to a reduction in the useful life of leased network technology for cell sites in the United States operating segment following the business combination of T-Mobile US and Sprint. The reclassification of T-Mobile Netherlands's assets to non-current assets and disposal groups held for sale in the amount of EUR 0.5 billion and disposals of EUR 0.4 billion also reduced the carrying amount. In addition, reclassifications of lease assets at the end of the contractual lease term to property, plant and equipment, in the United States operating segment in particular, reduced the carrying amount by EUR 0.2 billion.

Current and non-current **financial assets** decreased by EUR 0.8 billion to EUR 8.9 billion. The carrying amount of derivatives with a hedging relationship decreased by EUR 0.5 billion to EUR 1.6 billion, mainly due to the decrease in positive fair values from interest rate swaps in fair value hedges, which is primarily the result of a rise in the interest rate level. The carrying amount of derivatives without a hedging relationship decreased by a net effect of EUR 0.8 billion to EUR 1.2 billion. Taking into account the partial exercising of the stock options received from SoftBank in June 2020 to purchase shares in T-Mobile US, as well as measurement effects, the carrying amount of these stock options decreased by EUR 0.6 billion compared with December 31, 2020. In addition, the carrying amount of the derivatives without a hedging relationship decreased by EUR 0.4 billion in connection with embedded derivatives of T-Mobile US. This related in part to the premature repayment of bonds. By contrast, the carrying amount was increased by positive measurement effects of EUR 0.1 billion from energy forward agreements embedded in contracts. Receivables from grants still to be received from funding projects for the broadband build-out in Germany increased by EUR 0.1 billion year-on-year.

Non-current assets and disposal groups held for sale increased by EUR 3.7 billion compared with December 31, 2020 to EUR 4.9 billion. EUR 4.7 billion of the increase resulted from the reclassification of T-Mobile Netherlands' assets in connection with the sale agreed as of September 6, 2021 and EUR 0.1 billion from the agreement concluded on November 5, 2021 on the sale of 50 % of the shares in GlasfaserPlus. By contrast, the sale of the Dutch company T-Mobile Infra as of June 1, 2021 and of Telekom Romania Communications as of September 30, 2021 had decreasing effects on the carrying amount of EUR 0.4 billion and EUR 0.6 billion respectively.

For further information on the corporate transactions, please refer to the section "[Group organization](#)."

The increase in **other assets** of EUR 1.5 billion to EUR 11.9 billion was due in part to the increase in the carrying amount of investments accounted for using the equity method, mainly as a result of the combination of the cell tower business in the Netherlands and the set-up of an infrastructure fund. As a result of the transaction, 37.65 % of the shares in Cellnex NL with a carrying amount of EUR 0.4 billion were included in the Group Development operating segment in the consolidated financial statements using the equity method. Other assets increased by EUR 0.5 billion, in part in connection with an increase in advance payments for hardware and support services in the United States operating segment. Capitalized contract costs increased by EUR 0.4 billion due to higher levels of capitalized costs of obtaining contracts in postpaid customer business in the United States operating segment. These mainly related to sales commissions paid to employees and third-party retailers. Inventories increased by EUR 0.2 billion compared with December 31, 2020, primarily due to increased stockpiling of high-priced devices for planned marketing campaigns in the United States operating segment. Exchange rate effects also increased the carrying amount.

For further information on the combination of the cell tower business in the Netherlands and the set-up of an infrastructure fund, please refer to the section [“Group organization.”](#)

On the liabilities and shareholders' equity side, **current and non-current financial liabilities** increased by EUR 4.4 billion compared with the end of 2020 to a total of EUR 111.5 billion. Exchange rate effects, in particular from the translation of U.S. dollars into euros, raised the carrying amount by EUR 5.0 billion. T-Mobile US issued senior notes in the 2021 financial year with a total volume of USD 14.8 billion (EUR 12.5 billion) and made early repayments on bonds with a total volume of USD 5.8 billion (EUR 4.8 billion). In addition, T-Mobile US repaid bonds with a volume of USD 3.3 billion (EUR 2.8 billion) on schedule. Furthermore, AUD bonds with a volume of AUD 0.1 billion (EUR 0.1 billion) and euro bonds with a volume of EUR 0.1 billion were issued within the Group, and euro bonds with a volume of EUR 2.3 billion and U.S. dollar bonds with a volume of USD 0.6 billion (EUR 0.5 billion) were repaid. The carrying amount of liabilities to banks decreased by EUR 1.3 billion compared with December 31, 2020. Financial liabilities decreased by EUR 0.1 billion in connection with collateral received for derivative financial instruments.

Current and non-current lease liabilities increased by EUR 0.4 billion to EUR 33.1 billion compared with December 31, 2020. Exchange rate effects, in particular from the translation of U.S. dollars into euros, raised the carrying amount by EUR 2.2 billion. Effects of changes in the composition of the Group, mainly from the first-time inclusion of Shentel, acquired by T-Mobile US accounting for EUR 0.3 billion, also increased the carrying amount. This was offset in particular by an advance payment for the lease of cell sites of EUR 0.9 billion made by T-Mobile US to a U.S. cell tower company in September 2021 in connection with a change to the existing lease agreed in the reporting period and a decline of EUR 0.6 billion, due in part to the decommissioning of former Sprint cell sites and the closure of some former Sprint shops in the United States operating segment. The reclassification of the liabilities of T-Mobile Netherlands to liabilities directly associated with non-current assets and disposal groups held for sale also decreased the carrying amount.

For further information on the development of financial liabilities, please refer to Note 13 [“Financial liabilities and lease liabilities”](#) in the notes to the consolidated financial statements.

Trade and other payables increased by EUR 0.7 billion to EUR 10.5 billion, mainly due to higher liabilities to suppliers of mobile terminal equipment in the United States operating segment and exchange rate effects, in particular from the translation of U.S. dollars into euros. By contrast, liabilities in the Group Development operating segment decreased as a result of the reclassification of T-Mobile Netherlands' liabilities to liabilities directly associated with non-current assets and disposal groups held for sale.

Provisions for pensions and other employee benefits decreased by EUR 1.6 billion compared with December 31, 2020 to EUR 6.1 billion, mainly due to an increase in the share prices of plan assets and interest rate adjustments. All this resulted in an actuarial gain of EUR 1.4 billion from the remeasurement of defined benefit plans to be recognized directly in equity.

Current and non-current **other provisions** increased by EUR 0.4 billion compared with December 31, 2020 to EUR 9.5 billion, with other personnel provisions increasing by EUR 0.3 billion, which was attributable, in part, to short-term variable remuneration, phased retirement, and vacation. By contrast, the provisions recognized for the Civil Service Health Insurance Fund (Postbeamtenkrankenkasse – PBeaKK) decreased by EUR 0.1 billion, which is mainly attributable to the subsequent measurement of the present value determined using actuarial principles (interest effect). The provisions for restoration obligations increased by EUR 0.2 billion. Within provisions for termination benefits, provisions were reduced by, among other factors, the reversal of other provisions for personnel costs of EUR 0.1 billion, which had been recognized by OTE in 2010 and 2011 for an additional payment to the Greek social insurance fund, as a result of proceedings concluded in September 2021.

Liabilities directly associated with non-current assets and disposal groups held for sale increased by EUR 0.9 billion against December 31, 2020 to EUR 1.4 billion. Of this increase, EUR 1.4 billion resulted from the reclassification of T-Mobile Netherlands' liabilities in connection with the agreed sale. By contrast, the sale of the Dutch company T-Mobile Infra as of June 1, 2021 and of Telekom Romania Communications as of September 30, 2021 in particular had decreasing effects on the carrying amount of EUR 0.2 billion and EUR 0.3 billion respectively.

For further information on the corporate transactions, please refer to the section "[Group organization](#)."

Other liabilities remained at the level of December 31, 2020 of EUR 8.3 billion. Other liabilities were reduced by EUR 0.1 billion, mainly in connection with lower liabilities from early retirement arrangements for civil servants. By contrast, existing build-out obligations in connection with grants still to be received from funding projects for the broadband build-out in Germany increased other liabilities by EUR 0.1 billion. Income tax liabilities decreased by EUR 0.1 billion year-on-year, whereas contract liabilities increased by EUR 0.2 billion year-on-year.

Shareholders' equity increased from EUR 72.6 billion as of December 31, 2020 to EUR 81.5 billion. Profit of EUR 6.1 billion and other comprehensive income of EUR 6.7 billion increased shareholders' equity, as did the capital increase from share-based payment of EUR 0.5 billion. By contrast, shareholders' equity was reduced in connection with dividend payments for the 2020 financial year to Deutsche Telekom AG shareholders in the amount of EUR 2.8 billion and to other shareholders of subsidiaries in the amount of EUR 0.3 billion. The carrying amount of shareholders' equity also decreased by a net EUR 0.8 billion due to the acquisition of T-Mobile US shares by way of a capital increase against contribution in kind. As a result, Deutsche Telekom AG's stake in T-Mobile US increased by 3.6 percentage points to 46.8%. Taking into account a fair value of EUR 0.8 billion for the exercised stock options, which were recognized directly in equity as part of the consideration paid to SoftBank, the issued capital and reserves attributable to owners of the parent increased by a total of EUR 1.5 billion, while those attributable to non-controlling interests decreased by EUR 2.4 billion. As a result, the share of profit attributable to the owners of the parent increased, as did consequently earnings per share. Effects of changes in the composition of the Group – mainly due to the sale of Telekom Romania Communications in the Europe operating segment – of EUR 0.2 billion and transactions with owners of EUR 0.2 billion decreased the carrying amount.

For more information on the increase in the stake in T-Mobile US, please refer to the section "[Group organization](#)" and Note 19 "[Shareholders' equity](#)" in the notes to the consolidated financial statements.

Financial position of the Group and profitability

Finance management

Our finance management ensures our Group's ongoing solvency and hence its financial equilibrium. The fundamentals of Deutsche Telekom's finance policy are established each year by the Board of Management and overseen by the Supervisory Board. Group Treasury is responsible for implementing the finance policy and for ongoing risk management. In order to ensure we have scope for financing, we continuously monitor the development of net debt, Deutsche Telekom AG's rating, financial flexibility, and free cash flow AL.

Calculation of net debt

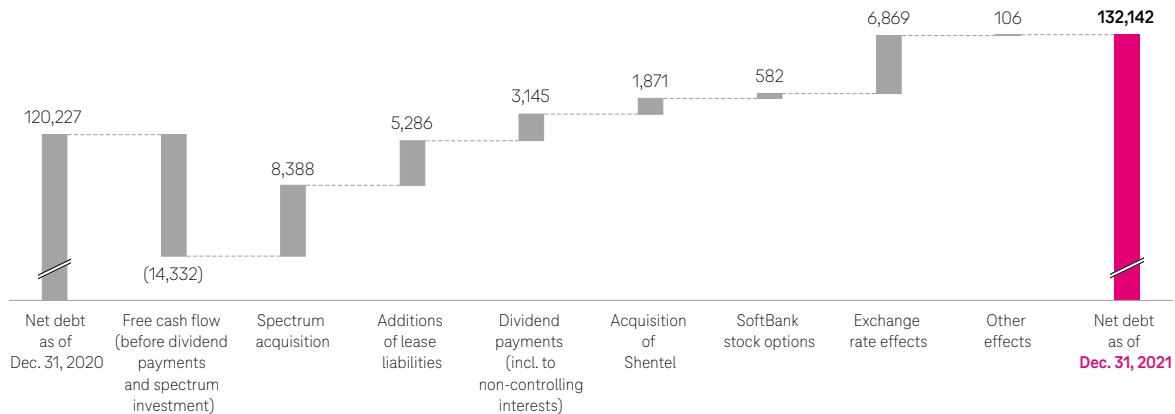
millions of €

	Dec. 31, 2021 ^a	Dec. 31, 2020	Change	Change %	Dec. 31, 2019
Bonds and other securitized liabilities	93,857	87,702	6,155	7.0	51,644
Liabilities to banks	4,003	5,257	(1,254)	(23.9)	6,516
Other financial liabilities	13,730	14,149	(419)	(3.0)	8,189
Lease liabilities	33,767	32,715	1,052	3.2	19,835
Financial liabilities and lease liabilities	145,357	139,823	5,534	4.0	86,184
Accrued interest	(1,012)	(1,035)	23	2.2	(748)
Other	(855)	(703)	(152)	(21.6)	(739)
Gross debt	143,490	138,085	5,405	3.9	84,697
Cash and cash equivalents	7,617	12,939	(5,322)	(41.1)	5,393
Derivative financial assets	2,762	4,038	(1,276)	(31.6)	2,333
Other financial assets	969	881	88	10.0	940
Net debt	132,142	120,227	11,915	9.9	76,031

^a Including the net debt of T-Mobile Netherlands included under liabilities directly associated with non-current assets and disposal groups held for sale as of December 31, 2021.

Changes in net debt

millions of €



Other effects of EUR 0.1 billion included a large number of smaller effects.

Other financing options

Off-balance-sheet financing instruments mainly relate to the sale of receivables by means of factoring. Total receivables sold as of December 31, 2021 amounted to EUR 3.3 billion (December 31, 2020: EUR 3.1 billion). This mainly relates to factoring agreements in the United States and Germany operating segments. The increase against the prior year resulted from normal fluctuations in the contractual sales volumes executed. The agreements are used in particular for active receivables management.

In the reporting year, we did not choose any financing options (2020: options chosen totaling EUR 0.2 billion) under which payments for trade payables from operating and investing activities became due at a later point by involving banks in the process and which upon payment are shown under net cash used in/from financing activities. As a result, we show these payables under financial liabilities in the statement of financial position.

The rating of Deutsche Telekom AG

	Standard & Poor's	Moody's	Fitch
Long-term rating / outlook			
Dec. 31, 2019	BBB+ / CreditWatch negative	Baa1 / negative	BBB+ / stable
Dec. 31, 2020	BBB / stable	Baa1 / negative	BBB+ / stable
Dec. 31, 2021	BBB / stable	Baa1 / stable	BBB+ / stable
Short-term rating	A-2	P-2	F2

Rating agency Standard & Poor's downgraded Deutsche Telekom AG's rating from BBB+ to BBB with a stable outlook on completion of the business combination of T-Mobile US and Sprint as of April 1, 2020. In June 2021 the rating agency Moody's upgraded the rating outlook for Deutsche Telekom AG. The Moody's rating is now Baa1 with a stable outlook. We are therefore still a solid investment-grade company with access to the international capital markets.

Financial flexibility

	2021	2020	2019
Relative debt^a			
Net debt	3.06x	2.78x	2.65x
EBITDA (adjusted for special factors)			
Equity ratio	28.9	27.4	27.1

^a Relative debt is calculated on a quarterly basis and the calculation of the figure for 2020 includes as an input for the first quarter of 2020 historic pro forma figures for Sprint, which was included in the United States operating segment.

To ensure financial flexibility, we primarily use the KPI "relative debt." This is a core component of our finance strategy and an important performance indicator for investors, analysts, and rating agencies. At 3.06x, we have deviated from the target range of 2.25x to 2.75x in the reporting year, as expected, on account of the business combination of T-Mobile US and Sprint. We expect to be back in the target range by the end of 2024.

Calculation of free cash flow AL

millions of €	2021	2020	Change	Change %	2019
Net cash from operating activities	32,171	23,743	8,428	35.5	23,074
Interest payments for zero-coupon bonds	0	1,600	(1,600)	(100.0)	0
Termination of forward-payer swaps at T-Mobile US	0	2,158	(2,158)	(100.0)	0
Net cash from operating activities^a	32,171	27,501	4,670	17.0	23,074
Cash capex	(26,366)	(18,694)	(7,672)	(41.0)	(14,357)
Spectrum investment	8,388	1,714	6,674	n.a.	1,239
Cash capex (before spectrum investment)	(17,978)	(16,980)	(998)	(5.9)	(13,118)
Proceeds from the disposal of intangible assets (excluding goodwill) and property, plant and equipment	139	236	(97)	(41.1)	176
Free cash flow (before dividend payments and spectrum investment)^a	14,332	10,756	3,576	33.2	10,133
Principal portion of repayment of lease liabilities ^b	(5,521)	(4,468)	(1,053)	(23.6)	(3,120)
Free cash flow AL (before dividend payments and spectrum investment)^a	8,810	6,288	2,522	40.1	7,013

^a Before interest payments for zero-coupon bonds and before termination of forward-payer swaps at T-Mobile US (both in 2020).

^b Excluding finance leases at T-Mobile US.

Free cash flow AL (before dividend payments and spectrum investment) increased by EUR 2.5 billion year-on-year to EUR 8.8 billion. The following effects impacted on this development:

Net cash from operating activities increased by EUR 4.7 billion. The sustained strong performance of the operating segments, especially the United States, including Sprint, had an increasing effect on net cash from operating activities. A net increase of EUR 0.7 billion overall in interest payments, mainly as a result of the financial liabilities assumed and the restructuring carried out in connection with the acquisition of Sprint, and the related increase in financing, decreased the carrying amount. Income tax payments increased by EUR 0.2 billion compared with the prior year. Factoring agreements resulted in negative effects of EUR 0.1 billion on net cash from operating activities in the reporting year. In the prior year, factoring agreements had had negative effects of EUR 0.8 billion, mainly as a result of the contractual termination of a revolving factoring agreement in the Germany operating segment.

Cash capex (before spectrum investment) increased by EUR 1.0 billion to EUR 18.0 billion, largely on account of the inclusion of Sprint and the ongoing 5G network build-out in the United States. In the Germany operating segment, cash capex decreased by EUR 0.1 billion. Capital expenditure in the Germany operating segment totaled around EUR 4.1 billion in 2021, in particular for the build-out of the 5G and fiber-optic networks. In the Europe operating segment, our investments were on a par with the prior-year level at EUR 1.8 billion. Here, we also continue to invest in the provision of broadband and fiber-optic technology and in 5G as part of our integrated network strategy.

The increase in repayments of lease liabilities was due in particular to payments for leases in the United States operating segment. The increase resulted from the inclusion of Sprint for the full year for the first time in the reporting year and from advance payments made by T-Mobile US for the lease of cell sites.

For further information on the statement of cash flows, please refer to Note 35 "Notes to the consolidated statement of cash flows" in the notes to the consolidated financial statements.

Profitability

millions of €	2021	2020	2019
ROCE %	4.1	4.6	5.1
Profit (loss) from operations (EBIT)	13,057	12,804	9,457
Share of profit (loss) of associates and joint ventures accounted for using the equity method	(102)	(12)	87
Net operating profit (NOP)	12,956	12,792	9,544
Tax (imputed tax rate 2021: 27.8 %; 2020: 27.8 %; 2019: 27.8 %)	(3,602)	(3,556)	(2,653)
Net operating profit after taxes (NOPAT)	9,354	9,236	6,891
Cash and cash equivalents	7,617	12,939	5,393
Intangible assets	132,647	118,066	68,202
Property, plant and equipment	61,770	60,975	49,548
Right-of-use assets ^a	30,777	30,302	17,998
Non-current assets and disposal groups held for sale and liabilities ^b	3,491	664	68
Investments accounted for using the equity method	938	543	489
Operating working capital	7,702	6,458	2,983
Other provisions	(9,463)	(9,033)	(6,663)
Net operating assets (NOA)	235,479	220,914	138,018
Average net operating assets (Ø NOA)	229,035	201,545	135,618

^a The calculation method used to determine this financial performance indicator was adjusted in 2019 as a result of the new IFRS 16 accounting standard.

^b Excluding the carrying amounts of companies accounted for using the equity method.

ROCE decreased by 0.5 percentage points in the reporting period to 4.1%. This was due to stronger percentage growth in average operating assets (NOA) than in net operating profit after taxes (NOPAT). The increase in NOA is primarily due to the acquisition of additional spectrum licenses by T-Mobile US and the associated increase in intangible assets. In addition, the development of NOA reflects our consistently high investment volume. The year-on-year development of NOPAT is primarily impacted by higher expenses classified as special factors, mainly in the United States operating segment. These arose in connection with higher integration and restructuring costs to realize cost efficiencies as a result of the business combination of T-Mobile US and Sprint and the reduction in the useful life of leased network technology for cell sites. In the prior year, NOPAT had been positively affected by the partial reversal of impairment losses on spectrum licenses, which had increased the carrying amount.

Overall, NOPAT amounted to EUR 9.4 billion in 2021, up from EUR 9.2 billion in the prior year. The average amount of net operating assets (NOA) increased to EUR 229.0 billion in 2021 from EUR 201.5 billion in the prior year.

For further information on the definition of ROCE and the methods used to calculate this key performance indicator, please refer to the section "Management of the Group."

Development of business in the operating segments

For further information on the development of business in the operating segments, please refer to the IR back-up on our [Investor Relations website](#).

Effective January 1, 2021, Deutsche Telekom reassigned the responsibility for business and profit and loss for Deutsche Telekom IoT GmbH from the Systems Solutions operating segment to the business customer unit in the Germany operating segment. Prior-year comparatives in both of the segments (development of operations, customer development, headcount development, and order entry) were adjusted retrospectively.

For further information on the reassignment of the IoT business, please refer to the sections "Group organization" and "Segment reporting" in the notes to the consolidated financial statements.

Germany

Customer development

thousands

	Dec. 31, 2021	Dec. 31, 2020	Change	Change %	Dec. 31, 2019
Mobile customers	53,211	48,213	4,998	10.4	46,189
Contract customers ^{a, b}	23,129	25,975	(2,846)	(11.0)	25,291
Prepaid customers ^{a, b}	30,081	22,239	7,842	35.3	20,898
Fixed-network lines	17,525	17,590	(65)	(0.4)	17,824
Retail broadband lines	14,478	14,118	360	2.5	13,730
Of which: optical fiber	10,379	9,515	864	9.1	8,529
Television (IPTV, satellite)	4,001	3,864	137	3.5	3,618
Unbundled local loop lines (ULLs)	3,622	4,101	(479)	(11.7)	4,638
Wholesale broadband lines	7,948	7,733	215	2.8	7,372
Of which: optical fiber	6,778	6,433	345	5.4	5,863

^a The realignment of the B2B telecommunications business in 2020 resulted in the deactivation of around 310 thousand SIM cards in the business customer area as of January 1, 2021, which are now treated as internal cards. Prior-year figures have been adjusted with retroactive effect.

^b From January 1, 2021, around 3.6 million SIM cards of a service provider that were previously reported under contract customers are now reported under prepaid customers. Prior-year comparatives were not adjusted.

Total

In Germany we continue to be market leader both in terms of fixed-network and mobile revenues. This success is attributable to our high-performance networks. We offer the best customer experience with award-winning network quality – in the fixed network as in mobile communications – and with a broad product portfolio and excellent service. We want to offer our customers a seamless and technology-neutral telecommunications experience. Hence, alongside fixed-network and mobile communications products, we also market convergence products. At the end of May 2021, we launched MagentaEINS Unlimited with unlimited data across Germany. Our MagentaEINS family of FMC products remains very popular among customers, with some 5.3 million customers having opted for MagentaEINS by the end of 2021. We added 217 thousand customers compared to the end of the prior year.

Demand remained high for our fiber-optic-based lines. The total number of these customer lines increased to around 17.2 million overall by the end of December 2021, which means a further 1.2 million customers in Germany received a fiber-optic-based line from us in the course of 2021. With the progress made in fiber-optic rollout, we also successfully drove forward the marketing of higher bandwidths.

Mobile communications

We won a total of some 5.0 million mobile customers in 2021. Of these, 666 thousand were high-value contract customers under our Telekom and congstar brands. Steady demand for mobile rate plans with included data volumes alongside our multiple award-winning network quality continues to drive this trend. Since January 1, 2021, the customers of a service provider previously reported under contract customers have been reported under prepaid customers. Allowing for this change in disclosure, we have added around 4.2 million prepaid customers since the start of the year, largely on the back of our automotive offerings targeted specifically at business customers.

The StreamOn option, with which customers can stream certain music, gaming, or video services without reducing their included data allowance, remains very popular. At the end of 2021, 4.6 million customers were using this option, up by 16.0 % year-on-year.

Fixed network

The fixed-network broadband market hosts a large number of players with differing infrastructures – from national through to regional providers. In order to consolidate our position on the market as Germany's leading telecommunications provider, we continue to add new offerings to our portfolio.

The number of broadband lines increased to around 14.5 million in 2021. Demand for our retail fiber-optic-based lines was the biggest driver here, accounting for 864 thousand lines. We recorded an increase of 137 thousand in the number of TV customers compared with year-end 2020. In traditional fixed-network business, the number of lines declined slightly by 65 thousand. This marked a considerable reduction in line losses compared with the prior-year period. As expected, the number of fixed-network lines was 17.5 million lines.

Wholesale

As of December 31, 2021, fiber-optic-based lines accounted for 58.6 % of all lines – 4.2 percentage points more than at the end of 2020. This growth is a result of demand for quota-based agreements under the “contingent model,” and subsequently for the new commitment agreements which were successfully introduced on April 1, 2021. Rising demand among consumers for higher-bandwidth lines also contributed to the increase. The number of unbundled local loop lines decreased by 479 thousand compared with the end of the prior year, partly as a result of the shift to higher-value fiber-optic-based lines and partly from consumers switching to other cable providers. In addition, our wholesale customers are migrating their retail customers to their own fiber-optic-based lines. The total number of wholesale lines at the end of 2021 was around 11.6 million.

Development of operations

millions of €					
	2021	2020	Change	Change %	2019
Total revenue	24,164	23,790	374	1.6	23,750
Consumers	12,221	11,740	481	4.1	11,618
Business Customers	8,878	8,857	21	0.2	8,957
Wholesale	2,767	2,983	(216)	(7.2)	2,944
Other	298	210	88	41.9	230
Service revenue^a	21,298	20,993	305	1.5	n.a.
Profit (loss) from operations (EBIT)	4,951	3,970	981	24.7	4,238
EBIT margin %	20.5	16.7			17.8
Depreciation, amortization and impairment losses	(4,016)	(4,510)	494	11.0	(4,368)
EBITDA	8,968	8,480	488	5.8	8,606
Special factors affecting EBITDA	(588)	(752)	164	21.8	(458)
EBITDA (adjusted for special factors)	9,556	9,232	324	3.5	9,064
EBITDA AL	8,932	8,435	497	5.9	8,568
Special factors affecting EBITDA AL	(588)	(752)	164	21.8	(458)
EBITDA AL (adjusted for special factors)	9,520	9,188	332	3.6	9,026
EBITDA AL margin (adjusted for special factors) %	39.4	38.6			38.0
Cash capex	(4,116)	(4,191)	75	1.8	(4,447)

^a The definition of “service revenue” was not applied consistently Group-wide for the years prior to 2020.

Total revenue, service revenue

In 2021 we generated total revenue of EUR 24.2 billion, which was up by 1.6 % year-on-year. The growth in service revenues of 1.5 % was attributable to increased revenue in the fixed-network core business, largely broadband-driven, and to higher mobile service revenues. Overall, revenue was affected by the effects of the coronavirus pandemic, such as temporary travel restrictions, lockdowns, and the deteriorated economic situation. This had a negative effect on roaming and visitor revenues. It also resulted in delays or postponements to current orders in B2B telecommunications business.

Revenue from **Consumers** increased by 4.1 % compared with the prior year. Volume-driven declines in revenue from voice components continued to impact on traditional fixed-network business. By contrast, revenue from broadband business grew by 6.9 %, due in part to the positive effects from increased customer appreciation for stable data lines. Fixed-network terminal equipment business posted growth of 9.2 % on the back of strong demand on the customer side for terminal equipment lease models. Mobile business increased by 4.7 %, primarily due to higher revenues from mobile terminal equipment business and a positive trend in the number of customers opting for our secondary brand, congstar.

Revenue from **Business Customers** was up slightly by 0.2 % year-on-year. IT revenue grew by 5.4 % against the prior year, mainly due to concerted efforts to drive forward digitalization in the SME sector. Overall, mobile revenue was up 2.1 % year-on-year, partly on the back of positive revenues from terminal equipment business and sustained customer additions. In organic terms, i.e., mainly assuming constant exchange rates and adjusted for the reassignment of Deutsche Telekom IT (DT IT) Russia, DT IT Slovakia, and DT IT Hungary to the Group Headquarters & Group Services segment, revenue increased by 2.0 % year-on-year.

Wholesale revenue was down at the end of 2021 by 7.2 % year-on-year. The positive trend in the number of fiber-optic-based lines continued, with an increase of 5.4 % compared with the prior year. However, this was not enough to offset the decrease in revenues of 11.7 % from declining volumes of unbundled local loop lines. In addition, the positive contribution in the prior-year period from the transition to the IFRS 16 Leases accounting standard, which reduced the customer retention period in connection with the lease of unbundled local loop lines, no longer applied in the reporting period. Since April 1, 2021, the transition to the new commitment agreements to replace the former quota-based agreements has led to sharper declines in revenue in the reporting year. This is primarily due to the fact that under the new commitment model the annual payments are initially lower compared to the up-front payments that had been made under the quota-based agreements under the contingent model. The annual commitment payments will rise over the course of subsequent years. Voice revenue was down against the prior year, which had contained higher, largely coronavirus-induced, revenues in this area.

For further information on the entry into force of the commitment agreements, please refer to the section [“The economic environment – Regulation.”](#)

Adjusted EBITDA AL, EBITDA AL

EBITDA AL adjusted for special factors increased by EUR 332 million or 3.6 % year-on-year to EUR 9.5 billion. Our adjusted EBITDA AL margin increased to 39.4 %, up from 38.6 % in the prior year. The main reasons for this increase are a sound operational development, driven by high-value revenue growth, and enhanced cost efficiency. Lower personnel costs resulting, among other factors, from the smaller headcount and the ongoing implementation of efficiency enhancement and digitalization measures reduced costs.

In contrast to the effects described under EBITDA AL, lower expenses recognized as special factors for socially responsible instruments in connection with the staff restructuring, in particular the dedicated retirement program, had an offsetting effect. EBITDA AL increased in 2021 by 5.9 % year-on-year to EUR 8.9 billion.

EBIT

Profit from operations was up 24.7 % year-on-year to EUR 5.0 billion, driven by the positive EBITDA AL trend together with lower depreciation, amortization, and impairment losses year-on-year, mainly on account of substantially lower amortization of intangible assets due to the expiry of the amortization of UMTS licenses.

Cash capex

Cash capex decreased by EUR 75 million or 1.8 % compared with the prior year. Capital expenditure totaled around EUR 4.1 billion in 2021, with much of this figure going towards the build-out of our 5G and fiber-optic networks. The number of households passed by our fiber-optic network increased to around 3.4 million by the end of 2021. In mobile communications, our customers benefit from greater LTE network coverage. As of December 31, 2021, we covered 99 % of households in Germany with LTE. Over 90 % of German households can already use 5G.

United States

Customer development

thousands					
	Dec. 31, 2021	Dec. 31, 2020	Change	Change %	Dec. 31, 2019
Customers	108,719	102,064	6,655	6.5	67,895
Postpaid customers	87,663	81,350	6,313	7.8	47,034
Postpaid phone customers ^{a, b}	70,262	66,618	3,644	5.5	40,346
Other postpaid customers ^{a, b}	17,401	14,732	2,669	18.1	6,689
Prepaid customers ^{a, c}	21,056	20,714	342	1.7	20,860

Adjustments of the customer base

thousands				
	Total adjustments of the customer base in 2020	Adjustment of customer definition for Sprint's prepaid business as of July 1, 2020 ^c	Adjustment of customer definition at Sprint as of Apr. 1, 2020 ^a	Sprint additions as of April 1, 2020
Customers	28,354	(9,393)	(4,853)	42,600
Postpaid customers	28,830	0	(5,514)	34,344
Postpaid phone customers	24,055	0	(1,861)	25,916
Other postpaid customers	4,775	0	(3,653)	8,428
Prepaid customers	(476)	(9,393)	661	8,256

^a Includes customers acquired in connection with the Sprint Merger and certain customer base adjustments on April 1, 2020.

^b In the first quarter of 2021, we acquired 11,000 postpaid phone customers and 1,000 postpaid other customers through our acquisition of an affiliate. In the third quarter of 2021, we acquired 716,000 postpaid phone customers and 90,000 postpaid other customers through the acquisition of wireless assets from Shentel.

^c In connection with obtaining regulatory approval for the Sprint Merger, on July 1, 2020, substantially all prepaid customers acquired were subsequently acquired by DISH. Upon closing of the transaction with DISH, we entered into a Master Network Service Agreement to provide network services to customers of their prepaid business for a period of up to seven years. As a result, we included a base adjustment to reduce prepaid customers by 9.4 million in the third quarter of 2020. The prepaid customers included in our total customers as of June 30, 2020 include the customers subsequently acquired by DISH and are expected to be different than the customers included under the Master Network Service Agreement, and classified as wholesale customers, due to differences in customer reporting policies.

Customers

At December 31, 2021, the United States operating segment (T-Mobile US) had 108.7 million customers, compared to 102.1 million customers at December 31, 2020. Excluding the customers that we acquired through acquisitions during the year, net customer additions were 5.8 million in 2021, compared to the same number of net customer additions in 2020, due to the factors described below.

Postpaid net customer additions were 5.5 million in 2021 and exceeded the high end of the company's annual guidance range. Compared to the prior year postpaid net customer additions were essentially flat and primarily impacted by higher postpaid phone net customer additions, primarily due to increased retail store traffic, compared to lower retail traffic in the prior period due to closures arising from the coronavirus pandemic, partially offset by higher churn. This increase was offset by lower postpaid other net customer additions, primarily due to elevated gross additions in the prior year related to the public and educational sector resulting from the coronavirus pandemic and higher disconnects from an increased customer base, partially offset by growth in high-speed internet. High-speed internet net customer additions were 546 thousand and 87 thousand for the years ended December 31, 2021 and 2020, respectively.

Prepaid net customer additions were 342 thousand in 2021, compared to 331 thousand prepaid net customer additions in 2020. The increase was primarily due to lower churn.

Development of operations

millions of €					
	2021	2020	Change	Change %	2019
Total revenue	68,359	61,208	7,151	11.7	40,420
Service revenue^a	48,929	44,271	4,658	10.5	n.a.
Profit (loss) from operations (EBIT)	7,217	9,187	(1,970)	(21.4)	5,488
EBIT margin %	10.6	15.0			13.6
Depreciation, amortization and impairment losses	(18,338)	(15,665)	(2,673)	(17.1)	(7,777)
EBITDA	25,555	24,852	703	2.8	13,265
Special factors affecting EBITDA	(1,836)	(270)	(1,566)	n.a.	(544)
EBITDA (adjusted for special factors)	27,392	25,122	2,270	9.0	13,809
EBITDA AL	20,060	20,628	(568)	(2.8)	10,590
Special factors affecting EBITDA AL	(2,637)	(370)	(2,267)	n.a.	(544)
EBITDA AL (adjusted for special factors)	22,697	20,997	1,700	8.1	11,134
Core EBITDA AL (adjusted for special factors) ^b	19,912	17,366	2,546	14.7	n.a.
EBITDA AL margin (adjusted for special factors) %	33.2	34.3			27.5
Cash capex	(18,594)	(10,394)	(8,200)	(78.9)	(6,369)

^a The definition of "service revenue" was not applied consistently Group-wide for the years prior to 2020.

^b Adjusted core EBITDA AL is distinguished by excluding revenue from terminal equipment leases from adjusted EBITDA AL, thereby presenting operational development undistorted by the withdrawal from the terminal equipment lease business.

Total revenue, service revenue

Total revenue for the United States operating segment of EUR 68.4 billion in 2021 increased by 11.7 %, compared to EUR 61.2 billion in 2020. In U.S. dollars, T-Mobile US' total revenues increased by 15.2 % year-over-year primarily due to increased service revenues and equipment revenues. The components of these changes are described below.

Service revenues increased in 2021 by 10.5 % to EUR 48.9 billion primarily due to higher postpaid revenues primarily from higher average postpaid accounts, including the impact of accounts acquired in the Sprint Merger, higher postpaid ARPA (Average Revenue per Account) and higher wholesale revenues primarily from our Master Network Service Agreement with DISH, which went into effect on July 1, 2020, and the success of our other MVNO relationships. In addition, service revenues increased due to higher prepaid revenues primarily from higher prepaid ARPU (Average Revenue per User) and higher average prepaid customers. Furthermore, service revenues increased due to higher other service revenues primarily from higher Lifeline revenues, primarily associated with operations acquired in the Sprint Merger and the inclusion of wireline operations acquired in the Sprint Merger.

Equipment revenues increased in 2021 primarily due to an increase in device sales revenue (excluding purchased leased devices) primarily due to an increase in the number of devices sold due to a larger customer base as a result of the Merger, switching activity returning to more normalized levels compared to the muted conditions from the coronavirus pandemic in the prior year a higher upgrade rate and the planned shift in device financing from leasing to EIP. Device sales revenue (excluding purchased leased devices) also increased due to higher average revenue per device sold driven by an increased mix of phone versus other devices, partially offset by an increase in promotional activities. In addition, equipment revenues increased due to an increase in sales of accessories, primarily from increased retail store traffic, compared to lower retail traffic in the prior period due to closures arising from the coronavirus pandemic and a larger customer base as a result of the Sprint Merger. Furthermore, equipment revenues increased due to an increase in liquidation revenues, primarily due to a higher volume of returned devices and an increase in the high-end device mix. These increases were partially offset by a decrease in lease revenues due to a lower number of customer devices under lease as a result of the planned shift in device financing from leasing to EIP.

Adjusted EBITDA AL, EBITDA AL

In euros, adjusted EBITDA AL increased by 8.1% to EUR 22.7 billion in 2021, compared to EUR 21.0 billion in 2019. The adjusted EBITDA AL margin decreased to 33.2% in 2021, compared to 34.3% in 2020. In U.S. dollars, adjusted EBITDA AL increased by 11.8% during the same period. Adjusted EBITDA AL increased primarily due to higher service revenues and equipment revenues (excluding lease revenues) as discussed above. These increases were partially offset by higher device cost of equipment sales (excluding purchased leased devices) primarily from an increase in the number of devices sold due to a larger customer base as a result of the Sprint Merger, switching activity returning to more normalized levels relative to the muted conditions from the coronavirus pandemic in the prior year, a higher upgrade rate and the planned shift in device financing from leasing to EIP. Device cost of equipment sales (excluding purchased leased devices) also increased due to higher average costs per device sold due to an increased mix of phone versus other devices. In addition, there were higher expenses associated with cost of accessories, due to increased retail store traffic, compared to lower retail traffic in the prior period due to closures arising from the coronavirus pandemic and a larger customer base as result of the Sprint Merger. Furthermore, there were higher expenses associated with leases and utilities primarily due to the Sprint Merger and the continued build-out of our nationwide 5G network, including a new tower master lease agreement in 2020 and higher employee-related and benefit-related costs primarily due to increased average headcount as a result of the Sprint Merger. In addition, there were higher costs associated with advertising relative to the muted coronavirus pandemic-driven conditions in the prior period, external labor and professional services primarily from the Sprint Merger and higher commissions primarily due to compensation structure changes and higher customer addition volumes. These increases in costs were partially offset by higher realized Sprint Merger synergies, including a decrease in expenses associated with backhaul agreements due to the termination of certain agreements acquired in the Sprint Merger, and lower bad debt expense due to the release of estimated bad debt reserves established in the prior year associated with macro-economic impacts of the coronavirus pandemic.

Adjusted core EBITDA AL increased by 14.7% to EUR 19.9 billion in 2021, compared to EUR 17.4 billion in 2020. In U.S. dollars, adjusted core EBITDA AL increased by 18.6% during the same period. The change was primarily due to the fluctuation in adjusted EBITDA AL, discussed above, excluding the change in lease revenues. In U.S. dollars, lease revenues decreased as a result of the planned shift in device financing from leasing to EIP by 20.6% in 2021.

EBITDA AL in 2021, included special factors of EUR -2.6 billion compared to EUR -0.4 billion in 2020. The change in special factors was primarily due to special factors recognized in 2020 including the EUR 1.6 billion spectrum impairment reversal and transaction fee received from SoftBank, partially offset by supplemental employee payroll, third-party commissions and cleaning-related expenses associated with the coronavirus pandemic and a postpaid billing system disposal. In addition, special factors increased due to higher Merger-related costs during 2021. Special factors include Merger-related costs associated with the Merger and acquisitions of affiliates comprised of transaction costs, including legal and professional services related to the completion of transactions; restructuring costs, including severance, store rationalization and network decommissioning; and integration costs to achieve efficiencies in network, retail, information technology and back office operations, migrate customers to the T-Mobile US' network and the impact of legal matters assumed as part of the Sprint Merger. Overall, EBITDA AL decreased by 2.8% to EUR 20.1 billion in 2021, compared to EUR 20.6 billion in 2020, primarily due to the factors described above, including special factors.

EBIT

EBIT decreased by 21.4% to EUR 7.2 billion in 2021, compared to EUR 9.2 billion in 2020. In U.S. dollars, EBIT decreased by 19.0% during the same period primarily due to higher depreciation and amortization and lower EBITDA AL. In U.S. dollars, depreciation and amortization increased by 20.7% primarily due to higher depreciation expense (excluding leased devices) from the continued build-out of our nationwide 5G network, accelerated depreciation expense on certain assets due to our Sprint Merger integration, and higher amortization from intangible assets, primarily due to a full year of amortization of intangible assets acquired in the Sprint Merger.

Cash capex

Cash capex increased to EUR 18.7 billion in 2021, compared to EUR 10.4 billion in 2020. In U.S. dollars, cash capex increased by 84.2% primarily from an increase in spectrum purchases, primarily due to USD 8.9 billion paid for spectrum licenses won at the conclusion of the C-band auction in March 2021, network integration related to the Sprint Merger and the continued build-out of our nationwide 5G network.

Europe

Customer development

thousands

	Dec. 31, 2021	Dec. 31, 2020	Change	Change %	Dec. 31, 2019
Europe, total^a					
Mobile customers	45,816	45,619	197	0.4	46,165
Contract customers	26,575	26,844	(269)	(1.0)	26,245
Prepaid customers	19,241	18,775	466	2.5	19,920
Fixed-network lines ^b	7,802	9,084	(1,282)	(14.1)	9,105
Of which: IP-based ^b	7,767	8,439	(672)	(8.0)	8,311
Broadband customers ^{b, c}	6,381	6,943	(562)	(8.1)	6,672
Television (IPTV, satellite, cable) ^{b, d}	4,019	5,046	(1,027)	(20.4)	4,945
Unbundled local loop lines (ULLs)/ wholesale PSTN	1,932	2,246	(314)	(14.0)	2,294
Wholesale broadband lines ^d	865	684	181	26.5	533
Greece					
Mobile customers	7,045	6,914	131	1.9	7,365
Fixed-network lines	2,624	2,589	35	1.4	2,638
Broadband customers	2,306	2,185	121	5.5	2,033
Romania^a					
Mobile customers	3,691	4,683	(992)	(21.2)	4,916
Fixed-network lines	0	1,444	(1,444)	(100.0)	1,560
Broadband customers	0	912	(912)	(100.0)	1,014
Hungary					
Mobile customers	5,634	5,427	207	3.8	5,369
Fixed-network lines	1,821	1,759	62	3.5	1,703
Broadband customers ^c	1,417	1,321	96	7.3	1,231
Poland					
Mobile customers	11,542	11,198	344	3.1	10,954
Fixed-network lines ^b	29	31	(2)	(6.5)	18
Broadband customers ^b	77	32	45	n.a.	18
Czech Republic					
Mobile customers	6,297	6,178	119	1.9	6,265
Fixed-network lines	645	606	39	6.4	533
Broadband customers	391	368	23	6.2	320
Croatia					
Mobile customers	2,276	2,253	23	1.0	2,274
Fixed-network lines	875	885	(10)	(1.1)	908
Broadband customers	633	625	8	1.3	621
Slovakia					
Mobile customers	2,502	2,441	61	2.5	2,428
Fixed-network lines	880	865	15	1.7	860
Broadband customers	633	607	26	4.3	576
Austria					
Mobile customers	5,258	5,074	184	3.6	5,019
Fixed-network lines	593	569	24	4.2	549
Broadband customers	656	635	21	3.3	612
Other^e					
Mobile customers	1,572	1,451	121	8.3	1,576
Fixed-network lines	336	335	1	0.3	335
Broadband customers	268	259	9	3.5	249

^a The number of lines and customers in Romania decreased in the fourth quarter of 2021 due to the sale of Telekom Romania Communications, which operates the Romanian fixed-network business, effective September 30, 2021.

^b The comparatives for fixed-network lines, broadband and TV customers in Poland were adjusted retrospectively as part of the standardization of the underlying customer definition.

^c The prior-year comparatives for broadband customers in Hungary were adjusted retrospectively as part of the standardization of the underlying customer definition.

^d The comparatives for TV customers in Croatia were adjusted retrospectively as part of the standardization of the underlying customer definition.

^e "Other": national companies in North Macedonia, Montenegro, and the lines of the GTS Central Europe group in Romania.

Total

Excluding the effect from the sale of Telekom Romania Communications, the number of customers in our Europe operating segment grew once again year-on-year, exceeding our expectations to some extent. For example, we recorded fixed-network net customer additions on an organic basis. Our MagentaOne convergent product portfolio, in particular, generated growth compared with year-end 2020 of 15.5 % in FMC customers thanks to ongoing demand. We are working flat out to build out our fixed-network infrastructure with state-of-the-art optical fiber. The number of broadband customers likewise increased by 5.8 % in organic terms. On the same basis, the mobile business also recorded an increase of 2.8 % in customer numbers, with increases in both the number of high-value contract customers and the number of prepaid customers. Our build-out of the 5G network is making good progress: most of our national companies have already launched the commercial sale of 5G products and services.

Mobile communications

Our Europe operating segment had a total of 45.8 million mobile customers as of December 31, 2021, marking a stable trend compared with the end of 2020. The number of high-value contract customers decreased slightly by 1.0 %, largely as a result of the effect from the sale of Telekom Romania Communications on September 30, 2021: Romanian FMC customers, i.e., customers who use both a fixed-network line and a mobile communications service were assigned to the fixed-network business in line with our steering definition. As a result, the corresponding SIM cards were no longer included as of the end of 2021. Without this effect, the number of contract customers increased by 3.0 %. By contrast, the contract customer base grew at our other national companies, especially in Poland, Hungary, and the Czech Republic. Overall, contract customers accounted for 58.0 % of the total customer base. In parallel with pure customer development, we have successfully pursued the more-for-more principle in our product portfolio, so as to sustainably increase value per customer. In addition, thanks to our integrated network strategy our customers benefited from greater coverage with fast mobile broadband. As of December 31, 2021, we covered 98.2 % of the population in the countries of our operating segment with LTE, reaching around 109 million people in total. The footprint countries of our operating segment are also making excellent headway with 5G. As of the end of 2021, our national companies covered 28.9 % of the population (in particular in Greece, Croatia, and Austria) with 5G.

The prepaid customer base recorded growth of 2.5 % compared with the end of 2020. Growth in countries including Poland and Austria more than offset the declines reported especially in Romania. In addition, we offer our prepaid customers high-value contract plans with the resulting number of contract conversions also contributing positively to contract customer business.

Fixed network

The broadband business declined by 8.1 % compared with the end of the prior year to total 6.4 million customers. Excluding the effect from the sale of the Romanian fixed-network business, the number of customers grew by 5.8 %. This increase was mainly driven by the national companies in Greece, Hungary, and Poland. By continuing to invest in innovative fiber-optic technologies, we are systematically building out our fixed-network infrastructure. At the end of the fourth quarter of 2021, a total of around 7.0 million households (coverage of 27.9 %) were provided with the option by our national companies to subscribe to a direct connection to our high-speed fiber-optic network with speeds reaching up to 1 Gbit/s. The number of IP-based lines increased to account for 99.6 % of all fixed-network lines in the same period. The number of fixed-network lines in our Europe operating segment declined by 14.1 % overall to 7.8 million. Excluding the effect from the sale of the Romanian fixed-network business, the number of lines grew by 2.1 % year-on-year.

The TV and entertainment business had a total of 4.0 million customers as of December 31, 2021, down by 20.4 % compared with the end of the prior year. Excluding the effect from the sale of the Romanian fixed-network business, the customer base grew by 5.5 %. With both telecommunications providers and OTT players offering TV services, the TV market is already saturated in many countries of our segment.

FMC – fixed-mobile convergence

Our portfolio of convergent products, MagentaOne, was highly popular with consumers across all of our national companies. As of December 31, 2021, we had 6.3 million FMC customers; this corresponds to growth of 1.0 % compared with the end of the prior year. Excluding the effect from the sale of the Romanian fixed-network business, the customer base grew by 15.5 %. Our national companies, in particular in Greece, Hungary, Poland, the Czech Republic, and Austria, contributed to this growth. We have also seen accelerated growth in the marketing of our MagentaOne Business product to business customers.

Development of operations

millions of €					
	2021	2020	Change	Change %	2019
Total revenue	11,384	11,335	49	0.4	11,587
Greece	3,078	2,940	138	4.7	2,943
Romania	709	951	(242)	(25.4)	980
Hungary	1,769	1,734	35	2.0	1,872
Poland	1,427	1,453	(26)	(1.8)	1,486
Czech Republic	1,146	1,072	74	6.9	1,088
Croatia	908	917	(9)	(1.0)	960
Slovakia	790	773	17	2.2	785
Austria	1,351	1,302	49	3.8	1,276
Other ^a	301	283	18	6.4	298
Service revenue^b	9,638	9,630	8	0.1	n.a.
Profit (loss) from operations (EBIT)	1,814	1,278	536	41.9	1,109
EBIT margin %	15.9	11.3			9.6
Depreciation, amortization and impairment losses	(2,576)	(2,875)	299	10.4	(3,114)
EBITDA	4,390	4,153	237	5.7	4,223
Special factors affecting EBITDA	11	(188)	199	n.a.	(141)
EBITDA (adjusted for special factors)	4,380	4,341	39	0.9	4,364
EBITDA AL	4,018	3,722	296	8.0	3,769
Special factors affecting EBITDA AL	11	(188)	199	n.a.	(141)
EBITDA AL (adjusted for special factors)	4,007	3,910	97	2.5	3,910
Greece	1,265	1,199	66	5.5	1,212
Romania	147	153	(6)	(3.9)	141
Hungary	536	520	16	3.1	551
Poland	385	378	7	1.9	383
Czech Republic	471	430	41	9.5	448
Croatia	355	337	18	5.3	360
Slovakia	327	335	(8)	(2.4)	327
Austria ^c	487	496	(9)	(1.8)	467
Other ^a	34	63	(29)	(46.0)	20
EBITDA AL margin (adjusted for special factors) %	35.2	34.5			33.7
Cash capex	(1,905)	(2,216)	311	14.0	(1,816)

The contributions of the national companies correspond to their respective unconsolidated financial statements and do not take consolidation effects at operating segment level into account.

^a "Other": national companies in North Macedonia, Montenegro, and the GTS Central Europe group in Romania, as well as the Europe Headquarters.

^b The definition of "service revenue" was not applied consistently Group-wide for the years prior to 2020.

^c As of January 1, 2021, the Austrian cell tower business was transferred from the Europe operating segment to the Group Development operating segment. Prior-year comparatives were not adjusted.

Total revenue, service revenue

Total revenue generated in our Europe operating segment by the end of the reporting year was EUR 11.4 billion, a year-on-year increase of 0.4 %. In organic terms – i.e., adjusted for the sale of Telekom Romania Communications, which operates the Romanian fixed-network business, on September 30, 2021, and assuming constant exchange rate effects – revenue increased by 2.4 % year-on-year. Service revenue remained stable year-on-year, growing by 2.0 % in organic terms. Regulatory intervention, in addition to the consequences of the coronavirus pandemic, continued to have a negative effect on the organic development of revenue in the reporting year.

Organic revenue growth was mainly driven by the strong performance of the mobile business, especially the increase in mobile service revenues with higher margins, slight increases in roaming and visitor revenues, and higher revenues from terminal equipment sales. Fixed-network service revenues, by contrast, developed slightly better. The strong performance of the broadband business in particular helped to offset the declines in voice telephony revenues, which were in line with expectations. Systems solutions business declined overall.

Looking at the development by country, our national companies in Greece, Hungary, Austria, and the Czech Republic recorded the best organic development of revenue.

Revenue from **Consumers** increased in organic terms by 2.5 % year-on-year, due mainly to higher mobile revenue: both service revenues and sales of mobile terminal equipment increased. In the fixed network, revenue from broadband/TV business increased thanks to our innovative TV and entertainment offerings as well as the continuous rollout of fiber-optic technology. This more than offset the decline in revenue from voice telephony. In addition, the higher number of FMC customers had a positive impact on revenue.

Revenue from **Business Customers** remained stable year-on-year in organic terms. The stable upward trend in mobile business over the course of the year offset the slight decline in demand in the fixed-network business. The number of SIM cards increased by 3 % year-on-year on the back of the development of business in Poland, Hungary, and Austria. This was a consequence of the widespread utilization of mobile working in our European companies. The strong IT revenues of the previous year could not be replicated in 2021 due to the sale of the Romanian fixed-network business and the new licensing rules in Croatia. Nevertheless, we reported sustained growth in demand and revenues in our productivity, cloud computing, smart cities, and security solution portfolios.

Adjusted EBITDA AL, EBITDA AL

Our Europe operating segment generated adjusted EBITDA AL of EUR 4.0 billion in the reporting year, up 2.5 % year-on-year. In organic terms, i.e., adjusted for the sale of the Romanian fixed-network business and the transfer of the Austrian cell tower business to the Group Development operating segment, and assuming constant exchange rates, adjusted EBITDA AL increased by 5.4 %, thus continuing to make a positive contribution to earnings. In addition to the positive revenue effects, savings in indirect costs, including due to lower personnel costs, contributed to this development.

Looking at the development by country, the increase in adjusted organic EBITDA AL was largely attributable to the positive trend at virtually all of our national companies, but in particular in Greece, Austria, Romania, Croatia, and Hungary.

EBITDA AL increased by 8.0 % year-on-year to EUR 4.0 billion. Special factors improved from EUR -188 million to EUR 11 million. The reason for this change was the reversal of other provisions for personnel costs recognized by OTE in 2010 and 2011 in connection with an additional payment of EUR 134 million to the Greek social insurance fund IKA-ETAM as a result of corresponding proceedings concluded in September 2021. The sale of Telekom Romania Communications resulted in a loss on deconsolidation of EUR 29 million, which was recognized as a special factor. In organic terms, EBITDA AL grew by 11.1 %.

Development of operations in selected countries

Greece. In Greece, revenue increased by 4.7 % year-on-year to EUR 3.1 billion. The encouraging development in mobile business is mainly attributable to the addition of new contract customers, with associated increases in both terminal equipment sales and service revenues. As travel activity increasingly returns to more normal levels, there was also a positive trend in visitor revenues. The intensive fiber-optic and vectoring build-out, together with the resulting higher numbers of customers, had an increasingly positive impact on the fixed-network business. Fixed-network revenues increased in the reporting year, mainly driven by strong growth in the broadband business. The systems solutions business also contributed to revenue growth.

In 2021, adjusted EBITDA AL in Greece stood at EUR 1.3 billion, a significant increase of 5.5 % against the prior year. This is attributable to a revenue-related increase in the net margin. Savings in indirect costs had a positive effect.

Hungary. Revenue in Hungary totaled EUR 1.8 billion in the 2021 financial year, an increase of 2.0 % despite negative exchange rate effects. In organic terms, revenue was up 4.1 % against the prior-year level. The biggest driver of this increase was mobile communications business, mainly on account of higher service revenues. In addition, growth in the number of contract customers had positive effects on terminal equipment business. Fixed-network operations also increased slightly year-on-year, with rising TV and broadband service revenues, both driven once again by larger customer bases. Systems solutions business posted a slight decline in revenue. Our MagentaOne convergence products continued to perform well, with further customer additions and corresponding revenue.

Adjusted EBITDA AL stood at EUR 536 million, up 3.1 % year-on-year. In organic terms, adjusted EBITDA AL grew by 5.1 %. This growth is attributable in particular to higher revenues, which more than offset the rise in costs.

Poland. Our revenue in Poland decreased by 1.8 % in the reporting year to EUR 1.4 billion. This decline was due to negative exchange rate effects. In organic terms, revenue increased slightly by 0.9 %, with the mobile business posting the largest increase. Growth in the number of contract customers had a positive effect on terminal equipment business. Higher roaming and visitor revenues were also recorded. Systems solutions business grew markedly in 2021. The number of FTTH customers in the fixed-network business also increased significantly, creating the basis for further broadband growth. This is reflected in higher broadband and TV service revenues, and is also thanks to our successful partnership agreements on network infrastructure.

Adjusted EBITDA AL stood at EUR 385 million in 2021, up 1.9 % year-on-year. In organic terms, adjusted EBITDA AL increased by 4.6 %, mainly on the back of the increase in revenue.

Czech Republic. In the reporting period, revenue in the Czech Republic stood at EUR 1.1 billion, up 6.9 % on the prior-year level. Organic growth was 3.6 % on account of positive exchange rate effects. Mobile revenues were a major driver of this trend, mainly on the back of increased service revenues (excluding visitor revenues) with higher margins, and higher terminal equipment revenues. In addition, broadband and TV business in the fixed network were yet again the key driver of growth in service revenues, thus bearing out our fiber-optic investment strategy. The number of broadband customers increased substantially year-on-year. We also generated additional revenue in the area of systems solutions.

Adjusted EBITDA AL increased by 9.5 % year-on-year to EUR 471 million. In organic terms, earnings grew by 6.2 % year-on-year, driven mainly by revenue.

Austria. Revenue in Austria totaled EUR 1.4 billion in the 2021 financial year. This increase of 3.8 % was mainly attributable to growth in mobile revenues, driven above all by an increase in higher-margin service revenues. The sale of mobile terminal equipment also made a positive contribution to revenue. Visitor revenues also had a modest positive effect. Service revenues in the fixed-network business also developed encouragingly. The broadband business generated substantial growth rates, due among other factors to a larger customer base and higher-value rate plans.

Adjusted EBITDA AL decreased as of December 31, 2021 by 1.8 % year-on-year to EUR 487 million. In organic terms, i.e., excluding the transfer of the Austrian cell tower business to the Group Development operating segment, adjusted EBITDA AL increased substantially by 9.7 % due to the positive revenue effect. A key contribution comes from the realization of synergies and from the expansion of convergent product offerings.

EBIT

Our Europe operating segment recorded an increase in EBIT of EUR 536 million in the reporting year. In addition to an increase in EBITDA of EUR 237 million, depreciation, amortization and impairment losses decreased by EUR 299 million, with depreciation and amortization down year-on-year. This was mainly a result of the suspension of depreciation and amortization in connection with Telekom Romania Communications due to the fact that it was held for sale until September 30, 2021. In addition, depreciation and amortization was lower on account of the transfer of the Austrian cell tower business to the Group Development operating segment. In the third quarter of the prior year, ad hoc impairment losses totaling EUR 160 million had been recognized on non-current assets of the Romanian mobile business, which is to remain in the Group. This impairment was triggered by the discontinuance of the previously existing MVNO agreements in connection with the sale of the Romanian fixed-network business, which was still being planned at that time.

Cash capex

In the 2021 financial year, the Europe operating segment reported cash capex of EUR 1.9 billion, down 14.0 % year-on-year. This decrease is due to a decline in cash outflows for the acquisition of spectrum licenses, primarily in Hungary and Greece. We continue to invest in the provision of broadband and fiber-optic technology and in 5G as part of our integrated network strategy.

Systems Solutions

Order entry

millions of €					
	2021	2020	Change	Change %	2019
Order entry	4,174	4,564	(390)	(8.5)	4,740

Development of business

The 2021 financial year continued to be dominated by the focusing of our systems solutions business on growth and future viability and the continuation of our transformation program. Under the transformation program, we continued to drive forward the alignment of our organization, workflows, and capacities, and the fine-tuning of the strategy for our portfolio. Stand-alone portfolio units assume responsibility not only for our growth areas (e.g., public cloud and security) but also for our traditional IT business.

We have defined selected industries (automotive, healthcare, public sector, and public transport), for which we have increased our offer of vertical solutions based on our expertise. In addition, we have agreed partnerships with leading cloud service providers (e.g., Amazon, Google, Microsoft), so as to be able to offer our customers an even broader and more flexible range of cloud solutions. Consistent with our efforts to implement the Group's strategy pillar "Lead in business productivity," we transferred our IoT (Internet of Things) portfolio unit to the Germany operating segment effective January 1, 2021.

Order entry in our Systems Solutions operating segment decreased year-on-year by 8.5 % in the 2021 financial year, putting it below our expectations. This development was mainly due to a decline in both traditional IT infrastructure business and SAP business, which was only partially offset by the strong upward trends in our growth areas. In addition, the prior-year figure included two major deals signed with important existing customers in late 2020.

Development of operations

millions of €					
	2021	2020	Change	Change %	2019
Total revenue	4,019	4,159	(140)	(3.4)	4,411
Of which: external revenue	3,171	3,237	(66)	(2.0)	3,418
Service revenue^a	3,893	3,903	(10)	(0.3)	n.a.
Profit (loss) from operations (EBIT)	(242)	(534)	292	54.7	(336)
Special factors affecting EBIT	(393)	(582)	189	32.5	(332)
EBIT (adjusted for special factors)	151	48	103	n.a.	(4)
EBIT margin (adjusted for special factors) %	3.8	1.2			(0.1)
Depreciation, amortization and impairment losses	(425)	(720)	295	41.0	(452)
EBITDA	183	185	(2)	(1.1)	116
Special factors affecting EBITDA	(213)	(209)	(4)	(1.9)	(304)
EBITDA (adjusted for special factors)	396	394	2	0.5	421
EBITDA AL	73	70	3	4.3	2
Special factors affecting EBITDA AL	(213)	(209)	(4)	(1.9)	(304)
EBITDA AL (adjusted for special factors)	286	279	7	2.5	307
EBITDA AL margin (adjusted for special factors) %	7.1	6.7			7.0
Cash capex	(237)	(235)	(2)	(0.9)	(324)

^a The definition of "service revenue" was not applied consistently Group-wide for the years prior to 2020.

Total revenue, service revenue

Total revenue in our Systems Solutions operating segment in the 2021 financial year amounted to EUR 4.0 billion, down 3.4 % year-on-year. Service revenue remained more or less stable year-on-year. The decrease in total revenue was mainly driven by the expected decline in traditional IT infrastructure business, due in part to deliberate business decisions such as the reduction in end-user services. Inorganic effects, including the sale of a business operation, further contributed to the decrease in revenue. By contrast, our growth areas grew significantly, especially public cloud (+19.2 %), digital solutions (+13.5 %), and road charging (+13.4 %).

Adjusted EBITDA AL, EBITDA AL

In the 2021 financial year, adjusted EBITDA AL at our Systems Solutions operating segment increased by 2.5 % year-on-year to EUR 286 million. Efficiency effects from our transformation program and effects from increased revenue in our growth areas exceeded the decline in earnings in the traditional IT infrastructure business. EBITDA AL increased by EUR 3 million compared with the prior year to EUR 73 million. Negative special factors were up EUR 4 million on the prior year at EUR 213 million, mainly due to a loss on deconsolidation in connection with the sale of a business operation and a contrasting effect of lower restructuring costs.

Adjusted EBIT, EBIT

Adjusted EBIT in our Systems Solutions operating segment in the 2021 financial year improved by EUR 103 million year-on-year, coming in at EUR 151 million, mainly as a result of declines in depreciation and amortization. EBIT increased by EUR 292 million compared with the prior year to EUR -242 million. The expense arising from special factors decreased by EUR 189 million year-on-year, to EUR 393 million. In the prior year, a non-cash impairment loss on non-current assets reduced EBIT by EUR 0.4 billion, which resulted in a reduction in the depreciation and amortization base. In the reporting year, non-cash impairment losses on non-current assets totaling EUR 0.2 billion were recorded as special factors. This was a consequence of several factors, including the ad hoc impairment testing carried out in the Systems Solutions cash-generating unit in the prior year. In addition, despite the marginal improvement in the business outlook, the increase in the cost of capital in the reporting year prompted further impairment losses to be recognized on non-current assets at the end of 2021.

Cash capex

Cash capex in the Systems Solutions operating segment stood at EUR 237 million in the 2021 financial year, which was on a par with the prior year. Going forward, we will continue to focus our investments on developing our growth business.

Group Development

Customer development

thousands

		Dec. 31, 2021	Dec. 31, 2020	Change	Change %	Dec. 31, 2019
T-Mobile Netherlands	Mobile customers	6,939	6,803	136	2.0	5,610
	Fixed-network lines	739	682	57	8.4	619
	Broadband customers	728	668	60	9.0	605

In the Netherlands, the number of mobile customers increased slightly. The number of fixed-network lines in the Netherlands contributed to the positive development of operational business and profited from the reopening of the T-Mobile shops at the end of April 2021 after the coronavirus-related lockdown, as well as from successful advertising.

Development of operations

millions of €

	2021	2020	Change	Change %	2019
Total revenue	3,165	2,883	282	9.8	2,797
Of which: T-Mobile Netherlands	2,071	1,946	125	6.4	1,910
Of which: GD Towers ^{a, b}	1,112	989	123	12.4	945
Service revenue^c	1,621	1,468	153	10.4	n.a.
Profit (loss) from operations (EBIT)	1,084	562	522	92.9	615
Depreciation, amortization and impairment losses	(706)	(780)	74	9.5	(812)
EBITDA	1,790	1,343	447	33.3	1,427
Special factors affecting EBITDA	173	(43)	216	n.a.	97
EBITDA (adjusted for special factors)	1,618	1,386	232	16.7	1,330
Of which: T-Mobile Netherlands	757	639	118	18.5	591
Of which: GD Towers ^{a, b}	894	786	108	13.7	771
EBITDA AL	1,479	1,058	421	39.8	1,130
Special factors affecting EBITDA AL	173	(43)	216	n.a.	97
EBITDA AL (adjusted for special factors)	1,307	1,101	206	18.7	1,033
Of which: T-Mobile Netherlands	668	554	114	20.6	502
Of which: GD Towers ^{a, b}	669	587	82	14.0	563
EBITDA AL margin (adjusted for special factors)	% 41.3	38.2			36.9
Cash capex	(572)	(699)	127	18.2	(452)

The contributions of T-Mobile Netherlands and GD Towers are shown excluding consolidation effects at operating segment level.

^a As of January 1, 2021, the Austrian cell tower business was transferred from the Europe operating segment to the Group Development operating segment. Prior-year comparatives were not adjusted.

^b As of June 1, 2021, the Dutch cell tower business was sold to DIV and subsequently contributed into Cellnex Netherlands.

^c The definition of "service revenue" was not applied consistently Group-wide for the years prior to 2020.

Total revenue, service revenue

Total revenue in our Group Development operating segment increased in the 2021 financial year by 9.8 % year-on-year to EUR 3.2 billion. In organic terms, i.e., adjusted for the sale of the Dutch cell tower business as of June 1, 2021, the transfer of the Austrian cell tower business as of January 1, 2021, as well as the acquisition of the Dutch MVNO and SIM provider Simpel as of December 1, 2020, revenue increased by 4.6 %. This revenue increase resulted from the operational and structural growth of our two business units T-Mobile Netherlands and GD Towers, which includes DFMG and the Austrian cell tower business. In the Netherlands, mobile operations in particular contributed to this revenue growth on the back of higher out-of-bundle revenues and higher terminal equipment sales. GD Towers also recorded an increase in revenue, driven by growth in the number of cell sites at DFMG and the transfer of the Austrian cell tower business. Service revenue rose by 10.4 % year-on-year to EUR 1.6 billion, primarily as a result of the operational growth of our T-Mobile Netherlands business unit, as well as the acquisition of the Dutch MVNO and SIM provider Simpel.

Adjusted EBITDA AL, EBITDA AL

Adjusted EBITDA AL increased by 18.7 % year-on-year to EUR 1.3 billion. This growth was attributable to the aforementioned positive revenue trend at T-Mobile Netherlands, the acquisition of Simpel, and efficient cost management at T-Mobile Netherlands. The GD Towers business posted consistent growth on the back of rising volumes and was further strengthened by the transfer of the Austrian cell tower business. An operational increase in adjusted EBITDA AL was also achieved through revenue growth and cost transformation. In organic terms, adjusted EBITDA AL grew by 13.5 %. EBITDA AL was positively influenced by net special factors of EUR 173 million, which mainly related to the gain on deconsolidation due to the sale of the Dutch cell tower business. EBITDA AL increased by EUR 421 million compared with the prior-year period to EUR 1.5 billion.

EBIT

EBIT increased by EUR 522 million year-on-year to EUR 1.1 billion, mainly as a result of the development described under EBITDA AL. Depreciation, amortization and impairment losses were down year-on-year, primarily due to lower depreciation and amortization in connection with the fact that T-Mobile Netherlands has been held for sale since September 6, 2021, and, accordingly, the related depreciation and amortization has been suspended.

Cash capex

Cash capex stood at EUR 572 million and thus below the prior-year level. The decrease is mainly due to the acquisition of mobile spectrum licenses by T-Mobile Netherlands in 2020. We continue to focus our investments on the accelerated 5G build-out and the build-out of mobile infrastructure in Germany.

Group Headquarters & Group Services

Development of operations

millions of €					
	2021	2020	Change	Change %	2019
Total revenue	2,515	2,556	(41)	(1.6)	2,627
Service revenue^a	984	970	14	1.4	n.a.
Profit (loss) from operations (EBIT)	(1,764)	(1,655)	(109)	(6.6)	(1,631)
Depreciation, amortization and impairment losses	(1,463)	(1,304)	(159)	(12.2)	(1,143)
EBITDA	(300)	(350)	50	14.3	(488)
Special factors affecting EBITDA	(182)	(277)	95	34.3	(237)
EBITDA (adjusted for special factors)	(118)	(73)	(45)	(61.6)	(251)
EBITDA AL	(622)	(707)	85	12.0	(887)
Special factors affecting EBITDA AL	(182)	(277)	95	34.3	(237)
EBITDA AL (adjusted for special factors)	(440)	(429)	(11)	(2.6)	(650)
Cash capex	(1,007)	(990)	(17)	(1.7)	(1,010)

^a The definition of "service revenue" was not applied consistently Group-wide for the years prior to 2020.

Total revenue, service revenue

Total revenue in our Group Headquarters & Group Services segment decreased in 2021 by 1.6 % year-on-year, mainly as a result of lower revenue from land and buildings due to the ongoing optimization of space. Higher intragroup service revenues at Deutsche Telekom IT from the licensing of the ERP system had an offsetting effect.

Adjusted EBITDA AL, EBITDA AL

Adjusted EBITDA AL at Group Headquarters & Group Services decreased by EUR 11 million year-on-year to EUR -440 million, largely as a result of falling revenue from land and buildings, and lower income from real estate sales. Increased service revenues at Deutsche Telekom IT from the licensing of the ERP system and from lower operating expenses at our Group Services had a positive effect.

Overall, EBITDA AL was negatively impacted in the reporting year by special factors amounting to EUR 182 million, especially for staff-related measures. This contrasts with special factors of EUR 277 million in the prior-year period, also in particular for staff-related measures.

EBIT

The year-on-year decline in EBIT of EUR 109 million to EUR -1.8 billion was largely a result of two contrasting effects: the significant increase in depreciation and amortization on the one hand, and the positive development of EBITDA AL on the other. The increase in depreciation, amortization and impairment losses is mainly attributable to the increased volume of output in connection with the introduction of agile processes and shorter project runtimes at Deutsche Telekom IT. In addition, depreciation, amortization and impairment losses increased due to higher capitalization in connection with the licensing of the ERP system. By contrast, depreciation, amortization and impairment losses from land and buildings decreased as a result of our continued optimization of the real estate portfolio. Impairment losses were also recognized by the Group Headquarters & Group Services segment in the reporting year totaling EUR 21 million on software used by the Systems Solutions operating segment. In the prior year, EUR 44 million had related to the Group Headquarters & Group Services segment in this connection.

Cash capex

Cash capex increased year-on-year by EUR 17 million. Increased investment at Group Headquarters contrasted with lower cash capex for vehicles and lower investment in technology and innovation, mainly for development activities.

Development of business at Deutsche Telekom AG

Deutsche Telekom AG prepares its annual financial statements in accordance with the principles of German GAAP, as specified in the German Commercial Code (Handelsgesetzbuch – HGB) and the German Stock Corporation Act (Aktiengesetz – AktG).

As the Headquarters of the Deutsche Telekom Group, we perform strategic and cross-segment management functions and provide services for other Group companies. The profits and losses of our subsidiaries and Group financing measures have a material effect on our financial position and results of operations. Total revenue in the United States operating segment increased by 11.7 % year-on-year. This increase was mainly attributable to higher service and terminal equipment revenues. In the Germany operating segment, total revenue was up 1.6 % against the prior year. This increase was primarily driven by service revenues in the fixed network and mobile business. Total revenue rose by 0.4 % compared with the previous year in the Europe operating segment. In organic terms, i.e., adjusted for the sale of the Romanian fixed-network business as of September 30, 2021 and assuming constant exchange rates, revenue increased by 2.4 % against the prior-year level. Organic growth was mainly driven by the strong performance of the mobile business. Total revenue in our Systems Solutions operating segment was down 3.4 % year-on-year. This decrease was mainly driven by the expected decline in traditional IT infrastructure business, due in part to deliberate business decisions such as the reduction in end-user services. By contrast, our growth areas grew significantly, especially Public Cloud (+19.2 %), Digital Solutions (+13.5 %), and Road Charging (+13.4 %). Total revenue in our Group Development operating segment increased by 9.8 % year-on-year. In organic terms, i.e., adjusted for the sale of the Dutch cell tower business as of June 1, 2021, the transfer of the Austrian cell tower business as of January 1, 2021, as well as the acquisition of the Dutch MVNO and SIM provider Sempel as of December 1, 2020, revenue increased by 4.6 %.

Deutsche Telekom AG reported income after taxes for the 2021 financial year of EUR 3.6 billion. Alongside the operating business, the development of business in the reporting year was affected by a large number of other factors, including a capital repayment based on fair values by T-Mobile Global Holding GmbH, Bonn, to T-Mobile Global Zwischenholding GmbH, Bonn.

Results of operations of Deutsche Telekom AG

Statement of income of Deutsche Telekom AG under German GAAP (total cost method)

millions of €

	2021	2020	Change	Change %	2019
Net revenue	2,538	2,740	(202)	(7.4)	3,423
Other own capitalized costs	9	9	0	0.0	7
Total operating performance	2,547	2,749	(202)	(7.3)	3,430
Other operating income	1,177	4,725	(3,548)	(75.1)	2,387
Goods and services purchased	(481)	(471)	(10)	(2.1)	(1,037)
Personnel costs	(2,176)	(2,291)	115	5.0	(2,326)
Depreciation, amortization and write-downs	(288)	(211)	(77)	(36.5)	(254)
Other operating expenses	(2,485)	(2,834)	349	12.3	(3,081)
Operating results	(1,706)	1,667	(3,373)	n.a.	(881)
Net financial income (expense)	5,606	1,245	4,361	n.a.	3,131
Income taxes	(278)	(380)	102	26.8	(484)
Income after income taxes	3,622	2,532	1,090	43.0	1,766
Other taxes	(17)	(17)	0	0.0	(17)
Income after taxes	3,605	2,515	1,090	43.3	1,749

The negative operating results worsened by approximately EUR 3.4 billion year-on-year, due mainly to a year-on-year decrease in other operating income of EUR 3.5 billion and a EUR 0.2 billion decline in net revenue. A decrease in other operating expenses of EUR 0.3 billion in particular had an offsetting effect.

Lower intragroup cost transfers from hiring out employees and from renting and leasing out property were the main factors contributing to the reduction in net revenue of EUR 0.2 billion.

Other operating income in the previous year had been positively impacted by several factors, including income of EUR 1.5 billion in connection with a capital repayment based on fair values, the write-up on an equity investment of EUR 0.9 billion, and the realization of hidden reserves in connection with a spin-off in the amount of EUR 0.8 billion. The decrease of EUR 3.5 billion in the reporting year was also attributable to a EUR 0.2 billion decline in income from derivatives, mainly in connection with U.S. dollar contracts, and to a EUR 0.1 billion decline in foreign currency translation gains on loans denominated in foreign currencies.

The decrease of EUR 0.3 billion in other operating expenses compared with the previous year was mainly attributable to a reduction of EUR 0.1 billion in foreign currency translation losses and a EUR 0.1 billion decline in expenses from derivatives, in particular in connection with U.S. dollar contracts. Another contributory factor was the EUR 0.1 billion decrease in other employee-related costs.

Net financial income increased by EUR 4.4 billion to EUR 5.6 billion, due primarily to an increase of EUR 2.5 billion in income related to subsidiaries, associated, and related companies and a EUR 0.5 billion decrease in net interest expense. Furthermore, net financial income in the previous year had been negatively impacted by a write-down in the amount of EUR 1.4 billion on CTA Holding GmbH, Bonn.

Income related to subsidiaries, associated, and related companies was positively affected in the reporting year in particular by profits transferred by Telekom Deutschland GmbH, Bonn, of EUR 4.3 billion (2020: EUR 3.6 billion), by T-Mobile Global Zwischenholding GmbH, Bonn, of EUR 2.1 billion (2020: EUR 0.6 thousand), by GMG Generalmietgesellschaft mbH, Cologne, of EUR 0.3 billion (2020: EUR 0.2 billion), and by DFMG Holding GmbH, Bonn, of EUR 0.1 billion (2020: EUR 0.2 billion). The transfer of the losses from Deutsche Telekom IT GmbH, Bonn, of EUR 0.7 billion (2020: EUR 0.8 billion), from T-Systems International GmbH, Frankfurt/Main, of EUR 0.2 billion (2020: EUR 0.7 billion), and from Telekom Innovation Pool GmbH, Bonn, of EUR 0.1 billion (2020: EUR 6 million) had an offsetting effect.

Income related to subsidiaries, associated and related companies was impacted in particular by the operating business of the consolidated subsidiaries. The figure for the reporting year also included the effect of a capital repayment based on fair values by T-Mobile Global Holding GmbH, Bonn, to T-Mobile Global Zwischenholding GmbH, Bonn, in the amount of EUR 2.1 billion.

The decrease in net interest expense of EUR 0.5 billion compared with the prior year was primarily the result of higher income from plan assets for pension obligations in the amount of EUR 0.2 billion and lower interest expense resulting from the decrease in long-term loans from Group companies, accounting for EUR 0.1 billion. In addition, a EUR 0.1 billion decline in expenses from interest added back to noncurrent other accruals had a positive effect on net interest expense.

Income after income taxes was particularly impacted by the aforementioned effects and increased by EUR 1.1 billion year-on-year in 2021.

Other tax expense of EUR 17 million combined with the aforementioned factors resulted in income after taxes of EUR 3,605 million in the 2021 financial year. Taking into account EUR 2,283 million in unappropriated net income carried forward, unappropriated net income totaled EUR 5,888 million.

Financial position of Deutsche Telekom AG

Balance sheet of Deutsche Telekom AG under German GAAP

millions of €

	Dec. 31, 2021	Dec. 31, 2021 %	Dec. 31, 2020	Change	Dec. 31, 2019
Assets					
Intangible assets	301	0.3	216	85	217
Property, plant and equipment	2,337	2.0	2,388	(51)	2,313
Financial assets	106,615	91.2	101,411	5,204	111,020
Noncurrent assets	109,253	93.5	104,015	5,238	113,550
Receivables	5,186	4.4	8,180	(2,994)	6,695
Other assets	1,556	1.3	964	592	1,313
Cash and cash equivalents	454	0.4	3,201	(2,747)	2,076
Current assets	7,196	6.2	12,345	(5,149)	10,084
Prepaid expenses and deferred charges	455	0.4	437	18	463
Difference between plan assets and corresponding liabilities	0	0	9	(9)	13
Total assets	116,904	100.0	116,806	98	124,110
Shareholders' equity and liabilities					
Capital stock and reserves	53,662	45.9	53,028	634	53,021
Unappropriated net income	5,888	5.0	5,129	759	5,460
Shareholders' equity	59,550	50.9	58,157	1,393	58,481
Accruals for pensions and similar obligations	3,898	3.3	3,960	(62)	3,780
Tax accruals	252	0.2	412	(160)	411
Other accruals	3,034	2.6	2,591	443	2,602
Accruals	7,184	6.1	6,963	221	6,793
Debt	10,175	8.7	10,952	(777)	10,928
Remaining liabilities	39,859	34.1	40,594	(735)	47,776
Liabilities	50,034	42.8	51,546	(1,512)	58,704
Deferred income	136	0.1	140	(4)	132
Total shareholders' equity and liabilities	116,904	100.0	116,806	98	124,110

In addition to shareholders' equity, our financial position is mainly determined by noncurrent assets as well as by receivables from and payables to Group companies. Loans recognized under financial assets as well as receivables from and payables to affiliated companies primarily resulted from financing relationships between Deutsche Telekom AG and its subsidiaries.

The balance sheet total increased by EUR 0.1 billion year-on-year to EUR 116.9 billion.

The development of total assets was attributable in particular to the increase of EUR 5.2 billion in financial assets and the increase of EUR 0.6 billion in other assets. By contrast, receivables decreased by EUR 3.0 billion and cash and cash equivalents by EUR 2.7 billion.

Financial assets increased year-on-year by EUR 5.2 billion, due primarily to an intragroup restructuring of current receivables from cash management from Telekom Deutschland GmbH, Bonn, in the amount of EUR 5.0 billion to noncurrent loans. Other factors contributing to the increase were the acquisition of shares in T-Mobile US, Inc, Bellevue (EUR 0.6 billion), a capital increase at Digital Infrastructure Vehicle II SCSp SICAV-RAIF, Senningerberg, a fund company established in the reporting year (EUR 0.3 billion), and an increase in loans to OTE Plc, London (EUR 0.2 billion). In particular a loan repayment by T-Mobile USA, Inc., Bellevue, in the amount of EUR 0.8 billion had an offsetting effect.

The decrease in receivables of EUR 3.0 billion resulted primarily from EUR 1.8 billion lower receivables from cash management, mainly due to an intragroup restructuring of current receivables from cash management from Telekom Deutschland GmbH, Bonn, to noncurrent loan receivables. The capital repayment by T-Mobile Global Holding GmbH, Bonn, had an offsetting effect on receivables from cash management. The decrease of EUR 1.1 billion in financial receivables from affiliated companies, mainly from the repayment of short-term loans by Deutsche Telekom Europe B.V., Maastricht, further reduced receivables.

The increase of EUR 0.6 billion in other assets is primarily due to higher receivables from collateral. The change in receivables from collateral is attributable to regular fluctuation in market values.

The development of total shareholders' equity and liabilities was mainly influenced by the increase of EUR 1.4 billion in shareholders' equity. By contrast, financial liabilities decreased by EUR 0.8 billion and other liabilities by EUR 0.7 billion.

The increase in shareholders' equity of EUR 1.4 billion was primarily attributable to income after taxes of EUR 3.6 billion in the 2021 financial year as well as a capital increase of EUR 0.6 billion. The dividend payment of EUR 2.8 billion for the previous year had an offsetting effect.

Financial liabilities decreased to EUR 10.2 billion, down by EUR 0.8 billion compared to the prior year. The EUR 1.0 billion decline in liabilities to banks accounted for a large share of this decrease. Bonds issued in the reporting year had an offsetting effect of EUR 0.2 billion.

Remaining liabilities decreased by a total of EUR 0.7 billion year-on-year, due mainly to the decrease of EUR 3.7 billion in financial liabilities to affiliated companies, particularly as a result of loan repayments of EUR 2.6 billion to Deutsche Telekom International Finance B.V., Maastricht, and of EUR 1.2 billion to T-Mobile Austria Holding GmbH, Vienna. Furthermore, other liabilities decreased by EUR 0.4 billion, EUR 0.3 billion of which were attributable to liabilities from early retirement arrangements for civil servants. By contrast, current liabilities from cash management increased by EUR 3.3 billion as a result of payments received by subsidiaries that were transferred to Deutsche Telekom AG in connection with the intragroup cash management system.

Statement of cash flows of Deutsche Telekom AG under German GAAP

millions of €

	2021	2020	Change	2019
Income after taxes	3,605	2,515	1,090	1,749
Net cash provided by (used for) operating activities	8,673	(1,808)	10,481	17,760
Net cash (used for) provided by investing activities	(2,980)	11,587	(14,567)	(14,536)
Net cash (used for) provided by financing activities	(8,440)	(8,654)	214	(1,828)
Net change in cash and cash equivalents	(2,747)	1,125	(3,872)	1,396
Cash and cash equivalents, at the beginning of the year	3,201	2,076	1,125	680
Cash and cash equivalents, at the end of the year	454	3,201	(2,747)	2,076

Net cash provided by/used for operating activities changed year-on-year by EUR 10.5 billion, resulting in net cash provided by operating activities of EUR 8.7 billion. This was attributable to income after taxes of EUR 3.6 billion plus a EUR 5.1 billion increase in net debt in connection with the intragroup cash management system. The increase compared with the previous year is attributable in particular to the conversion of current receivables from cash management into long-term loans at Telekom Deutschland GmbH, Bonn, which was completed in the reporting year. In addition, the year-on-year increase was attributable in part to a repayment of liabilities from cash management in connection with a capital repayment by T-Mobile Global Zwischenholding GmbH, Bonn, in the previous year.

Net cash used for/provided by investing activities changed year-on-year by EUR 14.6 billion, resulting in net cash used for investing activities of EUR 3.0 billion. This change was primarily attributable to cash outflows of EUR 5.2 billion in the reporting period as a result of loans granted to subsidiaries, mainly due to intragroup debt restructuring measures at Telekom Deutschland GmbH, Bonn. Corporate actions at subsidiaries resulted in further cash outflows in the amount of EUR 0.4 billion. Repayments of loans by Deutsche Telekom Europe B.V., Maastricht, in the amount of EUR 1.0 billion, and by T-Mobile USA, Inc., Bellevue, in the amount of EUR 0.8 billion in particular had an offsetting effect. Net cash used for/provided by investing activities also included interest received of EUR 0.8 billion. In the previous year, the Company's investing activities had been impacted by capital and loan repayments by subsidiaries totaling EUR 11.7 billion, in particular by T-Mobile USA, Inc., Bellevue, and T-Mobile Global Zwischenholding GmbH, Bonn, as well as by cash outflows to subsidiaries in connection with loans granted and the acquisition of property totaling EUR 1.3 billion. The prior-year figure had also included interest received of EUR 1.2 billion.


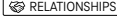


Net cash used for financing activities decreased only marginally by EUR 0.2 billion year-on-year to EUR 8.4 billion. Net cash used for financing activities in the reporting year resulted primarily from net repayments of current financial liabilities of EUR 4.5 billion, the payment of the dividend for the 2020 financial year of EUR 2.8 billion, and interest paid of EUR 1.3 billion.



In all, this resulted in a decrease in cash and cash equivalents of EUR 2,747 million in the reporting year.

Risk management in hedge accounting



We use derivatives to hedge interest rate and currency exposures; i.e., exclusively for hedging purposes, not for speculative gains. In the process, we monitor the effectiveness of the hedges on a regular basis.

Corporate responsibility and non-financial statement


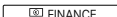


  Deutsche Telekom again contributed to the response to the coronavirus pandemic in 2021. In times of physical distancing, we made it possible for people to stay in contact, to obtain information, and to work or learn from home. Our multi-billion investments in the network infrastructure have paid off: our networks ran stably, even under high loads. We also implemented a range of other measures to help mitigate the effects of the coronavirus crisis on society. For example, in Europe we provided our customers, medical facilities, and care homes for the elderly with free internet connections and data volume. We also provided school and university students with access to technical equipment that would support them during distance learning. The Corona-Warn-App, which traces contacts between users of the app and which we developed jointly with SAP, has become one of the most important tools for individual protection during the pandemic both in Germany and abroad, with more than 34 million users.  



We often do not realize just how much we rely on mobile network and internet access in our day-to-day lives until there is a network outage. The catastrophic flooding in summer 2021 caused devastation in central Europe, including to our networks. Our employees made exceptional efforts again in this trying situation: The mobile network was restored extremely quickly, with a return to full coverage in the affected areas by the end of July 2021. We quickly came to the aid of those living in the area, distributing some 5,000 cell phones, including SIM cards, power banks, and quick-start packages, and increasing the data volume available to those affected. We are also working to rebuild the fixed network as quickly as possible. Over 96 % of the 103,000 fixed-network lines damaged in the flood disaster in Rhineland-Palatinate and North Rhine-Westphalia were fully operational again by the end of 2021. In particularly hard-hit regions, we are rebuilding telecommunications infrastructure from scratch in close cooperation with the municipalities and other utility providers. This new infrastructure comprises an FTTH network that connects some 40,000 homes and businesses directly to our network via optical fiber. To keep everyone connected during the work to rebuild the network, our technicians arranged interim solutions. For example, in Eschweiler and Stolberg, street cabinets were fitted with free Wi-Fi. We also supported our employees who live in the areas affected by flooding, for example by providing paid leave from work and emergency financial aid.  

For further information, please refer to the section "[Employees](#)."

An international study by the World Weather Attribution initiative in cooperation with Germany's National Meteorological Service, the Deutscher Wetterdienst, indicates the strong likelihood that climate change played a role in the torrential rainfall. To mitigate climate change, in 2021 we again stepped up our climate goals considerably: We want to achieve climate neutrality for our direct and indirect emissions by 2025, and for all emissions throughout the value chain by 2040 at the latest. Deutsche Telekom has been powered exclusively by electricity from renewable energy sources since 2021 – across the entire Group. Direct procurement, guarantees of origin, and own energy production are included in this calculation. In the United States, we achieved this by means, among other things, of power purchase agreements (PPAs) with two additional wind farms that were commissioned during the reporting year. The importance of our climate goals to us is also demonstrated by our performance management and incentive system using variable remuneration for members of the Board of Management of Deutsche Telekom AG, introduced in 2021.  

For further information, please refer to the section "[Management of the Group](#)."

We can do even more to protect our climate by helping our customers reduce their carbon footprint. In 2021, the positive CO₂ effects facilitated for our customers in Germany were 380 % higher than our own CO₂ emissions (enablement factor of 4.8 to 1).   We made major progress in other areas besides climate protection in the reporting year: All T-branded devices launched in Germany since 2021 have come in sustainable packaging, for example recycled cardboard boxes. We will expand this to the whole of Europe in 2022.  


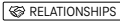
Another key priority for us in 2021 was our commitment to digital participation. We continued our #TAKEPART – No Hate Speech campaign in 2021, and also launched a new priority focus with Gaming – Where the Fun Ends. We are working with the [#equalesports](#) initiative to foster greater diversity in esports and gaming, among other things, and we support increased participation by women in professional and recreational esports.  

Creating transparency

We have been transparently reporting on our corporate responsibility (CR) activities for more than 20 years: on our website, in the We Care magazine, in our CR report, and in our Annual Report. Since the 2016 financial year, we have also explained how our core business contributes to achieving the UN Sustainable Development Goals (SDGs), which have been set as part of the 2030 Agenda.



For further information, please refer to the section "[Sustainable Development Goals](#)."

Since the 2017 reporting year, we have published a non-financial statement (NFS) as part of the management report pursuant to the CSR Directive Implementation Act and in accordance with § 315c in conjunction with § 289c to 289e HGB. In selecting the content for the 2021 NFS, we took both the statutory requirements and the results of our materiality analysis into account.

  The concepts in this NFS are described on the basis of our long-standing CR reporting and in line with the Global Reporting Initiative (GRI) standards. In addition, as of the 2021 reporting year, we fulfill the obligatory reporting requirements for environmentally sustainable economic activities in accordance with Regulation (EU) 2020/852 of the European Parliament and of the Council of June 18, 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088 (hereinafter EU taxonomy): In the section “Aspect 1: Environmental concerns” we provide a breakdown of what percentage of our turnover and also of our capital expenditure and operating expenditure for climate-related environmental objectives is taxonomy-eligible (where criteria already exist in our industry for this). The requirements for transparency in corporate sustainability are constantly increasing. To meet these requirements, we have followed the GRI standards for the concepts and the materiality analysis in this NFS, and our CR reporting additionally reflects other voluntary frameworks such as those of the Sustainability Accounting Standards Board (SASB) and the Task Force for Climate-related Financial Disclosures (TCFD).

| Detailed information on this will be published in our [2021 CR report](#).

The Supervisory Board of Deutsche Telekom AG is responsible for the review of the content of the NFS. In the reporting year, it did this with the support of PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft (external auditor) in the form of a limited assurance engagement. The two non-financial performance indicators “energy consumption” and “CO₂ emissions” are included as management-related performance indicators in the reasonable assurance engagement on Deutsche Telekom’s consolidated financial statements and the combined management report. The NFS engagement was based on the International Standard on Assurance Engagements ISAE 3000 (revised). Unless otherwise stated, all disclosures in this NFS apply in equal measure to the Group and the parent company (combined non-financial statement). To avoid repetition within the management report, we refer to further information provided in other sections wherever relevant. References to disclosures not contained in the combined management report are provided as background information; these disclosures are not part of the NFS and thus are not covered by the engagement.

Our annual CR report supplements this NFS, meeting in full the requirements from a range of different stakeholders for substantiated accountability. CR experts will find everything in the report that they need to analyze Deutsche Telekom’s sustainability performance. At the same time, the report aims to engage stakeholders in our sustainability topics. We therefore expanded the CR report in the reporting year to include interactive sustainability stories, serving the growing interest among the general public in sustainability issues. Some of the stories are also available in simplified German.  

We were ranked best in class for sustainability communication in the NetFederation’s CSR Benchmark in the reporting year. We also achieved first place in the ESG Reporting Awards 2021 in the category Best Sustainability Reporting: Technology & Telecoms. Our 2020 CR report received gold both at the German Online Communications Award in the CSR & Annual Report category, and at the 2021 PR Report Award in the category Sustainability and CSR.

Explanation of the business model



We are one of the leading telecommunications companies worldwide. We offer our consumers fixed-network/broadband, mobile, internet, and internet-based TV products and services, as well as ICT solutions for our business and corporate customers.

| For further information on our business model, please refer to the sections “[Group organization](#)” and “[Group strategy](#).”

Strategic and organizational approach to sustainability



We see ourselves as a responsible company and have made that a core element of our Group strategy. We are committed to implementing sustainability along our entire value chain – and to playing an important role in meeting today’s environmental, economic, and social challenges. We are expressly committed to the principles of the United Nations Global Compact, the German Sustainability Code, and the Code of Responsible Conduct for Business. Furthermore, we support the Sustainable Development Goals (SDGs) of the United Nations (UN), in particular contributing to the following goals: 3. Good health and well-being, 4. Quality education, 5. Gender equality, 8. Decent work and economic growth, 9. Industry, innovation and infrastructure, 11. Sustainable cities and communities, 12. Responsible consumption and production, 13. Climate action, and 16. Peace, justice and strong institutions.

The defining priorities of our CR strategy remain the same. However, our experience has shown that the three action areas of our CR strategy: “Connected life and work – enabling a sustainable lifestyle in a digital world,” “Connecting the unconnected,” and “Low-carbon and circular society” overlap in places. “Enabling a sustainable lifestyle in a digital world” in particular cannot be considered in isolation from the other two action areas. In addition, the issue of corporate digital responsibility has grown more important in recent years. We have therefore adjusted and expanded the wording of our action areas: “Climate protection & resource efficiency,” “Digital responsibility,” and “Digital participation.” Underpinned by clear governance, all three action areas help enable sustainable digitalization. The other key areas of our sustainability management remain unchanged: data security and data privacy, human rights and sustainable supply chains, sustainable finance, social commitment, and being a responsible employer. In addition, the principle of responsible corporate governance remains an important component of our sustainability activities.

During the reporting year, we brought many of our CR topics together under the headings #GreenMagenta and #GoodMagenta. Our aim is to position our commitment to sustainability more strongly in our communication with stakeholder groups such as employees and customers. We also use these two categories to label those of our products and initiatives that bring sustainability benefits. #GreenMagenta encompasses Deutsche Telekom products, services, projects, actions, and initiatives that make a positive contribution to climate protection and the more responsible use of resources. #GoodMagenta describes projects, actions, and initiatives that make a positive contribution to overcoming social challenges in the digital world. These labels help us increase the transparency of our CR communication. We also aim to increase transparency for CR experts by bringing our CR strategy in line with the ESG perspectives.  

Our Board of Management bears overall responsibility for our CR goals, discussing and making decisions on key CR-related issues. The Group Corporate Responsibility (GCR) unit develops Group-wide policies and guidelines. Its aim is to further develop our corporate culture, particularly in terms of sustainable innovation and social responsibility. The increasing importance of sustainability for Deutsche Telekom led to the decision to transfer the GCR unit from the Human Resources and Legal Affairs Board of Management department to the department of the Chairman of the Board of Management as of January 1, 2022. By taking this decision, the Supervisory Board and the Board of Management are emphasizing how seriously we take our social and environmental responsibility. The CR managers from the different business units and national companies are responsible for implementing our CR strategy and work together in the international CR Manager Network. GCR is also advised by the CR Board, which is composed of the heads of the Group’s key areas.

Our values and basic principles are anchored in our Guiding Principles, the Code of Conduct, the Code of Human Rights & Social Principles, and other subject-specific policies. The cornerstones of our sustainability management activities are formally set out in our CR Policy, which is binding for all Group units. As part of our CR controlling activities, we record environmental, social, and governance (ESG) data and performance indicators. We use this data primarily to calculate our Group-wide ESG KPIs (key performance indicators), which we use to measure and manage our CR performance. Alongside the ESG KPIs, we also report other metrics and quantitative disclosures with the aim of meeting all internal and external transparency requirements. In some cases, the KPIs and other metrics can also be linked to the SDGs to show the progress we are making in the SDG focus areas. CR controlling was included in Deutsche Telekom’s internal control system (ICS) as a strategically relevant process in the reporting year for the first time. With this in mind, specific ICS principles for CR controlling have already been drawn up and approved by those business units subject to reporting requirements. The ICS principles apply to all indicators that are currently systematically recorded locally and consolidated at Group level. Their aim is to ensure that the process delivers high-quality data, on time and transparently.

Growing numbers of investors take sustainability aspects into account in their investment decisions (Socially Responsible Investments, SRI). SRI investment products consist of securities from companies that have been reviewed based on environmental, social, and governance (ESG) criteria. The development of demand from socially responsible investors for the T-Share is an indicator we can use to assess our sustainability performance. The Socially Responsible Investment ESG KPI indicates the percentage of Deutsche Telekom AG shares held by such investors. Our commitment to greater sustainability is paying off: As of September 30, 2021, around 12 % of all T-Shares were held by investors who show at least a partial concern for environmental, social, and governance criteria, and 10 % were held by investors who manage their funds primarily in accordance with aspects of socially responsible investment (SRI).  

Listing of the T-Share in sustainability indexes/ratings

Rating agency	Indexes/ratings/ranking	2021	2020	2019	2018	2017
S&P CSA	DJSI World	✓	✓	✓	✓	✓
	DJSI Europe	✓	✓	✓	✓	✓
	S&P ESG Index Series	✓	✓	✓	—	—
CDP	STOXX Global Climate Change Leaders	✓	✓	✓	✓	✓
	Supplier Engagement A-List	✓	✓	✓	✓	✗
MSCI	ESG Universal Indexes	✓	✓	✓	✓	✓
ISS-oekom	“Prime” (Sector Leader)	✓	✓	✓	✓	✓
Bloomberg	Gender Equality Index	✓	✓	✓	✓	✗
Sustainalytics	STOXX Global ESG Leaders ^a	✓	✓	✓	✓	✓
	UN Global Compact 100	✓	✓	✓	✓	✓
FTSE Financial Times Stock Exchange	FTSE4Good	✓	✓	✓	✓	✓
V.E.	Euronext V.E. indexes	✓	✓	✓	✗	✗

✓ Listed successfully ✗ Not listed — Index did not exist in the relevant year

^a Listed in other indexes in the relevant universe.

We are making our contributions towards solving social challenges measurable. To this end, we have developed a process and methodology to evaluate the external impact of selected products, solutions, and measures. This helps us to keep our key sustainability activities results-oriented and to make our contribution to achieving the SDGs visible.

Detailed information on this will be published in our [2021 CR report](#).

Process for determining significant topics

We use a comprehensive materiality process to determine the topics that are relevant both for the direction of our sustainability strategy and for our reporting. To this end, we perform an annual document analysis in order to analyze aspects such as existing legislation and the expectations of our stakeholders, for example, the capital markets. In the reporting year, we focused in particular on the risks and opportunities associated with sustainability. To validate the results, we held a workshop with internal experts to look closely at the risk outcomes. No major topics emerged from the 2021 materiality analysis that needed to be added to those of the previous year. Consequently, there is no need to include further matters in the NFS for 2021.

Detailed information on our approach will be published in our [2021 CR report](#).

As part of our comprehensive risk and opportunity management system, we determine existing and potential risks and opportunities arising from environmental, economic, or social aspects, and from how our Company is managed. Topics such as climate protection, suppliers, and reputation involve potential risks, which we have outlined in the section “Risk and opportunity management.” We maintain this practice to provide the transparency our stakeholders expect, even if the risk assessment has found that these topics have a “low” risk significance and therefore do not need to be rated as “very likely severe” in the meaning of the CSR Directive Implementation Act. The present NFS focuses on these risks and opportunities in relation to the relevant aspects.

For further information, please refer to the section [“Risk and opportunity management.”](#)

Aspect 1: Environmental concerns

We are committed not only to minimizing the impact our business activities may have on the climate, but also to tapping into the opportunities for sustainable development offered by digitalization. When used properly, it can also make a valuable contribution to saving energy and thus slowing down climate change.

For further information, please refer to the section [“Deployment of ICT products to the benefit of society.”](#)

In order to handle the rising tide of regulatory requirements, especially from the EU, we established an internal, cross-divisional Green Deal task force in 2020. The purpose of the task force is to ensure that necessary measures and processes can be implemented without delay and to create the necessary transparency. As a result, assessments and indications from the task force are taken into account in the Group’s different sustainability initiatives. For example, T-Systems has joined the Climate Neutral Data Centre Pact. Our holistic environmental management system is based on the international ISO 14001 standard. A Group-wide environmental guideline brings together the main voluntary commitments to which the Group as a whole is subject.

Climate protection and resource conservation 🌱 SDG 13 🌿 ENVIRONMENT

Our investments in the network build-out make us one of the biggest investors in the industry. Rising demand for faster data services with full-coverage availability must not lead to an increase in CO₂ emissions and thus accelerate global warming. We are therefore making sure that we increase energy efficiency, for example in our data centers, so that we can at least keep our energy consumption at a stable level. We also use energy from renewable sources to decouple CO₂ emissions from energy consumption. To support Deutsche Telekom’s sustainability initiative in the long term, two ESG targets are to be used as components of the variable remuneration of the members of the Board of Management. Since the reporting year, the members of the Board of Management are incentivized to ensure that energy consumption remains at least stable in the medium term and that CO₂ emissions are reduced. The two non-financial performance indicators “energy consumption” and “CO₂ emissions” (Scope 1 and 2) provide the measurement base for target achievement. In the reporting year, energy consumption remained stable year-on-year at 13,323 GWh. Due in particular to the Group-wide use of electricity from renewable energy sources, CO₂ emissions fell sharply against the previous year, and are at 247 kt CO₂e.

For about the last two decades, climate protection has been steadily increasing in importance at Deutsche Telekom. Our Group-wide climate protection strategy covers the following aspects: “Emissions from the value chain,” “Renewable energy sources,” “Energy efficiency,” and “Enablement: positive climate-protection effects on our customers.” In 2019, the Group Board of Management adopted ambitious climate goals, which it stepped up again in 2021:

- a. By the end of 2021, we will use electricity that comes from 100 % renewable sources everywhere in the Group (Scope 2, market-based method). We have achieved this goal.
- b. By the end of 2025, we aim to reach climate neutrality across the Company. We will cut up to 95 % of our CO₂ emissions (Scope 1 and 2) with the transition to electricity from renewable energy sources and other measures. We will need to offset the remaining emissions through compensatory measures.
- c. By 2030, we aim to reduce the emissions created by the manufacture and use of our products by 25 % per customer (compared to 2017) (Scope 3, categories: purchased goods and services, capital goods, use of sold products, use of leased products). These emissions account for more than 98 % of our carbon footprint. We maintain a close dialog with suppliers in order to reduce the emissions generated during production and to ensure that the products we offer consume less energy during the utilization phase.
- d. We want to reach “net zero” by the end of 2040 at the latest, leaving no carbon footprint in any of the three scopes. This goal is in line with the targets set out by the European Green Digital Coalition, of which Deutsche Telekom is a founding member.

We developed our Group-wide climate goals in line with the current scientific and political conditions. The Science Based Targets initiative (SBTi) has confirmed to us that our climate protection targets contribute to compliance with the Paris Climate Agreement. The climate goals, which were tightened in 2021, will be reviewed in 2022 in line with the SBTi guidance. The SBTi also gave a positive assessment of the targets set by our subsidiaries in the United States and Hungary. The national companies are taking different steps to achieve these targets. These include power purchase agreements (PPAs) for procuring electricity from specific sustainable sources, such as wind and solar power. At the end of 2021, we were obtaining 23.1 % of our electricity through these PPAs. 🌞 SDG 7 🌿 ENVIRONMENT

We calculate our CO₂ emissions across the Group in line with the market-based method of the Greenhouse Gas (GHG) protocol. The standard distinguishes between three categories of CO₂ emissions (Scope 1, 2, and 3). We report on these each year as part of the CDP and in our CR and Annual Reports.

| Detailed information on year-on-year data trends will be published in our [2021 CR report](#).

The following graphic illustrates the emissions of the different scopes resulting from our business activities, shown as CO₂-equivalent emissions (CO₂e emissions).

CO₂e emissions (Scope 1–3)

Deutsche Telekom Group in 2021 in % and kilotons (kt) of CO₂e



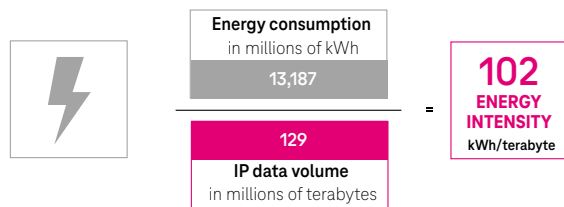
- **Scope 3 emissions from upstream activities:**
Upstream transportation and distribution, purchased goods and services, capital goods, waste generated in operations, fuel- and energy-related activities, business travel, and employee commuting
- **Scope 1 emissions from Deutsche Telekom’s own activities:**
Primary energy requirements for operation of Deutsche Telekom’s systems, buildings, and vehicles
- 🔌 **Scope 2 emissions from energy procured:**
Generation of electricity and district heating/cooling procured by Deutsche Telekom
- 🚚 **Scope 3 emissions from downstream activities:**
Transportation of products sold to the customer, use of sold or leased products, and disposal and recycling of sold products

The Power Usage Effectiveness (PUE) metric serves as one indicator for enhancing energy efficiency in our data centers. We determine this metric using the method recommended by the standard EN50600 for data centers, which takes the total energy consumed by data centers into account, not just that used to operate the servers. In 2021, the global PUE score for our T-Systems data centers was 1.58. Our high-availability, state-of-the-art data centers operated by T-Systems in Germany are designed with even greater efficiency in mind, and as such are capable of achieving a PUE of 1.30. From 2008 to 2021, we reduced the average PUE score for data centers in Germany from 1.85 to 1.49.

We determine the effectiveness of our climate protection measures using key performance indicators (KPIs). The KPIs Energy Intensity and Carbon Intensity for Deutsche Telekom (fixed-network and mobile entities) are shown in the following graphics. Both KPIs reflect our energy consumption and our CO₂ emissions in relation to the volume of data transmitted, thus demonstrating how our network’s energy and emissions efficiency has developed in practice. The result for the Energy Intensity KPI is 102 and for the Carbon Intensity KPI, 2. For the Group entities in Germany, the Energy Intensity KPI stands at 45 and the Carbon Intensity KPI is also at 2. This means that our networks have grown continually more efficient in the course of recent years, despite rising data volumes.

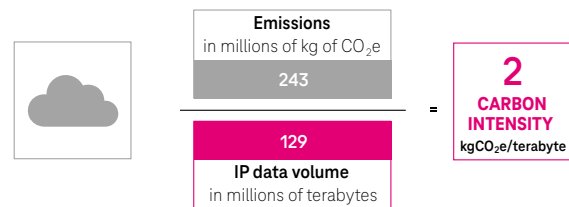
Energy Intensity ESG KPI

Deutsche Telekom Group (fixed-network and mobile entities) in 2021






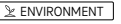


Carbon Intensity ESG KPI

Deutsche Telekom Group (fixed-network and mobile entities) in 2021





Another important metric for us is the Renewable Energy KPI. It shows how much of our Company’s overall electricity consumption is obtained from renewable energy sources. In 2021, this amounted to 100 % across the Group. Direct procurement, guarantees of origin, and own energy production are included in this calculation.

In order to effectively curb climate change, many relevant players must work together, which is why we participate in national and international associations and organizations, such as the Global Enabling Sustainability Initiative (GeSI) and econsense. We are also working systematically on improving climate protection throughout our supply chain. Since 2016, the CDP supplier engagement rating has assessed how well companies have integrated the topic of climate protection into their supply chains. In 2021, we were awarded an A rating by CDP and included on its Supplier Engagement Leader Board. Our CDP Supply Chain Coverage ESG KPI indicates the degree to which our procurement volume was covered by supplier participation in the CDP Supply Chain Program in 2021. In 2021, more than 70 % of the procurement volume was covered. A record 268 suppliers took part in the program in the reporting year (2020: 222).  

Last but not least, handling valuable resources efficiently also plays a vital role in a holistic approach to ecological responsibility. Our previous environmental program “We care for our Planet” was renamed the #GreenMagenta program during the reporting year. This makes it clear that the program is part of our higher-level sustainability agenda #GreenMagenta and #GoodMagenta. Whether in our Telekom shops, with our products and networks, or in terms of mobility, we have adopted an array of measures to conserve resources as part of the program.   For example, all of Deutsche Telekom’s new branded products have had sustainable packaging since the end of 2020. We developed corresponding sustainability criteria precisely for this purpose. Over 60 % of the new packaging for smartphones we source from our suppliers also meets these criteria.   Our subsidiary Comfort Charge provides charging infrastructure for e-mobility in Germany. Operating rapid charging stations has allowed us to save more than 548 metric tons of CO₂. That is the equivalent of the CO₂ emissions produced by a passenger car on a journey of around three million kilometers. One of the Group’s goals is to increase the proportion of electric vehicles in its fleet. Currently, around 30 % of new vehicles ordered are electric. Various measures have been agreed to significantly increase that share in the coming years and to reduce the share of vehicles with combustion engines. In addition, during the reporting year we again focused on international networking and expansion of the #GreenMagenta program. KPIs were developed for each component of the initiative, which will feed into our ESG KPIs. These KPIs help us measure our progress and also enhance public transparency of what we do.

For further information on the progress of our environmental program and on our KPIs, please refer to the [2021 CR report](#).

Conserving resources is also a goal of the Green Pioneers initiative launched by our employees. More than 350 employees from around 50 locations in Germany have joined the initiative thus far. Our Green Pioneers play a proactive role within the workforce, promoting awareness of resource efficiency in the workplace and providing impetus for our core business – and they do so voluntarily, on top of their professional duties. In 2021, some Green Pioneers held courses on environmental issues for their colleagues, with more than 1,500 employees in total taking part. They organized workshops as part of #GreenMagenta Week and launched a trash collection competition to mark World Clean-Up Day in September. Other Green Pioneers organized activities on sustainable mobility in the reporting year, such as Cycling to Work and Cycling at Lunchtime. Despite the high proportion of employees working from home during the pandemic, these cycling campaigns had saved more than 20,000 kg of CO₂ by the end of September 2021. The Green Pioneers also worked with Facility Management to install bicycle service stations, where employees who bike to work can quickly and easily carry out minor repairs. At international level, the CR managers in the national companies also launched relevant local activities. DT IT Solutions Russia, for example, carried out local campaigns during #GreenMagenta Week in which, as well as training options, the program also included team trash collection initiatives.  

Compliance with the EU taxonomy transparency requirements

The EU taxonomy aims to promote investment flows from the finance sector to businesses that are involved in environmentally sustainable activities. It is thus intended to help the EU implement the European Green Deal, while, at the same time, creating a common understanding of the environmental sustainability of activities and investments. The regulation also lays down corporate reporting obligations in regard to these economic activities. Criteria were set out in EU legislation in mid-2021 for the first environmental objectives of the taxonomy, Climate Change Mitigation and Climate Change Adaptation.

For Deutsche Telekom, as a company in the information and telecommunications industry, two of the economic activities currently listed in the EU taxonomy are relevant:

- Data processing, hosting and related activities (8.1. in Annex I + II of the Delegated Regulation (EU) 2021/2139)
- Data-driven solutions for GHG emissions reductions (8.2. in Annex I + II of the Delegated Regulation (EU) 2021/2139)

The relevant indicators are applicable to two environmental objectives: Climate Change Mitigation and Climate Change Adaptation. We are allocating them to the objective Climate Change Mitigation.

The EU taxonomy does not currently include criteria for the economic activity “Provision and operation of a network infrastructure for telecommunications.” This means that the key part of our business model is not yet covered by the taxonomy. As a result, we cannot describe our core business as taxonomy-eligible. Suitable EU taxonomy criteria with which we could describe our contribution to climate protection as taxonomy-aligned do not yet exist either. We therefore lobby in a range of business and industry associations for the inclusion of suitable, relevant criteria in the EU taxonomy to describe our core activities.

At the same time, the EU taxonomy does address economic activities that are relevant, e.g., for our fleet and building management activities, but that are not within Deutsche Telekom’s core business. These include the installation, maintenance and repair of energy-efficient devices, of electric vehicle charging stations, of devices for measuring, regulating and controlling the overall energy efficiency of buildings, and of renewable energy technologies. Activities in these areas largely relate to our capital expenditure and our operating expenditure. It will not be possible to gauge whether the associated turnover of the providers of these services are taxonomy-aligned until early 2023, when our business partners publish reports with the relevant information. Until then, we cannot report any capital expenditure and operating expenditure relating to the procurement of products from taxonomy-aligned economic activities as being taxonomy-eligible. We were not able to take the Draft Commission Notice published on February 2, 2022 into account. It provides further details on the interpretation of capital expenditure and operating expenditure (category c in item 1.1.2.2 and 1.1.3.2. of Annex 1 to the Delegated Act). Due to the publication date of the Notice, it will only be possible to carry out the complex and quality-assured collection and review of the necessary disclosures for the first time for the 2022 financial year.

The table below shows the taxonomy-eligibility of our economic activities for this reporting year in absolute figures and as a percentage of the Group’s total turnover, capital expenditure, and operating expenditure. As of the 2022 reporting year, we will also report the amount and the proportion of our economic activities that are taxonomy-aligned. Below, we explain our approach to the two economic activities that are currently relevant to us.

Based on the provisions of the EU taxonomy, the total figures for the Group that are relevant for this calculation in the reporting year are EUR 108.8 billion (turnover), EUR 35.7 billion (capital expenditure), and EUR 0.5 billion (operating expenditure). The definition of turnover from the EU taxonomy is equivalent to net revenue in our Group. The relevant capital expenditures were determined on the basis of the consolidated statement of financial position and are calculated by adding together the following key line items: additions and changes in the composition of the Group under property, plant and equipment, intangible assets (excluding goodwill), and right-of-use assets. The disclosures on capital expenditures do not form part of a capital expenditure plan in line with the EU taxonomy guidelines. The definition used in the EU taxonomy for calculating relevant operating expenditure encompasses costs that relate to research and development; building remediation measures; short-term leases; maintenance and repair; and any other direct expenditures relating to the day-to-day maintenance of property, plant and equipment which are presented in the consolidated income statement under other operating expenses.

The disclosures on taxonomy-eligibility in terms of turnover, capital expenditure, and operating expenditure are directly assigned at the level of product groups to either the operation of data centers in accordance with economic activity 8.1. or the provision of ICT solutions in accordance with economic activity 8.2.

The economic activity **“Data processing, hosting and related activities”** covers “Storage, manipulation, management, movement, control, display, switching, interchange, transmission or processing of data through data centers, including edge computing”, and pertains to group J.63.1.1. of the same name in the European registry of sectors. Of our Group-wide business activities, our Systems Solutions operating segment (T-Systems) falls into this sector. To evaluate whether activities are taxonomy-eligible, we consider T-Systems’ global business, including data centers operated by other companies in which we lease space (“third-party data centers”). Taxonomy-eligible turnover can be clearly and transparently assigned to specific data centers using a suitable ratio. To do so, we use the proportion that a data center makes up of the total number of T-Systems server IDs. Capital expenditure and operating expenditure can be calculated specifically for all data centers using the relevant IT systems. This analysis shows that a large proportion of the revenue from our Systems Solutions segment is taxonomy-eligible. To avoid double counting under the EU taxonomy, T-Systems’ cloud solutions are not covered and reported here; they are only included under the economic activities for data-driven solutions detailed below.

Based on the relevant total figures for the Group, the taxonomy-eligibility of our business activities for data processing and hosting stands at 1.1 % (turnover) and 0.2 % (capital expenditure). Since we classify our data centers as non-current assets, no direct expenses are incurred in this context. In order to also include a view of taxonomy-eligibility from a segment perspective, we additionally report the KPIs in respect of Systems Solutions. The taxonomy-eligible portion, determined using the same calculation logic, is 36.6 % in relation to net revenue of the segment, and 21.3 % in relation to its capital expenditure.

We apply the definition of the economic activity **“Data-driven solutions for GHG emissions reductions”** to those solutions and products in the Group that are “predominantly aimed at the provision of data and analytics enabling GHG emission reductions,” which means that they have clear potential to enable users to save CO₂. In this context, we are guided by the key levers of the established Enablement Factor ESG KPI and by other solutions with clear potential to enable users to save CO₂ within the Sustainable Revenue Share ESG KPI and the #GreenMagenta label. These include first and foremost the following services from among our Group-wide business activities: web- and video-conferencing tools, workplace and cloud solutions, and connected car. We mainly provide these services in the Germany operating segment, in our major subsidiaries in the Europe operating segment, and in the Systems Solutions operating segment. We therefore focus on the relevant companies when evaluating the taxonomy-eligibility of activities. To avoid double counting under the EU taxonomy, T-Systems’ cloud solutions are only reported under this economic activity, and not under that for data processing and hosting.

The very specific selection of economic activities for this taxonomy environmental objective means that only a small proportion of the Deutsche Telekom Group’s turnover (0.8 %) and operating expenditure (2.1 %) is taxonomy-eligible. We only disclose direct operating and capital expenditure for economic activity 8.2 in the Systems Solutions operating segment; we do not provide these figures for the other operating segments due to lack of materiality.

Even an aggregate view of the taxonomy-eligibility of both economic activities provides very low proportions in the reporting year of turnover (1.8 %), capital expenditure (0.2 %), and operating expenditure (2.1 %).

EU taxonomy KPIs – taxonomy-eligibility of the economic activities of the Deutsche Telekom Group

Deutsche Telekom Group in 2021		Turnover		Capital expenditure		Operating expenditure	
		millions of €	%	millions of €	%	millions of €	%
Relevant total figures for the Group		108,794	100.0	35,665	100.0	473	100.0
Of which: taxonomy-eligible	8.1. Data processing and hosting	1,160	1.1	70	0.2	0	0.0
	8.2. Data-driven solutions for GHG emissions reductions	836	0.8	17	0.1	10	2.1
	Total	1,996	1.8	87	0.2	10	2.1
Of which: not taxonomy-eligible		106,798	98.2	35,578	99.8	463	97.9

Aspect 2: Employee concerns

With their commitment, expertise, and high performance, our almost 217,000 employees ensure that we are always there for our customers, our network remains stable, and the Company can grow and pave the way for the digital society. They are crucial to our business success. Six Guiding Principles, representing our values, form the cornerstones for collaboration within our Company. We have defined our strategic HR priorities in line with the motto: “Supporting people. Driving performance.” We attach great importance to employee involvement and fair behavior toward colleagues, promote diversity, and engage in systematic health management.

For our Guiding Principles and further information about our HR work, please refer to the section “[Employees](#).”

Collaboration with employees’ representatives and trade unions

Digitalization is fundamentally changing the way we work together. Employees are expected to demonstrate greater flexibility, social skills, and autonomy, to continue learning throughout their lives, and to work with greater independence. We have made it our goal to support our employees in this transformation – and to help them not only to manage change, but also to take an active role in shaping it.

Codetermination rights play a key role in the digital transformation. Together with employees’ representatives and trade unions, we want to create the working world of the future – with an eye to the needs of our workforce and the success of our Company. As the underlying laws and contracts vary from country to country, codetermination matters are managed locally with trade unions and employees’ representatives. Group management is generally involved in issues of particular importance.

The works councils, central works councils, and Group Works Council represent the interests of Group employees in Germany. Our partner representing the employees’ interests on a European level is the European Works Council (EWC). We also have executive staff representation committees and representatives of disabled employees at unit, company, and Group level. The EWC has been one of our established key dialog partners for many years, representing the interests of our employees in countries within the European Union and the European Economic Area. The EWC has 32 seats, 29 of which are currently occupied (as at December 31, 2021). Collective bargaining plays an important role and has a long tradition at our Company, a fact made clear by the percentage of employees covered by collective agreements. As of December 31, 2021, 73 % of employees in Germany were covered by collective agreements. We record the Group-wide coverage rate every two years. As of December 31, 2020, it stood at just under 46 %. In 2021, 115 collective agreements were signed with the trade unions in Germany, which is a testament to the close cooperation with employees’ representatives.

We carefully monitored trade union matters in the United States over the course of 2021. The responsibility for national human resources management matters in the United States lies with T-Mobile US’ management, who are deeply committed to exercising this responsibility. Across the globe, Deutsche Telekom respects the rights to freedom of association and collective bargaining in accordance with national law. This naturally also applies to the United States, with all employees at T-Mobile US entitled to form or join a trade union. At the same time, employees are also free to choose not to do so. T-Mobile US will not exert any influence in this respect, neither favoring nor discriminating against employees because of a decision they have made.

Collaboration with employees’ representatives is founded on our commitment to trusting cooperation – anchored in our Group-wide Employee Relations Policy, which sets out twelve core elements describing what we stand for as an employer around the world. The policy also describes our aspiration with regard to the following HR topics: virtual working, employee development, responsible handling of changes, health and sustainability, fair pay, work-life balance, leadership, diversity, the prohibition of discrimination, and how we communicate and work together with employees’ representatives. Topics such as freedom of opinion and digitalization are also addressed. Our Code of Human Rights & Social Principles policy statement also includes a voluntary commitment to safeguarding the freedom of association and the right to collective bargaining (in compliance with national law in each case).

Our employee survey, carried out every two years, is a key indicator of the relationship between our Company and its workforce. We supplement it with pulse surveys, which give us a snapshot of the mood across the Group twice a year. More than 117,000 colleagues, or 80 % of the total, took part in the employee survey in 2021. The survey dealt, among other topics, with sustainability, with considerable success: 84 % of those surveyed stated that they identified with Deutsche Telekom’s environmental and social engagement. A total of 83 % believe that Deutsche Telekom acts responsibly towards the environment and society. Both figures represent an increase of seven percentage points on the 2019 survey.

For further information about the employee survey, please refer to the section “[Employees](#).”

Diversity, equity, and inclusion SDG 10 EMPLOYEES

People from some 150 countries work successfully together at Deutsche Telekom. They all bring their diverse skills and cultural characteristics to the workplace. Respecting the individuality of our employees and harnessing their diversity for our joint success is just as important for our Group as developing a shared corporate culture. That is why the Human Resources and Legal Affairs Board of Management department includes a Diversity team. Our Group policy on Diversity, Equity and Inclusion, the six Guiding Principles, the Employee Relations Policy, and the Code of Human Rights & Social Principles policy statement form the foundation of our commitment to diversity. We are also a founding member of the Diversity Charter corporate initiative.

In line with the key dimensions of diversity set out by the Diversity Charter, we offer all employees – irrespective of age, ethnic origin and nationality, gender and gender identity, physical and mental abilities, religion and worldview, sexual orientation and social origin – many development opportunities. To achieve this, we use a range of measures including mentoring programs, flexible working models, child care services, advisory services for those caring for loved ones, and an action plan for inclusion. Developments in the proportion of women in leadership positions and serving on the supervisory boards are reported to and discussed by the Board of Management on an annual basis. We offer various training courses that shine a light on unconscious bias in order to reveal hidden prejudices. Last but not least, we support the many employee networks at Deutsche Telekom, e.g., in Germany Magenta Pride, Women@telekom, the Fathers' Network, and the Network for International Employees.

In Germany, for example, our collective agreements on remuneration and other matters reached with the trade unions ensure transparent, gender-neutral compensation. We meet the requirements set out in the Act to Promote Transparency of Pay Structures by publishing a report on gender equality and equal pay every five years – most recently in the 2017 financial year.

For further information about equity and diversity in our Group, please refer to the section "[Employees](#)."

Occupational health and safety SDG 3 EMPLOYEES

The coronavirus pandemic again left its mark on 2021. We kept our comprehensive hygiene plans in place and initiated many other measures to protect our employees' health. These focused among other things on offering vaccinations to our employees and on giving our employees the opportunity to work from home where there were no compelling operational or personal grounds preventing this.

For further information, please refer to the section "[Employees](#)."

Measures that promote health within the Company not only help individual employees and ensure long-term business success, but also have positive effects beyond that on society as a whole. We use holistic health management to take on social responsibility and promote a proactive culture of health. We support our employees in maintaining their health and occupational safety with a host of target audience-specific measures and extensive prevention programs. We consider the statutory requirements to be only the minimum standard we must achieve. Our corporate occupational health and safety measures are effectively incorporated into our structures via certified management systems and appropriate policies and guidelines. We support the Group-wide approach with an internationally harmonized quality, work, health, and environmental management system based on the international standards ISO 9001, ISO 45001, and ISO 14001.

The Board of Management bears overarching responsibility for safeguarding health, occupational safety, and the environment. We manage cross-segment measures at Group level; the Group companies have health & safety managers who are responsible for specific processes and offerings that take into account special requirements and conditions right down to company level. We systematically evaluate the measures to ensure they are effective. The health rate, for instance, is reported to the Board of Management once per quarter. In addition, we review the results of our employee survey, analyses of stress prevention measures under collective agreements, health insurance reports, and competitor benchmarks. We analyze this data each year to derive measures that exceed the statutory requirements. Raising awareness, prevention, and encouraging individual responsibility are high priorities at our Company.

Group-wide initiatives serve to promote health awareness and health literacy among our employees. On completion of the employee survey, for example, all teams across 30 countries are issued recommendations, along with measures to be implemented on the basis of their particular health index rating. In Germany, a range of services are available to employees to promote health in the workplace, including comprehensive check-ups, colon cancer screenings, and flu shots. The Betriebsärztlicher Dienst (BAD) occupational health service started vaccinating Deutsche Telekom employees against the coronavirus at 87 locations around Germany in June 2021. Assembly and meeting spaces at larger locations were turned into temporary vaccination centers. The health promotion program also includes courses on nutrition, exercise, and relaxation (stress prevention, mindfulness, etc.). Due to the coronavirus pandemic, many courses had been held online since 2020. Digital formats were offered again in 2021. In addition, with our Germany-wide employee and executive advisory service, we offer a portfolio of support services in the area of psychosocial health, but also crisis prevention and advice in the event of psychosocial crises and extreme incidents. As part of this, occupational physicians have also been available since 2020 to answer medical questions regarding coronavirus. In 2021, we expanded the options to include an advisory service for our employees who had been affected by the extreme flooding event in July.

Standards have been put in place in Germany to improve occupational safety by regulating aspects such as safe, ergonomic environments in buildings and vehicles. In addition to services available to all employees, there are also target group-specific measures, e.g., driver safety training for certain areas of work. Our aim is to promote employees' health, boost their motivation, and improve the health rate.

A variety of key figures demonstrate the effectiveness of our corporate health management services. The health rate, including long-term illnesses, at Deutsche Telekom in Germany was 95.3 % in 2021 (prior year: 95.0 %). Excluding long-term illnesses, the health rate in 2021 stood at 96.7 % (prior year: 96.5 %). The health rate is reported to the Board of Management each quarter. Our aim for 2021 was a Group-wide health rate of 95.9 % (excluding long-term illnesses). The total number of work-related accidents continued to decline in the reporting year in comparison with the previous year. With 4.2 accidents (resulting in over three days of absence) per thousand employees, the accident rate in Germany was well below the industry average. This figure includes occupational accidents associated with the coronavirus pandemic. Without these Covid-19 cases, the accident rate in Germany was 3.7 and therefore once again down year-on-year (prior year: 3.8). The health index, which is measured every two years in a Group-wide employee survey, increased slightly in 2021 in comparison with the previous survey. The score from the 2021 employee survey for the Group health index was 69 on a scale of 0 to 100. In the 2019 survey, the index had been shown as an average on a scale from 1 to 5, with a value of 3.6. When converted to the new scale, this represents 65 points, which means the index improved by 4 points. The next survey is scheduled for 2023.





We noted one-time effects in 2020 and 2021 due to the coronavirus-induced regulations (lockdown) and hygiene measures taken to mitigate the pandemic. This led to an increase in the health rate and an improvement in the accident rate. The return to "normal" working conditions, and also to normality within society, means we must expect an increase in temporary incapacities for work due to infections and a rise in accidents on the way to work. With this in mind, we will not be changing the targets for the health rate or the accident rate.

Aspect 3: Social concerns

Access to state-of-the-art information technology is key to participating in the information and knowledge society. Our promise with the #TAKEPART brand campaign is to enable as many people as possible to participate – also and especially in times of crisis. We are delivering on that promise with an array of different activities. In this context, the security of our customers' data is of prime importance. But the internet is also supposed to be a space in which everyone can feel safe and where we interact on the basis of democratic principles. That is why we are actively pushing for a positive culture of online debate, promoting the competent use of ICT, and making a stand against hate speech and for civil courage online.

For further information on our corporate identity and our Guiding Principles, please refer to the sections "[Group organization](#)" and "[Employees](#)."

Deployment of ICT products to the benefit of society

During the coronavirus pandemic, the internet has enabled us to physically distance yet still stay close to others. In cooperation with SAP, we have continually improved the Corona-Warn-App that traces contact between users of the application and that was commissioned by the German government. The app now has the ability to store and display EU digital vaccination certificates. By September 2021, the app had been downloaded more than 33 million times.   We also provided specific help with a range of solutions and activities in 2021. For example, Slovak Telekom supported healthcare workers, teachers, and students by providing mobile data, technical equipment, and financial aid. In the United States, T-Mobile US continued its 10Million project, which aims to ensure school students have internet access. In Croatia and Poland, our national companies provided hardware and software to ensure that facilities for elderly people or people in need of care had internet access.  

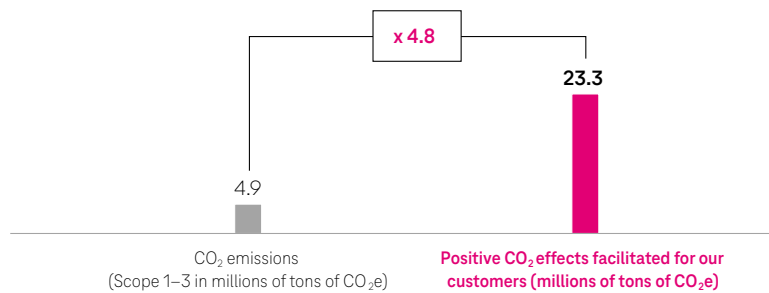
We can use our products, services, and activities to contribute to tackling many environmental and social challenges, as was made clear in a comparison with the 17 sustainability goals (SDGs) adopted by the United Nations. For instance, ICT solutions can help reduce resource consumption in agriculture and increase harvests, shape cities and mobility up for the future in terms of sustainability, stabilize power supply grids, or improve access to education and medical care – areas of application that offer market opportunities for our Company. In order to evaluate the concepts described in this NFS, it is important to also look to the opportunities digitalization opens up for sustainable development. For this reason, we are addressing the topic here, even though it is not required under the CSR Directive Implementation Act.

For further information on our sustainability risks and opportunities, please refer to the section [“Risk and opportunity management – Risks and opportunities.”](#)

Using the Sustainable Revenue Share ESG KPI, we determine how much revenue we (excluding T-Mobile US) generate from products that make a contribution to sustainability. In 2021, this share amounted to just over 42 %. For the Enablement Factor ESG KPI, we also calculate the positive CO₂ effects facilitated for our customers through using selected products. Relevant emissions generated by customers are generally taken into account, with the exception of emissions caused by operating video-conferencing facilities. Rebound effects are taken into account based on studies and expert estimates, where it is possible to do so with reasonable effort. We combine this figure with our own CO₂ emissions to determine the enablement factor, which we use to measure our overall performance in relation to climate protection. According to this figure, the positive CO₂ effects facilitated for our customers in Germany were 380 % higher in 2021 than our own CO₂ emissions (enablement factor of 4.8 to 1). The decline against the prior year (enablement factor of 7.1 to 1) is due to the use of more differentiated data collection methods, as well as a reduction in the number of people using our conferencing solutions.

Enablement Factor ESG KPI

Deutsche Telekom Group in Germany in 2021



Sustainable products are another key competition factor at our Company. We work closely with manufacturers to be able to offer an increasingly sustainable product range. In Germany and Austria, we stepped up our collaboration with Fairphone – the leading manufacturer of sustainable smartphones – in the reporting year. We also entered a partnership with Samsung for increased sustainability, and aim to jointly launch a “green” smartphone on the market by the end of 2022. We also introduced the Eco Rating initiative in cooperation with four other European mobile communications operators. This rating is already in use in 26 countries. More than 150 cell phones from 15 suppliers were assessed in regard to their environmental impact throughout their entire life cycle. In this way, we can help our customers make more sustainable purchase decisions and motivate vendors to reduce the environmental footprint of their devices.


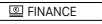
To indicate the sustainability benefits of our products to our customers, we make suitable products identifiable with recognized environmental labels. For example, several routers and mesh devices are certified with the Green Product environmental label of the TÜV Rheinland testing service provider. In addition, the majority of Telekom Deutschland’s fixed-network phones and media receivers carry the Blue Angel or Green Product seal of approval. The Blue Angel was also awarded to the joint system of Telekom Deutschland and Teqcycle for taking back cell phones.


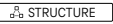
We use #GreenMagenta and #GoodMagenta to label products, services, measures, and initiatives offering ecological or social sustainability added value. We have set out some rules for awarding these two labels. There must be proven sustainability benefits. If there are clear disadvantages for society or the environment, #GreenMagenta or #GoodMagenta may not be awarded. The decision on labeling is made by a panel of experts from a range of fields. For example, we have labeled our green network in Germany, which has been operated with electricity from 100 % renewable energy sources since 2020, with #GreenMagenta. Our Speedport Smart 4 router, with a case made from 90 % recycled plastic and packaging that is entirely plastic-free, also bears the label. For further information on our #GoodMagenta label, please refer to the following two sections.

[SDG 12](#) [ENVIRONMENT](#)


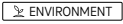
Detailed information on this will be published in our [2021 CR report](#).

Network access and digital responsibility

All around the world, having access to state-of-the-art information technologies is a precondition for economic performance and participation in a knowledge and information society. That is why we continue to rapidly expand our infrastructure and improve transmission speeds with new, secure technology.  

Demand for faster data services with full-coverage availability is growing continuously. Group-wide, we invested around EUR 18.0 billion primarily in building and operating networks, with around EUR 4.1 billion of this figure earmarked for the Germany operating segment alone. This is in addition to the investments that we make in acquiring mobile spectrum. Hence, the majority of the Group's investment volume in Germany is for the build-out of broadband networks. This build-out is based on the goals of our Europe-wide integrated network strategy, which we use to help achieve the EU Commission's network build-out targets and the Federal Government's Digital Agenda and broadband strategy. Founded on two pillars – building out mobile networks and rolling out optical fiber – our strategy sets out, among other elements, to upgrade our mobile networks with 4G/LTE technology so as to offer network coverage with fast mobile broadband. By the end of 2021, we already covered 99 % of German households with LTE. We also pushed ahead with the 5G build-out in Germany in 2021: by the end of the year, over 90 % of the population had access to the new technology. In more than 140 cities across Germany, 5G was available in the 3.6 GHz band at top speeds (as of the end of 2021). At the end of the reporting year, our fixed network provided around 36 million households with fiber-optic-based technology. We also pushed on with FTTH rollout in 2021, making fiber-optic lines available to around 1.2 million more households. In addition to the FTTH rollout, we are using other innovative products, such as our hybrid router, which combines the transmission bandwidths of fixed-network and mobile communications, thus attaining higher transmission speeds – particularly in rural areas.  

For further information about our build-out targets, please refer to the section “Group strategy.”

In general, we want to make our network infrastructure and our products as efficient, environmentally friendly, and harmless to health as possible. That is why we are committed to addressing the topic of mobile communications and health responsibly. In the context of the 5G build-out, there is public debate around the potential effects of 5G on health. We have been providing information on the scientific evidence regarding mobile communications and health for more than 20 years now. Together with Telefónica Deutschland, Vodafone, and Drillisch Netz, we also support the information platform www.informationszentrum-mobilfunk.de. This platform provides expert, evidence-based information on mobile communications topics subject to controversial public debate, such as health, research, technology, benefits, and applications. Among other initiatives, in 2021, the information platform worked with the three associations of local authorities to publish a new brochure on the topic of mobile communications and health. We adopted our Group-wide EMF Policy (EMF being short for “electro-magnetic fields”) back in 2004. It defines standard requirements – which considerably exceed the applicable national legal requirements – for addressing mobile communications and health-related matters.  

For further information, please refer to the section “Risk and opportunity management.”

Responsibility for shaping the digital transformation has to be assumed by society as a whole. Our Board of Management plays an active role in this discussion, which entails looking at matters such as how we can use artificial intelligence (AI) responsibly. AI is a feature of an ever-growing number of ICT products and services that often goes unnoticed. It opens up opportunities, but also presents challenges. Back in 2018, under the auspices of Compliance Management, we were one of the first companies worldwide to adopt AI guidelines on digital ethics. These guidelines provide a framework for a responsible approach to AI. To supplement them, in 2021 we worked with experts to draw up professional ethics guidelines for all developers and product managers working with AI. The guidelines provide best practices, methods, and tips for transferring the Digital Ethics Guidelines on AI to application in development processes.

AI is used, for example, in a voice and chatbot offered by Telekom Deutschland's business customer sales unit in cooperation with technology partner Cognigy. We had this offering reviewed in 2021 according to the Federal Office for Information Security's Artificial Intelligence Cloud Service Compliance Criteria Catalogue (AIC4) in the form of an assurance engagement which confirmed compliance with the Federal Office for Information Security criteria. We were one of the first companies to conduct this assurance engagement. To ensure that in the supply chain, too, AI is developed that complies with our high ethical requirements, we expanded our Supplier Code of Conduct in 2020 to include relevant content from our AI Guidelines – here again, we are pioneers in the field.  

Connect the unconnected

To ensure equal participation for all in the information and knowledge society, the affordability of products and services is just as important as technical access. The ability to use digital media safely, responsibly, and to the benefit of all is becoming increasingly important. That is why we are working to build media literacy and democracy skills in the population. In doing so, we are guided by the aspiration embodied in our #TAKEPART campaign to keep everyone connected, namely that digital participation also includes participation in society.  

As one of Germany’s major corporate foundations, the Deutsche Telekom Foundation is dedicated to improving education in STEM subjects (science, technology, engineering, and mathematics) in the digital world. Since 2018, it has been supporting the initiative “The Future of STEM learning” and, together with five universities, developing concepts for good STEM teaching with digital media. In total, the Deutsche Telekom Foundation is investing EUR 1.6 million in this project. SDG 4 RELATIONSHIPS

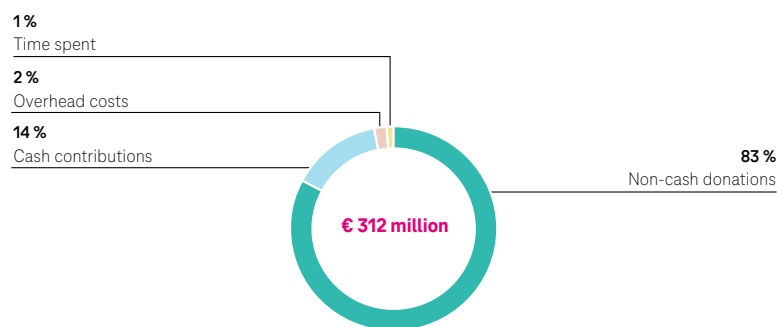
The individual national companies are responsible for implementing projects on digital participation. Examples include the youth promotion programs in Slovakia and the United States. Slovak Telekom’s national education program ENTER encourages digital education, while T-Mobile US’ Changemaker Challenge is a contest in which young people contribute ideas for better coexistence – in the categories technology, environment, and education. There was also an extra category for T-Mobile US employees and their families. A total of 16 projects were selected as winners. SDG 4 RELATIONSHIPS

All of our initiatives for greater media literacy in Germany can be found on the website “Media, sure! But secure,” where we provide information material for all target groups. Deutsche Telekom’s #TAKEPART stories – topics from the digital world for teenagers and young adults – are a practical take on digitalization issues of social relevance, translating them into a range of offers for multipliers. The aim is to raise awareness, highlight alternatives, and try out new behaviors. All modules of the #TAKEPART stories are also available in simplified German. Our multiple award-winning “Teachtoday” initiative promotes the safe and competent use of online media by children and young people. Since 2020, a toolbox has been available for multipliers and teachers. It comprises more than 120 formats that deal mainly with media literacy and democracy skills. They can be used without any specialist knowledge and have been designed for young people aged between 9 and 16. The initiative additionally publishes the interactive digital children’s magazine SCROLLER, which also provides material and background information to be used in media literacy lessons. SDG 4 RELATIONSHIPS

Together with Deutsche Telekom’s brand management, we launched the campaign #TAKEPART – No Hate Speech in 2020 and continued it throughout 2021. We also launched a new priority focus with the campaign Gaming – Where the Fun Ends. Gaming platforms are often a backdrop for hate speech and exclusion that aim to create rifts in society. Along with 44 partners such as the esports player foundation and the Amadeu Antonio Foundation, we are sending a message supporting more civil courage online and taking a stand in gaming. Thousands of people listened to our podcasts on this topic. Hate and gaming was also a topic of discussion at an international meeting of Deutsche Telekom managers and at the Equal Esports Festival. Since the campaign was launched in the second quarter of 2020, we have achieved a media reach of around 720 million contacts. We reached more than 3.8 million people directly or through multipliers such as parents and educators (e.g. in workshops). We have labeled the campaign #TAKEPART – No Hate Speech and our associated commitment with #GoodMagenta. We have also won a range of awards and prizes for the No Hate Speech campaign. The topic of data privacy is part and parcel of using digital media safely and securely. Our online guidebook [Digitally secure](#) offers practical advice on how to use digital media safely and securely. SDG 16 RELATIONSHIPS

We measure the impact of our Group’s social commitment with a set of three ESG KPIs. While in 2020, the focus of the KPIs was still media literacy, in 2021 we incorporated the aspect of digital participation as a key requirement of our CR and corporate strategy into new and/or revised KPIs. The Community Contribution ESG KPI maps our social commitment in terms of financial, human, and material resources. In 2021, this amounted to EUR 312 million. The new Reach ESG KPI shows the number of people we have reached with our communication on digital participation. In 2021, this figure was 968 million. The Beneficiaries ESG KPI shows the number of people who have benefited from our commitment to the issue of digital participation: in 2021 the figure was 28 million. The values of the 2021 ESG KPIs for the Deutsche Telekom Group in Germany were EUR 56 million (Community Contribution), 21 million people (Beneficiaries), and 873 million people (Reach). With the changes to the ESG KPIs as described above still in the process of being introduced from 2021, we do not yet have a Reach value for T-Mobile US.

Community Contribution ESG KPI



Data privacy and data security SDG 16 STRUCTURE

People will only use ICT solutions if they trust in the security of their personal data – and only then can these solutions develop their true potential for more sustainable development. As a result, we attach particularly great importance to protecting and securing data.

For further information, please refer to the section "[Risk and opportunity management](#)."

Our active data privacy and compliance culture, which has been built up over ten years, sets national and international standards. The data privacy-related compliance management system outlines the measures, processes, and audits we use to ensure compliance with laws, regulations, and voluntary commitments to uphold data privacy in the Group. Since 2009, the Group Board of Management has been advised by an independent Data Privacy Advisory Board comprising reputable experts from politics, the research community, business, and independent organizations.

Data privacy and data security are governed by the corresponding Group policies: the Binding Corporate Rules Privacy (BCRP) policy regulates how the Group treats personal data, while the Group Security Policy contains significant security-related principles valid within the Group, based on the international standards ISO 27001 and ISO 27701. These policies allow us to guarantee an adequately high and consistent level of data privacy and security throughout our entire Group.

We issue an annual transparency report – since 2014 in Germany, and since 2016 in our other national companies in Europe – in which we set out the nature and scope of our disclosures to security authorities. We are thus fulfilling our statutory duty as a telecommunications company.

In order to ensure even better data privacy and data security within our Group, our corporate units are audited and certified several times a year by internal and external experts. This includes the annual (re-)certification of the Telekom Security management in accordance with ISO 27001, regular Group-wide internal security checks, and the annual review of the individual Group units in connection with security maturity reporting. These audits help us assess the status quo of security in our Group.

Every two years, we perform a sample survey of data privacy and data security awareness across the Company. In the course of the Group Data Privacy Audit (GDPA), we survey 25,000 Deutsche Telekom employees on topics related to data privacy and data security. The results are used to calculate the Data Protection Award indicator – which quantifies the level of data protection in the units on a scale from 0 to 100 %. It is based on what the employees said they thought, did, and knew about data protection. The Data Protection Award indicator was last calculated in 2020 at 86 % (2018: 76 %), excluding T-Mobile US.

The focus of our Online Awareness Survey (OAS) is security awareness at the Company. The OAS surveys around 42,000 employees Group-wide (excluding T-Mobile US) across all levels of the hierarchy and provides data on security awareness. With academic support, we use the results from this survey to determine the Security Awareness Index (SAI). In the last survey in 2021, the index was 80.9 of a maximum of 100 points – higher than in any other benchmark company. We also have our processes and management systems as well as products and services certified by external, independent organizations such as TÜV, DQS, DEKRA, and auditing firms. The IT systems at Telekom Deutschland were most recently certified as secure in 2020 by the testing institute TÜV Informationstechnik (TÜViT) of the TÜV Nord Group.

Telecommunications companies are required to train their employees on issues related to data protection law when they begin their employment. Deutsche Telekom goes above and beyond these legal requirements: Every two years, we train all of our employees in Germany and place them under an obligation to uphold data privacy and telecommunications secrecy. Corresponding requirements apply to our national companies. Where there is a greater risk of data such as customer or employee information being misused, we also provide additional online training designed for self-study, give data privacy presentations, and host classroom training courses on specialized topics such as protection of customer data.

Since July 1, 2020, the Group's cybersecurity expertise has been pooled at Deutsche Telekom Security, a Deutsche Telekom subsidiary that leads the market for IT security solutions in Germany. Deutsche Telekom Security is responsible for everything related to internal security and its goal is to protect all Group units. It offers consumers and business customers solutions to make information technology more secure, from smartphones through to corporate infrastructure. In the Cyber Defense and Security Operation Center, more than 240 security experts around the world monitor our systems and those of our customers around the clock.

We react to new emerging threats and continuously develop innovative processes for defending against attacks. And for good reason: cyberattacks on companies are becoming more aggressive and sophisticated across all industries. In the reporting period alone, we registered on average almost 52 million attacks per day on our honeypot systems. Of course, not all of the attacks picked up by our sensors are high-level threats. Most are automatic scanning tools seeking to exploit potential vulnerabilities. While these do not necessarily count as fully fledged attacks, they are still to be seen as relevant early-stage activities. In a shielded environment, Deutsche Telekom Security even develops its own malware and uses it to test whether new systems can reliably detect and mitigate attack vectors. In this way we ensure our own critical IT infrastructure is protected. We also offer other operators of critical infrastructure advisory services, for example energy providers.

Our security experts use their experience to help develop security solutions for our customers. Deutsche Telekom Security has brought a wide range of solutions to market maturity. Among other things, our key security and defense offerings were combined in the Magenta Security Shield package, so as to offer our customers even better protection. Data privacy and security play a fundamental role in the development of our products and services. We review the security of our systems at every step of development using the Privacy and Security Assessment process both for new systems and for existing systems when the technology or method of data processing is modified. We use a standardized procedure to also document the data privacy and data security status of our products throughout their entire life cycle. Our security management systems are certified externally. At the same time, we ensure that our services also comply with specific regulatory requirements from other industries, such as TISAX in the automotive industry.

Youth protection aspects are also taken into consideration in our product and service design. When we develop services that could be relevant in terms of youth protection in Germany, we consult our Youth Protection Officer for suggestions of restrictions or changes. In 2014, we appointed a Child Safety Officer (CSO) in each of our national companies in Europe. The CSO acts as a central contact for the relevant stakeholders of the community, and plays a key internal role in coordinating issues relevant to youth protection. Since protecting minors when they interact with media is a challenge across many different industries, we cooperate with different youth protection organizations and participate in alliances such as the “Alliance to better protect minors online,” which aims to make the internet a safer place for children and young people.

SDG 3 RELATIONSHIPS

We work with research institutes, industry partners, initiatives, standardization bodies, public institutions, and other internet service providers worldwide with a view to fighting cybercrime and enhancing internet security together. For instance, we collaborate with the German Federal Office for Information Security throughout Germany and with the European Union Agency for Network and Information Security at a European level. The Cyber Security Cluster Bonn is an association of authorities and companies in Bonn that are dedicated to consulting, education, and research in the field of cybersecurity. As an expert committee, the Cyber Security Cluster Bonn offers direct advice to German and European government bodies.

SDG 17 RELATIONSHIPS

Aspect 4: Respecting human rights

We place high priority on respecting human rights. This applies not only to our Company, but also to our business partners and our approximately 20,000 suppliers in more than 80 countries – whom we explicitly place under the same obligations.

Labor standards in the supply chain and in the Group SDG 10 EMPLOYEES

There are still places in the world where human rights are not a given. As part of our global procurement activities, we can be exposed to country- and supplier-specific risks. These include, for example, inadequate local working and safety conditions. Violations cause severe damage to those affected and can result in reputational damage and negative financial consequences for companies.



For further information, please refer to the section “[Risk and opportunity management](#).”

As a responsible company, we have made an express commitment to upholding the UN Guiding Principles on Business and Human Rights adopted by the United Nations Human Rights Council in 2011 (Ruggie Principles). The obligation to respect human rights is anchored in our core regulations – i.e., our Guiding Principles and our Code of Human Rights & Social Principles policy statement, both of which have been approved by the Board of Management. This underscores our commitment to protecting human rights and to the goals of the German National Action Plan on Business and Human Rights adopted by the Federal Government in 2016. At the same time, the code embodies our commitment to complying with the principles laid down by the International Labour Organization (ILO), the Organisation for Economic Co-operation and Development (OECD), the Universal Declaration of Human Rights, and the UN Global Compact. In addition to these obligations, we also recognize the minimum social standards which, in line with the new EU Taxonomy Regulation, are necessary conditions for the taxonomy-alignment of economic activities. We are also in favor of the new Supply Chain Due Diligence Act (Lieferkettensorgfaltspflichtengesetz) in Germany. We have carried out regular human rights audits for years. In 2021, we analyzed these in regard to the new act and will adapt them accordingly in the future. We also require our suppliers to comply with all our guidelines related to human rights. Within the Group, the main focus of our attention is on preserving the right to collective agreements, and on ensuring diversity and equity.

For further information, please refer to the sections “[Collaboration with employees’ representatives/trade unions](#)” and “[Diversity, equity and inclusion](#).”


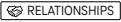
Detailed information on this will be published in our [2021 CR report](#).

In order to meet the requirements of the UN Guiding Principles, we have developed an extensive program to implement these Principles throughout our Group and introduced an ongoing process comprising several interconnected measures and tools. The program includes the policy statement, promoting awareness, a mechanism for lodging complaints, a risk and impact analysis, and reporting.

We use two main instruments to review our Code of Human Rights & Social Principles in the Group: Firstly, we compile a central Human Rights & Social Performance Report each year. For 2021, all 111 of the companies surveyed declared in this report that they comply with the rules and principles of the Code of Human Rights & Social Principles. We additionally included five joint ventures in the survey for 2021. The report indicated no violations for 2021. Secondly, we have established a central point of contact for human rights issues, which can be reached via the email address “humanrights@telekom.de.” Further contact options and an anonymous whistleblower system are available on TellMe, our Group-wide whistleblower portal. We look into all tip-offs received and introduce countermeasures, provided the information is identified as plausible. In 2021, seven tip-offs relating to human rights were received via the point of contact and the whistleblower portal. Not all of these tip-offs were deemed plausible. Whenever necessary, we carry out review processes at our national companies to assess employer-employee relationships. To do so, we compile five human rights-related key performance indicators, such as employee satisfaction and the health rate, then assess these using a traffic light system.  

For further information about employee satisfaction, please refer to the section “Employees.”


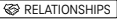
In addition, we conduct an annual formal review of compliance with our Employee Relations Policy. In September 2021, an Employee Relations Policy review was conducted at OTE in Greece. After a review like this, the results are discussed with the regional managers in our national companies. If necessary, we agree measures such as a Human Rights Impact Assessment and Engagement – a process for estimating the actual and potential effects of business activities on human rights, as well as the ability of the organization to prevent, mitigate, or eliminate negative effects. In view of the coronavirus pandemic, we were unable to perform any further routine assessments abroad in 2021. The pandemic also prevented us from holding on-site training courses to raise awareness among managers and employees for human rights issues. Instead, we organized a Human Rights Risk Assessment at Group Headquarters in 2020, in the course of which we identified further Group-wide challenges as regards human rights; among other things, these will make it necessary to adjust individual policies and communications measures. The relevant measures, such as adapting our Code of Human Rights, are implemented on an ongoing basis. For example, in 2021 we set up a human rights working group and carried out a more in-depth review of the procurement process.


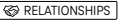
Our perception of ourselves as a company that acts in a socially and ecologically sustainable way includes assuming responsibility along our entire value chain. We have been working to improve sustainability throughout our supply chain for many years. Our strategy for sustainable procurement practices is embedded Group-wide in our procurement processes. The heads of the CR and Procurement units are jointly responsible for its implementation. On January 1, 2022, responsibility will be transferred directly to the department of the Chairman of the Board of Management. An escalation process calls for decisions to be made at Board of Management level in severe cases. The Sustainable Procurement Group, a working group that has had an international focus since the reporting year, supports our national and international procurement units in implementing the sustainability requirements. The aim is also to foster dialog among procurement employees. Our sustainability principles for procurement are set out in the Group’s Global Procurement Policy. The supplementary Procurement Practices provide specific guidelines for procurement in Germany and serve as templates for implementation in the different national companies. The section of the Procurement Practices covering sustainability gives purchasing officers an overview of the CR criteria that are to be taken into account in each stage of the procurement process. An e-learning tool is available to our employees throughout the Group providing training videos on the issue of sustainability in procurement.  

Our suppliers must accept the principles of our Supplier Code of Conduct and meet the associated requirements. Nonetheless, we cannot guarantee that all of our suppliers are up to the standard. We review their compliance regularly to minimize risks and support suppliers in further developing their sustainability performance, working closely with them on these issues. Leading up to the supplier evaluation, we classify our categories as critical or non-critical based on risk and opportunity. We have defined 14 Corporate Social Responsibility (CSR) risk criteria and 4 CSR opportunity criteria on the basis of expert interviews.

For the supplier evaluation itself, we use a multi-stage approach: The Supplier Code of Conduct, for instance, is an integral part of all supplier agreements and binding for all of our suppliers. Ethical, social, and ecological principles as well as fundamental human rights are codified in this document. When selecting a supplier after issuing an invitation to tender, sustainability factors are given a weighting of 10 %. In addition, all new suppliers undergo a review by a company specializing in the analysis of published ESG risk data (excluding T-Mobile US). In this way, we can find out at an early stage if there is any increased risk with regard to specific sustainability criteria at any of our suppliers.

We are constantly working to enhance the social and ecological sustainability of our value chain. During the reporting year, we again carried out a dedicated process to review IT and network products on the basis of specific sustainability criteria, which we had already tried out in 2020 as part of a pilot project. On the basis of our findings, we worked with the telecommunications company Orange to draw up a harmonized set of criteria that was then piloted in selected invitations to tender for hardware products. As of 2022, these harmonized criteria are to be applied in all tenders for hardware products and have a weighting of 20 % when selecting suppliers.

Sustainability assessments and reviews are additionally conducted for selected suppliers of critical categories. Depending on their individual sustainability performance and risk classification, we use a range of instruments, for instance, the information system EcoVadis, mobile employee surveys, and on-site supplier audits (social audits). Our focus here is not only on our direct suppliers but also, wherever possible, on downstream suppliers. We increase the effectiveness of our audits through our cooperation with Joint Audit Cooperation (JAC), which currently consists of 17 telecommunications companies. In 2021, we completed a total of 88 social audits (71 audits and 17 mobile surveys) – 34 at our direct and 54 at our indirect suppliers. Since 2010, we have carried out 812 audits within the framework of the JAC.  

We work in close cooperation with our strategically important suppliers on improving their sustainability performance, for example, in terms of environmental protection, working hours regulations, and occupational health and safety. This is done primarily as part of the development program we initiated for suppliers. Since 2018, we have been implementing this program on the basis of a voluntary industry-wide approach known as the Sustainable Development Program (SDP). The SDP has been continued in the Joint Audit Cooperation (JAC) since 2021. Alongside Deutsche Telekom, which heads the project, Telefónica, Swisscom, and Orange are working together to refine the SDP on an ongoing basis in accordance with the JAC sustainability targets. In the reporting period, four further suppliers (two of Deutsche Telekom and two of Swisscom) were included in the SDP. Since the launch of the program in 2014, a total of 29 suppliers have completed the SDP, achieving measurable ecological, social, and economic progress. For example, one supplier was able to reduce energy consumption by 2.45 % and save 681.54 metric tons of CO₂e emissions. Another supplier has established regular employee satisfaction surveys, achieving a satisfaction rate of 80 % in the second half of 2021.  

Sustainability in procurement is measured based on the following ESG KPIs: the Procurement Volume Without CR Risk ESG KPI – for which the target is 95 % by 2025 – measures the procurement volume from direct business partners on whom an established external service provider carried out checks in the reporting period for negative reports in the media and found no irregularities. It also includes suppliers for whom irregularities were identified, but where corresponding corrective action was taken. The share of this procurement volume subjected to a risk assessment amounted to 99.7 % in 2021 (prior year: 99.6 %). The Procurement Volume Verified as Non-Critical ESG KPI – target for 2025: 60 % – by contrast, measures the share accounted for by suppliers checked for social and ecological criteria by means of dedicated reviews – e.g., through EcoVadis, the CDP, social audits, supplier visits, or our Supplier Development Program. In 2021, the share of these CR-verified suppliers was 60 % (prior year: 62 %). In each case, the calculation is based on the Group-wide procurement volume that is already uniformly mapped to a large extent (excluding the Network Capacity category and T-Mobile US), but on different levels of supplier relationships.

Detailed information on our supplier management system will be published in our [2021 CR report](#).

Aspect 5: Fighting corruption

Corruption and unfair business practices violate national and international law. We reject every form of corruption, which is why prevention and corruption avoidance measures constitute a focus of our compliance activities.

Ethical business practices and compliance

We feel it is highly important that all staff and executive bodies in our Group act with integrity and comply with our values, rules of conduct, and applicable laws and statutory requirements at all times. The goal of our compliance activities is to prevent violations and improper business behavior and to integrate compliance into our business processes early on and enduringly. Our customers need to be able to trust that our actions meet the highest standards for compliance and integrity around the world. This is essential if we are to be seen as a reliable partner.

We have expressed our commitment to complying with ethical principles and both legal and statutory requirements. We have anchored this pledge in our Guiding Principles and our Code of Conduct. The Code of Conduct is valid throughout the Group and has been introduced in all of our national companies.



Group Compliance, our central compliance management organization, also plays a key role in establishing corporate governance structures and a corporate culture that focus on respect and integrity. It promotes a compliance culture and establishes a set of values centering around the issue of compliance at our Group, and encourages managers and employees to internalize these values. Our understanding of compliance therefore far exceeds simply conducting business legally, i.e., in line with laws and internal regulations, and aims to ensure everyone in our Group behaves with integrity.

We have introduced a comprehensive compliance management system to establish integrity and compliance with the law as pillars of conduct across the entire Group. The compliance management system serves to mitigate exposure to legal and financial risks, minimize the risk of reputational damage being sustained by the Company, its employees or executive bodies, prevent violations of applicable law and internal policies and regulations, and deter conduct not in compliance with our values. The aim of compliance management is to ensure that all our activities comply both with legal and statutory requirements and with our own internal policies and regulations. Responsibility for the compliance management system lies with the Board of Management department for Human Resources and Legal Affairs. In addition, one person at management or board of management level in each Group company is in charge of compliance. Our Chief Compliance Officer is responsible for the Group-wide design, advancement, and implementation of the compliance management system. Compliance officers implement the compliance management system and our compliance goals locally at the level of our operating segments and national companies.

We take many different actions and measures to prevent and fight corruption. Our compliance management system is based on the Compliance Risk Assessments (CRAs), which we use to identify and assess compliance risks and introduce suitable preventative measures. To this end, we have introduced a Group-wide process to be carried out annually. The companies that will take part in the CRAs are selected according to the level of maturity of their compliance management system (maturity-based model). In the reporting year, the CRAs included 112 entities (92 companies and 20 central units) and covered 98.1 % of the workforce (according to the headcount figures for the fully consolidated companies and central units). The individual Group companies are responsible for conducting the CRA, with support and advice given from the central compliance organization. We have our compliance management system reviewed, with particular attention paid to anti-corruption measures. In 2020, initially nine German companies were examined. A further 13 international companies were then assessed in 2021. A total of 22 companies were thus successfully reviewed in the two-year period 2020/2021. Like in 2020, the review during the reporting year focused on business processes that are subject to an increased risk of corruption, such as procurement, sales, events, donations, sponsoring, M&A, and HR.

We regularly provide risk-oriented and target group-specific compliance and anti-corruption training. We have set up the AskMe advice portal to address all kinds of issues relating to compliance. The portal contains reliable information for employees on laws, internal policies, and rules of conduct relevant to their daily activities.

Despite all precautions, we are not always able to prevent breaches of law or violations of regulations at the Company. The TellMe whistleblower portal is available to employees and external parties for reporting breaches or suspected breaches of the law or of internal policies and regulations. In 2021, 87 compliance-related tip-offs were submitted via the TellMe portal (prior year: 113 tip-offs). Over the course of the year, 47 of these were confirmed to be cases of misconduct and dealt with accordingly. Within the scope of the legal framework available to us, we systematically pursue all tip-offs, including those that reach us via other channels, and implement commensurate sanctions in compliance with the relevant statutory provisions. We have introduced a Group-wide reporting process to control and monitor these activities.

With our Supplier Code of Conduct as an integral component of our General Terms and Conditions for Purchasing, we obligate our suppliers to, among other elements, refrain from any kind of corruption or conduct that could be interpreted as such. We select our business partners based on compliance criteria and conduct risk-oriented compliance business assessments. We have been offering regular e-learning training courses on compliance to our suppliers since 2014.  

Employees

Supporting people. Driving performance.

We at Deutsche Telekom are actively shaping the digitalization of society and, at the same time, we are engaged in the cultural and digital transformation of our own company. In many areas, environmental effects, new technologies, and business models entail fundamental changes to our working world and the skills we require for it. Our aspiration is to steer this change process and, in doing so, shift the focus of attention to people. After all, it is our employees who make all the difference. In the very best offer our customers not only outstanding products and services, but also excellent customer service, we need the very best employees – now and in the future. That is why we also have to remain an attractive employer for talented individuals. We need to create a working environment that encourages flexible, participative ways of working, and to entrench a culture of learning that enables us to build up the new skills needed to meet current and future challenges.

Our priorities in 2021



1. Support our employees through crisis situations
2. Evolve our culture and design new working environments
3. Continue the long-term transformation of our workforce

In the following, we provide details of sample projects and initiatives designed with these priorities in mind.

Our HR work based on the priorities



1. Support our employees through crisis situations

As a critical infrastructure company, Deutsche Telekom makes an important contribution to society through the reliable provision and restoration of telecommunications services. This holds particularly true in respect of the restoration of telecommunications infrastructure following the occurrence of natural disasters and crisis situations, such as the catastrophic flooding experienced across North Rhine-Westphalia and Rhineland-Palatinate in July 2021, the devastating wildfires in Greece in August 2021, as well as the maintenance of operational capability in all of our national entities during the coronavirus pandemic. Crisis situations like these call for special measures aimed at maintaining our operational capability and at protecting Deutsche Telekom employees. The Group-wide measures described below were taken in collaboration with the Group Situation Center to prevent the spread of the pandemic, inform the workforce, and intervene where necessary. The Group Situation Center forms part of Deutsche Telekom's system for managing security incidents. It is responsible for coordinating, managing, and monitoring the measures taken to tackle acute threats; it reviews and evaluates the available information, and implements countermeasures – either directly, for example, as part of Deutsche Telekom Security's master incident management system, or by delegating responsibility to employees or units with the relevant expertise.

Coronavirus pandemic.   We have been acting with the utmost care since the start of the pandemic, using every means available to protect our customers' and employees' health. Our hygiene plan undergoes ongoing revision in consultation with virologists to keep it in line with the latest developments. It contains measures ranging from reduced room occupancy and the obligation to wear a medical mask, through the provision of disinfectant and masks, to the option to work from home. In addition, we provide rapid antigen self-tests free of charge to colleagues working on site in Germany and other European countries, such as Poland and Slovakia.



In Germany, Deutsche Telekom has applied the "3G rule," which was adopted by the federal government and the states and under which only people who are vaccinated, recovered, or tested have access to the workplace since the legal regulation entered into force in November 2021. Employees must provide the required proof before they can enter the workplace. This is checked and documented by our managers. To enable our employees to submit their proof to the relevant manager immediately, Deutsche Telekom developed an app which combines a validation service developed by T-Systems International, our tried-and-tested employee app, and the access management system. The app was piloted in December 2021, followed by the start of the rollout in January 2022. The various national companies also have access rules in place. In Austria, the 3G rule also applies, and in the United States, it's 1G, which means all employees must be vaccinated.

In many of our international companies, including in Croatia, Poland, and Austria, we have been offering support in the form of vaccination campaigns for employees. During our first vaccination campaign, which ran from June to September 2021, for example, we provided employees and their family members with the COVID-19 vaccination on 87 different sites, 18 of which were exclusive Deutsche Telekom vaccination centers. A total of 45,500 appointments were arranged for first, second, and mix-and-match vaccinations. From December 2021, employees were also offered booster vaccinations.

We were for the most part able to stop the spread of the coronavirus within the Group by providing all relevant contacts at the local organizations with a daily briefing from the Group Situation Center, reporting all suspected and actual cases of illness to the latter, and putting in place a process to intervene in confirmed cases. We continued our constant efforts to inform and protect all our employees and establish rules of conduct with a personal Coronavirus Update newsletter issued by our Board of Management member for Human Resources and Legal Affairs. We also made use of our extensive network with other DAX-listed companies and the scientific community to continually refine our best practices and share them with other companies. Above and beyond this, our national companies took action to offer localized support. For example, we offered all our employees in Germany a regular opportunity to chat online via live stream with a virologist and hygiene expert from the University of Bonn. This live chat option not only provided participants with a rundown of the current situation, but also covered key topics, gave recommendations on how to behave, provided answers to employees' questions, and dealt with the consequences of the "new normal!" for working life at Deutsche Telekom.  

Catastrophic flooding.   July of the reporting year saw very extreme weather in parts of Germany. A number of cities and communities in the federal states of Rhineland-Palatinate and North Rhine-Westphalia were among those hit particularly hard. Torrential rain meant whole villages were flooded, destroying large sections of the local infrastructure. In addition to restoring the technical infrastructure, Deutsche Telekom also showed solidarity with the people concerned: our 1,319 employees who were affected could apply for paid release from work and were also given up to 5 days of paid special leave. Moreover, our welfare service (Betreuungswerk) offered emergency aid of EUR 500 per family member to the employees affected. Accommodation and furniture were also provided.

Those of our employees who were not affected also showed considerable solidarity: 250 volunteers provided support on the ground at all hours, having also been released from their duties with pay by Deutsche Telekom. 2,000 employees volunteered to collect donations during the SAT.1 fundraising gala. In addition to donations from the Company to charities such as Aktion Lichtblicke e.V. and Aktion Deutschland Hilft e.V., more than 500 colleagues also donated to our welfare service.

Employee health.   Our health management strategy is designed to maintain our employees' health and performance. We view occupational health and safety legislation as minimum requirements. Our corporate culture encourages our employees to take responsibility for their own health. The steps we took to promote employee health, including anti-infection precautions, contributed to a further improvement in the health rate in 2021, continuing the upward trend from 2020. After Deutsche Telekom AG won the Corporate Health Award, for which companies can apply every two years, in 2020, other international Deutsche Telekom subsidiaries followed with awards in the field of health and safety during the reporting year: T-Mobile US, for example, became the first mobile communications company to earn the WELL Health-Safety Rating. Above and beyond that, we supported our employees and managers by providing them with virtual formats on topics such as leadership, remote collaboration, and resilience (for instance, the online seminar "Starke Psyche (A strong psyche)") and by setting up additional IT support channels and a helpline for dealing with psychological problems.

For further information on the subject of occupational health and safety, please refer to the section "[Corporate responsibility and non-financial statement](#)."

Employee satisfaction. Our engagement score, which is our measure of employee satisfaction, is calculated from data collected by the Group-wide (excluding T-Mobile US) employee survey conducted every two years. The questionnaire and the measurement model were reviewed in the context of the 2021 employee survey and were updated based on feedback and the latest research findings. As part of this process, we changed the scale used for the engagement score (formerly the "commitment index") to 1 to 100, instead of the 1 to 5 we had previously used. Since the 2021 employee survey, the questions used to calculate the engagement score are now based on the categories of Mood, Employer Attractiveness, Brand Identity, and Inspiration. The 2021 employee survey showed a high commitment level of 77 points. The survey, which we carried out in November 2021, saw a participation rate of 80 %. The results in numerous areas, such as Goals (92 %), Strengths (88 %), Purpose (86 %), Digital Collaboration (86 %), and Information (86 %), were the highest ever. The question on Mood is comparable to the earlier question on Satisfaction and is at a very high level of 80 %. To allow for qualitative answers, the survey included a free-text box for the first time in which employees could suggest things that would reinforce their commitment to their work. We also conduct pulse surveys twice per year to obtain feedback from our employees. Several initiatives are in place to further enhance employee satisfaction.

T-Mobile US carried out separate employee surveys in January, June, and October of 2021. Changes were made to the employee survey in the reporting year to address a broader range of cultural aspects, so as to create an employee survey that spans the full spectrum of issues. Of T-Mobile US' over 75,000-strong workforce, 39,000 took part in the most recent employee survey, held in October 2021. The results show the high level of employee satisfaction there: 86 % of employees say their own team creates an inclusive working environment that is accepted by all colleagues. 83 % are proud to work for the company. 80 % would recommend T-Mobile US to others as an attractive employer. This is further borne out by the numerous accolades awarded to T-Mobile US over the last few years for its attractiveness as an employer. Like last year, the company was once again on the Forbes list of America's Best Employers. T-Mobile US won not one but four HR awards from Comparably: in the categories Best Company Perks & Benefits, Best Company Leadership, Best Places to Work in Seattle, and Best Company Leadership Teams. T-Mobile US is number 51 in the Fortune 100 list of Best Companies to Work For. T-Mobile US also scored 100 in the Human Rights Campaign's Corporate Equality Index for the ninth time in a row, making it the best place to work in terms of equal treatment of lesbian, gay, bisexual, and transgender people.

2. Evolve our culture and design new working environments

We are convinced that corporate culture is a key factor in a company's long-term success. Building on the strong foundation of our Guiding Principles, corporate culture must also reflect the changing needs of customers and employees. For this reason, we understand culture to be a constantly evolving process. At Deutsche Telekom, we talk about "living culture." Our purpose statement "We won't stop until everyone is connected," announced in January 2020, serves to guide all of our corporate efforts. In times of physical distancing in society and in our Company, we are constantly reminded of the importance of this shared identity.

Our Guiding Principles. We consider culture to be part of the corporate DNA. Our Guiding Principles act as our compass, leading us to reflect on our behavior on a daily basis and helping us to make the right decisions. Each year, we focus on our Guiding Principles during Living Culture Day and the Telekom Team Award. In 2021, we held our first hybrid Living Culture Day event, with the slogan "Passion for the Future." More than 20 countries took part, with over 5,000 participants watching the live stream of the event. There was a strong social media presence, with 17,000 posts, comments, and likes on both internal and external networks. The Telekom Team Award is an international intragroup award with six categories, one for each of our Guiding Principles, aimed at recognizing outstanding performance as a team. In 2021, a total of 18 winning teams were chosen from among 272 entries from 19 countries. In November and December, some 14,000 employees around the world used an online tool to vote on the final order of the winners.

Our six Guiding Principles



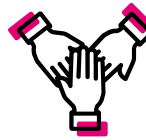
DELIGHT OUR CUSTOMERS



GET THINGS DONE



ACT WITH RESPECT & INTEGRITY







TEAM TOGETHER – TEAM APART



I AM T – COUNT ON ME





STAY CURIOUS & GROW

Practicing diversity.   We support a work environment in which all employees can achieve their full potential. Promoting diversity, equity, and inclusion in terms of gender, age, and cultural identity is intrinsic to how we see ourselves. We firmly believe that this also increases our corporate success, because we consider diverse teams to be a driver of innovation. Our goal of increasing the percentage of women in management positions to 30 % across the Group (excluding T-Mobile US) by 2025 still applies. With women occupying 45 % of positions on the Supervisory Board and 37.5 % of positions on the Board of Management of Deutsche Telekom AG, we have already exceeded this target in these boards. Across the Group, the proportion of women in middle and upper management stood at 27.3 % at the end of 2021. To ensure we also reach our target in these management levels, we have worked with the different business segments to draw up concrete implementation plans (excluding T-Mobile US). Specific measures are to be agreed aimed at increasing diversity in management teams regarding gender, age, and the international dimension on the basis of the starting point of the segment in question. T-Mobile US is equally committed to maintaining and further enhancing the diversity of its workforce in terms of gender, age, and internationality.  

We have a range of measures and products in place to support and monitor our efforts to increase diversity in the Company. Continually refining and implementing these measures and products promotes diversity in the Group. Among other actions, a revised Group Policy on Diversity, Equity and Inclusion (DE&I) was implemented globally in the reporting year. The policy is intended as a binding written commitment that will ensure our values are reflected in every decision and action at every level of the Group. The launch of the new policy is accompanied by a broad-based communication campaign – Connected as One. The campaign focuses on individual differences while emphasizing that we are nonetheless united when it comes to promoting diversity, equal opportunities, and inclusion in every sense. T-Mobile US, too, demonstrates its commitment to diversity with a range of initiatives, including the Women & Allies Network (WAN), Women in Tech, and the McKinsey Black Leadership Program.



The successful launch of the Talent Hub in 2021 promotes the targeted placing of talents within our succession management process, ensuring diversity in all aspects, e.g., gender, age, and cultural background. We also raise employee awareness through tailored training courses on topics such as hidden prejudices, racism, and transgender issues, and we encourage employees to reflect on these.

New Work.   Also in this year, the coronavirus pandemic was key to shaping the way we work together. The related guardrails adopted by the Board of Management in 2020 proved effective once again in the reporting year:

1. We will take the best of both worlds: the type of work will determine the mix of mobile and in-person work, whether the latter is performed on the customers' premises, in our shops, or in the office. The share of mobile working is set to rise significantly, not just because it "works," but because it even enhances productivity in many areas. But real-life interaction, too, will remain a key component of our working life. That is because the success of creative collaboration, complex problem-solving, and team processes often hinges on physical proximity.
2. Our offices will become places of encounter: the office is set to remain the most important location for our identity. More than ever before, our office buildings will become places for teamwork, encounters, and social and creative interaction.
3. Digital tools will become even more important: digital collaboration tools have become our constant companions and key helpers in our daily work. For this reason, we will ramp up our Group-wide investment in IT tools, equipment, and enablement.
4. We will travel less: going forward, we will get by with fewer business trips, thus making a contribution to sustainability.
5. Our understanding of leadership will change: it will not be based on attendance and control, but on trust and transparency. We will face new challenges when it comes to virtual leadership and to leading hybrid teams. It will become even more important for our managers to create a safe, motivating "space," formulate clear objectives, provide feedback, and monitor results. We will offer a wide range of virtual tools to support our managers in this area.

Deutsche Telekom has no centralized provisions or one-size-fits-all solutions, as the nature of work differs greatly throughout our Company. It is up to our managers to shape the new way of working with their teams.


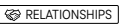
We successfully built on our experience in recent months and put proactive measures in place that have been reflected, once again, in extremely high employee satisfaction and a consistently high level of employer attractiveness. We were able to implement the guardrails step by step: we pressed forward with making our offices places of encounter and identification, while at the same time introducing Group-wide collaboration tools, simplifying and optimizing hybrid cooperation. In agreement with the Group Works Council, we are currently running a pilot project in Germany on working close to home, aimed at testing another instrument to increase workplace flexibility. We made good use of the time between the periods when government recommended to work from home to hold a variety of events with our customers, business partners, and employees, strengthening relationships and giving new momentum to creativity.

Shares2You.   Deutsche Telekom AG launched the employee share program Shares2You in 2021. Through the program, once per year employees can acquire shares in Deutsche Telekom AG up to an amount of EUR 1,000. For every two shares they purchase, they receive another share at no cost. All shares acquired in this way must be kept for a minimum of four years. The program was launched in 2021 in the participating German Group companies, and is to be extended step by step in the coming years to Group companies outside of Germany. In the reporting year, 36,290 employees took advantage of the program. A total of 3,055,071 shares were transferred in this way from Deutsche Telekom AG to these participants.

3. Continue the long-term transformation of our workforce

It is our responsibility to ensure that we have the right employees in the right place at the right time, that they enjoy competitive conditions, and that they are able to grow and develop. In addition to both the transformation initiatives driven by digitalization and automation, and to staff reduction and restructuring measures, the decisive tools in achieving this goal are proactive total workforce management, the digitalization of our core processes, and investment in developing skills.

Major transformation initiatives. In the reporting year, we again succeeded in transforming individual business areas of the Group, e.g., DT IT, T-Systems, and the business customer and service units at Telekom Deutschland. Restructuring is being implemented in a socially responsible manner. To support our managers, we focused strongly on offering training courses in 2021 aimed at building skills in leadership during change processes.

Systematic skills development.   Our employees' in-depth expertise and forward-looking skills are among our Company's most important resources and are thus crucial to our business success. Deutsche Telekom values future-proof digital skills particularly highly: by 2024, the Group's need for digital experts will increase to 17 %. It is therefore up to us to provide an environment in which employee skills can be transformed. With the introduction of the Global Job Architecture (GJA) and specific Group works agreements on strategic qualitative personnel planning (SQP) and on skill management, the trade union ver.di, the Group Works Council, and Deutsche Telekom have worked together to lay the foundations for the necessary skills transformation. The GJA simplifies existing function structures and consolidates them in future-proof job profiles. Our SQP takes changing market conditions into account to plot the right course for targeted investment in the skills that will be needed going forward. Personal development meetings in conjunction with a digital tool help pinpoint where individual skills are lacking, while development plans can be continuously adapted by means of tailored training programs. Around 30,000 employees successfully went through the skill management process in 2021. "We grow," our modern performance management system that enables ongoing dialog between managers and employees, also focuses on our employees' individual development. This combination of strategic HR instruments – job architecture, strategic personnel planning, and the identification of personal training needs – forms the basis for targeted upskilling/reskilling for our employees.

Upskilling and reskilling programs with a focus on digital skills.   With the goal of equipping as many employees as possible with the skills that will be needed in the future and guaranteeing their employability in the best way possible, we offered more "Explorer journeys" again in 2021, programs which address specific innovation topics. Around 6,000 employees signed up in 2021 for multiple-week digital training programs on topics such as big data, digital marketing, artificial intelligence, and software development. We also instated academies with the aim of offering both reskilling and large-scale upskilling for digital experts, e.g., in the fields of software engineering, DevOps, artificial intelligence, and data analytics. In our Technology and Innovation unit alone, 1,650 employees completed specialized training in 2021 – alongside the many other standard training measures we continue to offer year after year.



Learning initiatives and offerings. Developing skills for the future and reinforcing our learning culture are top priorities for us, and are reflected in our Guiding Principle “Stay curious and grow.” With our Youlearn initiative – aimed at entrenching self-paced learning in our everyday working life – we have significantly enhanced our employees’ options for upgrading their skills. Employees in Germany and our European national companies devoted almost 4 million hours of their time to learning in the reporting year – that was 4.6 working days per employee, on average. After a decrease in learning hours in 2020 (caused by the lack of in-person courses due to the coronavirus restrictions), 83 % of the Group’s learning portfolio was systematically moved online in 2021 (excluding T-Mobile US). Deutsche Telekom has established a high-quality training service for employees by rolling out Percipio, an intelligent learning platform also dubbed the “Netflix of learning,” and integrating Coursera as a provider of digital further-training courses offered by top-ranking universities. The more than 180,000 Percipio registrations since the third quarter of 2019 show that our efforts have been worthwhile. The employee initiative Learning from Experts (LEX), launched in 2018, is another model of autonomous, self-organized and digital learning, in which experts from the Group pass on their knowledge to colleagues via different channels. The highlight are open digital courses known as LEX sessions. More than 5,000 options had been made available with this type of content at the end of 2021, with 140,000 colleagues having taken part. Today, with 20,000 active members, LEX is the fastest-growing community in the Group. Acceptance of digital learning has thus become stronger, as is reflected in the increase in the digital learning rate to 90 % and a rise in satisfaction with learning offerings (+4 %) compared with 2020. The Top Learner Award for outstanding commitment to learning was awarded for the first time in 2021, with four employees receiving the award. Youlearn Day, a day of digital learning for all employees, reached a new participation record in comparison with the previous year, with some 5,000 registered participants from 30 countries. Employees of T-Mobile US completed 5.4 million hours of learning via a learning management tool. In addition, the Magenta University at T-Mobile US acts as a central support hub, empowering employees to make the most of their abilities, take advantage of career opportunities, expand their leadership skills, and strengthen their commitment to diversity, equity, and inclusion.

Recruiting and onboarding. We want to shape the digital world of tomorrow. Even amid the ongoing coronavirus pandemic, we succeeded in recruiting around 8,280 new employees across the Group (excluding T-Mobile US). T-Mobile US recruited over 16,000 new employees in 2021. Given the growing prominence of technical and IT profiles in the international labor market, we closely orient our employer marketing activities to these highly relevant areas. We welcomed 2,076 new trainees and dual students in Germany, a high percentage of whom in the area of technology/IT. In 2021, Capital magazine validated our keen efforts to advance young employees working at our Company and offer them opportunities for success by ranking us “Germany’s best training provider” in the categories “Vocational training” and “Dual studies.” Our entire recruitment strategy is digital, but at the same time with a personal touch. Our international [careers website](#) is a platform offering job-seekers transparent information, for example introducing employees and providing a glimpse into the world of work. It also facilitates digital recruitment and supports international standards in our selection processes (e.g., virtual job interviews and assessment centers). Notwithstanding the digital transformation, we still value direct and personal contact, so we continue to attend careers fairs, networking sessions, and other events. By addressing specific target groups, our recruiting strategy also aims to encourage more talented women to join our Company. 2020 marked the eighth time that female students of STEM subjects (science, technology, engineering, mathematics) from all over the world were able to compete for our Women’s STEM Award. We are also involved in Femtec, a career program for female STEM students, and in the Global Digital Women network. We have shown that digital recruitment is a crucial success factor when it comes to responding rapidly to changing requirements and continuing to secure employees with critical profiles for the Company.

Particularly during the pandemic, we relied on our motto “Stronger together” to reinvent our onboarding process at international level. We now use an onboarding app so that new employees can get to know Deutsche Telekom before their first day on the job and can benefit from the best possible onboarding experience to prepare them for their tasks when they start work. This includes introductions to the tools they will use, to Deutsche Telekom’s strategy, and to the training options available (excluding T-Mobile US). The onboarding app also helps managers with the onboarding process, for example by providing checklists. In the context of this process, we held a virtual global welcome event for our new employees, the “New Unstoppables,” in May and November 2021, with 689 new employees in attendance (excluding T-Mobile US).

In the second half of 2021, T-Mobile US introduced its new Being Un-carrier onboarding program for back-office employees to offer new employees a consistent experience across the board. Prior to this, the approaches to onboarding had differed in each business segment. A company-wide platform was created to centralize the suggested onboarding activities and make them available to all employees and their managers to use as needed. Two-part virtual live and interactive orientation sessions are offered on a weekly basis as an opportunity for back-office employees to get to know other colleagues from outside their team.

Employer brand. Digitalization, automation, scope for development, new ways of working, and self-realization are priorities for applicants, shaping the way they look for jobs. Job security and a flexible working environment that allows for a good balance between personal and professional challenges are key criteria when selecting a future employer. In the IT & Tech industry in particular, the “war for talent” grew fiercer, with these target groups more sought after than ever. Our recruitment communication addressed our target groups’ needs at an early stage to strengthen our employer brand, advertising Deutsche Telekom’s digital application processes, agile workflows, flexible working, and working-from-home options. Another key component of our communication is to personally address the talents and to create a sense of community and proximity in a digital world, because the notion of belonging is front and center in 2021. Our new employer campaign “We are IT!” shines a spotlight on the people behind the IT-specific jobs with their wide-ranging interests. By means of a unique external and internal IT survey we examined what is important to IT professionals outside of and within Deutsche Telekom, and what brings them together. We use target group-specific messages, authentic communication, and a finely tuned content strategy to remind IT experts of what technology means to them and what opportunities exist for them at Deutsche Telekom. A strong employer brand pays off: in the reporting year, Magenta Telekom in Austria was awarded the Leading Employer Award, among other things.

Offerings for managers.   In the age of digitalization, managers must possess skills and methods that differ greatly from those needed in the analog world. That is why, since the start of the reporting year, we have been supporting not just our executives with levelUP!, an innovative digital further-training service; but we have extended the offering of training for successful leadership in the digital age to all managers worldwide. levelUP! comprises modules that can be combined as required. Knowledge is shared primarily via interactive, digital learning formats in combination with classroom training. levelUP! is also the central information hub for intragroup and segment-specific leadership topics. Training offered in 2021 included modules on Leading in Transformation and Leading into the Future. The success of this new approach is reflected in both user numbers and satisfaction, with a record figure of 1,300 managers using levelUP!. A satisfaction index of 8.7 shows the very high level of acceptance of the program.

Following the success of the levelUP!NextGeneration program in the previous year, we offered the program again in digital format in 2021: 500 employees worldwide, from 45 companies and 18 countries, took part in this four-month development program, which features digital learning and imparts innovative, inspiring, and concrete leadership topics and skills such as ambidexterity, mindfulness, and agility. Optional modules chosen by the individual help meet development needs. levelUP!NextGeneration also helps us strengthen and encourage intragroup and cross-segment collaboration.

We value highly an environment in which our managers feel part of a leadership team. This drives us to invest not only in the transfer of skills and the teaching of methodologies, but also in strengthening our leadership communities. In summer 2021, we seized the opportunity to deliberately return to an in-person approach. Over a period of just under one week in July, our 47 business leaders joined the Board of Management on a learning journey in Estonia. The focal topic was digitalization and the event offered all participants a platform for dialog with established companies, start-ups, and government authorities. For our Telekom Transformation Team (T3), which is made up of almost 250 managers and top talents, the central topic for 2021 was courage, especially in transformation processes. The joint T3 event took place in Croatia in summer.

T-Mobile US has a range of career and leadership development programs in place to support employees with defining career success on their own terms and achieving their career goals. They are supported by a portfolio spanning coaching, self-study courses, and other development programs (including CareerTraX and Magenta9).

Headcount development

The Group’s headcount fell by 4.3 % compared with the end of the prior year. The number of employees in our Germany operating segment decreased by 9.3 % against year-end 2020, mainly as a result of the reassignment of employees to the Group Headquarters & Group Services segment in connection with reorganization measures at Deutsche Telekom IT. Employees also continued to take up socially responsible instruments as part of staff restructuring activities, such as dedicated retirement and phased retirement. The total number of employees in our United States operating segment remained stable compared with December 31, 2020. In our Europe operating segment, the headcount was down 14.4 % compared with the end of the prior year, with staff levels decreasing in Romania in particular, mainly due to the sale of the fixed-network business. The headcount in our Systems Solutions operating segment was down 1.2 % against year-end 2020. The effect on headcount of our global efficiency enhancement measures was offset by increased staff requirements in our growth areas. The decline in numbers was due to the sale of a business operation and the reassignment of parts of the business within the Group (-2.0 %). The takeover of external service providers in Mexico had an offsetting effect (+0.9 %). In the Group Development operating segment, the headcount remained at the 2020 year-end level. The number of employees in the Group Headquarters & Group Services segment was up 17.6 % compared with the end of 2020, mainly due to the aforementioned reassignment of employees from the Germany operating segment.

Workforce statistics

Headcount development

	Dec. 31, 2021	Dec. 31, 2020	Change	Change %	Dec. 31, 2019
FTEs in the Group	216,528	226,291	(9,763)	(4.3)	210,533
Of which: Deutsche Telekom AG	13,897	15,374	(1,477)	(9.6)	17,461
Of which: civil servants (in Germany, with an active service relationship)	9,653	10,583	(930)	(8.8)	12,153
Germany operating segment ^a	60,189	66,348	(6,159)	(9.3)	69,117
United States operating segment	71,094	71,303	(209)	(0.3)	47,312
Europe operating segment	35,319	41,272	(5,953)	(14.4)	44,410
Systems Solutions operating segment	27,754	28,098	(344)	(1.2)	29,800
Group Development operating segment	2,674	2,684	(10)	(0.4)	2,603
Group Headquarters & Group Services ^a	19,498	16,585	2,913	17.6	17,292
Breakdown by geographic area					
Germany	85,160	89,032	(3,872)	(4.3)	94,111
International	131,368	137,258	(5,890)	(4.3)	116,422
Of which: other EU member states	50,005	55,816	(5,811)	(10.4)	58,743
Of which: rest of Europe	2,066	2,168	(102)	(4.7)	2,055
Of which: North America	71,337	71,617	(280)	(0.4)	47,652
Of which: rest of world	7,960	7,658	302	3.9	7,971
Natural attrition	% 5.2	3.9	1.3	33.3	5.3
Of which: Germany	% 2.1	2.0	0.1	6.1	2.3
Of which: international	% 9.3	6.6	2.7	40.9	9.5
Productivity trend^b					
Net revenue per employee	thousands of € 493	452	41	9.1	378

^a As part of reorganization measures at Deutsche Telekom IT, around 3.7 thousand employees were reassigned from the Germany operating segment to the Technology and Innovation unit in the Group Headquarters & Group Services segment effective January 1, 2021. Prior-year comparatives were not adjusted.

^b Based on the average number of employees.

Personnel costs


millions of €	2021	2020	Change	Change %	2019
Personnel costs in the Group	18,463	18,853	(390)	(2.1)	16,723
Of which: Germany	8,461	8,764	(303)	(3.5)	8,699
Of which: international	10,002	10,089	(87)	(0.9)	8,024
Special factors ^a	906	1,836	(930)	(50.7)	1,037
Personnel costs in the Group (adjusted for special factors)	17,556	17,017	539	3.2	15,686
Net revenue	108,794	100,999	7,795	7.7	80,531
Adjusted personnel cost ratio	% 16.1	16.8			19.5
Personnel costs at Deutsche Telekom AG under German GAAP	2,176	2,291	(115)	(5.0)	2,326

^a Expenses for staff-related measures.

Technology and innovation

T&I strategy: digital transformation and human centricity

At Deutsche Telekom, innovation means creating the best (digital) customer experience on the basis of the best network – now and in the future. To this end, we neither manufacture smartphones, nor do we create large amounts of our own film content, or the automation technology and sensors for industrial campus networks. Our core competency consists in integrating the individual components so that, in conjunction with our partner, network, and IT infrastructure, we can guarantee the best customer experience at a reasonable price with resilient and future-proof technology. This is precisely the task of our Technology and Innovation Board of Management department, which works in close cooperation with our operating segments. The Technology and Innovation Board of Management department is where we combine and integrate our Technology, Innovation, IT, and Security functions. This structure will allow us to meet the demands of the future network generation and the associated requirements not only of our customers, but also of our employees, our partners, and our shareholders – in terms of network security and sustainability, too. Our Group strategy Leading Digital Telco applies not only to high-speed broadband access, but also to responsible network production. That is an economic and ecological necessity, especially given growing cloudification, increasing data traffic, and the rising number and concentration of active components in our network.



The crisis triggered by coronavirus has underscored the importance of investing in resilient, future-proof technology: our networks and IT were, are, and will remain secure and stable. That would not have been possible without the IP migration in our markets and the IT turnaround, particularly in Germany.  

We are thus in a position both to enable Deutsche Telekom's current business and at the same time to shape the future. We are convinced that, in line with the priorities of our segments, we can reliably deliver results, constantly develop product, industry, and technological innovations, and simultaneously hone and refine our ways of working.

- **Delivery Innovation:** Technology and Innovation is a supplier and service provider for the Group. As such, it is particularly important that we consistently meet our obligations. That means conscientiously delivering our services, leveraging the synergies offered by centralized production, and working cost efficiently. At the same time, we can also shape the future, e.g., by promoting agile working methods to make our production future-proof.
- **Experience Innovation:** We are Deutsche Telekom's central innovation unit. Constantly pursuing innovations that benefit our customers, the Group, and all other stakeholders is our task and our obligation – but we also consider it an expression of the freedom we enjoy. Our technological innovations form the underpinnings for this. We work in close cooperation with the segments and with external partner companies in order to meet our customers' requirements and to create the innovations this calls for.
- **Capability Innovation:** Continuing to turn Deutsche Telekom into a software-based company entails transforming our capabilities on an ongoing basis. We want to recognize the need for future changes in our Company and to be able to handle them as they arise. Changes become entrenched especially when accompanied by cultural innovation in the shape of skills transformation and the systematic retraining and further training of our employees as software engineers, AI experts, and network architects. By the end of 2021, we had given 1,650 of our employees intensive training in topics relevant for the future, such as software development, artificial intelligence (AI), cloud technologies, and agile methods, in 15 Skill Academies.  

Innovation priorities

Innovations can be produced everywhere. That is why it is important to ensure we pursue our innovation activities at an intragroup level and that they are aligned with our strategy. Our interconnected innovation areas provide a holistic, Group-wide framework for this. In the reporting year, we continued to hone our innovation priorities in close coordination with the operating segments, building on our activities in 2020:

- **Connectivity:** We are developing our router operating system for the digital future – with enhanced cloud-based connectivity management and service quality, a superior customer experience and standardized operation via app, PC, or television, and value-added applications such as child protection functions, home security, predictive maintenance, and troubleshooting. This new router generation is based on a globally scalable reference system (Reference Design Kit, RDK), which we are constantly fine-tuning together with other leading telecommunications providers. We began an initial, very promising pilot for beta users in Hungary in the reporting year, and are planning the market launch there for 2022, alongside further applications and prototypes in Germany, Croatia, Greece, and North Macedonia. A core element of connectivity management is the home-network check software feature, which was introduced in 2021 both in service apps in Germany such as MeinMagenta and via the TV interface, and which provides for new, context-based customer interaction to optimize service and troubleshoot problems in home networks.
- **Smart home:** We began cloudifying our smart home offerings in 2019 and continue to refine them, with the aim of making the ecosystem future-proof. A key component is the cloud-based MagentaZuhause app, which was launched in September 2021 for beta users. The app integrates every connected household device and enables personalized use by every member of the household. The focus is on developing software-based entry-level applications for users of a suitable Deutsche Telekom router.  
- **Service orchestration in the connected home:** We want to improve the customer experience at home by ensuring the easy, seamless, uniform, uncomplicated interaction of all Deutsche Telekom's services and devices, and by enabling services from selected partners. We are doing this on the basis of the Magenta HomeOS orchestration platform, which has been developed by Deutsche Telekom. The platform bundles our various services, creating unique customer experiences. The MagentaZuhause TV app, which was launched on the market in December 2021, is the first customer touchpoint to use the HomeOS platform. The app, which combines television, smart home, router management, MagentaCloud, and voice control, is available to more than 3.5 million households in Germany. The launch of the MagentaZuhause mobile app is planned for February 2022.
- **Magenta Voice:** With smart voice control (also known as voicification), we want to further enhance the way our customers experience our services, and to simplify interaction with technology and devices. To achieve this, we are constantly evolving our voice platform, winning over new partners, and integrating voice control into numerous additional products and services such as television, smart home, and the MeinMagenta app, with the aim of offering our customers a comprehensive convergent application space. Ongoing functionality enhancements have resulted in rising customer usage and satisfaction levels. In parallel, we are pushing forward with B2B solutions. Some examples of this are a scheduling assistant for business customers and voice recognition for authentication and personalization.

- **Campus networks:** Campus networks for corporate customers are one of the core applications for 5G technology. Campus networks combine dedicated mobile connectivity with edge computing and integrated digital applications from the fields of production, automation, and logistics, enhancing options to automate production and achieve stability and flexibility in industry. In the reporting year, we rounded out our campus portfolio with standalone and hybrid solutions, and attracted further key anchor customers. In the reporting year, Deutsche Telekom was named best mobile network operator for 5G enterprise offerings from among 20 telecommunications providers listed in an international study published by ABI Research. 5G-supported positioning solutions in production, which can log and locate factory objects and autonomous devices in real time using ultra-wideband (UWB) technology with a precision of up to 30 cm, are additional vertical solutions that complement campus networks.
- **Network differentiation:** In this innovation program, we are working on developments to disaggregate, cloudify, and automate our network production. This new approach will both improve customer experience considerably and increase flexibility and scalability, while simultaneously lowering costs. We will achieve this with software solutions for automated analysis and with error correction based on artificial intelligence and machine learning, among other things. In addition, our multi-vendor strategy serves to strengthen our independence from individual suppliers and enables us to maintain our technology leadership. We are also opening up new options for direct monetization of the network, for example through network APIs. Leading network operators have joined forces in the O-RAN Alliance to pursue a standard for a vendor-agnostic, modular, Open Radio Access Network and to work with other partners to develop the associated hardware and software components. In the reporting year, Deutsche Telekom successfully brought online Europe's first model network for Open RAN, including massive Multiple Input Multiple Output (MIMO), in Neubrandenburg, Germany. In the Open Test & Integration Center (OTIC) in Berlin, start-ups, suppliers, operators, and systems integrators can test out how new components interact with mobile networks.
- **Standalone 5G:** Up to now, Deutsche Telekom has used 5G non-standalone (5G NSA) in which the existing 4G network continues to provide the technical backbone. True to its role as a technology leader, in the reporting year Deutsche Telekom commissioned its first site for 5G standalone (5G SA) in Garching, near Munich, Germany. The 5G radio access network is integrated with the new 5G core network at the location. This core network is the source of the crucial innovations and benefits, because it removes the need for terminal devices to connect to the 4G and 5G networks in parallel. The 5G core network is based on cloudified, virtualized hardware and software, which will enable new applications such as network slicing. Network slices are discrete logical networks with individual, application-specific characteristics such as bandwidth, latency or capacity, which are created on the same shared physical infrastructure. They allow applications always to be made available specifically for the appropriate (virtual) network, thus improving the customer experience. Network slices could therefore be used, for example, for applications where bandwidth and latency are critical, such as augmented/virtual reality; for communication among authorities where security is critical; or for secure, high-availability applications for business customers. In the reporting year, Deutsche Telekom, together with its partners, became the first network operator in the world to demonstrate the benefits of network slicing for a gaming app on a commercial smartphone. Actively controlling performance parameters in line with the different requirements was also successfully tested for 5G network slicing via a network API.
- **AI One Conversation:** By integrating artificial intelligence, we will ensure that our products and services remain competitive into the future. The focus of our activities in the reporting year was on scaling up our AI-based Frag Magenta digital assistants for chat and telephone. The aim of these digital assistants is to further personalize all customer interactions across all points of contact. In November 2021, German computer magazine Computer Bild and market statistics company Statista named our Frag Magenta chatbot the best chatbot by a German telecommunications provider for 2022. We also continue to personalize our marketing and sales activities so as to be able to offer our customers tailored solutions that are based on our previous interactions with them.
- **Big Data & AI:** This is an innovation area in which we are driving the implementation of Group-wide principles for data processing and analytics. Our uniform data model will enhance our data analysis and enable us to easily transpose successful applications to new markets and countries using cloud-based deployment architecture. As the privacy and integrity of our customers' data is our top priority, customer and network data remain with the relevant national companies.   Dozens of use cases for data processing, analysis, and quality have been tested in eight of our national companies and have been scaled up within the Group.
- **Sustainable Telco:** Our newest innovation area is devoted to making the telecommunications industry more sustainable. Currently, the main focus is on energy-optimized dynamic network production and the resource-efficient design of products and services. The reporting year saw successful prototypes and tests for AI-based, smart energy management in the mobile network and for decentralized production of renewable energy such as hybrid solar and wind power and hydrogen-based fuel cells.  

Three-pronged innovation strategy



We set ourselves apart from the competition and generate growth in three ways:

1. In-house developments

In 2021, we continued to pursue our current innovation topics and optimized our delivery process, developed new products, and simultaneously ramped up our transformation into a more agile company.



- **Delivery Innovation:** Artificial intelligence drives internal digitalization, e.g., in campaign management or with our award-winning Frag Magenta chatbot. Dynamic spectrum sharing helped us build on our leadership position. This new antenna technology enables the parallel use of LTE and 5G in the same frequency band.
- **Experience Innovation:** In the consumer area, we commercially launched the linking of a range of Magenta services at home via app and television through home orchestration. Industrial campus networks also reached the market.
- **Capability Innovation:** In the wake of our transformation into an agile company, more than 95 % of our employees now work in an agile set-up, which is also having a positive impact on IT delivery. For example, around two-thirds of our IT deployments now take place outside of the traditional waterfall development model.

T-Labs is the research and development unit of Deutsche Telekom, focusing on translating new technology trends into tangible results for Deutsche Telekom's innovation portfolio. Co-research is the key mission for the team, with the vision of achieving a superior customer experience and exploring disruptive technologies for future telecommunications infrastructures. From our base in Berlin, we cooperate with multiple universities in Germany, Europe, Israel, and around the world.

Active cooperation with universities and academia in general has the goal of turning ideas into action and has been at the heart of T-Labs' mission from the outset. As a trusted interface between academia and business, we provide fast access to scientific innovation and R&D, enabling various co-creation formations. The **T-Challenge** is a new innovation format to attract a global research community. Recently, Deutsche Telekom and T-Mobile US launched a T-Challenge for 5G XR (extended reality) in retail. In a worldwide competition for start-ups, developers, scientists, and designers we are looking for research into and solutions for using 5G networks and extended reality technology to transform the shopping experience throughout the different retail channels. The T-Challenge is designed to fuel new innovations in how consumers shop, using immersive XR experiences in stores, at home, and on the go.  

Together with Deutsche Telekom's HR team, T-Labs' active promotion of cooperation with universities also serves a Group-wide function, by also attracting talents and strengthening brand awareness of the company in the R&D community.

Our current research areas are future networks & AI, spatial computing, and decentralized systems.

Future networks & AI.   Telecommunications networks belong to the most complex structures in modern industrial societies. The techno-economic evolution of these networks follows the principles of decentralization, disaggregation, and automation. Consequently, we research data-driven algorithmic approaches for optimized operation and preemptive cybersecurity in telecommunications systems. T-Labs' new research activities focus on Open RAN, cybersecurity, quantum technology, and next-generation (6G) radio network technology. In particular, the next generation of digital communication (6G) represents the evolutionary development of current technology and fundamental advances from in-depth research.

Spatial computing. Spatial computing is focused on enabling advanced user interaction at higher standards for various customer segments by using next-generation XR technologies and human-computer interfaces. Our activities in smart media will provide a seamless and consistent experience when using future Deutsche Telekom products and services. Our mission as innovators, researchers, and developers is to create an exciting, immersive world for our customers. A concrete example is the 5G Cloud VR project, which is enabling photorealistic VR (virtual reality) services based on advanced 5G network capabilities, such as rendering 3D graphics on a cloud-based infrastructure. As part of another recent project with our national company Hrvatski Telekom, we conducted a field trial testing live-streamed sport channels with low latency.

Decentralized systems. This research area deals with the distribution of authority over data among multiple players with the aim of making intermediaries obsolete. Corporations and individuals alike have recognized the immense potential of distributed ledger technologies. These enable the decentralization, transparency, and integrity of data, while significantly increasing efficiency at the same time. The goal is to enable trust without dependence on single trusted parties. Some applied use cases within this area are digital identities, digital business processes, digital asset management, and crypto-economics. The latest results were shown by NOMAD, which is a blockchain network for inter-operator transactions in wholesale roaming, conceived and built together with the GSMA and other industry partners.

2. Partnerships

We draw on the expertise and abilities of our partners in order to implement the digital transformation. For example, we rely on the tremendous innovative energy coming out of Silicon Valley, Israel, China, Korea, India, Germany, and other innovation hotspots across the globe. The following are some examples of successful partnerships:

- Like many other experts, Deutsche Telekom is convinced that extended reality (XR), in which the real and virtual worlds merge, heralds the next major technological revolution. We want to foster this development, which is why we support the **Qualcomm** open XR developer platform Snapdragon Spaces, which will further boost XR. Exciting applications, ever-improving hardware and, first and foremost, 5G, with its low latency, will be the technological basis for the triumph of XR. In spring 2022, Deutsche Telekom's hubraum tech incubator and the T-Mobile Accelerator will both launch new XR programs, giving start-ups, creatives, and developers the chance to work with mentors from the Group to develop and test solutions on Snapdragon Spaces.
- Deutsche Telekom is declaring war on paperwork. For legally sound digital processes, the Group now provides small and medium-sized companies with electronic signatures using **Adobe Sign**. The solution has been available in the Telekom Cloud portal since December 2021. Customers can use Adobe Sign from anywhere and any device to manage, send, and archive legally valid signed documents, replacing time-consuming paper-based processes. As Adobe Sign is a service from the cloud, customers are always safe in the knowledge they have the latest version with all of the relevant performance features. It can be integrated easily into existing IT systems, for example Microsoft 365, using standardized connectors.

SDG 12
FINANCE
- The unified communications and video conferencing provider **Zoom** and Deutsche Telekom are stepping up their partnership. The coronavirus pandemic has given a global boost to hybrid working models, which call for innovative communications and collaboration solutions tailored to businesses of all sizes. We provide a range of solutions for communications from a single source in Germany and in other European national companies. Both companies are also working on new and future innovative solutions for the B2C and above all for the B2B segment.
- In addition, the partnership with **SoftBank**, which was agreed in September 2021, became operational. This furthers the expansion of exclusive digital partnership offerings as part of the Magenta Advantage strategic area of operation. We have already had the opportunity to offer our customers in certain European markets selected partner offerings based on a range of models for cooperation with start-ups and small businesses from the SoftBank portfolio (e.g., discounted e-mobility through the supplier TIER Mobility), and our intention is to expand this option in the future.

3. Start-up funding SDG 9 RELATIONSHIPS

As Deutsche Telekom's leading start-up program, the **hubraum** tech incubator puts external start-ups in touch with the relevant business units in our Group, so that together they can offer innovative products to consumers and business customers. To this end, hubraum provides the start-ups with seed financing from its own investment fund and targeted innovation programs geared to our strategic growth areas and technologies.

Since founding hubraum in 2012, we have established a strategic investment portfolio of over 30 companies and worked together closely with around another 350 start-ups from Europe and Israel in areas such as the real-time gigabit society (e.g., 5G and edge cloud), the smart data economy (e.g., AI and process automation), and the Internet of Things (e.g., NB-IoT and Industry 4.0). With one of Europe's first 5G networks and edge cloud infrastructure, the hubraum campus in Berlin offers start-ups not only co-working office space, but also exclusive access to our Group's networks, product platforms, and test data to help them build up their businesses faster. The hubraum 5G prototyping initiative was continued in 2021 with more specific programs:

- **Campus Networks:** Two start-ups were selected in 2021 which, similar to the previous year, will work with hubraum and T-Systems to develop applications for 5G campus networks.
- **iOS AR Innovation Program:** Augmented reality has been a focus area for our start-up incubator since 2019. The Berlin team is now aiming to cooperate for the first time with developers creating iOS-based applications, focusing on a range of industries such as gaming, education, and communication. In late November 2021, nine start-ups from the United States and Finland presented their results in Berlin.

The hubraum 5G prototyping initiative was also accompanied by other programs and initiatives in 2021:

- **Network Sustainability Award:** hubraum created this award in 2020 with the aim of making our telecommunications networks more energy efficient. The award was presented again in 2021. The judges sifted through a total of 221 entries, finally selecting 4 winners. Tests are currently underway to ascertain the efficiency of the sustainable solutions and to assess their benefit before they are rolled out. Renowned partners like Microsoft, Orange, and South Korean Telecom were involved in the awards process. At Technology and Innovation, the topic comes under the TESLA program (Telco Energy Efficiency, Sustainability & Leveraging Assets).

SDG 13
ENVIRONMENT
- **Residency Program for IoT Creators:** With a total of some 150 desks in Berlin and Krakow, hubraum launched its first structured program to provide office space, including mentoring, in the reporting year. A total of seven start-ups have moved onto our premises and are currently working on their applications with the help of the infrastructure and mentors provided. The final presentation will take place in late February 2022. There is a strong focus on IoT, which is why the IoT engineers (Deutsche Telekom IoT GmbH) have an essential role to play as partners.

- **Developer Relations:** Developers currently have difficulty integrating telecommunications services into their applications, as the current network architecture does not support it. To overcome this problem, hubraum is currently developing a portal for access to Deutsche Telekom APIs and creating a community for this topic. The ultimate aim is to enable businesses to offer their products and services, including telecommunications services, easily.
- **Accuracy Unlocked:** The aim of this program is to investigate how precise positioning using a cloud-based solution can be implemented to optimize existing satellite navigation and to offer applications in both the B2C and the B2B segment. In August 2021, 13 start-ups selected by hubraum and Swift Navigation demonstrated their solutions in areas such as robotics, shared mobility, and the automotive industry.
- **hub4industry:** The hub4industry consortium was founded in 2019 with funds from the Polish Ministry of Economic Development and Technology. hubraum is establishing the factory of the future on site, with a 4G/5G campus network based on typical single RAN architecture and an EPC network. It provides a showroom for the many customers and partners who are interested in Industry 4.0.

The following start-ups received investment funding from Deutsche Telekom in the reporting year:

- **MonoLets** has developed a particularly energy-efficient, scalable IoT system solution for logistics and supply, enabling real-time monitoring of a range of parameters at item level.
- **PHYTunes** solves the problem of poor 5G coverage indoors. It has developed a new process for transmitting 5G signals that bypasses obstacles such as windows, walls, plants, etc.

hubraum will be ten years old in 2022, making it the oldest start-up incubator in Berlin and therefore unparalleled in the European start-up world. A range of further innovation programs, some building on existing programs, is also planned. The programs again focus on topics such as sustainability, augmented reality, and 5G.

Innovation governance

Innovation cycles are getting shorter and shorter. As a result, we must be agile and flexible in how we manage and budget our innovation projects. We orient ourselves toward the best-practice approaches used by innovative start-ups and successful companies, and to the latest findings from research and academia.

Portfolio and Innovation Board

The Portfolio & Innovation Board (PIB) plays a central role in managing our innovations. This Group-wide body ensures that we set the right priorities by identifying and selecting the innovation projects for our Group and deciding on the method of implementation. Our efforts are guided primarily by the Group strategy and we create full transparency across the Group regarding our investments in innovation.

Corporate Innovation Fund



Our Corporate Innovation Fund (CIF) is managed centrally by the PIB. Similar to a venture capital approach, the CIF offers all business and product ideas generated within the Group a flexible and results-oriented form of funding for a specific project phase. The provision of an additional innovation budget allows us, for example, to fund new innovation projects at short notice and with little red tape. Such financing is granted independently of annual planning periods, and therefore intensifies our focus on market and customer requirements. Innovation can take place anywhere across Deutsche Telekom, as long as the proposed business and product ideas fit within our Group's central innovation focuses.

T&I Investment Committee

We established the Investment Committee to speed up investment decisions on our multi-year innovation priorities. Its objective is to act like an (internal) venture capitalist. The Investment Committee allocates funding according to success, similar to the approach used for start-ups and among venture capital investors, whereby raising new funding from capital investors is dependent on the venture's performance. This gives us the flexibility we need when developing innovation topics and focuses efforts on success. Funding is made available for the next project phase only when specific outcomes that are relevant to our customers are achieved.

DTCP

Deutsche Telekom's investment management group DTCP, established in early 2015, manages around USD 1.0 billion for Deutsche Telekom and other institutional investors, and has a portfolio of more than 60 businesses. DTCP pursues two investment strategies: growth equity in Europe, the United States, and Asia, and investments in digital infrastructure in Europe. The prime motive for DTCP's investments is financial. For example, it acquires shares in companies still in the growth phase and aids those companies' further growth, with a view to selling its stake for a profit later on. DTCP also plays an active role in establishing business relations between the innovative portfolio companies and Deutsche Telekom and other partner corporations, in order to add value for both sides.


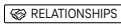
In the growth equity field, the focus on cloud-based software-as-a-service (SaaS) solutions for companies resulted in a positive development similar to the previous years, not least due to the rising number of people working from home and the growing acceptance of this mode of working, and to increasing digitalization.   New additions to the growth equity portfolio are Axonius (cybersecurity asset management), Iterable (a cross-channel marketing platform), One Store (a South Korean app store), Neo4j (a graph database management system), and Figment (infrastructure for Web3 staking). In addition, DTCP increased its stakes in the successful portfolio companies AppsFlyer (marketing analysis), Aircall (call center software), and Arctic Wolf Networks (corporate network security). The former portfolio company Signavio, a provider of software for business processes, was taken over by SAP. In addition, the single sign-on systems company Auth0 was acquired by Okta. The portfolio company Epsagon (application monitoring) was acquired by Cisco, and the portfolio company Guardicore (network segmenting for cybersecurity) was taken over by Akamai. The merger with a private equity-financed competitor meant that DTCP could sell part of its stake in Dynamic Signal, a corporate communications platform provider.

The strategic investment fund Telekom Innovation Pool (TIP) is available for investments that are mainly strategically motivated. Advised by DTCP, Deutsche Telekom invests in and promotes business start-ups through TIP that have a strategic focus and that support the Group's long-term targets through collaboration with the different business areas. TIP actively pursues long-term innovations for the Deutsche Telekom Group, particularly in the fields of software-defined networking (SDN), decentralized and cloud-based applications, and the digitalization of business operations. TIP made four new corporate investments in 2021: Celo (decentralized financial systems and tools for smartphones), Signalwire (communications platforms as a service, CPaaS), Teridion (software-defined wide area network, SD-WAN), and GoStudent (digital tutoring, online learning).

Patent portfolio

Patents are gaining more and more significance in the telecommunications industry. Our patent strategy has to keep pace with the constant evolution of market players and fields of activity. On the one hand, our Group's scope for action must be maintained. On the other, we want to protect the results of our own research and development, and to use these in cooperation and partnership with other companies. National and international patent rights are vital for these types of activity. We are therefore strongly dedicated to generating and maintaining our own patents. In the reporting year, Deutsche Telekom held a total of around 8,800 patent rights. We are firmly committed to expanding our patent portfolio, taking relevant current and future technologies into account. This will secure the value of our innovations in a dynamic world and bolster the Group's competitiveness.

Investment in research and development

Research and development (R&D) expenditure includes pre-production research and development, such as the search for alternative products, processes, systems, and services.   By contrast, we do not class as R&D expenditure the costs of developing system and user software which is designed to improve productivity and make our business processes more effective. R&D expenditure in the Deutsche Telekom Group amounted to EUR 33 million in 2021 (2020: EUR 33 million). In 2021, our Group's investments in internally generated intangible assets to be capitalized were up year-on-year at EUR 612 million compared with EUR 448 million for the previous year. These investments predominantly relate to internally developed software, mainly in our Group Headquarters & Group Services segment and our Systems Solutions operating segment.

Forecast^a

Statement by the Board of Management on the expected development of the Group

We successfully continued our growth course on both sides of the Atlantic again in 2021. We want to surpass the strong development of the last few years and lead the Group into the future with sustainable growth. We presented our medium-term strategy and the financial outlook at our Capital Markets Day in May 2021. We have already passed key milestones to secure control of T-Mobile US in the long term and, on this side of the Atlantic too, significant transactions have been closed and reorganizations completed. We want to use this strong starting position going forwards to underpin our success with solid financial growth rates, further extend our technology leadership with the best state-of-the-art networks, and thereby implement our Leading Digital Telco strategy.

^a The forecasts contain forward-looking statements that reflect management's current views with respect to future events. Words such as "assume," "anticipate," "believe," "estimate," "expect," "intend," "may," "could," "plan," "project," "should," "want," and similar expressions identify forward-looking statements. These forward-looking statements include statements on the expected development of revenue, service revenue, EBIT, EBITDA after leases, adjusted EBITDA after leases, adjusted core EBITDA after leases, ROCE, cash capex, and free cash flow after leases. Such statements are subject to risks and uncertainties, such as an economic downturn in Europe or North America, changes in exchange and interest rates, the outcome of disputes in which Deutsche Telekom is involved, and competitive and regulatory developments. Some uncertainties or other imponderables that might influence Deutsche Telekom's ability to achieve its objectives, are described in the "Risk and opportunities management" section of the combined management report and in the "Disclaimer" at the end of the Annual Report. Should these or other uncertainties and imponderables materialize, or the assumptions underlying any of these statements prove incorrect, the actual results may be materially different from those expressed or implied by such statements. We do not guarantee that our forward-looking statements will prove correct. The forward-looking statements presented here are based on the future structure of the Group, without regard to significant acquisitions, disposals, business combinations, or joint ventures that may arise at a later date. These statements are made with respect to conditions as of the date of this document's publication. Without prejudice to existing obligations under capital market law, we do not intend, or assume any obligation, to update forward-looking statements.

This ties in with our financial targets for the period through 2024, which we communicated at our [Capital Markets Day](#) in May 2021. From 2020 through 2024, we aim to achieve the following compound annual growth rates (CAGR) or targets for our key financial performance indicators:

- **Net revenue** is expected to increase by an average of 1 to 2 %; **service revenue** by an average of 3 to 4 %.
- **Adjusted EBITDA AL** is expected to increase by 3 to 5 % on average; adjusted core EBITDA AL, i.e., adjusted EBITDA AL excluding revenues from terminal equipment leases in the United States, is expected to increase by 5 to 6 % on average.
- **Free cash flow AL** (before dividend payments and spectrum investment) is expected to increase steadily, exceeding EUR 18 billion in 2024.
- **Earnings per share** (adjusted for special factors) is expected to exceed EUR 1.75 in 2024.

For 2022, we expect to post the following year-on-year trends, assuming a comparable consolidated group and constant exchange rates:

- **Net revenue** is initially likely to remain stable in 2022. We expect **service revenue** to increase slightly.
- **Adjusted EBITDA AL** is expected to be around EUR 36.5 billion in 2022. In the reporting year, adjusted EBITDA AL came in at EUR 37.3 billion; on a like-for-like basis, i.e., adjusted for comparability with the adjusted EBITDA AL forecast for 2022, adjusted EBITDA AL stood at EUR 36.5 billion. We expect adjusted core EBITDA AL to increase by around 5 % in 2022.
- **Free cash flow AL** is expected to grow to around EUR 10 billion in 2022. Free cash flow AL in 2021 was EUR 8.8 billion; on a like-for-like basis, i.e., adjusted for comparability with the free cash flow AL forecast for 2022, free cash flow AL stood at EUR 8.4 billion.
- We expect a slight increase for **earnings per share** (adjusted for special factors) in 2022.

Economic outlook

In its economic forecast from January 2022, the International Monetary Fund (IMF) expects global economic growth of 4.4 % in 2022. We also expect the economic recovery to continue in our core markets. The delivery and capacity bottlenecks are expected to gradually ease in 2022 and to decline in importance. Inflation rates are likely to slow down in 2022, when key special factors such as the rise in prices for raw materials and energy are no longer included in the year-on-year comparison. Eastern European countries in particular are also set to benefit in 2022 from the first disbursements from the Recovery and Resilience Facility, the central pillar of the NextGenerationEU recovery fund.

Forecast on the development of GDP and the unemployment/non-employment rates in our core markets for 2022 and 2023

%				
	GDP for 2022 compared with 2021	GDP for 2023 compared with 2022	Unemployment/ non-employment rate in 2022	Unemployment/ non-employment rate in 2023
Germany	3.8	2.5	5.2	5.0
United States	4.0	2.6	4.2	4.0
Greece	5.2	3.6	15.0	14.5
Romania	5.1	5.2	4.8	4.5
Hungary	5.4	3.2	3.1	2.9
Poland	4.6	3.7	3.1	3.0
Czech Republic	4.4	3.2	2.6	2.4
Croatia	5.6	3.4	6.2	5.8
Slovakia	5.3	4.3	6.4	5.6
Austria	4.9	1.9	4.6	4.5

Source: International Monetary Fund, European Commission, HSBC; last revised: January 2022.

The unemployment rate for Germany and the non-employment rates for the other countries are presented in conformance with ILO standards.

Expectations for the Group

Expectations up to 2023. We expect profitable growth to continue over the next two years. This will provide a sound basis for achieving our financial ambitions – as communicated at our [Capital Markets Day](#) in May 2021.

We expect our **financial performance indicators** to develop as follows in 2022 and 2023:

- **Net revenue** is projected to remain stable year-on-year in 2022 and to increase slightly in 2023. This trend will be influenced in particular by the United States operating segment, which is also expected to report a stable trend in 2022 and a slight increase in 2023. In the United States, the forecast period will be negatively impacted by the withdrawal from the business model of terminal equipment leases and lower revenue in the wholesale business. In the Germany operating segment, revenue is expected to increase slightly in 2022 and to increase in 2023.
- **Service revenue** is projected to slightly increase year-on-year in both 2022 and 2023. In the United States operating segment, after an increase in 2022, this metric is expected to increase slightly in 2023.

- **Adjusted EBITDA AL** is expected to come in at around EUR 36.5 billion in 2022 and to increase in 2023. In the next two years, adjusted EBITDA AL will also be negatively affected by the gradual exit from the business model of terminal equipment leases in the United States, with revenues from terminal equipment leases being offset primarily by the depreciation of the capitalized terminal devices on the expenses side. Terminal equipment leases were a major pillar, in particular, at Sprint. In its place, marketing activities are set to shift increasingly toward terminal equipment sold under installment plans.
- We expect **adjusted core EBITDA AL** to increase year-on-year in 2022 and then again in 2023. Adjusted core EBITDA AL is distinguished by excluding revenue from terminal equipment leases in the United States from adjusted EBITDA AL, thereby presenting operational development undistorted by the withdrawal from the terminal equipment lease business. For this reason, we are adding adjusted core EBITDA AL to our financial performance indicators for the years of the withdrawal from the business model of terminal equipment leases in the United States for explanatory purposes.
- **EBIT** is expected to increase sharply year-on-year in 2022 and 2023. This is based on the positive development of adjusted core EBITDA AL. While 2022 will additionally benefit from income relating to the sale of T-Mobile Netherlands, 2023 will include effects from the reduction in integration costs in connection with the business combination of T-Mobile US and Sprint.
- **ROCE** is expected to increase slightly in 2022 and significantly in 2023. Hence, we expect to achieve our target for ROCE to be higher than the expected weighted average cost of capital (WACC) again in 2023, following a briefly increased burden until 2022 from the integration costs arising from the business combination of T-Mobile US and Sprint.
- Our investments – measured in terms of **cash capex** (before spectrum investment) – are expected to amount to around EUR 19.3 billion in 2022 and include higher investments for the accelerated 5G build-out in the United States operating segment. In 2023, cash capex (before spectrum investment) is expected to decrease substantially. We want to continue investing heavily in building out our network infrastructure in Germany, the United States, and Europe in order to safeguard our technology leadership in the long term.
- **Free cash flow AL** (before dividend payments and spectrum investment) is expected to reach around EUR 10 billion in 2022. We also expect a strong increase in free cash flow AL in 2023 due to good operational development. For business outside of the United States, we expect free cash flow AL of EUR 3.7 billion for 2022. Free cash flow AL outside of the United States in 2021 was EUR 3.9 billion; on a like-for-like basis, i.e., adjusted for comparability with the forecast for free cash flow AL outside of the United States for 2022, it stood at EUR 3.5 billion.
- At the end of 2021, we had the following **ratings**: BBB with a stable outlook (Standard & Poor's – S&P); BBB+ with a stable outlook (Fitch); and Baa1 with a stable outlook (Moody's). Maintaining an investment grade rating within the A– to BBB range will enable us to retain access to the international capital markets and is thus a key component of our finance strategy.
- We expect a slight increase for our **earnings per share** (adjusted for special factors) in 2022. We expect to see adjusted earnings per share increase sharply in 2023.

Our debt issuance program puts us in a position to place issues in the international capital markets at short notice, while our commercial paper program enables us to issue short-term papers in the money market. T-Mobile US is being refinanced primarily in the form of senior secured and unsecured notes.

Bonds and loans in the total amount of EUR 7.0 billion and EUR 7.8 billion will fall due for repayment in 2022 and 2023, respectively. A number of T-Mobile US bonds include issuer termination rights. If the premature termination and refinancing of these bonds result in economic gains, this could give rise to further refinancing requirements. We plan to issue new bonds in various currencies. The exact financing transactions will depend on developments in the international finance markets. We also intend to cover part of our liquidity requirements by issuing commercial paper.

We want to continue leveraging economies of scale and synergies through suitable partnerships or appropriate acquisitions in our footprint markets. There are no plans, however, to expand into emerging markets. We will continue to subject our existing partnerships and equity investments to regular strategic reassessments with a view to maximizing the value of our Company.

Our expectations for the period until 2023 for the Group and the operating segments as regards our financial and non-financial performance indicators are shown in the following tables. They assume a comparable consolidated group and constant exchange rates. If the economic situation should deteriorate or any unforeseen state or regulatory interventions arise, the expectations expressed here may change accordingly. Given the level of macroeconomic uncertainty, for instance in the context of the continuation of the coronavirus pandemic, we cannot rule out the possibility of deviations either. All trends denote year-on-year changes. To indicate the intensity and trends of our forecasts, we apply the following assessment matrix: strong decrease, decrease, slight decrease, stable trend, slight increase, increase, strong increase.

Financial performance indicators

		Results in 2021	Pro forma in 2021 ^a	Expectations for 2022 ^b	Expectations for 2023 ^b
Net revenue					
Group	billions of €	108.8	106.5	stable trend	slight increase
Germany	billions of €	24.2	24.2	slight increase	increase
United States (in local currency)	billions of \$	80.8	81.0	stable trend	slight increase
Europe	billions of €	11.4	11.0	slight increase	stable trend
Systems Solutions	billions of €	4.0	4.0	stable trend	slight increase
Group Development	billions of €	3.2	1.1	increase	increase
Service revenue					
Group	billions of €	84.1	82.1	slight increase	slight increase
United States (in local currency)	billions of \$	57.8	57.8	increase	slight increase
Profit (loss) from operations (EBIT)					
	billions of €	13.1	12.5	strong increase	strong increase
EBITDA AL					
	billions of €	33.9	33.0	increase	strong increase
EBITDA AL (adjusted for special factors)					
Group	billions of €	37.3	36.5	around 36.5	increase
Germany	billions of €	9.5	9.5	9.8	slight increase
United States (in local currency)	billions of \$	26.9	26.8	26.4	increase
Europe	billions of €	4.0	3.9	4.0	slight increase
Systems Solutions	billions of €	0.3	0.3	0.3	increase
Group Development	billions of €	1.3	0.6	0.6	increase
Core EBITDA AL (adjusted for special factors)^c					
Group	billions of €	34.5	33.7	increase	increase
United States (in local currency)	billions of \$	23.6	23.6	increase	strong increase
ROCE					
	%	4.1		slight increase	strong increase
Cash capex (before spectrum investment)					
Group	billions of €	18.0	17.7	19.3	strong decrease
Germany	billions of €	4.1	4.1	increase	increase
United States (in local currency)	billions of \$	12.2	12.2	strong increase	strong decrease
Europe	billions of €	1.8	1.7	stable trend	stable trend
Systems Solutions	billions of €	0.2	0.2	stable trend	stable trend
Group Development	billions of €	0.6	0.3	strong increase	stable trend
Free cash flow AL (before dividend payments and spectrum investment)					
	billions of €	8.8	8.4	around 10.0	strong increase
Rating					
Standard & Poor's, Fitch		BBB, BBB+		from A- to BBB	from A- to BBB
Moody's		Baa1		from A3 to Baa2	from A3 to Baa2
Other					
Dividend per share ^{d, e}	€	0.64		Dividend payout ratio of 40 to 60 % of EPS (adjusted for special factors), minimum € 0.60	Dividend payout ratio of 40 to 60 % of EPS (adjusted for special factors), minimum € 0.60
Earnings per share (adjusted for special factors)	€	1.22		slight increase	strong increase
Equity ratio	%	28.9		25 to 35	25 to 35
Relative debt		3.06x ^f		> 2.75x ^f	> 2.75x ^f

^a Including changes in the organizational structure and in the composition of the Group up to the date of preparation of the consolidated financial statements and the combined management report (including the sale of T-Mobile Netherlands – exclusion of 12 months for pro forma 2021 and expectations, the sale of Telekom Romania Communications, the acquisition of Shentel, the combination of the cell tower business in the Netherlands, and set-up of an infrastructure fund).

^b On a comparable basis.

^c Adjusted core EBITDA AL is distinguished by excluding revenue from terminal equipment leases in the United States from adjusted EBITDA AL, thereby presenting operational development without distortion. For this reason, we are adding adjusted core EBITDA AL to our financial performance indicators for the years of the withdrawal from the business model of terminal equipment leases in the United States for explanatory purposes.

^d The expectation regarding the dividend per share refers to the respective financial year indicated.

^e Subject to approval by the relevant bodies and the fulfillment of other legal requirements.

^f Deviation from the target range of 2.25–2.75x for a short period due to the business combination of T-Mobile US and Sprint until year-end 2024.

Non-financial performance indicators

		Results in 2021	Pro forma in 2021 ^a	Expectations for 2022	Expectations for 2023
Group					
Customer satisfaction (TRI*M index)		73.4		slight increase	slight increase
Employee satisfaction (engagement score)		77		stable trend	stable trend
Energy consumption ^b	GWh	13,323		stable trend	stable trend
CO ₂ emissions (Scope 1 and 2) ^c	kt CO ₂ e	247		slight decrease	slight decrease
Fixed-network and mobile customers					
Germany					
Mobile customers	millions	53.2	53.2	increase	increase
Fixed-network lines	millions	17.5	17.5	stable trend	stable trend
Retail broadband lines	millions	14.5	14.5	slight increase	slight increase
Television (IPTV, satellite)	millions	4.0	4.0	increase	strong increase
United States					
Postpaid customers	millions	87.7	87.7	increase	strong increase
Prepaid customers	millions	21.1	21.1	slight increase	slight increase
Europe					
Mobile customers	millions	45.8	45.8	slight increase	slight increase
Fixed-network lines	millions	7.8	7.8	slight decrease	stable trend
Broadband customers	millions	6.4	6.4	increase	increase
Television (IPTV, satellite, cable)	millions	4.0	4.0	increase	increase
Systems Solutions					
Order entry	billions of €	4.2	4.2	slight increase	slight increase

^a Significant changes in the organizational structure and in the composition of the consolidated Group included up to the date of preparation of the consolidated financial statements and the combined management report.

^b Energy consumption, mainly: electricity, fuel, other fossil fuels, district heating for buildings.

^c Calculated according to the market-based method of the Greenhouse Gas Protocol.

For further information on the development of the non-financial performance indicators of our operating segments, please refer to the section “Expectations for the operating segments.”

In both 2022 and 2023, we intend to achieve a moderate improvement in **customer loyalty/satisfaction** – which is measured using the **TRI*M index** performance indicator.

Having achieved a high level of 77 points – on a scale of 0 to 100 – on the **engagement score** in the 2021 employee survey, and in view of the results of the pulse surveys conducted in 2021, we expect the positive response of our employees regarding our Company to remain stable in the next pulse surveys in 2022 and 2023.

We plan to maintain **energy consumption** at a stable level in 2022 and 2023. We expect **CO₂ emissions** (Scope 1 and 2) to decline slightly over the next two years, since the energy consumption of all Group units has been covered entirely by electricity from renewable energy sources since 2021 and, as such, the majority of emissions have already been eliminated.

For further information on our ESG KPIs, please refer to the section “Corporate responsibility and non-financial statement.”

Our planning is based on the following exchange rates:

Currency		Exchange rate
Croatian kuna	HRK	7.53
Polish zloty	PLN	4.57
Czech koruna	CZK	25.65
Hungarian forint	HUF	358.54
U.S. dollar	USD	1.18

Expectations for Deutsche Telekom AG. The development of business at Deutsche Telekom AG, the Group’s parent company, is reflected particularly in its service relationships with its subsidiaries, the results of the subsidiaries’ domestic reporting units, and other income from subsidiaries, and from associated and related companies. In other words, our subsidiaries’ results from operations and the opportunities and challenges they face are key factors shaping the future development of Deutsche Telekom AG’s figures. Accordingly, in addition to our expectations for the Group, the expectations described on the following pages concerning the operating segments’ revenue and earnings – such as strong competition, regulatory intervention, market and economic expectations, etc. – have an impact on our expectations concerning the development of Deutsche Telekom AG’s future income after taxes.

For the 2021 financial year, we will propose a dividend of EUR 0.64 for each dividend-bearing share. Since 2021, subject to approval by the relevant bodies and the fulfillment of other legal requirements, the amount of the dividend is based on a dividend payout ratio of 40 to 60 % of adjusted earnings per share, with a lower limit fixed at EUR 0.60 per dividend-bearing share.

Expectations for the operating segments

Below, we explain the market expectations and the expectations for the financial and non-financial performance indicators of our operating segments. We assume a comparable consolidated group and constant exchange rates for the development of our performance indicators.

We presented more detailed information at our [Capital Markets Day](#) in May 2021.

Germany

Following an increase in revenue from telecommunications services in Germany in the reporting year compared with the prior year, further revenue growth is expected for 2022. The negative impact of the coronavirus pandemic on revenue in the mobile market will decline. Negative regulatory effects from reduced mobile termination rates (MTR) and the decline in traditional fixed-network telephony will be more than offset by still growing demand for mobile data volumes and faster connectivity in the consumer and business customer area. In the German mobile market, revenue is expected to increase by 0.9 % in 2022. In the fixed-network business, the number of broadband lines will continue to grow. Revenue is expected to grow by 1.2 % (source: Analysys Mason).

Innovative, attractive rate plans and supplementary services – such as TV and streaming options, and smart-home services – are becoming increasingly important for our competitive position with consumers, while cloud services, security applications, and solutions for Industry 4.0 are gaining in significance with business customers. We set ourselves apart from other providers with technology leadership and our broad range of products and services. Rate plan innovations like our convergent offering MagentaEINS Unlimited or innovative fixed-network products like the 5G hybrid router, are just two examples of our commitment to staying at the cutting edge. We are the first telecommunications company in Germany to have tackled the topic of sustainability head on in the form of our two sustainability labels, #GreenMagenta and #GoodMagenta, which we launched to improve the transparency of our products.

The mobile communications market in Germany is currently dominated by three providers, each with its own network infrastructure, deploying 4G/LTE and 5G technology to ensure that the majority of the population has access to high-speed mobile internet. In 2019, Drillisch Netz AG, a subsidiary of United Internet AG, acquired mobile spectrum and has announced its intention to set up a fourth mobile network. On May 21, 2021, Drillisch Netz AG signed a national roaming agreement with Telefónica, which Drillisch will use to serve its customers until it has set up its own mobile network. This will further increase infrastructure competition.

In mobile communications, we are keeping our promise to build out the network and are therefore the leader in terms of network coverage, speeds, and customer experience. In total, as of the end of 2021, more than 90 % of the population in Germany can use the state-of-the-art mobile technology on the Telekom network. The 5G network is being built out with a combination of two spectrum bands. The 2.1 GHz band, which has wide reach, will provide high mobile bandwidths in rural areas in particular. The 3.6 GHz band offers high-speed 5G in densely populated areas like big cities. In addition, our multi-brand strategy in mobile communications allows us to address the entire customer spectrum – from smart shoppers through to premium customers. We impress our business customers with our Business Mobile rate plans, which already include the new 5G standard and can be expanded with additional options catering exclusively to this target group.

By contrast, the fixed-network broadband market hosts a large number of players with differing infrastructures – from national through to regional providers. We are assuming that competition from cable network operators will remain intense and that the number of providers who have their own fiber-optic networks will increase.

In the fixed network, we want to offer fiber-optic-based products to more and more customers, creating the best customer experience for them. Our Germany-wide IP-based network achieves high transmission bandwidths of up to one gigabit per second. In order to always offer our customers competitive high-speed lines, we increasingly invest in digital infrastructure. Over the next years, we plan to roll out fiber to the home (FTTH) to up to 2.5 million households per year, such that by 2024, we can provide around 10 million households and business locations with fiber-optic lines. We already doubled our FTTH rollout in the reporting year and enabled 1.2 million households to directly connect to our fiber-optic network. Our build-out will benefit both people in towns and cities and those in rural areas. Partnerships are a key component of our fiber-optic build-out. In addition to established partnerships, the fiber-optic build-out entity GlasfaserPlus GmbH was set up in 2021, in which IFM Global Infrastructure Fund will hold a 50 % stake. The joint venture is to build out an additional four million gigabit-capable FTTH lines in (subsidized) rural and development areas by 2028. With our wide-ranging partnership models, we aim to set standards for sustainable broadband infrastructure. In the process, we ensure capacity utilization of our platform through our own retail business as well as by extending long-term partnerships with wholesale providers in broadband marketing.

We want to continue growing in the TV market, with a focus on our entertainment and exclusive streaming offers on MagentaTV, i.e., providing a wide array of entertainment from a single platform. In order to offer our customers the best possible user experience, we are engaging in strong partnerships, for example with RTL+, Disney+, Netflix, Prime Video, Sky, DAZN, and AppleTV+. In this way, MagentaTV combines multiple entertainment worlds in one.

In our Germany operating segment, we are accelerating our comprehensive transformation program and are aiming to secure our market position as the leading integrated telecommunications provider in Germany by means of innovative, competitive offers. To this end, we aim to further reduce the complexity of our products and processes through automation and digitalization initiatives. Our goal is to deliver the best customer experience with perfect service. To this end, we continue to invest systematically in our networks and the brand experience. We improve the service and shopping experience through our digital channels by creating more opportunities to offer customized and contextualized products and services. For our business customers, we position ourselves as the preferred partner for digitalization. We offer integrated portfolios for both small and large business customers as well as multinational corporations. From fixed network and mobile communications through to IT, we offer one-stop integrated solutions professionally and fast to provide our customers with optimum, sustainable support in a digital world.

We want to remain the market leader in Germany in terms of revenue over the coming years and extend our lead through rising service revenues. We are responding to our customers' constantly growing demand for bandwidth and continuing to invest extensively in broadband networks, digital transformation, and outstanding customer service. In our broadband business, revenues are constantly growing and customer satisfaction levels rising, and we want to continue this growth trend again in 2022. We will improve customer satisfaction by actively evolving our mobile services (e.g., MeinMagenta app) and ensuring seamless service across all channels (e.g., web, hotline, shop).

In our Germany operating segment, we expect slight revenue growth in 2022 and an increase in revenue in 2023. Our value drivers are growing mobile and broadband revenues (a result of the increased attractiveness of our own mobile brand), rising numbers of customers with high-speed lines, and B2B revenue growth, for example, thanks to the positive trend in IT and cloud business. We want to continue expanding our fiber-optic services, both by means of business models with wholesale products (such as the commitment agreements) and through further partnerships.

We also anticipate that our growth initiatives in Germany will offset the volume-driven decline in revenue from traditional fixed-network business and that we will continue consolidating our position as market leader in mobile and fixed-network communications. Thanks to our outstanding network quality and the progress we are making with fiber-optic build-out, we expect to see an increase in the next two years in the number of mobile customers as well as growth in our broadband products, fueled by demand for TV and high-speed lines. Our initiatives to digitalize IT solutions business for our business customers will continue enhancing revenues from IT and cloud services, and from M2M/IoT business. In wholesale business, we expect sales volumes to fall overall, mainly due to the fact that our wholesale customers are migrating their retail customers to alternative cable and fiber-optic-based infrastructure. We nevertheless expect demand to remain high as a result of our commitment agreements.

In each of the next two years, we expect to post year-on-year increases in earnings in our Germany operating segment. For 2022, we expect adjusted EBITDA AL to increase to around EUR 9.8 billion, driven in particular by high-value revenue growth and a simultaneous reduction in indirect costs, mainly through digitalization and automation. Our adjusted EBITDA AL is likely to rise again slightly in 2023. We are forecasting a stable adjusted EBITDA AL margin through 2023.

Our course is set for innovation and growth: While we will continue to consistently promote investments in new technologies with great intensity in the future, we will wind down legacy systems, cutting costs in the process. Over the coming years, we will focus our investments on building out a forward-looking fixed-network and mobile infrastructure (e.g., FTTH and 5G). Our aim here will be to close gaps in the network in rural areas and provide urban centers with the high bandwidth they require. We want to continue this rollout efficiently and, to this end, are participating in funding programs. We expect our cash capex to increase year-on-year in 2022 and then again in 2023.

United States

The overall U.S. ICT market swung back upward in 2021, after having declined in 2020. Growth returned to nearly all ICT sectors, including IT equipment and services, and total telecommunications infrastructure and services. Mobile voice and data services showed strong increase over 2020 levels, and total market growth, as well as individual sector growth, is expected at a steady clip through 2026.

Overall mobile revenues are expected to increase annually with continued subscriber growth, data consumption increases, and growth in the device market. Plan rates remain competitive. As anticipated, the MVNO offerings from cable companies Altice, Charter, and Comcast increased in competitive prominence in 2021, with the latter two growing to over three million subs each. Cable can present an even greater competitive threat if they are able to leverage its mid-band spectrum won in 2020. DISH has yet to make a concerted push with its Boost Mobile prepaid asset.

Leading industry associations such as GSMA expect the United States to lead global migration to 5G. The United States' 5G is expected to accelerate in 2022 and beyond, with providers expanding their capacity and coverage in complementary bands. The Federal Communications Commission conducted an auction in the 3.45 GHz band in 2021, is planning rules for the 2.5 GHz band auction, and is working to deploy C-band spectrum, all in support of 5G. GSMA expects almost half of all mobile connections to be running on 5G networks by 2025, and Ericsson forecasts 90 % by 2027. T-Mobile US expanded its 5G network leadership, by reaching 310 million people, utilizing the 600 MHz spectrum holdings, and covering over 210 million people with Ultra Capacity 5G by the end of 2021, utilizing the 2.5 GHz spectrum holdings it acquired in the merger with Sprint.

T-Mobile US delivered several company-best results in 2021, and built further momentum in its growth initiatives and network leadership that positions the company for another strong year in 2022. T-Mobile US will continue to focus on creating shareholder value and providing the best value proposition on the best 5G network with award-winning experiences in the U.S. wireless industry. Key elements of the company's focus include continuing to consistently and profitably outgrow the competition, unlocking the value of synergies faster and bigger than anticipated, and making the necessary investments in the near term to position the company for long term success. T-Mobile US continues to keep this winning formula through providing this best value proposition in the market, while providing winning customer service married with its leading 5G network to deliver significant and sustainable long-term growth and margin implications.

T-Mobile US expects continued increases in postpaid and prepaid customers in 2022 and 2023 (albeit with more of a slight increase in prepaid customers) with expansion in underpenetrated growth vectors such as smaller markets and rural areas and enterprise to fuel future growth. Military, 55+, family plans, and previous greenfield retail expansion have all helped fuel industry-leading growth over the last few years while allowing T-Mobile US to deliver great financial returns along with industry-leading subscriber growth. In addition, continued growth of the upper and lower age demographics as well as new product category growth of the high-speed internet base is expected in the U.S. wireless market. However, competitive pressures and unforeseen changes in the wireless communications industry in the United States may significantly affect the expected ability to attract and retain branded postpaid and prepaid customers.

T-Mobile US expects a stable growth trend in total revenues in U.S. dollars in 2022 and a slight increase in 2023 driven by slightly increasing service revenue growth expected in 2022 and further increased growth in 2023 primarily from postpaid account and ARPA growth. Further adoption of 5G devices is anticipated to lead to equipment revenue growth and increases in installment device financing, but partially offset by lower lease revenues from a declining lease base and lower revenues in the wholesale business.

For 2022, T-Mobile US expects adjusted EBITDA AL of USD 26.4 billion and an increase in 2023. The development of adjusted EBITDA AL will be affected by the continued exit from handset leasing in the upcoming years. Sprint had a higher focus on handset leasing, which is being replaced by an increased focus on equipment installment plans. Revenue growth is expected to outpace increases in expense as T-Mobile US is focused on customer growth and delivering synergies of the merger with Sprint by driving operating cost efficiencies and site decommissioning as the network is integrated and customers are migrated to the destination network. However, investments to unlock growth vectors such as the growth in digitalization and supporting smaller markets and rural areas as well as enterprise growth; coupled with the expectation of increased switching activity from network migrations will impact adjusted EBITDA AL. Adjusted core EBITDA AL, i.e., adjusted EBITDA AL excluding revenues from handset leasing, is expected to increase in 2022 and to increase strongly in 2023.

Excluding expenditures relating to spectrum, T-Mobile US expects a strong increase in cash capex in 2022 in U.S. dollars as capex remains elevated and the company accelerates network integration and the rapid pace of deployments to continue building out the 5G network that then results in a strong decrease in capex in 2023.

Europe

In 2021, the coronavirus pandemic again had a substantial negative impact on economic development in the countries of our Europe operating segment, although the economy did substantially recover from the downturn in the prior year. Private consumption gained significant momentum over the course of 2021. In 2022, real GDP will rise in our segment's footprint countries by between 4.4 and 5.6 % per annum. However, the ongoing economic uncertainty could have a negative impact on household and business expenditure for telecommunications services and thus reduce in particular revenues from business customer operations, roaming, and the prepaid segment. Analysys Mason forecasts total revenue growth for telecommunications services of 1.4 % for the countries of our Europe operating segment for 2022; for 2023 growth will be more modest. Customer demand for a fast and reliable broadband connection is also expected to lead to growth in broadband revenues of around 3 % for the next two years. The trend towards increased data usage will also continue, especially in households that have not previously had a sufficiently fast broadband line. Demand has also grown as a result of the coronavirus-induced shift towards working from home. On top of this, the fiber-optic build-out is being accelerated. In most Central and Eastern European countries, there is still the possibility of increasing broadband network coverage. Additional regulatory-induced measures will likely further boost investments in network infrastructure. This growth is being bolstered by the growing number of companies offering convergent products. According to Analysys Mason, TV revenues will also increase in traditional pay TV business over the next two years, by around 3 % in both 2022 and 2023. Mobile revenues will increase again slightly in 2022 according to the Analysys Mason forecast. The analysts rather expect revenue to again develop stably in 2023.

We aspire to become Europe's leading digital telecommunications provider in the coming years. We firmly believe that we can only generate long-term and sustainable growth if we put our customers at the heart of everything we do. In the consumer segment, we want, for example, to create the best customer experience by offering our FMC product portfolio to customers across all national companies in a segment-specific way. We are able to do this because we use our network infrastructure intelligently based on different technologies. With our fast fiber-optic networks and the accelerated rollout of 5G, we are making huge strides in digitalization and we want to serve private households, business customers, and municipalities with our fully integrated products.

The Europe operating segment is distinguished by its strong investment portfolio: All of our national companies, except for Romania, are integrated providers of telecommunications services and, as well as having a high brand recognition value, are substantially relevant in their respective home markets. In Romania, we have transformed ourselves from an integrated to a mobile-only provider through the sale of our stake in Telekom Romania Communications. Our strong international positioning in the Europe operating segment gives us the advantage of synergies: The national companies support each other through training and knowledge sharing. In particular this transnational cooperation gives us an edge over regional providers in the challenges posed by digitalization and cloudification.

Our successful convergent product portfolio, MagentaOne, means we offer strong, integrated fixed-network and mobile offerings for our customers with which we have successfully shaped developments on the European markets. In the reporting year, we made further significant strides: On the one hand, our national companies continue to generate strong growth, such that the majority of our customers often have signed corresponding bundle contracts and we were therefore able to increase FMC revenues as a percentage of total revenues. On the other, we profit from a resulting increase in customer satisfaction combined with a lower churn rate. Over the next few years, we will further develop our convergent bundled products to address specific target groups, thereby continuously increasing the value per household. With MagentaOne, we are creating an outstanding connection, in particular for families, for at home and on the move, combined with attractive add-on services. Our goal remains to deliver the best integrated customer experience.

Our TV business remains key to the success of FMC. The basis for this is the combination of excellent network, an outstanding customer experience, and a wide array of content (super aggregation). In terms of content, we continue to attach importance to high-quality and – where it makes sense – exclusive proprietary content. Going forward, we will continue negotiations, depending on local market conditions, to acquire (co-)exclusive rights to broadcast sports events, such as the UEFA Champions League and the Europa League, or the rights to TV movies/series. However, we also still believe high-quality local content to be very relevant in our markets. This is why we would like to offer our customers a wide range of such content. By implementing a new TV platform, we can improve the customer experience on the one hand, and rapidly roll out new services and content on the other. We are also working together with what are known as OTT players, like Netflix or Prime Video, and gradually expanding our range of OTT services – both national and international – to all screens – especially to our Android-TV-based terminals. Overall, we expect to continue growing our revenues from TV business over the next two years.

In order to bring us a step closer to achieving the best customer experience, we want to focus even more rigorously on our customers and their needs. In particular, we are looking at the end-to-end customer experience across all channels. Digitalization can make a major contribution in this regard. We will further expand digital interaction with our customers, meaning we can meet customer needs in a more personalized and efficient way, and position products and innovative services in the market more quickly. At the same time, we want to continue to ensure that, in addition to digital contact, human contact also remains a key factor in our interaction with customers. Thus, we believe we can achieve first place in customer satisfaction rankings of telecommunications companies in the respective national companies by 2024, as measured by the TRI*M index which is based on empirical research.

The broadband build-out will remain a key focus of activities in the coming years. Our state-of-the-art network infrastructure supports the digital transformation and enables us to leverage our technology leadership. The 5G rollout is gaining further momentum following the successful spectrum auctions. As of the end of 2021, our national companies covered 28.9 % of the population in our European footprint with 5G. In Greece, Croatia, and Austria, at least 50 % of the population and in some cases even more benefit from the advantages of the 5G technology. LTE remains the backbone for mobile data services and with network coverage of almost 98.2 %, it is becoming the new standard technology. We have begun decommissioning of the 3G technology in some countries. In all our footprint countries, we will gradually re-use the technology that is currently still used for 3G and reform the released spectrum to increase LTE and 5G capacity. The build-out of fiber-optic technology also progresses further. In the reporting year, we accelerated our build-out again, making fiber-optic lines available to another 1.4 million households. By 2023, we will add around 2 million more households, increasing fiber-optic coverage from the current level of 7.0 million households (27.9 % coverage) to a level of 36 % network coverage. In addition to the fiber-optic build-out, we have launched the first pilots in the fixed network for decommissioning the legacy copper infrastructure. We will systematically continue this process over the next few years.

With our service app, we have successfully revolutionized our digital approach in recent years. We produce the app centrally, on award-winning architecture, for all national companies as a state-of-the-art digital tool for interacting with our customers. More than two thirds of our customers use the service app and we make use of this for monetization (up- and cross-selling) and to cut costs by significantly reducing customer service cases through self-service and predictive maintenance. This production model is so successful that it is now being used for more and more products. The current focus is on a centralized OneShop (already live in four markets), centrally produced TV products (two markets with newly developed TV app are currently in the final stages of development), and centrally developed broadband and router products. In addition, this centralized digitalization approach offers numerous possibilities for customer experience across products, e.g., managing your router in the service app.

When it comes to the success of their business, our business customers in Europe will have a strong and reliable partner by their side in Deutsche Telekom over the coming years. We have made ourselves faster and more precise than ever in order to offer solutions for productivity, digitalization, and continuity from a single source. After all, the ongoing coronavirus pandemic and the ever more complex requirements in the digital economy continue to place additional pressure to act on small companies, big companies, and the public sector alike. We have understood this remit, and we will combine our 5G network and our fiber-optic offering with productivity solutions from strong, proven partners such as Microsoft and Cisco, but also from younger companies like Zoom, to support hybrid working. We also include here state-of-the-art cloud data storage solutions with automatic back-up functions. In addition, our business customers can further strengthen their digital business with us and our partners. And ultimately, security remains one of our major focal areas. In this regard, in several markets, we have already secured the data traffic on our mobile and fixed networks for business customers, entirely automatically and without the need for installations on the part of customers. We will continue to expand these features, as well as to constantly add to our portfolio for all sizes of business and optimize our consultancy approach with teams of experts (e.g., live demonstrations of attacks on companies from the internet, or live hacking events).

In our Europe operating segment, we expect a positive customer trend in the next two years, primarily thanks to the stronger focus on the convergence brand MagentaOne. We expect the number of TV and broadband customers to increase in both 2022 and 2023. We expect the number of mobile customers to increase slightly in 2022 and again in 2023. We expect the number of fixed-network lines to decline slightly in 2022 and remain stable in 2023.

Despite the negative impact of decisions made by regulators, we expect revenues for our Europe operating segment to increase slightly in 2022 and then remain stable in 2023 – measured on a like-for-like basis, i.e., at constant exchange rates and market conditions, and given an unchanged organizational structure. Looking at the future development of service revenues, we expect them to grow slightly in 2022 followed by a stable trend in 2023.

Vigorous competition in the markets of our operating segment could potentially put pressure on our margins. In order to be prepared for such a trend, we realize cost-cutting potential and intend to increase our productivity and exploit the benefits of digitalization, for instance by automating processes. Accordingly, we anticipate adjusted EBITDA AL to develop positively. We expect adjusted EBITDA AL to increase to around EUR 4.0 billion in 2022 and then to increase slightly in 2023.

To maintain our technology leadership, we continue to invest in our integrated networks and plan to maintain the high overall level of investments over the next few years. We expect a stable trend for cash capex in 2022 and 2023.

Systems Solutions

Overall, growth in the IT market is expected to continue apace over the next two years, while cost pressure and intense competition are likely to persist. The impact of the coronavirus pandemic has accelerated digitalization in many areas. For this reason, we expect further growth in demand for solutions from the areas of cloud services, big data, and digitalization of business processes, as well as IT security (cybersecurity).

The market for IT services is expected to continue growing over the coming years. At the same time, this market is undergoing a radical transformation, e.g., due to ongoing standardization and automation, demand for smart services, and the changes being wrought by cloud services in outsourcing business. Further challenges have arisen in the shape of digitalization, the growing importance of cybersecurity, big data, and increasing mobility. Traditional IT business will continue to decline, while cloud services, mobility, and cybersecurity may achieve double-digit growth rates. In view of all this, our plan is to continue investing increasingly in growth markets – especially in digitalization (e.g., edge computing, artificial intelligence (AI), and blockchain), multi- and hybrid cloud services, and cybersecurity.

Part of our Group strategy is the ambition to be a leading partner for business productivity. We give our customers help and guidance in implementing digital business models with our offerings for consulting, cloud services, and digitalization solutions, including data sovereignty and security, as well as through our strategic partnerships.

Under the program to transform our systems solutions business, we realigned our organization and workflows on a portfolio basis, thereby creating the basis for business transparency and dedicated portfolio management and strategy. We are continuing to drive forward expansion of the growth business (e.g., public cloud, sovereign cloud, cloud migration) while at the same time stabilizing and making further cost savings in established IT business (e.g., infrastructure solutions), with the aim of bringing about a significant shift in the revenue mix towards our growth areas.

In terms of revenue and market share, we are among the top providers in the European IT market and are market leader in Germany. Our very high levels of customer satisfaction – with a TRI*M score of 90 – are a core element in maintaining this position in the long term as well as in playing a leading role in digitalization.

Overall, we forecast slight year-on-year growth in order entry for the Systems Solutions operating segment in 2022 and again in 2023. Revenue is projected to initially remain stable in 2022 and to increase slightly in 2023. Revenue primarily comprises service revenue. The trend in service revenue thus essentially mirrors that of total revenue. Adjusted EBITDA AL is expected to increase in 2022, reaching around EUR 0.3 billion. We expect adjusted EBITDA AL to increase again in 2023. With ongoing investments in growth areas, we expect cash capex to remain stable in 2022 and 2023.

Group Development

The development of the financial performance indicators for our Group Development operating segment will in future be driven primarily by the cell towers operated as part of GD Towers.

GD Towers comprises the equity investments Deutsche Funkturm (DFMG) and Magenta Telekom Infra (MTI). With some 33,600 sites, DFMG is the biggest provider of passive wireless infrastructure for mobile communications and broadcasting in Germany. We expect demand for cell sites to rise steadily over the next few years, given that network operators plan both to close gaps in coverage and to increase the density of mobile networks to meet the growing demand for mobile data services. MTI, which bundles the Austrian cell tower business, is the second largest provider of passive wireless infrastructure for mobile communications and broadcasting in Austria, operating around 7,000 sites. Demand for cell sites is expected to rise here too over the next few years, which is why the first 5G upgrades were carried out in 2021. The pace of these upgrades will be stepped up going forward and more new sites will be built, too.

We expect the revenues of our Group Development operating segment to increase in 2022, as well as in 2023. Adjusted EBITDA AL is set to increase in 2022 to around EUR 0.6 billion and we expect to see a further increase in 2023. The positive revenue trend is mainly driven by the continued build-out of sites at DFMG and the 5G upgrades by MTI. The positive development of adjusted EBITDA AL and the EBITDA AL margin is driven by revenue growth and cost efficiencies.

We expect investments in our Group Development operating segment to grow strongly in 2022, with a stable development projected for 2023. This is primarily down to the further build-out of cell sites, the build-out of 5G, and modernization measures undertaken by DFMG in Germany, as well as the 700 MHz rollout in Austria.

Group Headquarters & Group Services

At Group Headquarters & Group Services, we will stay focused over the next two years on our ongoing efficiency enhancement measures, with which we are further optimizing our structures, especially within Group Services. We will also continue to focus on implementing our cost-cutting measures. This will primarily involve reallocating human resources, bundling standardized processes for the Group, and enhancing the value of our real estate portfolio by means of innovative space and workplace concepts. In this context, we are constantly working to optimize office space and capacities in the Group, benefiting from existing technical solutions that make it easier for our employees to organize their own place of work flexibly between home or the office. In this way, the same desks can be used by multiple employees at different times. In addition, this flexibility has also worked in our favor throughout the current pandemic, where the situation with workstations has had to be adapted frequently and at short notice. As these cost cuts will put us in a position to offer our services more cost-effectively, the operating segments stand to benefit from them as well.



In the coming years, too, our Board of Management department Technology and Innovation will drive not only the development of innovative technologies, products, and services, but also IT standardization and the ongoing establishment of centralized production platforms. Major areas of capital expenditure in the years 2022 and 2023 will include technology development, the implementation of our IT strategy, and security. We expect this to reduce overheads and capital expenditure, driven by IT operating costs and by the ongoing standardization of IT infrastructure and platforms, mainly through cloudification, automation, and retiring.

In the long term, these savings will help the Group finance its innovation endeavors. We are focusing innovation topics, such as network slicing, Open Radio Access Network (O-RAN), applications based on the new 5G mobile communications standard, evolution of a proprietary smart system for the voice control of Deutsche Telekom products and services, and introduction of a uniform operating system for routers marketed by the Group. Technological innovations will serve to safeguard the network and technology leadership of our Germany and Europe operating segments in the long term and to evolve the campus networks, which are designed to improve the integrated automation of our international industrial customers' production processes. Ultimately, every one of our investment projects revolves around enhancing the customer experience.

Risk and opportunity management

Board of Management's assessment of the aggregate risk and opportunity position

The assessment of the aggregate risk position is the outcome of the consolidated analysis of all material risk categories or individual risks. The aggregate risk position in 2021 was largely stable compared with the previous year. Our major challenges particularly include the regulatory factors, economic uncertainties, and intense competition and the associated price pressure in the telecommunications business, as well as the pressure to change arising from new technologies and strategic transformation. As it stands today, Deutsche Telekom AG's Board of Management sees no risk to the Group's continued existence as a going concern. As of the reporting date and the time of preparing the financial statements, there were no risks that jeopardize Deutsche Telekom AG's and key Group companies' continued existence as a going concern.

We are convinced that we will also be able to master challenges and exploit opportunities in the future without having to take on any unacceptably high risks either for our business or for society and the environment. We strive to achieve a good overall balance between opportunities and risks, with the aim of increasing added value for our stakeholders by analyzing and seizing new market opportunities.  

For further information on sustainability, please refer to the section ["Corporate responsibility and non-financial statement."](#)



Risk and opportunity management system

As one of the world's leading providers in the telecommunications and information technology industry, we are subject to all kinds of uncertainties and change. In order to operate successfully in this ongoing volatile environment, we anticipate potential developments at an early stage and systematically identify, assess, and manage the resulting risks and opportunities. We therefore consider a functioning risk and opportunity management system to be a central element of value-oriented corporate governance.

A risk and opportunity management system of this kind is not only necessary from a business point of view; it is also required by laws and regulations, in particular § 91(2) and (3) of the German Stock Corporation Act (Aktiengesetz – AktG). Deutsche Telekom AG's Audit Committee monitors the effectiveness of the internal control system and the risk management system as required by § 107(3) sentence 2 AktG.

Our risk and opportunity management system is based on the globally applicable risk management standard of the International Standards Organization (ISO). ISO standard 31000 "Risk management – Principles and guidelines" is regarded as a guideline for internationally recognized risk management systems.

The new IDW Auditing Standard 340 on the audit of the risk early detection system came into effect on January 1, 2021. We have brought our risk and opportunity management system in line with the methodology of the new standard. The main changes are the implementation of a risk-bearing capacity concept, improvements to risk aggregation (e.g., through greater quantification of risks), as well as the renaming and in some cases reassignment of risks and opportunities to the various categories. So, for example, risks previously assigned to the category “Risks relating to innovations (substitution)” have been reassigned to the category “Market environment” according to their segment. Furthermore, the category “Risks relating to existing and future IT infrastructure, United States” have been incorporated into the category “Technology, United States.” Regarding “regulatory risks,” we have switched from a purely qualitative to a quantitative risk assessment. In addition, we have now added the category “Compliance risks.”

  Any changes to the content of the risk categories are explained in the relevant sections of the report.

Our Internal Audit unit reviews the functionality and effectiveness of elements of our risk management system at regular intervals. Under § 317 (4) of the German Commercial Code (Handelsgesetzbuch – HGB), the auditor of listed companies should assess whether the board of management has taken the measures incumbent upon it under § 91 (2) AktG in a suitable form, and whether the monitoring system stipulated by this paragraph is calculated to meet its objectives, including the early detection of developments that could put the continued existence of the company at risk. Our system complies with the statutory requirements for a risk early detection system.

In addition, our Group Controlling unit specifies a series of Group guidelines and processes for the planning, budgeting, financial management, and reporting of investments and projects. These guidelines and processes are intended to guarantee both the necessary transparency during the investment process and the consistency of investment planning and decisions in our Group and operating segments. They also provide the Board of Management with support in reaching its decisions. This process also includes the systematic identification of strategic risks and opportunities.

Organization of the risk and opportunity management system

The Group Risk Governance unit defines the methods for the risk and opportunity management system that is applied Group-wide and for the associated reporting system, in particular the Group risk report. All operating segments as well as the Group Headquarters & Group Services segment are connected to the central risk and opportunity management system of the Group via their own risk and opportunity management. The relevant owners in each of the segments are responsible for identifying, assessing, and continuously monitoring risks. Management takes potential opportunities into account in the annual planning process and continuously develops them further during business operations.

Our Group-wide risk and opportunity management system covers strategic, operational, regulatory, legal, compliance, and financial risks and opportunities for our consolidated and major non-consolidated entities. The standard process described below provides a framework. The starting point for the identification of risks and opportunities is the deviation from a planned value or company target. Once risks and opportunities have been identified, we move on to analyze and assess them in more detail. We then decide on the specific course of action to be taken, for example, in order to reduce risks or seize opportunities. The respective risk owner evaluates, implements, and monitors the associated measures. The risks are summarized in the risk reporting, which is submitted to the decision-makers in the company and/or the relevant supervisory body. This also enables transparent monitoring of the development of individual risks, as well as of the overall risk situation, including the mitigation measures taken. Our risk culture, the manner in which we deal with risks, is a key component and is embedded in all parts of the Company.

The risks and opportunity management process is described below using five elements. For purposes of simplification, “risks” is used in the following, instead of referring to “opportunities and risks” in each case. The document nonetheless focuses on both positive and negative deviations from the planned value. Risk management is therefore always a matter of opportunity and risk management.

The risk and opportunity management system



Risk culture

Our risk culture includes the basic attitudes in relation to risks and forms the basis and the framework for everyday business, for being able to make risk-oriented decisions. The risk culture is closely interlinked with Deutsche Telekom’s corporate culture, which requires risks and opportunities to be dealt with in a positive and transparent way. At the core of our risk culture is the motto “Everyone is a risk manager,” which means that, in principle, every employee takes responsibility for their risks, and handles them in accordance with the defined process.

Corporate targets

The corporate targets (or targets for the relevant individual unit derived from these) serve as the starting point for the identification of risks as deviations from planned values. These include both quantitative and qualitative targets. In order to assess the threat to the continued existence of the Company, we implemented the concept of risk-bearing capacity. Risk-bearing capacity encompasses the assets for covering possible losses. These assets are defined through equity and liquidity.

Risk analysis

Risk identification. Each segment produces a quarterly risk report or risk notification in accordance with the standards laid down by the central risk management and based on specific materiality thresholds. These reports or notifications assess risks, taking into account their extent in terms of impact on results of operations or financial position, as well as their probability of occurrence, and they identify action to be taken and suggest or initiate measures. Qualitative factors affecting our strategic positioning and reputation are taken into account. We base our assessment of risks on a period of two years. This is also the length of our forecast period. If significant risks exist beyond the forecast period, these are monitored on an ongoing basis. In addition, on an annual basis, we consider “emerging risks,” which are primarily derived from external studies. These are risks and opportunities that are developing at considerable pace, and in some cases are difficult to assess. Risks and opportunities like these are triggered primarily by technological developments (e.g., digitalization), environment (e.g., climate change), or threats (e.g., cyberattacks).

Risk assessment. Individual risks are assessed on the basis of “probability of occurrence” and “risk extent.” The following assessment yardsticks apply:

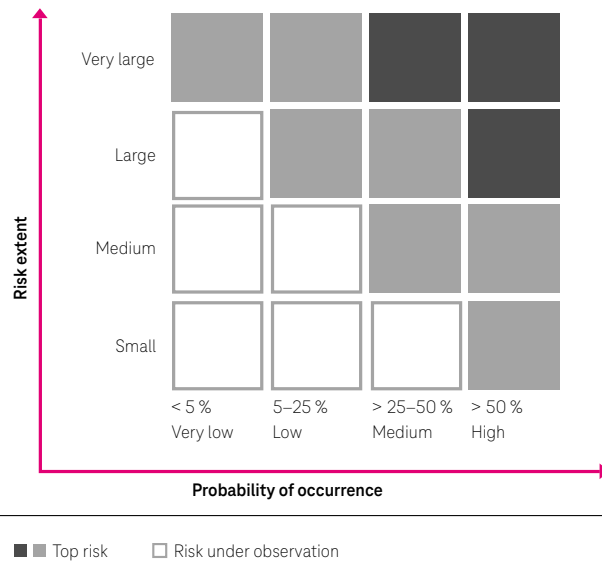
Probability of occurrence	Description
< 5 %	Very low
5 to 25 %	Low
> 25 to 50 %	Medium
> 50 %	High

Risk extent	Description
Small	Limited negative effects on business activities, results of operations, financial position, and reputation; individual EBITDA AL risk < € 200 million
Medium	Negative effects on business activities, results of operations, financial position, and reputation; individual EBITDA AL risk ≥ € 200 million
Large	Significant effects on business activities, results of operations, financial position, and reputation; individual EBITDA AL risk ≥ € 500 million, and/or affects more than one Group entity
Very large	Damaging negative effects on business activities, results of operations, financial position, and reputation; individual EBITDA AL risk ≥ € 1.0 billion, and/or affects more than one Group entity

Risk extent is primarily assessed based on EBITDA AL. However, it can also be assessed using other indicators, e.g., financial risks based on cash flow, which can also be used to assess the categories of risk. The parameters for classifying risk extent were adjusted in the 2021 financial year following a significant rise in Deutsche Telekom’s EBITDA AL on the back of organic corporate growth and the business combination of T-Mobile US and Sprint. These adjustments affect the presentation and assessment of the risks and opportunities to some extent and are shown in the table “Corporate risks.”

On the basis of our assessment using the criteria described above, we categorize the individual risks in our risk and opportunity management process as “top risks” or “risks under observation,” as shown in the graphic below.

Risk portfolio



We generally report the top risks (gray and dark ray shading) Exceptions are possible, for example, risks from prior years that we continue to list for the sake of reporting continuity although they are classified as “risk under observation” (white shading) in the current reporting period.

It should be noted that risks with an extent currently assessed as being small may in the future have a stronger impact than risks currently assessed as having a larger extent. This may be due to uncertainties that cannot be assessed at present and over which we have no influence.

For the aggregate disclosure of an overall risk position, central risk management performs an “EBITDA AL at risk” calculation for Deutsche Telekom. This states that, with a particular probability of occurrence, the risk extent ascertained using the simulation will not be exceeded. This risk aggregation is carried out using a Monte Carlo simulation, in which a large number of risk-related potential future scenarios are considered. The overall risk position is set in relation to the assets for covering possible losses.

Identification and assessment of opportunities in the annual planning process. The systematic management of risks is one side of the coin; securing the Company’s long-term success by means of integrated opportunities management is the other. That is why identifying opportunities and subjecting them to a strategic and financial assessment is an essential part of our annual planning process. It allows us to factor those opportunities into our forecasts for financial and non-financial performance indicators.

The short-term monitoring of results and the medium-term planning process help our operating segments and Group Headquarters identify and seize the opportunities in our business throughout the year. While short-term monitoring of results mainly targets opportunities for the current financial year, the medium-term planning process focuses on opportunities that are strategically important for our Group. In this context we distinguish between two types of opportunity:



- External opportunities, i.e., those with causes over which we have no influence, for example, the revocation of additional taxes in Europe.
- Internal opportunities, i.e., those that arise within the Company, for example by focusing our organizational structure on innovation and growth areas and products, or through business partnerships and collaborations from which we expect to reap synergies.

We are constantly enhancing the efficiency of our planning process so as to gain greater scope for action. The preliminary plans of our operating segments form the basis for a concentrated planning phase during which members of the Board of Management, business leaders, senior executives, and experts from all business areas intensively discuss the strategic and financial focus of the Group and its operating segments, and from all of which they ultimately produce an overall picture. The identification of opportunities from innovation and their strategic and financial assessment play a major role throughout this process. This “brainstorming” may result in opportunities being taken and transferred to the organization, or rejected and passed back to the respective working groups for revision.

Risk handling

Group insurance management. To the extent possible and economically viable, we take out adequate Group-wide insurance cover for insurable risks. DeTeAssekuranz – a subsidiary of Deutsche Telekom AG – acts as an insurance broker for group insurance management. It develops and implements solutions for the Group's operational risks using insurance and insurance-related tools and places them on the national and international insurance markets.

Taking out insurance cover is an essential option for our external risk transfer. The coverage of risks in our Group insurance programs requires the transfer of risk for the purpose of protecting the Group's financial position. That means that the possible extent of the risk must have reached a volume "relevant for the Group" or the risks have to be bundled and managed at Group level to protect the Group's interests (opportune reasons/cost optimization/risk reduction).

Business continuity management (BCM). BCM is a process within operational security and risk management that helps protect business processes from the consequences of damaging incidents and disruptions. It ensures the continuation of business processes through ongoing analysis, assessment, and management of relevant risks for people, technology, infrastructure, supply and service relationships, and information. The aim is to identify potential threats at an early stage and to keep the impact and duration of a disruption of critical business processes to an acceptable minimum by ensuring appropriate resilience in the organization plus the ability to effectively cope with threats.  

To this end, BCM identifies critical business processes and business processes requiring protection, including any supporting processes, process steps, and assets (people, technology, infrastructure, information, and supply and service relationships). Appropriate precautionary measures are also defined. In particular, security management works in coordination with the relevant units and process owners to analyze the possible consequences of external and internal threats with relevance for security, such as natural disasters, vandalism, or sabotage. Once the extent of potential losses and probability of occurrence have been assessed, preventive measures can be put in place and contingency plans developed.

Risk containment measures. The risk owners initiate and execute further measures to mitigate the risks. A wide range of measures are available, depending on the risk type. A few examples of these measures are:

- We tackle risks from the market environment with comprehensive sales controlling and intensive customer management.
- We deal with risks arising from brand and reputation by continuously analyzing the market and communications.
- We also take a whole array of measures to deal with operational risks: for example, we constantly implement operational and infrastructural measures in order to improve our networks, and offer our employees systematic training and development programs.
- We deal with risks from the political and regulatory environment through an intensive, constructive dialog with policymakers and the authorities.
- We minimize legal risks by ensuring suitable support for proceedings and by designing contracts appropriately in the first place.
- We manage interest and currency risks by means of systematic risk management and hedge them using derivative and non-derivative financial instruments.
- The Group Tax unit identifies potential tax-related risks at an early stage and systematically records, assesses, and monitors them. It takes any measures necessary to minimize tax-related risks and coordinates them with the Group companies affected. The unit also draws up and communicates policies for avoiding tax risks.

Risk monitoring

The Group risk report, which presents the main risks, is prepared for the Board of Management on a quarterly basis. The Audit Committee of the Supervisory Board of Deutsche Telekom AG also examines this report at its meetings. Furthermore, the Board of Management informs the Supervisory Board. In addition, the emerging risks are presented once a year as part of the risk report. Among other benefits, the Group risk report ensures transparent monitoring of the development of individual risks, as well as of the overall risk situation. This is supported by the new Group-wide risk management tool. If any unforeseen risks arise, they are reported ad hoc (even outside of regular reporting). We inform the Audit Committee about all of the latest developments and/or changes in the risk management system at a special meeting held annually.

Risks and opportunities

In the following section, we present all risks and opportunities of significance to the Group – including emerging risks – that, as things currently stand, could affect the results of operations, financial position, and/or reputation of Deutsche Telekom and, via the subsidiaries' results, the results of operations, financial position, and/or reputation of Deutsche Telekom AG. We only consider risks after the mitigation measures taken (net assessment). If risks and opportunities can be clearly allocated to an operating segment, this is presented accordingly in the following.

In order to make it easier to understand and see their effects, we have assigned the individually assessed risks to the following categories. Where multiple individual risks are assigned to one risk category, we calculate the risk significance on the basis of risk aggregation carried out using a Monte Carlo simulation, in which we consider the individual risks along with their individual extent and probability of occurrence. The outcome, or risk significance, is the “value at risk.” This states that, with a particular probability of occurrence, the risk extent ascertained using the simulation will not be exceeded. An expert assessment is used for risk categories that have not been quantified.

The resulting risk significance for the risk categories is broken down into four levels:

Risk significance	Description
Low	< € 200 million value at risk
Medium	≥ € 200 million value at risk
High	≥ € 500 million value at risk
Very high	≥ € 1.0 billion value at risk

This representation of risks was applied for the first time in the reporting year and reflects the stronger focus placed on quantifying risks and their aggregation. To further increase transparency we have introduced the risk significance levels described above.

Corporate risks

	Risk significance	Change against prior year ^a
Strategic risks		
Macroeconomic environment, Germany	Low	Improved ^b
Macroeconomic environment, United States	Low	Improved ^b
Macroeconomic environment, Europe	Low	Improved ^b
Market environment, Germany	Low	Improved ^b
Market environment, United States	Very high	Unchanged
Market environment, Europe	Low	Improved ^b
Strategic implementation and integration	High	Improved
Brand and reputation	Low	Unchanged
Sustainability and social responsibility	Medium	Unchanged
Health	Low	Improved ^b
Operational risks		
Technology, Germany	Low	Improved ^b
Technology, United States	High	Unchanged
Technology, Europe	Low	Improved ^b
Procurement and suppliers	Low	Unchanged
Data privacy and data security	Medium	Unchanged
Other operational risks	Low	Unchanged
Regulatory risks	Medium	-
Litigation and anti-trust proceedings	See Litigation	
Compliance risks	See Compliance risks	
Financial risks	High	Deteriorated ^b

^a The risk extent from the 2020 Annual Report is used as a comparative yardstick.

^b The change in risk significance compared with the prior year results entirely from the adjustment in the method for ascertaining risk extent.

Strategic risks and opportunities

Risks and opportunities relating to the macroeconomic environment. As an international corporation, we operate in a large number of countries, using a range of currencies. A substantial economic downturn could generally reduce the purchasing power of our customers and adversely affect our access to the capital markets. Exchange rate fluctuations could impact on our earnings.

The global economy recovered from the coronavirus crisis in 2021, however, economic development continues to be impacted by its aftermath. Leading institutes and organizations expect the recovery to continue in 2022. Overall, the general growth outlooks for Germany and Europe are positive. In January 2022, the International Monetary Fund (IMF) forecast a 3.9 % expansion of the eurozone economy for 2022 (Germany +3.8 %). Many countries in Eastern Europe saw relatively robust economic growth in 2021, and are expected to perform above the EU average again in 2022. The economic recovery is also likely to continue in the United States. Extensive relief and infrastructure packages were passed in the United States in 2021, which could, however, also entail higher U.S. corporate income tax rates and/or a minimum tax going forward, potentially increasing the tax burden for our Group company T-Mobile US. In January 2022, the International Monetary Fund (IMF) forecast a 4.0 % expansion of the U.S. economy for 2022. Economic activity in the United States returned to pre-pandemic levels in mid-2021.

However, wide-ranging supply-side bottlenecks are disrupting global value chains and, combined with ongoing pandemic-related restrictions, are slowing growth. Rising raw materials and energy prices as well as delivery and capacity bottlenecks have ramped up inflationary pressures worldwide. And this is only likely to let up slightly in 2022, with no expectation of a rapid return to the pre-pandemic very low rates of inflation.

As such, economic development is subject to not insignificant risks going forwards. New, wide-reaching pandemic-related restrictions or longstanding delivery and capacity bottlenecks could impede recovery to a greater extent than expected. Further risks result from potential geopolitical conflicts and uncertainties from international trade conflicts.

These risks are counterbalanced by opportunities, especially if the coronavirus pandemic can be effectively contained. Based on experience so far, the coronavirus pandemic is expected to have only a limited impact on Deutsche Telekom's business. If delivery and capacity bottlenecks are resolved faster than expected, this would open up the opportunity for pent-up consumer and investment demand to drive a dynamic upturn.

Risks from the market environment. The main market risks we face include the steadily falling price level for voice and data services in the fixed network and in mobile communications. In addition to price reductions imposed by regulatory authorities, this is primarily attributable to ongoing intense competition in the telecommunications industry.

Competitive pressure is expected to continue, especially in the fixed network in Germany and the countries of our Europe operating segment. In the broadband market, the trend of disproportionate growth in the market shares of regional network operators and supra-regional specialist FTTH providers, particularly in Germany, continues to establish itself. They build out their own infrastructure and thus increase their market coverage. Increasingly this is done with fiber-optic infrastructure, thereby increasing their customer numbers and expanding their own value added. There is still strong competition to gain new customers by cutting prices and offering introductory discounts.

We expect ongoing price pressure for mobile voice telephony and mobile data services, which could adversely affect our mobile service revenue. Among the main reasons for this price pressure are data-centric, aggressively priced offers. Providers that do not have their own infrastructure (MVNOs) market such offers over the internet, for instance, while there is also the risk that smaller competitors will take unforeseen, aggressive pricing measures. Technological innovations such as the use of pure eSIMs in smartphones could put further pressure on prices by increasing the willingness of customers to switch providers.


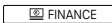
Another competitive risk lies in the fact that, both in the fixed network and in mobile communications, we are increasingly faced with competitors who are not part of the telecommunications sector as such, but are increasingly moving into the traditional telecommunications markets. This mainly relates to major players in the internet and consumer electronics industries. As a result, we are exposed to the risk of a further loss of share of value added and falling margins due to increasingly losing direct customer contact to competitors.

T-Mobile US is active in a market environment that is characterized by intensive, increasing competition. Alongside traditional telecommunications providers that deliver bundled offerings including content and mobile video services, there is additional competition, for example, Big Cable in mobile, as the mobile, fixed-network, and satellite industries increasingly converge. In addition, strategic partnerships and MVNO relationships, such as between DISH and AT&T, are being built. Potential market saturation in the United States may cause the wireless industry's customer growth rate to decline in comparison with previous years, as competition further intensifies. Although T-Mobile US has an advantage in spectrum licenses, it must push on with the network build-out, particularly in smaller markets with limited coverage and in rural areas, if it is to maintain its claim of market leadership with the best network. T-Mobile US must continue to successfully refine and implement its market strategy as Value Leader, Customer Service Leader and 5G Network Leader to maintain customer additions and retention. Should consumer behavior or customer requirements change, it could be difficult in the future to achieve targets in terms of business, financial and operational, and operating results.



Innovation cycles are getting shorter and shorter. This confronts the telecommunications sector with the challenge of bringing out new products and services at shorter and shorter intervals. New technologies are superseding existing technologies, products, or services in part, in some cases even completely. This can lead to lower prices and revenues in relation to the services offered, such as telephony, news, internet access, smart home, or television – right through to full substitution by new, global providers. These substitution risks could impact our revenue and earnings. We deal with the impact of substitution risks by, for example, offering integrated solutions with hyper-personalization and contextualization (e.g., Magenta HomeOS) in order to “turn customers into fans” and thereby secure their loyalty. The expansion of the new 5G mobile standard as a technological innovation entails uncertainties in the form of public discussions on security, safety, and electromagnetic compatibility, and the limited number of telecommunications hardware providers we include in planning scenarios.

Our Systems Solutions operating segment also faces challenges. Continued strong competition and persistent cost pressure are adversely affecting traditional IT business. In addition, the technological shift toward cloud solutions and digitalization in the IT sector is prompting new, strongly capitalized, competitors to enter the market. This may lead to revenue losses and declining margins at T-Systems.

Opportunities from the market environment. The telecommunications and IT market is extremely dynamic and highly competitive. The economic and competition conditions as well as customers' changing wants and needs affect our actions and impact on our Company indicators. We generally expect the situation to develop as described in the section “Forecast.”

In addition to the risks described, ever-shorter innovation cycles enable us to drive the digital transformation of our society and to provide our consumers and business customers with innovative products and solutions. That is why, with growing convergence of networks, IT, and products, our innovation and technology activities are decisive when it comes to identifying opportunities and making the most of them in an increasingly competitive environment. Hence, our Technology and Innovation Board of Management department has joined all relevant functions under a common leadership to ensure a close integration of innovation, network, IT, and security.   By doing so, we are putting the development of human-centered solutions and outstanding, seamless customer experiences front and center, and in the reporting year we won multiple awards, for example, for our digital assistant Frag Magenta and the product Magenta SmartHome.

For further information on our innovation activities, please refer to the section “[Technology and innovation](#).”



The substantial increase in capacity, bandwidth, and availability, and the lower latencies provided by the 5G mobile standard currently being rolled out offer greater reliability, security, and guaranteed service quality, for example, for industrial use cases. 5G thus offers not only the immediate opportunity of managing rapidly increasing demands in existing business models more cost-effectively going forward, but also opportunities for further business models by marketing network capabilities (e.g., network access, localization, security, identity, storage location, temporary storage, real-time processing) to relevant partners. We have already implemented the first use cases such as 5G campus networks and mobile edge computing, in which data is processed in a decentralized manner (at the edges of the network). Together with other technologies like the NarrowBand Internet of Things (NB-IoT) and artificial intelligence (AI), 5G and edge computing provide the underpinnings for the further digital transformation of society. To develop the next, sixth mobile generation, we are working with researchers on a standard that aims to address a number of current challenges facing telecommunications networks: the connection between all people, sustainability, and carbon neutrality, and the further underpinning of data privacy, trust, and security.  

Furthermore, opportunities for new project business are arising in our Systems Solutions business from innovation areas such as artificial intelligence (AI) and industrial IoT.

Risks relating to strategic implementation and integration. We are in a continuous process of strategic adjustments and cost-cutting initiatives. If we are unable to implement these projects as planned, we will be exposed to certain risks. In other words, the benefit of the measures could be less than originally estimated, take effect later than expected, or not at all. Each of these factors, individually or in combination, could have a negative impact on our business situation, financial position, and results of operations.

The business combination of T-Mobile US and Sprint was consummated on April 1, 2020. Implementing the business combination poses complex challenges for T-Mobile US, which must be successfully overcome in order to continue realizing the predicted synergies and to meet the conditions imposed by the authorities. The combination of the two companies to form the new T-Mobile US affects all operational areas. For instance, the integration of the mobile networks and the IT and technology environments, customer management, sales, HR management, logistics, and the control environment. At the same time, it will be necessary to fulfill multiple conditions, including those agreed with the antitrust and regulatory authorities such as the Federal Communications Commission (FCC), the U.S. Department of Justice (DoJ), the supervisory authorities in various U.S. states, and the Committee on Foreign Investment in the United States (CFIUS). There are numerous obligations, in particular in relation to network construction and the support of DISH in setting up an independent network. Almost a year after the merger with Sprint, T-Mobile US gave a progress update on the status of the business integration at its Analyst Day in March 2021, and stated that T-Mobile US was at that point already ahead of schedule in implementing the synergies from the business combination, as communicated at the announcement of the transaction in April 2018.

Collaboration with Chinese suppliers is being impeded by the enduring trade conflict between the United States and China. Since 2020, the United States has restricted the use of U.S. technology for and by Chinese suppliers on account of security concerns. They also put pressure on other countries to do the same. In Germany, the legislator has put an end to many years of intensive discussion concerning the security of critical infrastructure with the new Second Act to Increase the Security of Information Technology Systems, or the IT Security Act 2.0 (IT-Sicherheitsgesetz 2.0). A positive outcome is that a number of long-disputed requirements for critical infrastructure (KRITIS) have now been laid down. Deutsche Telekom itself has long been scrutinizing security-critical components prior to installation and on an ongoing basis once in operation. We therefore assume that the assessment by the authorities will also be compatible with rapid network build-out and will not lead to any long-term delays. The IT Security Act 2.0 does not include any ban on individual manufacturers. The Federal Ministry of the Interior, Building and Community is currently drafting the necessary rules (on the certification of critical components, manufacturer declarations of trustworthiness, among others) for the practical application of the IT Security Act 2.0. The requirements laid down in the security catalog, drawn up by the Bundesnetzagentur and the Federal Office for Information Security in accordance with the Telecommunications Act and published in early August 2021, will be relevant to any critical components that could potentially be affected. In respect of the certification obligation for components that have already been installed, the catalog stipulates a transition period expiring on December 31, 2025. This is why the affected components can largely be considered to be grandfathered until that point in time. The risk of a retrospective order to remove components already installed in the network is low under current legislation. However, we cannot rule out the possibility that critical components from certain manufacturers currently in use may not be deployed from January 1, 2026 onwards. Several network operators have taken steps to file official objection proceedings to clarify the ambiguous legal terminology and scope of application of the security catalog. Irrespective of this, the hurdles for retrospective orders to remove components already approved will be high. In other countries, such as Austria and Poland, it is still possible that suppliers in critical infrastructure will have to be replaced within specific deadlines. The extent of potential loss has been reduced in particular by the IT Security Act 2.0 adopted in Germany. Thanks to the improved risk situation in the implementation of synergies in the United States and in collaboration with Chinese suppliers, we have lowered the risk significance of the risk category "Strategic implementation and integration" to "high."

Opportunities relating to strategic implementation and integration.   Partnerships provide opportunities, among other benefits, to increase revenue and strengthen customer loyalty. For example, thanks to the inclusion of the new strategic area of operation Magenta Advantage in our Group strategy and the associated program, portfolio companies will receive access to digital customer interfaces and sales points from SoftBank, and thereby innovatively expand our range of services.



The logical network that has resulted from the completed IP transformation (all IP) speaks one language and, in technical terms, functions largely independently of the services transmitted. This will enable efficiency gains, e.g., by reducing the complexity of maintenance and operation, switching off service-specific legacy platforms, and saving energy. In addition, all IP will generate growth potential in the short to medium term by improving the customer experience of existing services (e.g., better voice quality, more customer self-service, greater configuration flexibility) and, in the medium to long term, by providing an indispensable basis for convergence products and the Internet of Things (IoT), and by shortening the time to market for new products.

One of the key benefits of the all-IP network is that it also acts as a foundation for the future cloud- and software-based production of networks and services. It creates opportunities to increase efficiency, accelerate the provision of new services and features, improve quality, and tap into new revenue potential, while at the same time increasing automation.

The disaggregation of the access networks (in mobile communications: Open Radio Access Network, O-RAN; in the fixed-network: Access 4.0) and core networks (e.g., the 5G core network) as part of our network differentiation strategy offers the opportunities of expanding the supplier ecosystem and, as a result, increasing competition, flexibility, and innovation. As we simultaneously drive forward automation and cloudification, we also expect a reduction in total costs and an increase in agility and speed in the provision of new services and features.




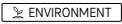
We are driving forward the transformation of our IT using agile development, decoupling, and cloudification. These approaches enable us to tap into new possibilities for accelerating developments and increasing the efficiency of IT production, by providing modular components, known as microservices, and APIs and producing them in a scalable cloud with state-of-the-art technology. Furthermore, agile and decoupled development makes it possible to reduce big bang risks in the delivery of major software releases by means of smaller, flexible software releases.

Risks and opportunities arising from brand and reputation. An unforeseeable negative media report on our products and services or our corporate activities and responsibilities can have a huge impact on the reputation of our Company and our brand image. Social networks have made it possible that such information and opinions can spread much faster and more widely. Ultimately, negative reports can impact on our revenue and our brand value. In order to avoid this, we engage in a constant, intensive, and constructive dialog, in particular with our customers, the media, and the financial world. For us, the top priority is to take as balanced a view as possible of the interests of all stakeholders and thereby uphold our reputation as a reliable partner.

Risks and opportunities relating to sustainability and social responsibility. For us, comprehensive risk and opportunity management also means considering the opportunities and risks arising from ecological or social aspects or from the management of our Company. To this end, we actively and systematically involve all relevant stakeholders in the process so as to identify current and potential risks and opportunities. In parallel with our ongoing monitoring of ecological, social, and governance issues, we systematically determine our stakeholders' positions on these issues. The key tools we use here are: our stakeholder survey; a document analysis, covering legal texts, studies, and media publications, amongst other things; our involvement in working groups and committees of national and international business associations and social organizations, e.g., GeSI, ETNO, BDI, Bitkom, Econsense, and BAGSO; stakeholder dialog formats organized by us; and our various publications, such as the press review and newsletter. We also integrate the biggest sustainability risks in our internal compliance assessment, thereby recording the associated positioning and development of measures in the various business areas.  

For further information on sustainability, please refer to the section [“Corporate responsibility and non-financial statement.”](#)

We have identified the following as our main sustainability management issues:

- **Reputation.** How we deal with sustainability issues also entails both opportunities and risks for our reputation. A high level of service quality is one of the most important factors for improving customer perception. Customer satisfaction has been embedded in our Group management as a non-financial performance indicator to underline the importance of this issue. Transparency and reporting help to promote the trust of other external stakeholders in our Group. Our annual and CR reports also serve this purpose. However, issues such as business practices, data privacy, and work standards in the supply chain, conduct in relation to human rights, and ethical conduct in relation to and use of artificial intelligence also entail reputational risks: if our brands, products, or services are connected with such issues in negative media reports, this can cause substantial damage to our reputation. As part of our sustainability management activities, we continuously review such potential risks and take measures to minimize them. This includes systematically incorporating them in the Group's internal compliance management system, so as to determine the relevance of the risks in relation to sustainability issues and their effect on reputation across units. We also ascertain how our products and services make a positive contribution to sustainability in order to enhance our reputation.  
- **Climate protection.**   We pursue an integrated climate strategy, which means focusing not only on the risks that climate change poses for us and our stakeholders, but also on the opportunities it presents. By 2030, ICT products and services will have the potential to save up to seven times as much in CO₂ emissions in other industries as the ICT sector itself generates, even taking into account the expected rebound effects (according to the GeSI Digital for Purpose study). Taking an optimistic view, this could mean a 9% reduction in global CO₂ emissions by 2030. In addition, investments of around USD 3 trillion in innovative solutions are expected by 2030, which will not only expand the business, but will also support the SDGs. We are supporting this trend by evaluating our product portfolio to identify sustainability benefits. In addition, we want to continuously improve the ratio of the emissions that our products and services save to those generated by our own value chain.

Climate change risks are already visible in the form of increasingly extreme weather conditions. Such storm events can damage our infrastructure and disrupt network operation. This has a direct effect on our stakeholders, e.g., our customers, suppliers, and employees and can result in revenue losses or lower customer satisfaction. The risk is assessed in relation to the continuation of operations as part of risk management and is managed at an operational level in the business units. Deutsche Telekom welcomes the targets behind the Task Force on Climate-related Financial Disclosures (TCFD) and is actively working to implement them. In a first step, we conducted a gap analysis on the coverage of TCFD recommendations. In a number of workshops with relevant players from technology, procurement, strategy, and risk management, we defined Deutsche Telekom AG's key climate-related opportunities and risks and gave them an initial weighting. As a next step, we conducted a location analysis, with the example of Germany, of the physical climate risks in various scenarios (business as usual/4-degree scenario), which is now to be internationalized as part of a transnational project. In addition to the physical risks, transitory risks (threats arising from sudden adaptations to climate change made by economic sectors) are now also being analyzed in detail.

Detailed information on this will be published in our [2021 CR report](#).

We can take further preventive action in this area by also reducing our own CO₂ emissions. For this reason, in 2021 we set ourselves the ambitious target of cutting our CO₂ emissions across the Group (Scope 1 and 2) to net zero by 2025. Up to 95% of these emissions will be actually cut. Any remaining emissions will be offset through compensatory measures. Climate protection also carries financial risks, whether from the introduction of levies on CO₂ emissions or increased energy costs, as well as stricter requirements for products, for example in relation to energy efficiency. The measures we are taking to counter these risks include measuring our own energy efficiency and finding ways to improve it. Our new ESG targets agreed for 2021 for Board of Management remuneration in relation to the respective annual energy consumption as well as the planned annual CO₂ emissions for Scope 1 and 2 also contribute to achieving the climate targets and energy efficiency measures. We have a Group-wide program to specifically address our supply chain and we are working to optimize our products and their packaging. Since 2021, the Group has covered 100% of its electricity requirement with renewable energy. This is achieved through power purchase agreements (PPAs) and other forms of direct purchase, also by other means, such as through guarantees of origin.

For further information, please refer to the section [“Corporate responsibility and non-financial statement.”](#)

■ **Suppliers.** SDG 8 RELATIONSHIPS We see more sustainability in our supply chain as an opportunity – for our reputation and our business success. Apart from the general risks associated with our global procurement activities, we can be exposed to country- and supplier-specific risks. These include, for example, the use of child labor, the conscious acceptance of environmental damage, or inadequate local working and safety conditions. We systematically review our processes, including in terms of upcoming requirements (e.g., the German Supply Chain Due Diligence Act (Lieferkettensorgfaltspflichtengesetz)), and the same applies for our suppliers. In this way, we minimize risks. We conduct corresponding audits within the scope of the Joint Audit Corporation (JAC). The aim of the JAC is to reduce sustainability risks in our supply chain and to improve ecological and social aspects, including the issue of human rights. As such, the audit is compliant with internationally recognized guidelines and standards, such as the ILO Core Labor Standards, the UN Guiding Principles on Business and Human Rights, and the OECD Guidelines for Multinational Enterprises. Our partnerships with suppliers that comply with international sustainability standards ensure a high level of product quality and reliable procurement. We have a special development program in place to help strategic suppliers introduce business practices that are both socially and ecologically acceptable while remaining economically efficient. This program showed measurable successes again in the reporting period and has three major advantages: It has a positive impact on our suppliers' working conditions, enhances their profitability, and makes the economic relevance of sustainability clear for both sides, i.e., for our suppliers and for the Group alike. For instance, better working conditions at our suppliers reduces the number of work-related accidents as well as the attrition rate. That, in turn, ensures high product quality and increases productivity, while at the same time lowering costs for recruitment and training. Thus, not only are we strengthening our suppliers' profitability and CR performance, we are also significantly reducing identified risks.

Health. Mobile communications, or the electromagnetic fields used in mobile communications, regularly give rise to concerns among the general population about potential health risks. This issue continues to be the subject of public, political, and scientific debate. Acceptance problems among the general public mostly concern mobile communications networks and occasionally the use of mobile terminals such as smartphones, tablets, and laptops. The discussion has intensified repercussions for the build-out of the mobile infrastructure. In the fixed network, this can affect the use of traditional IP and DECT (digital cordless) phones, and devices that use Wi-Fi technology. There is a risk of regulatory interventions, such as tightened thresholds for electromagnetic fields or the implementation of precautionary measures in mobile communications, e.g., amendments to building law, or also the risk of a labeling requirement for handsets.

Over the past few years, recognized expert organizations such as the World Health Organization (WHO) and the International Commission on Non-Ionizing Radiation Protection (ICNIRP) have repeatedly reviewed the current thresholds for mobile communications and confirmed that – if these values are complied with – the use of mobile technology is safe based on current scientific knowledge. National and international expert organizations will continue to regularly review the recommended thresholds.

We are convinced that mobile communications technology is safe if specific threshold values are complied with. We are supported in this conviction by the assessment of the recognized bodies. Our responsible approach to this issue finds expression in our Group-wide EMF Policy, with which we commit ourselves to more transparency, information, participation, and support of independent mobile communications research, far beyond that which is stipulated by legal requirements. We aim to overcome concerns among the general public by pursuing an objective, scientifically well-founded, and transparent information policy. We thus continue to see it as our duty to continue our trust-based dialog with local authorities and to ensure its successful progress. This particularly applies since our long-standing collaboration with municipalities to expand the mobile network was enshrined in law in 2013. Previously, this collaboration was based on voluntary self-commitments by the network operators. SDG 3 RELATIONSHIPS

Operational risks and opportunities



Risks arising from technology. We have an increasingly complex information/network technology (IT/NT) infrastructure, which we constantly expand and upgrade to ensure the best customer experience and consolidate our technology leadership. Outages in the current and also future technical infrastructure cannot be completely ruled out and could in individual cases result in revenue losses or increased costs. After all, our IT/NT resources and structures are the key organizational and technical platform for our operations. The ongoing convergence of IT and NT harbors risks. In order to counter these holistically, our network, innovation, and IT activities are combined under the Board of Management department for Technology and Innovation.

Risks could arise in this area relating to all IT/NT systems and products that require internet access. For instance, faults between newly developed and existing IT/NT systems could cause interruptions to business processes, products, and services, such as smartphones and MagentaTV, or to connectivity for business customers. In order to avoid the risk of outages, e.g., due to natural disasters or fires, we use technical early warning systems and redundant IT/NT systems. The Computer Emergency Response Team (CERT) at Deutsche Telekom Security is in charge of protecting our business customers' servers. In cloud computing, all data and applications are stored at a data center. Our European data centers have security certification and meet strict data protection provisions and the EU regulations. All data relating to companies and private persons is protected from external access. Constant maintenance and automatic updates keep the security precautions up to date at all times. On the basis of a standardized Group-wide business continuity management (BCM) process, we also take organizational and technical measures to prevent damage from occurring or, if we cannot, to mitigate the subsequent effects. We also have insurance cover for insurable risks. SDG 9 FINANCE

T-Mobile US relies upon its own systems and networks and the systems and networks of other providers and suppliers, to provide and support services. T-Mobile US' business, like that of most retailers and wireless companies, involves the receipt, storage, and transmission of customers' confidential information, including sensitive personal information, payment card information, and confidential information about their employees and suppliers, as well as other sensitive information about T-Mobile US, such as business plans, transactions, and intellectual property. Cyberattacks, such as denial of service and other malicious attacks, could disrupt T-Mobile US' internal systems, networks, and applications, impair its ability to provide services to customers, and have other adverse effects on its business.

In order to grow and remain competitive with new and evolving technologies in the industry, T-Mobile US will need to adapt to future changes in technology, continually invest in its network, increase network capacity, enhance existing offerings, and introduce new offerings to address its current and potential customers' changing demands. If T-Mobile US is unable to take advantage of technological developments on a timely basis, then it may experience a decline in demand for its services or face challenges in implementing or evolving its business strategy. Following the business combination with Sprint, T-Mobile US operates and maintains several customer billing systems and will continue to run them until all of Sprint's legacy customers have been successfully migrated to T-Mobile US' existing billing systems. Unexpected difficulties or delays could cause major system or business disruptions.

Opportunities arising from technology. The utilization of large data volumes (big data) from our networks can improve and speed up decision-making processes by enhancing transparency. It does so by shifting the basis for decisions from hypotheses to facts and, for example, enabling correlations to be recognized.

Our Systems Solutions operating segment covers innovative business areas in the digital transformation of business processes, such as cloud computing, edge computing, and cybersecurity. These business areas could develop faster than expected. As a pioneer of the digital transformation, we have an opportunity not only to participate in, but also actively shape, the market trend through a variety of projects in the fields of healthcare and mobility solutions. In the ramp-up phase of these new business models based on M2M communication and big data, our partner-oriented approach is a highly promising way of contributing our core competencies – in cloud computing, edge computing, and cybersecurity – to various projects. In addition, we have references regarding strategic engagements in our focal sectors Automotive, Public, Health, and Public Transport. We also see potential for development in the sovereign clouds environment.  

As a technology and development partner for toll collection business in Europe, we already have a strong competitive position. We have earned valuable references in European toll collection projects in Belgium and Austria and through the launch of a Europe-wide toll collection system (Toll4Europe). This will help to give us an edge over our competitors.

Procurement and supply risks. Deutsche Telekom cooperates with a variety of suppliers of technical (information and communication technology) and non-technical products and services. Products and services that might involve a higher risk include software and hardware, network technology components, and all products and services provided directly to end customers.



Supply risks cannot be entirely ruled out. Pandemics, other delivery bottlenecks, price increases, changes in the prevailing economic or political conditions, or suppliers' product strategies may have a negative impact on our business processes and our results. Additional risks may also result from the dependence on individual suppliers or from individual suppliers defaulting. This is especially true for Chinese telecommunications suppliers. We employ organizational, contractual, and procurement strategy measures to counteract such risks. For example, in early 2021, the Chip Shortage Task Force was set up to assess Deutsche Telekom's risk situation at regular intervals and, where necessary, take relevant mitigating measures, and monitor their implementation.

Risks and opportunities arising from data privacy and data security

Since the introduction of the General Data Protection Regulation (GDPR), data privacy law has been largely harmonized in Europe. As a Group with its focus in Europe, Deutsche Telekom has benefited substantially from this. In the recent past, European institutions have further strengthened data protection. On July 16, 2020, the European Court of Justice (ECJ) issued a landmark judgment on Schrems II. With this ruling, Europe's highest court addressed the concerns on the level of data protection in the United States and declared the adequacy decision of the EU Commission for the United States (Privacy Shield) void. Group Privacy is working with all affected Group units to implement the requirements arising from the ruling and the publications of the European Data Protection Board. All companies in the EU, but also their contractual partners around the globe, must rise to the significant challenges of this ruling in order to be able to ensure data continues to be processed in compliance with data protection regulations going forwards.



The new requirements also affect the Group's Privacy and Security Assessment (PSA) process, which was established 12 years ago. This process, which is now fully digital, meets the requirements of the GDPR with regard to carrying out a Privacy Impact Assessment for evaluating and documenting the risks posed by data processing. For example, a Transfer Impact Assessment was integrated in the PSA process. In all new processes with a third-country dimension, all requirements from the Schrems II ruling are taken into account and documented right from development. Existing agreed standard contractual clauses, however, can still be used until the end of 2022. However, extensive inspection obligations apply for the contracting parties and the data protection authorities to verify that the data protection level is in fact adequate. Extensive technical and legal checks must be carried out for all third-country transfers and, if necessary, adjustments must be made.



The Schrems II ruling impacts on the implementation of Deutsche Telekom's cloudification activities. Prior to the relocation of workloads or applications, for example, in a cloud solution from a third country, a detailed risk analysis is carried out, both on the transfer and its potential impacts on the business, and on the ability to recall the workload or application. If it were no longer possible to use the cloud solutions in third countries, this would result in significant losses of efficiency and additional costs.



In addition, we have carefully examined technical developments and digital transformation projects to verify if they are in line with the Group strategy. Take, for example, the service app, which our customers can use to manage their Telekom products and contracts. In 2021, this standardized technical and data privacy-compliant solution was also launched in Germany. Another example is the German Corona-Warn-App and the subsequent European solution, which we continue to further develop together with the Robert Koch Institute, SAP, and other partners. Deutsche Telekom played a decisive role in the data privacy concept throughout the development of the app and coordinated between the partners, the Federal Government, and other parties involved. We were, and are, thus able to make a substantial contribution to fighting the coronavirus pandemic in Germany and Europe.  

T-Systems is a signatory of the EU Cloud Code of Conduct (EU Cloud CoC). After all, the EU Cloud is synonymous with something essential, namely, nothing less than the digital sovereignty of Europe in cloud services. This refers to the complete control of stored and processed data and independent decision-making on who can access the data. This requires clear rules and requirements, which is what the EU Cloud CoC offers. The European data protection authorities authorized this Code of Conduct. By becoming a signatory, the Company and hence also T-Systems undertakes to continue to increase the data protection level for cloud services in the interests of customers and European data protection. In this way they provide proof that data is processed in accordance with the requirements of the GDPR. Compliance with the rules is reviewed by an independent body.

However, since the ePrivacy Regulation has still not yet been adopted, there is yet another sector-specific regulatory challenge for the telecommunications sector in the EU. As telecommunications providers' data processing options are substantially restricted compared with what is possible under the GDPR, innovative big data and artificial intelligence applications in the field of telecommunications cannot realize the same kind of potential as those of companies that are only subject to the GDPR.

IT security continues to pose major challenges. In addition to preventive measures such as integrated security in business processes and measures to raise security awareness among employees, we counter these challenges with increased focus on the analysis of threats and cyber risks. This is where our early warning system comes in: It detects new sources and types of cyberattack, analyzes the behavior of the attackers while maintaining strict data privacy, and identifies new trends in the field of security. Along with the honeypot systems, which simulate vulnerabilities in IT systems, our early warning system includes alerts and analytical tools for spam mails, viruses, and Trojans. We exchange the information we obtain from all these systems with public and private bodies to detect new attack patterns and develop new protection systems.  

Cybercrime and industrial espionage are on the rise and are becoming ever more complex due to rapidly advancing technologies and attack methods. As a result, we face constant challenges and adjustments to protect our customer and business partner data, as well as our networks, technologies, products, and services against these attacks. Such incidents can lead, among other things, to business disruptions, embezzlement, or unauthorized access to confidential or personal information, and to loss of reputation. We are addressing these risks with comprehensive security concepts. In order to create greater transparency and thus be in a stronger position to tackle these threats, we are relying more and more on partnerships, e.g., with public and private organizations.   By means of the Security by Design principle, we have made security an integral part of our development process for new products and information systems. In addition, we carry out intensive and obligatory digital security tests.

We are continually striving to accelerate our growth through IT security solutions. To this end, we have combined our security units within Deutsche Telekom Security. We want to leverage this end-to-end security portfolio to secure market shares and score points with security concepts on the back of megatrends like the Internet of Things and Industry 4.0. We are also continuing to gradually expand our partner ecosystem in the area of cybersecurity.  

We provide regular updates on the latest developments in data protection and data security on our [website](#).

Other operational risks and opportunities

Employees. Our employees play a crucial role in the transformation of Deutsche Telekom. Their skills are a key factor to our business success. In view of the strained market situation, recruitment of new employees/experts for business-critical areas such as IT is very challenging and essential for business success.

In 2021, we once again used socially responsible measures to restructure the workforce in our Group. Early retirement models such as phased and dedicated retirement, and severance payments have been largely taken up, but also the training and placement of civil servants in the public sector by Vivento has proved very popular. The transformation with the associated staff restructuring is extremely important for achieving the Group's goals. Nevertheless, it is essential the restructuring is managed in a targeted way. That is why, for each request by an employee to take up a staff reduction instrument, it must be ensured on principle that the arrangement is voluntary on both sides (agreed by employee and manager), so as to avoid, for example, the loss of high performers.

The Company still employs numerous civil servants, who originally belonged to Group units of Deutsche Telekom that have since been sold. Where requested, these civil servants have been granted temporary leave from their civil servant status. However, there is a risk that they may return to us from a sold entity, for instance after the end of their temporary leave from civil servant status, without the Company being able to offer them jobs. Currently, 1,174 civil servants are entitled to return from outside the Group in this way (as of December 31, 2021), thus posing a risk.

Risks and opportunities relating to regulation

In the following section, we describe the main regulatory risks and opportunities that, as things currently stand, could affect our results of operations and financial position, and our reputation.

Regulatory risks arise from telecommunications-specific statutory regulations at the national, European, and U.S. level, and from the consequent powers of national authorities to regulate or intervene in the market and limit our freedom as regards product design and pricing. Deregulation can give rise to regulatory opportunities. Regulatory intervention, which we can only anticipate to a limited extent, may exacerbate existing price and competitive pressure. There are concerns that regulation in the United States, Germany, and other European countries may also impact revenue and earnings trends in the medium to long term.

Changes in regulatory policy and legislation

European Electronic Communications Code (EECC) transposed into national law. The transposition of the EECC into national law in each of Deutsche Telekom's footprint countries confers both opportunities, in particular for a shift towards more investment-friendly regulation, and risks, primarily in connection with the higher costs of transposing extended consumer protection provisions and operational implementation into processes. The rules are already in place in Germany in the form of the Telecommunications Modernization Act (Telekommunikationsmodernisierungsgesetz – TKMoG), which entered into force on December 1, 2021. The legislative process for the EECC has also been completed or is underway in the countries of our European subsidiaries.

For more information on the EECC, please refer to the section "[The economic environment – Major regulatory decisions.](#)"

The revision of the EU legal framework for telecommunications remains part of a package of new EU legislation on the single market for electronic communications that provides for amendments to the regulations governing media services – mainly due to the growing importance of internet offerings – which are competing with the TV services previously focused on (e.g., regarding copyright law, laws for the protection of minors from harmful media, consumer protection, and the liability of internet service providers (in particular hosting) for third-party content). At the national level, too, specific amendments (for instance, to the German State Media Treaty and the German Telemedia Act, as well as to competition law) have recently been made in response to digitalization and convergence trends.

For further information on key regulatory decisions, please refer to the section "[The economic environment.](#)"

In the United States, too, new or amended wireless-related provisions and laws can increase the complexity of processes and lead to higher costs for T-Mobile US.

Awarding of spectrum

Risks could arise from the fact that inappropriate auction rules and frequency usage requirements, excessive reserve prices, or disproportionately high annual spectrum fees could jeopardize our planned acquisition of spectrum. Inappropriate conditions for the awarding of spectrum can include, for example, extensive build-out requirements and, in some cases, requirements to grant network access (national roaming, service provider access). By contrast, we see an opportunity in particular in the fact that such spectrum award procedures enable mobile network operators to obtain the optimum amount of spectrum for their future business. We would thus be equipped for further growth and innovation. The upcoming award procedures mainly relate to the auctioning of additional spectrum in the 700 MHz, 800 MHz, 900 MHz, 1,800 MHz, and the 3,400 MHz to 3,800 MHz ranges. In addition, spectrum licenses, especially in the 2,100 MHz and 2,600 MHz ranges, will expire between 2022 and 2024 in some countries and need to be renewed. Award procedures are currently being prepared, primarily in Croatia, Poland, Romania, Slovakia, the Czech Republic, and the United States.

For further information on spectrum auctions that were completed in 2021 or are still ongoing, please refer to the section [“The economic environment.”](#)

Areas in which national regulators may intervene

European and national laws and regulations grant national regulators extensive powers of intervention. In addition to the aforementioned EECC, a case in point at the European level is the **EU Regulation concerning the single market for electronic communications**, which was enacted in 2015. It contains provisions on international roaming, net neutrality, and obligations to provide information. These provisions restrict our product design options, mainly as regards retail products. The Body of European Regulators for Electronic Communications (BEREC) has published guidelines for implementing this regulation. Risks arise from how the national regulators interpret both the regulation and these guidelines. When the Telecommunications Modernization Act entered into force in December 2021, the previously non-binding communication by the Bundesnetzagentur on the interpretation of certain parts of the regulation was replaced by a legally binding administrative order issued by the Bundesnetzagentur. In addition, national regulatory authorities have wide-ranging powers under law to require products to be adjusted in order to enforce the regulation and to impose fines in cases of non-compliance.

Our Group companies in Germany and Europe continue to be subject to extensive **regulation of wholesale products**, obligating us to make our network and services available to our competitors wherever we are deemed to have significant market power as an operator. The national regulators regularly check and determine the corresponding terms, conditions, and prices of these wholesale offerings. The key wholesale products subject to regulation are unbundled local loop lines, bitstream products, leased lines, and the associated services. Since 2021, termination rates have been determined directly by the European Commission by way of a **delegated act**. In addition, European and national **consumer protection regulations** apply. The amendment to the German Telecommunications Act (Telekommunikationsgesetz), which entered into force on December 1, 2021, introduced additional **transparency provisions**. Consumers who find substantial deviations in bandwidth using the bandwidth measuring program provided by the Bundesnetzagentur can also reduce their monthly charge or terminate their contract. In addition, in the event of missed technician appointments or faults that are not remedied in a timely manner, lump-sum damages can be claimed.

In addition to the requirements of telecommunications law, our media products are also subject to special European and national regulations under **media law**, as well as non-sector-specific regulations such as data and consumer protection. These include, in the broader sense, copyright law, regulations concerning the responsibility for published content, requirements in relation to ensuring the protection of minors in the media, and requirements in relation to the content and user interfaces of media distribution platforms. Barring any changes to its shareholder structure on the one hand (the Federal Republic and KfW being its major shareholders), or to the legal situation, or the prevailing opinions of media regulators on the other, it is unlikely that Telekom Deutschland will be granted a license to broadcast radio and television programs.

New state interventions in the context of cybersecurity in Poland under debate. In January 2021, the Polish government published a draft for a cybersecurity act and new provisions for an amendment to the national telecommunications act. These changes would give new mobile network operators privileged access to resources to foster their establishment in the market. This could result in unfair competition and negatively affect the competitive standing of our mobile communications subsidiary in Poland. The second draft for the Cyber Security Act published on October 12, 2021 and the associated provisions in the Polish Telecommunications Act continue to give rise to risks to free access to frequency resources for the 5G network build-out in the near future.

Litigation

Major ongoing legal proceedings

Deutsche Telekom is party to proceedings both in and out of court with government agencies, competitors, and other parties. The proceedings listed below are of particular importance from our perspective. If, in extremely rare cases, required disclosures on individual litigation and anti-trust proceedings are not made, we concluded that these disclosures may seriously undermine the outcome of the relevant proceedings.

Prospectus liability proceedings (third public offering, or DT3). This relates to initially around 2,600 ongoing lawsuits from some 16,000 alleged buyers of T-Shares sold on the basis of the prospectus published on May 26, 2000. The plaintiffs assert that individual figures given in this prospectus were inaccurate or incomplete. The amount in dispute currently totals approximately EUR 78 million plus interest. Some of the actions are also directed at KfW and/or the Federal Republic of Germany as well as the banks that handled the issuances. The Frankfurt/Main Regional Court had issued orders for reference to the Frankfurt/Main Higher Regional Court in accordance with the German Capital Investor Model Proceedings Act (Kapitalanleger-Musterverfahrensgesetz – KapMuG) and has temporarily suspended the initial proceedings. On May 16, 2012, the Frankfurt/Main Higher Regional Court had ruled that there were no material errors in Deutsche Telekom AG's prospectus. In its decision on October 21, 2014, the Federal Court of Justice partly revoked this ruling, determined that there was a mistake in the prospectus, and referred the case back to the Frankfurt/Main Higher Regional Court. On November 30, 2016, the Frankfurt/Main Higher Regional Court ruled that the mistake in the prospectus identified by the Federal Court of Justice could result in liability on the part of Deutsche Telekom AG, although the details of that liability would have to be established in the initial proceedings. Following an appeal from both parties, in February 2021, the Federal Court of Justice once again referred the proceedings back to the Frankfurt/Main Higher Regional Court for further consideration. In November 2021, Deutsche Telekom AG presented a settlement concept under which a concrete settlement offer is to be made to every eligible plaintiff. The settlement offers are made without any judicial decision and do not constitute an admission of liability on the part of Deutsche Telekom AG. Deutsche Telekom AG has recognized appropriate provisions for risk in the statement of financial position.

Claims relating to charges for the shared use of cable ducts. In 2012, Kabel Deutschland Vertrieb und Service GmbH (today Vodafone Deutschland GmbH (VKDG)) filed a claim against Telekom Deutschland GmbH to reduce the annual charge for the rights to use cable duct capacities. According to VKDG's latest estimates, its claims amounted to around EUR 624 million for the period from 2009 to mid-2018, along with around EUR 9 million for the alleged benefit from additional interest, plus interest in each case, and the company is also demanding a considerable reduction of the charges for the following years. In similar proceedings, the then Unitymedia Hessen GmbH & Co. KG, Unitymedia NRW GmbH, and Kabel BW GmbH (today Vodafone Hessen et al.) filed claims against Telekom Deutschland GmbH in January 2013, demanding that it cease charging the plaintiffs more than a specific and precisely stated amount for the shared use of cable ducts, including in the future. The plaintiffs are demanding a refund, most recently calculated at approximately EUR 570 million plus interest for the years 2009 to 2017. The claims were recently rejected by the Frankfurt Higher Regional Court (VKDG) and by the Düsseldorf Higher Regional Court (Vodafone Hessen et al.) and an appeal was not allowed in both cases. In response to the complaints of the plaintiffs against non-allowance of appeal, the Federal Court of Justice allowed the appeal by VKDG to the extent that it relates to claims dating from January 1, 2012; the appeal by Vodafone Hessen et al. was allowed to the extent that it relates to claims dating from January 1, 2016. The claims were rejected with legally binding effect for the time periods prior to this, which leads to a significant reduction in current calculations of claims. In a ruling on December 14, 2021, the Federal Court of Justice referred the proceedings concerning the remaining claims back to the responsible Higher Regional Courts for a new hearing and decision. At present the financial impact of both these proceedings cannot be assessed with sufficient certainty.

Sprint Merger class action. On June 4, 2021, a shareholder class action and derivative action was filed in the Delaware Court of Chancery against Deutsche Telekom AG, SoftBank, T-Mobile US, and all of our officers and directors at that time, asserting breach of fiduciary duties relating to the repricing amendment to the Business Combination Agreement, as well as SoftBank's subsequent monetization of its T-Mobile US shares. On October 29, 2021, the complaint was amended. The amended complaint is directed at the same defendants and the same underlying transactions as in the original action; however, it includes additional submission on alleged facts. At present, the financial impact of these proceedings cannot be assessed with sufficient certainty.

Proceedings against T-Mobile US as a consequence of the cyberattack on T-Mobile US. In August 2021, T-Mobile US confirmed that their systems had been subject to a criminal cyberattack that compromised data of millions of their customers, former customers, and prospective customers. With the assistance of outside cybersecurity experts, T-Mobile US located and closed the unauthorized access to their systems and identified customers whose information was impacted and notified them, consistent with state and federal requirements. As a result of the cyberattack, numerous consumer class actions were filed against T-Mobile US. The class actions brought in before the federal courts were consolidated to one action in December 2021. The plaintiffs are claiming damages in an as yet unspecified amount. Moreover, in November 2021 a derivative action was filed against the members of the Board of Directors of T-Mobile US. T-Mobile US is also named as a nominal defendant in this lawsuit. The plaintiff is making various unquantified claims in relation to the company's cybersecurity practices. In addition, inquiries have been made by various government agencies, law enforcement and other state authorities. At present the financial impact of these proceedings cannot be assessed with sufficient certainty.

Patents and licenses. Like many other large telecommunications and internet providers, Deutsche Telekom is exposed to a growing number of intellectual property rights disputes. There is a risk that we may have to pay license fees and/or compensation; we are also exposed to a risk of cease-and-desist orders, for example relating to the sale of a product or the use of a technology.

Further, Deutsche Telekom intends to defend itself and/or pursue its claims vigorously in each of these proceedings.

Proceedings concluded

Claim for damages in Malaysia despite an earlier, contrary, legally binding arbitration ruling. In 2006, Celcom Malaysia Berhad (Celcom) and Technology Resources Industries Berhad pursued actions with the state courts in Kuala Lumpur, Malaysia, against eleven defendants in total, including DeTeAsia Holding GmbH, a subsidiary of Deutsche Telekom AG, for damages and compensation in the amount of USD 232 million plus interest. DeTeAsia Holding GmbH had enforced this amount against Celcom in 2005 on the basis of a final arbitral award in its favor. After DeTeAsia Holding GmbH agreed a mutual settlement with the plaintiffs – without recognition of a legal obligation on both sides – the claim against defendants including DeTeAsia Holding GmbH was withdrawn in full with legally binding effect in November 2021.

Anti-trust proceedings

Like all companies, our Group is subject to anti-trust law. In recent years, we have notably stepped up our compliance efforts in this area too. Nevertheless, Deutsche Telekom and its subsidiaries are from time to time subject to proceedings under anti-trust law or follow-on damage actions under civil law. In the following, we describe material anti-trust proceedings and resulting claims for damages.

Claims for damages against Slovak Telekom following a European Commission decision to impose fines. The European Commission decided on October 15, 2014 that Slovak Telekom had abused its market power on the Slovak broadband market and as a result imposed fines on Slovak Telekom and Deutsche Telekom AG, which were paid in full in January 2015. After the General Court of the European Union partially overturned the European Commission's decision in 2018 and reduced the fines by a total of EUR 13 million, the legal recourse following the ruling of the European Court of Justice on March 25, 2021 is exhausted. Following the decision of the European Commission, competitors filed damage actions against Slovak Telekom with the civil court in Bratislava. These claims seek compensation for alleged damages due to Slovak Telekom's abuse of a dominant market position, as determined by the European Commission. At present, two claims totaling EUR 112 million plus interest are still pending. It is currently not possible to estimate the financial impact with sufficient certainty.

Claims for damages against Deutsche Telekom AG, including due to insolvency of Phones4U. Phones4U was an independent British mobile retailer, which declared insolvency in 2013. The insolvency administrator is pursuing claims before the High Court of Justice in London against the mobile providers active on the UK market at that time and their parent companies on the grounds of alleged collusion in violation of anti-trust law and breach of contract. Deutsche Telekom AG, which at that time held 50 % of the mobile company EE Limited, has rejected the claims as unsubstantiated, including at the Case Management Conference in October 2021, but will nevertheless have to take part in the court proceedings, which are expected to begin in May 2022. Phones4U has yet to state the amount of its claim for damages. It is currently not possible to estimate the financial impact with sufficient certainty.

Compliance risks

Compliance-relevant risks are all potential infringements by members of executive bodies or employees that could give rise to administrative or criminal liability on the part of the Company or result in a material loss of reputation. In order to minimize these risks, we have set up a compliance management system. Our compliance management system is based on the Compliance Risk Assessments (CRAs), which we use to identify and assess compliance risks and introduce suitable preventative measures. The TellMe whistleblower portal is available to employees and external parties for reporting breaches or suspected breaches of the law or of internal policies and regulations. We have set up the AskMe advice portal to address all kinds of issues relating to compliance. The portal contains reliable information for employees on laws, internal policies, and rules of conduct relevant to their daily activities. [SDG 16](#) [EMPLOYEES](#)

For more information, please refer to the section "Ethical business practices and compliance" under "[Corporate responsibility and non-financial statement](#)."

Financial risks and opportunities

Liquidity, credit, currency, interest rate risks

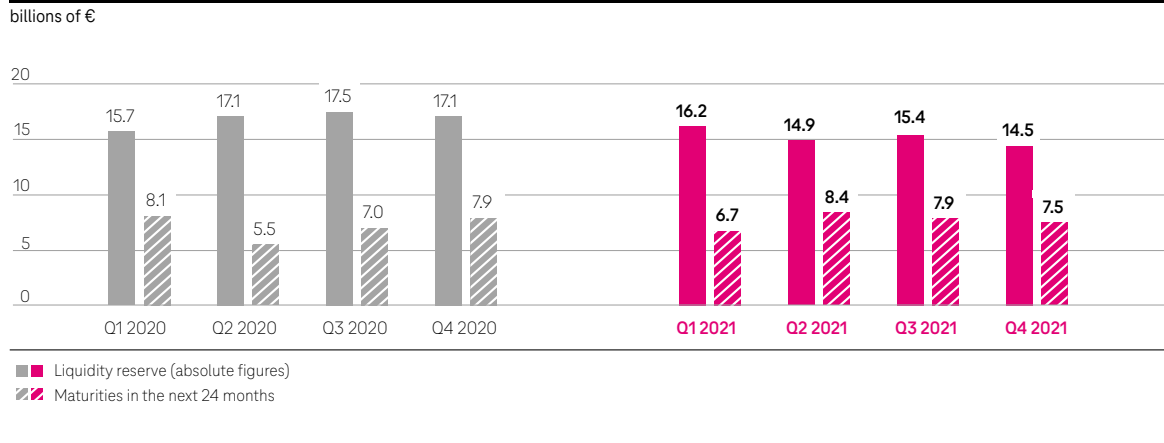
With regard to its assets, liabilities, and planned transactions, our Group is particularly exposed to liquidity risks, credit risks, and the risk of changes in exchange rates and interest rates. We want to contain these risks. Risks with an impact on cash flows are monitored in a standard process and hedged accordingly using derivative and non-derivative hedges. Derivative financial instruments are used solely for hedging and never for speculative purposes. The following risk areas – liquidity, credit, currency, and interest rate risks – are evaluated taking into account all hedges.

For further information on the risk assessment, please refer to the "Corporate risks" table above.

Liquidity risk. To ensure the Group’s and Deutsche Telekom AG’s solvency and financial flexibility at all times, we maintain a liquidity reserve in the form of credit lines and cash as part of our liquidity management. Since the successful business combination of T-Mobile US and Sprint, T-Mobile US has pursued its own separate financing and liquidity strategy.

Deutsche Telekom (excluding T-Mobile US): Primarily bilateral credit agreements with 21 banks with an aggregate total volume of EUR 12.6 billion were available as of December 31, 2021, of which EUR 0.1 billion were utilized. Our liquidity reserve covered maturing bonds and long-term loans at all times for at least the next 24 months (see graphic below).

Development of the liquidity reserve (excluding T-Mobile US), maturities in 2020/2021



T-Mobile US: Bilateral credit lines with an aggregate total volume of USD 5.5 billion (EUR 4.9 billion) plus a cash balance of USD 6.6 billion (EUR 5.9 billion) were available as of December 31, 2021.

Credit risks. In our operating business and certain banking activities, we are exposed to a credit risk, i.e., the risk that a counterparty will not fulfill its contractual obligations. To keep this credit risk to a minimum, we conclude transactions with regard to financing activities only with counterparties that have at least a credit rating of BBB+/Baa1; we also actively manage limits. In addition, we have concluded collateral agreements for our derivative transactions. At the level of operations, the outstanding debts are continuously monitored in each area, i.e., locally.

Currency risks. Currency risks result from investments, financing measures, and operations. Risks from foreign-currency fluctuations are hedged if they affect the Group’s cash flows. However, foreign-currency risks that do not influence the Group’s cash flows (e.g., risks resulting from the translation of assets and liabilities of foreign operations into euros) are not hedged. Deutsche Telekom may nevertheless also hedge these foreign-currency risks under certain circumstances.

Interest rate risks. Our interest rate risks mainly result from Group financing: On the one hand, we have an interest rate risk relating to the issue of new liabilities, and on the other, we have an interest rate risk arising from variable-interest liabilities. The euro interest rate position is managed as part of our interest rate management activities. Each year, a maximum is set for the percentage of variable-interest liabilities. The USD debt position of T-Mobile US primarily comprises partially cancelable, fixed-income bonds.

For further information, please refer to Note 40 “Financial instruments and risk management” in the notes to the consolidated financial statements.

Tax risks

We are subject to the applicable tax laws in many different countries. Risks can arise from changes in local taxation laws or case law and different interpretations of existing provisions. These risks can impact both our tax expense and benefit as well as tax receivables and liabilities.

Other financial risks and opportunities

This section contains information on other financial risks that we consider to be immaterial at present or cannot evaluate based on current knowledge.

Rating risk. Deutsche Telekom’s credit rating affects our access to the capital markets, to the international finance markets, and our refinancing costs. A lower rating could impede access to the capital market and, over time, would lead to an increase in the cost of debt financing. We intend to maintain our rating in a corridor from A- to BBB and thereby safeguard undisputed access to the capital market. As of December 31, 2021, Deutsche Telekom AG’s credit rating with Moody’s was Baa1 with a stable outlook, while Standard & Poor’s rated us BBB with a stable outlook, and Fitch confirmed its current rating of BBB+ with a stable outlook. From today’s perspective, access to the international debt capital markets for both Deutsche Telekom AG and T-Mobile US is not jeopardized.

Sales of shares by the Federal Republic or KfW Bankengruppe. As of December 31, 2021, the Federal Republic and KfW Bankengruppe jointly held 30.5 % in Deutsche Telekom AG. It is possible that the Federal Republic will continue its policy of privatization and sell further equity interests in a manner designed not to disrupt the capital markets and with the involvement of KfW Bankengruppe. There is a risk that the sale of a significant volume of shares by the Federal Republic or KfW Bankengruppe, or any speculation to this effect, could have a negative impact on the price of the T-Share.

Impact of the CR strategy on the value of the Company. Our CR strategy enhances the value of our Company in the long term, which also has a positive effect of reducing business risks. Investors with a long-term horizon acknowledge this approach. In the capital markets, this is evident, for example, in the proportion of T-Shares held by investors that base their investment decisions, at least in part, on sustainability criteria. As of September 30, 2021, around 12 % of all T-Shares were held by SRI (socially responsible investment) investors, and 10 % were held by investors who manage their funds primarily in accordance with SRI aspects. 🏠 SDG 8 🏢 FINANCE

Impairment of Deutsche Telekom AG's assets. The value of the assets of Deutsche Telekom AG and its subsidiaries is reviewed periodically. In addition to the regular annual measurements, specific impairment tests may be carried out, for example, where changes in the economic, regulatory, business, or political environment suggest that the value of goodwill, intangible assets, property, plant and equipment, investments accounted for using the equity method, or other financial assets might have decreased. These tests may lead to the recognition of impairment losses that do not, however, result in cash outflows. This could impact to a considerable extent on our results, which in turn may negatively affect the T-Share price.

For further information, please refer to the section [“Summary of accounting policies – Judgments and estimates”](#) in the notes to the consolidated financial statements.

Governance and other disclosures

Governance

As of December 31, 2021, **Board of Management** responsibilities were distributed across eight Board departments.

Four of these cover cross-functional management areas:

- Chairman of the Board of Management
- and the Board of Management departments
- Finance
 - Human Resources and Legal Affairs
 - Technology and Innovation.

In addition, there are four segment-based Board of Management departments:

- Germany
- Europe
- T-Systems
- USA and Group Development.

Composition of the Board of Management as of December 31, 2021

Members of the Board of Management	Department
Timotheus Höttges	Chairman of the Board of Management (CEO)
Adel Al-Saleh	T-Systems
Birgit Bohle	Human Resources and Legal Affairs
Srini Gopalan	Germany
Dr. Christian P. Illek	Finance (CFO)
Thorsten Langheim	USA and Group Development
Dominique Leroy	Europe
Claudia Nemat	Technology and Innovation

On February 25, 2021, the Supervisory Board resolved to reappoint Birgit Bohle as the Board of Management member for Human Resources and Legal Affairs for the period from January 1, 2022 through December 31, 2026. Also on February 25, 2021, the Supervisory Board resolved to reappoint Thorsten Langheim as the Board of Management member for USA and Group Development for the period from January 1, 2022 through December 31, 2026. Furthermore, on December 15, 2021, the Supervisory Board resolved to cancel Timotheus Höttges' appointment as Chairman of the Board of Management effective December 31, 2021, and reappointed Mr. Höttges as Chairman of the Board of Management for the period from January 1, 2022 through December 31, 2026.

The members of the Board of Management are appointed and discharged in accordance with § 84 and § 85 of the German Stock Corporation Act (Aktiengesetz – AktG) and § 31 of the German Codetermination Act (Mitbestimmungsgesetz – MitbestG).

The **Supervisory Board** of Deutsche Telekom AG advises the Board of Management and oversees its management of business. It is composed of 20 members: 10 represent the shareholders and 10 the employees. The employees' representatives were most recently appointed at the delegates' assembly on November 20, 2018.

Amendments to the Articles of Incorporation are made pursuant to § 179 and § 133 AktG and § 18 and § 21 of the Articles of Incorporation. According to § 21 of the Articles of Incorporation, the Supervisory Board is authorized, without a resolution by the shareholders' meeting, to adjust the Articles of Incorporation to comply with new legal provisions that become binding for the Company and to amend the wording of the Articles of Incorporation.

The **remuneration system** for the Board of Management provides incentives to successfully implement the corporate strategy, to ensure a sustainable development of the Company, and is also focused on creating long-term value for our shareholders. The remuneration received by the members of the Supervisory Board is specified under § 13 of the Articles of Incorporation of Deutsche Telekom AG. Under the remuneration system, members of the Supervisory Board received fixed annual remuneration. The recommendations of the German Corporate Governance Code (GCGC), as published in the Federal Gazette on March 20, 2020, on "Remuneration of the Management Board and the Supervisory Board" (Section G) were complied with.

| Detailed information on the remuneration of the Board of Management and the Supervisory Board is published in the separate [remuneration report](#).

Members of the Board of Management and Supervisory Board of Deutsche Telekom AG were reported to have purchased and transferred 308,258 shares (2020: 353,569) and sold 0 shares (2020: 90,215) inter alia under the Share Matching Plan and as personal investments in the course of 2021. Total direct or indirect **shareholdings** in the Company or associated financial instruments by members of the Board of Management and the Supervisory Board do not exceed 1% of the shares issued by the Company.

Significant events after the reporting period

For information on events after the reporting period, please refer to Note 46 "[Events after the reporting period](#)" in the notes to the consolidated financial statements and to the notes to the annual financial statements of Deutsche Telekom AG as of December 31, 2021.

Accounting-related internal control system

Deutsche Telekom AG's internal control system (ICS) is based on the internationally recognized COSO (Committee of Sponsoring Organizations of the Treadway Commission) Internal Control – Integrated Framework, COSO I, as amended on May 14, 2013.

The Audit Committee of the Supervisory Board of Deutsche Telekom AG monitors the effectiveness of the ICS as required by § 107 (3) sentence 2 AktG in conjunction with § 107 (4) sentence 1 AktG. The Board of Management is responsible for defining the scope and structure of the ICS at its discretion in accordance with § 91 (3) AktG. Internal Audit is responsible for independently reviewing the functionality and effectiveness of the ICS in the Group and at Deutsche Telekom AG, and, to comply with this task, has comprehensive information, audit, and inspection rights.

The accounting-related ICS comprises the principles, methods, and measures used to ensure appropriate accounting. It is continuously being refined and aims to ensure the consolidated financial statements of Deutsche Telekom are prepared in accordance with the International Financial Reporting Standards (IFRS) as adopted by the European Union, as well as with the regulations under commercial law as set forth in § 315e (1) HGB. Another objective of the accounting-related ICS is the preparation of the annual financial statements of Deutsche Telekom AG and the combined management report in accordance with German GAAP.

It is generally true of any ICS that regardless of how it is specifically structured there can be no absolute guarantee that it will achieve its objectives. Therefore, as regards the accounting-related ICS, there can only ever be relative, but no absolute, certainty that material accounting misstatements can be prevented or detected.

Group Accounting manages the processes of Group accounting and management reporting. Legal provisions, accounting standards, and other pronouncements are continuously analyzed as to whether and to what extent they are relevant and how they impact on financial reporting. The relevant requirements are defined in the Group Accounting Manual, for example, communicated to the relevant units and, together with the financial reporting calendar that is binding throughout the Group, form the basis of the financial reporting process. In addition, supplementary process directives such as the Intercompany Policy, standardized reporting formats, IT systems, as well as IT-based reporting and consolidation processes support the process of uniform and compliant Group accounting. Where necessary, we also draw on the services of external experts, for example, to measure pension obligations or in connection with purchase price allocations. Group Accounting ensures that these requirements are complied with consistently throughout the Group. The staff involved in the accounting process receive regular training. Deutsche Telekom AG and the Group companies are responsible for ensuring that Group-wide policies, regulations, and procedures are complied with. The Group companies ensure the compliance and timeliness of their accounting-related processes and systems and, in doing so, are supported and monitored by Group Accounting.

Operational accounting processes at the national and international level are increasingly managed by our shared service centers. Harmonizing the processes enhances their efficiency and quality and, in turn, improves the reliability of the internal ICS. The ICS thus safeguards both the quality of internal processes at the shared service centers and the interfaces to the Group companies by means of adequate controls and an internal certification process.

Internal controls are embedded in the accounting process depending on risk levels. The accounting-related ICS comprises both preventive and detective controls, which include:

- IT-based and manual matching
- The segregation of functions
- The dual-checking principle
- Monitoring controls
- General IT checks such as access management in IT systems, and change management

The ICS is continuously developed in line with the operating processes, systematically responding to new technologies and ways of working. These include the use of software robots, real-time alarms, artificial intelligence, and agile working.

We have implemented a standardized process throughout the Group for monitoring the effectiveness of the accounting-related ICS. This process systematically focuses on risks of possible misstatements in the consolidated financial statements. At the beginning of the year, specific accounts and accounting-related process steps are selected based on risk factors. They are then reviewed for effectiveness in the course of the year. If control weaknesses are found, they are analyzed and assessed, particularly in terms of their impact on the consolidated financial statements and the combined management report. Material control weaknesses, the action plans for eradicating them, and ongoing progress are reported to the Board of Management and additionally to the Audit Committee of the Supervisory Board of Deutsche Telekom AG. In order to ensure a high-quality accounting-related ICS, Internal Audit is closely involved in all stages of the process.

Corporate Governance Statement and Declaration of Conformity

The Corporate Governance Statement pursuant to § 289f, § 315d HGB and the Declaration of Conformity pursuant to § 161 AktG are available on our [Investor Relations website](#).

Legal structure of the Group

Deutsche Telekom AG, Bonn, is the parent of the Deutsche Telekom Group. Its shares are traded on the Frankfurt/Main Stock Exchange as well as on other stock exchanges.

For information on the composition of capital stock in accordance with § 289a (1) HGB and § 315a HGB of direct and indirect equity investments, please refer to Note 19 “Shareholders’ equity” in the notes to the consolidated financial statements and to the notes to the annual financial statements of Deutsche Telekom AG as of December 31, 2021.

Shareholders’ equity

Each share entitles the holder to one vote. These voting rights are restricted, however, in relation to treasury shares (at December 31, 2021: around 15 million in total).

Capital increase. In connection with the agreement concluded on September 6, 2021 between Deutsche Telekom AG and SoftBank Group Corp., Tokyo, for the acquisition of around 45.4 million T-Mobile US shares, an increase in issued capital was entered in the commercial register and executed on September 28, 2021 by issuing 225 million no par value shares at the lowest issue price of EUR 2.56 per share against contribution in kind. Issued capital was increased by EUR 576 million in total. The non-cash capital increase was executed by SoftBank contributing 45.4 million T-Mobile US shares to Deutsche Telekom AG in return for the transfer of 225 million new Deutsche Telekom AG shares from the 2017 Authorized Capital. The number of Deutsche Telekom’s outstanding shares increased as a result from 4,761 million to 4,986 million shares.

Treasury shares. The amount of issued capital assigned to treasury shares was approximately EUR 37 million at December 31, 2021. This equates to 0.3 % of share capital. 14,517,728 treasury shares were held at December 31, 2021.

For information on the treasury shares in accordance with § 160 (1) No. 2 AktG, please refer to Note 8 in the annual financial statements of Deutsche Telekom AG as of December 31, 2021 and to Note 19 “Shareholders’ equity” in the notes to the consolidated financial statements.

The shareholders’ meeting resolved on April 1, 2021 to authorize the Board of Management to purchase shares in the Company by March 31, 2026, with the amount of share capital accounted for by these shares totaling up to EUR 1,218,933,400.57, provided the shares to be purchased on the basis of this authorization in conjunction with the other shares of the Company that the Company has already purchased and still possesses or are to be assigned to it under § 71d and § 71e AktG do not at any time account for more than 10 % of the Company’s share capital. Moreover, the requirements under § 71 (2) sentences 2 and 3 AktG must be complied with. Shares shall not be purchased for the purpose of trading in treasury shares. This authorization may be exercised in full or in part. The purchase can be carried out in partial tranches spread over various purchase dates within the authorization period until the maximum purchase volume is reached. Dependent Group companies of Deutsche Telekom AG within the meaning of § 17 AktG or third parties acting for the account of Deutsche Telekom AG or for the account of dependent Group companies of Deutsche Telekom AG within the meaning of § 17 AktG are also entitled to purchase the shares. The shares are purchased through the stock exchange in adherence to the principle of equal treatment (§ 53a AktG). Shares can instead also be purchased by means of a public purchase or share exchange offer addressed to all shareholders, which, subject to a subsequently approved exclusion of the right to offer shares, must also comply with the principle of equal treatment.

The shares may be used for one or several of the purposes permitted by the authorization granted by the shareholders' meeting on April 1, 2021 under item 7 on the agenda. The shares may also be used for purposes involving an exclusion of subscription rights. In addition, they may be sold on the stock market or by way of an offer to all shareholders, or withdrawn. The shares may be used to fulfill the rights of Board of Management members to receive shares in Deutsche Telekom AG, which the Supervisory Board has granted to these members as part of the arrangements governing the remuneration of the Board of Management, on the basis of a decision by the Supervisory Board to this effect. Furthermore, under the authorization granted on April 1, 2021, the Board of Management is authorized to offer and/or grant shares to employees of Deutsche Telekom and of lower-tier affiliated companies as well as to Managing Board members of lower-tier affiliated companies; this also includes the authorization to offer or grant shares free of charge or on other special conditions.

Under the resolution of the shareholders' meeting on April 1, 2021, the Board of Management is also authorized to acquire the shares through the use of equity derivatives.

No treasury shares were acquired in the reporting period and in the prior year. Currently, the treasury shares for participants of the Share Matching Plan and of the employee share program Shares2You are issued from the pool of shares previously held in a trust deposit.

As part of the acquisition of VoiceStream Wireless Corp., Bellevue, and Powertel, Inc., Bellevue, in 2001, Deutsche Telekom AG issued new shares from authorized capital to a trustee, for the benefit of holders of warrants, options, and conversion rights, among others. These options or conversion rights expired in full in the 2013 financial year. As a result, the trustee no longer had any obligation to fulfill any claims in accordance with the purpose of the deposit. The trust relationship was terminated at the start of 2016 and the deposited shares were transferred free of charge to a custody account of Deutsche Telekom AG. The previously deposited shares are accounted for in the same way as treasury shares in accordance with § 272 (1a) HGB. On the basis of authorization by the shareholders' meetings on May 25, 2016 and April 1, 2021, the treasury shares acquired free of charge may be used for the same purposes as the treasury shares acquired for a consideration. In the reporting year, 3,462 thousand previously deposited shares were reallocated for issue to eligible participants of the Share Matching Plan (prior year: 558 thousand shares).

For matching shares from the Share Matching Plan and for free shares from the employee share program Shares2You, treasury shares are transferred free of charge to the custody accounts of employees of Deutsche Telekom AG. In cases where treasury shares are transferred to the custody accounts of employees of other Group companies, the costs have been transferred at fair value to the respective Group company since the 2016 financial year. Where treasury shares were transferred to the custody accounts of employees that were bought by way of personal investment as part of the Shares2You program, a conversion rate of EUR 16.72 per share was used. The conversion is determined using the lowest price at which a trade actually took place on an official German exchange on the date of conversion.

In all months of the reporting year, except for October, treasury shares (3,485 thousand in total) were reallocated and transferred to the custody accounts of eligible participants (prior year: 523 thousand treasury shares). As of December 31, 2021, disposals of treasury shares resulting from the transfers in the reporting period accounted for 0.07 %, or EUR 8,921 thousand, of share capital. Gains on disposal arising from transfers of treasury shares amounted to EUR 57,717 thousand. The transfers of treasury shares increased the capital reserve by EUR 48,796 thousand. In the reporting year, 1,042 thousand treasury shares with a fair value of EUR 17,585 thousand were billed to other Group companies.

Authorized capital and contingent capital. The shareholders' meeting on May 31, 2017 authorized the Board of Management to increase the share capital with the approval of the Supervisory Board by up to EUR 3,600,000,000 by issuing up to 1,406,250,000 no par value registered shares against cash and/or contribution in kind in the period ending May 30, 2022. This authorization may be exercised in full or on one or more occasions in partial amounts. The Board of Management is authorized, subject to the approval of the Supervisory Board, to exclude residual amounts from shareholders' subscription rights. Furthermore, the Board of Management is authorized, subject to the approval of the Supervisory Board, to disapply shareholders' subscription rights in the event of capital increases against contribution in kind when issuing new shares for business combinations or acquisitions of companies, parts thereof, or interests in companies, including increasing existing investment holdings, or other assets eligible for contribution for such acquisitions, including receivables from the Company. However, the value of the new shares for which shareholders' subscription rights have been disappplied on the basis of this authorization – together with the value of the shares or conversion and/or option rights or obligations under bonds issued or sold since May 31, 2017 subject to the disapplication of subscription rights – must not exceed 20 % of the total share capital; the latter is defined as the amount existing as of May 31, 2017, upon entry of the authorization, or upon the issue of the new shares, whichever amount is lowest. If the issue or sale is carried out in analogous or mutatis mutandis application of § 186 (3) sentence 4 AktG, this shall also constitute the disapplication of subscription rights. Further, the Board of Management is authorized, subject to the approval of the Supervisory Board, to determine the further content of share rights and the conditions under which shares are issued (**2017 Authorized Capital**).

Following the capital increase against contribution in kind, the 2017 Authorized Capital was reduced to EUR 3,024,000,000. The remaining 2017 Authorized Capital was entered in the commercial register on September 28, 2021.

As of December 31, 2021, the share capital was contingently increased by up to EUR 1,200,000,000, comprising up to 468,750,000 no par value shares (**2018 Contingent Capital**). The contingent capital increase will be implemented only to the extent that

- a. the holders or creditors of bonds with warrants, convertible bonds, profit participation rights, and/or participating bonds (or combinations of these instruments) with options or conversion rights, which are issued or guaranteed by Deutsche Telekom AG or its direct or indirect majority holdings by May 16, 2023, on the basis of the authorization resolution granted by the shareholders' meeting on May 17, 2018, make use of their option and/or conversion rights or
- b. those obligated as a result of bonds with warrants, convertible bonds, profit participation rights, and/or participating bonds (or combinations of these instruments), which are issued or guaranteed by Deutsche Telekom AG or its direct or indirect majority holdings by May 16, 2023, on the basis of the authorization resolution granted by the shareholders' meeting on May 17, 2018, fulfill their option or conversion obligations (including in the event that, in exercising a repayment option when the final due date of the bond is reached, Deutsche Telekom AG grants shares in Deutsche Telekom AG completely or partially in lieu of payment of the amount due)

and other forms of fulfillment are not used. The new shares shall participate in profits starting at the beginning of the financial year in which they are issued as the result of the exercise of any option or conversion rights or the fulfillment of any option or conversion obligations. The Supervisory Board is authorized to amend § 5 (3) of the Articles of Incorporation of Deutsche Telekom in accordance with the particular usage of the contingent capital and after the expiry of all the option or conversion periods.

Main agreements including a change of control clause

The main agreements entered into by Deutsche Telekom AG that include a clause in the event of a change of control principally relate to bilateral credit lines and several loan agreements. In the event of a change of control, the individual lenders have the right to terminate the credit line and, if necessary, serve notice or demand repayment of the loans. A change of control is assumed when a third party, which can also be a group acting jointly, acquires control over Deutsche Telekom AG.

On November 2, 2016, Deutsche Telekom AG signed a change agreement to the shareholder agreement with the Greek government from May 14, 2008 on Hellenic Telecommunications Organization S.A., Athens, Greece (OTE); the change agreement concerned the accession of the Hellenic Republic Asset Development Fund (HRADF) as a party to the contract. Under this agreement, the Greek government is, under certain circumstances, entitled to acquire all shares in OTE from Deutsche Telekom AG as soon as one (or more) person(s), with the exception of the Federal Republic of Germany, either directly or indirectly acquire(s) 35 % of the voting rights of Deutsche Telekom AG.

In the master agreement establishing the procurement joint venture BuyIn in Belgium, Deutsche Telekom AG and Orange S.A. (formerly France Télécom S.A.)/Atlas Services Belgium S.A. (a subsidiary of Orange S.A.) agreed that if Deutsche Telekom or Orange comes under the controlling influence of a third party or if a third party that is not wholly owned by the Orange group of companies acquires shares in Atlas Services Belgium S.A., the respective other party (Orange and Atlas Services Belgium S.A. only jointly) may terminate the master agreement with immediate effect.

Changes in the composition of the Group

62 German and 314 foreign subsidiaries are fully consolidated in Deutsche Telekom's consolidated financial statements (December 31, 2020: 61 and 364). 16 associates (December 31, 2020: 15) and 10 joint ventures (December 31, 2020: 9) are also included using the equity method.

The principal subsidiaries of Deutsche Telekom AG are listed in the section "[Summary of accounting policies – Principal subsidiaries](#)" in the notes to the consolidated financial statements.

Business combinations

On May 28, 2021, a purchase agreement was signed between T-Mobile US and Shenandoah Personal Communications Company (Shentel) – a local provider of mobile network products in certain regions of some U.S. states – for the acquisition of assets and liabilities directly associated with the wireless telecommunications operation of Shentel. The transaction was consummated on July 1, 2021.

For further information, please refer to the section "[Summary of accounting policies – Changes in the composition of the Group and other transactions](#)" in the notes to the consolidated financial statements.

Consolidated financial statements

Consolidated statement of financial position

millions of €			
	Note	Dec. 31, 2021	Dec. 31, 2020
Assets			
Current assets		38,799	37,293
Cash and cash equivalents	1	7,617	12,939
Trade receivables	2	15,299	13,523
Contract assets	3	2,034	1,966
Current recoverable income taxes	31	321	349
Other financial assets	11	4,051	3,224
Inventories	4	2,855	2,695
Other assets	12	1,766	1,484
Non-current assets and disposal groups held for sale		4,856	1,113
Non-current assets		242,828	227,624
Intangible assets	6	132,647	118,066
Property, plant and equipment	7	61,770	60,975
Right-of-use assets	8	30,777	30,302
Capitalized contract costs	9	2,585	2,192
Investments accounted for using the equity method	10	938	543
Other financial assets	11	4,836	6,416
Deferred tax assets	31	7,906	7,972
Other assets	12	1,369	1,159
Total assets		281,627	264,917

millions of €			
	Note	Dec. 31, 2021	Dec. 31, 2020
Liabilities and shareholders' equity			
Current liabilities		38,803	37,135
Financial liabilities	13	12,243	12,652
Lease liabilities	13	5,040	5,108
Trade and other payables	14	10,452	9,760
Income tax liabilities	31	549	690
Other provisions	16	3,903	3,638
Other liabilities	17	3,584	3,213
Contract liabilities	18	1,668	1,625
Liabilities directly associated with non-current assets and disposal groups held for sale		1,365	449
Non-current liabilities		161,355	155,232
Financial liabilities	13	99,223	94,456
Lease liabilities	13	28,094	27,607
Provisions for pensions and other employee benefits	15	6,134	7,684
Other provisions	16	5,560	5,395
Deferred tax liabilities	31	19,809	17,260
Other liabilities	17	1,959	2,418
Contract liabilities	18	577	411
Liabilities		200,159	192,367
Shareholders' equity		81,469	72,550
Issued capital		12,765	12,189
Treasury shares		(37)	(46)
		12,728	12,143
Capital reserves		63,773	62,640
Retained earnings including carryforwards		(36,358)	(38,905)
Total other comprehensive income		(1,641)	(4,115)
Net profit (loss)		4,176	4,158
Issued capital and reserves attributable to owners of the parent		42,679	35,922
Non-controlling interests		38,790	36,628
Total liabilities and shareholders' equity		281,627	264,917

Consolidated income statement

millions of €				
	Note	2021	2020	2019
Net revenue	<u>20</u>	108,794	100,999	80,531
Of which: interest income calculated using the effective interest method		276	278	345
Other operating income	<u>21</u>	1,299	2,879	1,121
Changes in inventories		(6)	(15)	29
Own capitalized costs	<u>23</u>	2,868	2,774	2,418
Goods and services purchased	<u>24</u>	(49,683)	(44,674)	(36,956)
Personnel costs	<u>25</u>	(18,463)	(18,853)	(16,723)
Other operating expenses	<u>26</u>	(4,271)	(4,476)	(3,301)
Impairment losses on financial assets		(638)	(862)	(452)
Gains (losses) from the write-off of financial assets measured at amortized cost		(123)	(188)	(42)
Other		(3,510)	(3,425)	(2,807)
EBITDA		40,539	38,633	27,120
Depreciation, amortization and impairment losses	<u>27</u>	(27,482)	(25,829)	(17,663)
Profit (loss) from operations (EBIT)		13,057	12,804	9,457
Finance costs	<u>28</u>	(4,601)	(4,224)	(2,364)
Interest income		451	414	348
Interest expense		(5,052)	(4,638)	(2,712)
Share of profit (loss) of associates and joint ventures accounted for using the equity method	<u>29</u>	(102)	(12)	87
Other financial income (expense)	<u>30</u>	(437)	109	81
Profit (loss) from financial activities		(5,139)	(4,128)	(2,197)
Profit (loss) before income taxes		7,918	8,677	7,260
Income taxes	<u>31</u>	(1,815)	(1,929)	(1,993)
Profit (loss)		6,103	6,747	5,268
Profit (loss) attributable to				
Owners of the parent (net profit (loss))		4,176	4,158	3,867
Non-controlling interests	<u>32</u>	1,927	2,589	1,401
Earnings per share	<u>33</u>			
Profit (loss) attributable to the owners of the parent (net profit (loss))	millions of €	4,176	4,158	3,867
Adjusted weighted average number of basic/diluted ordinary shares outstanding	millions	4,813	4,743	4,743
Earnings per share basic/diluted	€	0.87	0.88	0.82

Sprint has been included in Deutsche Telekom's consolidated financial statements as a fully consolidated subsidiary since April 1, 2020. This transaction affects the comparability of the figures for the current period with the prior-year figures. For further information on the transaction, please refer to the section "Changes in the composition of the Group and other transactions" under "Summary of accounting policies."

Consolidated statement of comprehensive income

millions of €	2021	2020	2019
Profit (loss)	6,103	6,747	5,268
Items not subsequently reclassified to profit or loss (not recycled)			
Gains (losses) from the remeasurement of equity instruments ^a	112	62	99
Gains (losses) from the remeasurement of defined benefit plans	1,426	(1,358)	(603)
Share of profit (loss) of investments accounted for using the equity method	0	0	0
Income taxes relating to components of other comprehensive income	(261)	142	134
	1,278	(1,154)	(369)
Items subsequently reclassified to profit or loss (recycled), if certain reasons are given			
Exchange differences on translating foreign operations			
Recognition of other comprehensive income in income statement	61	0	(8)
Change in other comprehensive income (not recognized in income statement)	5,142	(6,578)	463
Gains (losses) from the remeasurement of debt instruments			
Recognition of other comprehensive income in income statement	417	491	(47)
Change in other comprehensive income (not recognized in income statement)	(497)	(481)	34
Gains (losses) from hedging instruments (designated risk components)			
Recognition of other comprehensive income in income statement	17	431	(148)
Change in other comprehensive income (not recognized in income statement)	296	(1,446)	(483)
Gains (losses) from hedging instruments (hedging costs) ^a			
Recognition of other comprehensive income in income statement	2	2	2
Change in other comprehensive income (not recognized in income statement)	60	(30)	(9)
Share of profit (loss) of investments accounted for using the equity method			
Recognition of other comprehensive income in income statement	0	0	(7)
Change in other comprehensive income (not recognized in income statement)	0	1	11
Income taxes relating to components of other comprehensive income	(81)	283	155
	5,417	(7,327)	(38)
Other comprehensive income	6,694	(8,481)	(407)
Total comprehensive income	12,798	(1,734)	4,861
Total comprehensive income attributable to			
Owners of the parent	8,010	(496)	3,514
Non-controlling interests	4,788	(1,238)	1,347

^a The hedging costs relate entirely to cross-currency basis spreads. For further information, please refer to Note 40 "Financial instruments and risk management."

Consolidated statement of changes in equity

millions of €

	Issued capital and reserves attributable to owners of the parent					
	Equity contributed			Consolidated shareholders' equity generated		
	Number of shares thousands	Issued capital	Treasury shares	Capital reserves	Retained earnings including carry-forwards	Net profit (loss)
Balance at January 1, 2019	4,761,459	12,189	(49)	54,646	(37,392)	2,166
Changes in accounting standards					221	
Changes in the composition of the Group						
Transactions with owners				77		
Unappropriated profit (loss) carried forward					2,166	(2,166)
Dividends					(3,320)	
Capital increase at Deutsche Telekom AG						
Capital increase from share-based payment				306		
Share buy-back/shares held in a trust deposit			1		4	
Profit (loss)						3,867
Other comprehensive income					(463)	
Total comprehensive income						
Transfer to retained earnings					74	
Balance at December 31, 2019	4,761,459	12,189	(47)	55,029	(38,709)	3,867
Balance at January 1, 2020	4,761,459	12,189	(47)	55,029	(38,709)	3,867
Changes in accounting standards						
Changes in the composition of the Group						
Transactions with owners				7,356		
Unappropriated profit (loss) carried forward					3,867	(3,867)
Dividends					(2,846)	
Capital increase at Deutsche Telekom AG						
Capital increase from share-based payment				256		
Share buy-back/shares held in a trust deposit			1			
Profit (loss)						4,158
Other comprehensive income					(1,218)	
Total comprehensive income						
Transfer to retained earnings					1	
Balance at December 31, 2020	4,761,459	12,189	(46)	62,640	(38,905)	4,158
Balance at January 1, 2021	4,761,459	12,189	(46)	62,640	(38,905)	4,158
Changes in accounting standards						
Changes in the composition of the Group						
Transactions with owners				(183)		
Unappropriated profit (loss) carried forward					4,158	(4,158)
Dividends					(2,846)	
Capital increase at Deutsche Telekom AG	225,000	576		1,063		
Capital increase from share-based payment				253		
Share buy-back/shares held in a trust deposit			9			
Profit (loss)						4,176
Other comprehensive income					1,125	
Total comprehensive income						
Transfer to retained earnings					110	
Balance at December 31, 2021	4,986,459	12,765	(37)	63,773	(36,358)	4,176

Issued capital and reserves attributable to owners of the parent								Total	Non-controlling interests	Total shareholders' equity
Total other comprehensive income										
Translation of foreign operations	Revaluation surplus	Equity instruments measured at fair value through other comprehensive income (IFRS 9)	Debt instruments measured at fair value through other comprehensive income (IFRS 9)	Hedging instruments: designated risk components (IFRS 9)	Hedging instruments: hedging costs (IFRS 9)	Investments accounted for using the equity method	Taxes			
(1,120)	(28)	84	2	519	58	(4)	(165)	30,907	12,530	43,437
								221	125	346
								0	239	239
(7)				4			(1)	73	340	413
								0	0	0
								(3,320)	(236)	(3,555)
								0	0	0
								306	178	484
								5	0	5
								3,867	1,401	5,268
319		99	(9)	(393)	(7)	4	97	(353)	(54)	(407)
								3,514	1,347	4,861
	7	(82)						0	0	0
(808)	(21)	101	(6)	130	51	0	(69)	31,707	14,524	46,231
(808)	(21)	101	(6)	130	51	0	(69)	31,707	14,524	46,231
								0	0	0
								0	17,329	17,329
(339)		0	12	380			(109)	7,299	5,967	13,266
								0	0	0
								(2,846)	(215)	(3,061)
								0	0	0
								256	262	517
								1	0	1
								4,158	2,589	6,747
(2,945)		62	(6)	(733)	(27)	1	213	(4,654)	(3,827)	(8,481)
								(496)	(1,238)	(1,734)
	7	(7)		0		(1)		0	0	0
(4,092)	(14)	156	0	(223)	24	0	34	35,922	36,628	72,550
(4,092)	(14)	156	0	(223)	24	0	34	35,922	36,628	72,550
								0	0	0
								0	(181)	(181)
				5			(1)	(179)	(48)	(227)
								0	0	0
								(2,846)	(292)	(3,138)
(83)				(64)			19	1,511	(2,358)	(847)
								253	252	505
								9	0	9
								4,176	1,927	6,103
2,427		107	(37)	227	62		(77)	3,833	2,861	6,694
								8,010	4,788	12,798
	6	(120)	0				3	0	0	0
(1,747)	(7)	143	(37)	(56)	86	0	(22)	42,679	38,790	81,469

Consolidated statement of cash flows

millions of €	Note	2021	2020	2019
Profit (loss) before income taxes	35	7,918	8,677	7,260
Depreciation, amortization and impairment losses		27,482	25,829	17,663
(Profit) loss from financial activities		5,139	4,128	2,197
(Profit) loss on the disposal of fully consolidated subsidiaries		(130)	(10)	9
(Income) loss from the sale of stakes accounted for using the equity method		(13)	0	(143)
Other non-cash transactions		226	(857)	569
(Gains) losses from the disposal of intangible assets and property, plant and equipment		161	368	112
Change in assets carried as operating working capital		(1,475)	(2,702)	(814)
Change in other operating assets		(1,059)	(509)	(248)
Change in provisions		(152)	20	203
Change in liabilities carried as operating working capital		241	(2,108)	(440)
Change in other operating liabilities		(260)	(239)	(325)
Income taxes received (paid)		(893)	(690)	(758)
Dividends received		8	6	15
Net payments from entering into, canceling or changing the terms and conditions of interest rate derivatives		(1)	(2,207)	(3)
Cash generated from operations		37,191	29,706	25,297
Interest paid		(6,158)	(7,252)	(3,924)
Interest received		1,138	1,289	1,701
Net cash from operating activities		32,171	23,743	23,074
Cash outflows for investments in				
Intangible assets		(12,749)	(5,756)	(4,375)
Property, plant and equipment		(13,616)	(12,938)	(9,982)
Non-current financial assets		(336)	(566)	(417)
Payments for publicly funded investments in the broadband build-out ^a		(436)	(507)	(401)
Proceeds from public funds for investments in the broadband build-out ^a		420	431	341
Changes in cash and cash equivalents in connection with the acquisition of control of subsidiaries and associates		(1,617)	(5,028)	(261)
Proceeds from disposal of				
Intangible assets		2	3	0
Property, plant and equipment		137	233	176
Non-current financial assets		352	112	251
Changes in cash and cash equivalents in connection with the loss of control of subsidiaries and associates		352	1,094	62
Net change in short-term investments and marketable securities and receivables		89	273	376
Other		0	(2)	(1)
Net cash (used in) from investing activities		(27,403)	(22,649)	(14,230)
Proceeds from issue of current financial liabilities		4,431	19,018	10,778
Repayment of current financial liabilities		(18,040)	(34,939)	(16,533)
Proceeds from issue of non-current financial liabilities		12,925	34,131	6,278
Repayment of non-current financial liabilities		0	(1,699)	(21)
Dividend payments (including to other shareholders of subsidiaries)		(3,145)	(3,067)	(3,561)
Principal portion of repayment of lease liabilities		(6,458)	(5,371)	(3,835)
Cash inflows from transactions with non-controlling entities		14	53	13
Cash outflows from transactions with non-controlling entities		(506)	(565)	(261)
Other		0	0	0
Net cash (used in) from financing activities		(10,779)	7,561	(7,141)
Effect of exchange rate changes on cash and cash equivalents		620	(1,036)	11
Changes in cash and cash equivalents associated with non-current assets and disposal groups held for sale		68	(73)	0
Net increase (decrease) in cash and cash equivalents		(5,323)	7,547	1,713
Cash and cash equivalents, at the beginning of the year		12,939	5,393	3,679
Cash and cash equivalents, at the end of the year		7,617	12,939	5,393

^a The payments and proceeds shown here relate to those investments in the broadband build-out that are publicly financed in full. Since the payments are not made at the same point in time as the proceeds are received, the net amounts can be positive or negative in the individual periods. These investments are not included in the operational KPIs "Cash capex" and "Free cash flow," because the payments made do not result in additions to property, plant and equipment.

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Summary of accounting policies

General information

The Deutsche Telekom Group (hereinafter referred to as “Deutsche Telekom” or the “Group”) is one of the world’s leading service providers in the telecommunications and information technology sector. Deutsche Telekom offers its customers all kinds of products and services for connected life and work. The Group reports on the operating segments Germany, United States, Europe, Systems Solutions, and Group Development, as well as on the Group Headquarters & Group Services segment.

The Company was entered in the commercial register of the Bonn District Court (Amtsgericht – HRB 6794) as a stock corporation under the name Deutsche Telekom AG on January 2, 1995.

The Company has its registered office in Bonn, Germany. Its address is Deutsche Telekom AG, Friedrich-Ebert-Allee 140, 53113 Bonn.

The Declaration of Conformity with the German Corporate Governance Code required pursuant to § 161 of the German Stock Corporation Act (Aktiengesetz – AktG) has been released and made available to shareholders. The Declaration of Conformity can also be found on the website of Deutsche Telekom in accordance with § 161 AktG.

[Declaration of Conformity](#)

The shares of Deutsche Telekom AG are traded on the Frankfurt/Main Stock Exchange as well as on other stock exchanges.

The annual financial statements of Deutsche Telekom AG as well as the consolidated financial statements of Deutsche Telekom AG, which have an unqualified audit opinion from PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft, Frankfurt/Main, are published in the Federal Gazette (Bundesanzeiger). The Annual Report is available on Deutsche Telekom’s website.

[Publications](#)

The consolidated financial statements of Deutsche Telekom for the 2021 financial year were released for publication by the Board of Management on February 15, 2022.

Basis of preparation

The consolidated financial statements of Deutsche Telekom are prepared in accordance with the International Financial Reporting Standards (IFRS) as adopted by the European Union (EU), as well as with the regulations under commercial law as set forth in § 315e (1) of the German Commercial Code (Handelsgesetzbuch – HGB). The term IFRS is consistently used in the following.

The financial year corresponds to the calendar year. The consolidated statement of financial position includes comparative amounts for one reporting date. The consolidated income statement, the consolidated statement of comprehensive income, the consolidated statement of changes in equity, and the consolidated statement of cash flows include two comparative years.

Presentation in the statement of financial position differentiates between current and non-current assets and liabilities, which – where required – are broken down further by their respective maturities in the notes to the consolidated financial statements. The consolidated income statement is presented using the total cost method. Here, the costs incurred in the financial year are broken down by cost type and the costs capitalized under inventories as well as under intangible assets and property, plant and equipment are presented separately as changes in inventories or own capitalized costs. The consolidated financial statements are prepared in euros.

The financial statements of Deutsche Telekom AG and its subsidiaries included in the consolidated financial statements were prepared using uniform group accounting policies.

Initial application of standards, interpretations, and amendments in the financial year

Pronouncement	Title	To be applied by Deutsche Telekom from	Changes	Expected impact on the presentation of Deutsche Telekom's results of operations and financial position
IFRSs endorsed by the EU				
Amendments to IFRS 16	Covid-19-Related Rent Concessions/ Covid-19-Related Rent Concessions beyond June 30, 2021 ^a	Jan. 1, 2021 ^b	Practical expedient for lessee accounting of rent concessions granted due to the Covid-19 pandemic. Instead of assessing whether a rent concession is a lease modification, the lessee may account for the changes in lease payments as if they were not lease modifications.	Practical expedient not applied by Deutsche Telekom.
Amendments to IFRS 4	Insurance Contracts – deferral of IFRS 9	Jan. 1, 2021	Deferral of first-time application of IFRS 9 for insurance companies.	No impact.
Amendments to IFRS 9, IAS 39 and IFRS 7, IFRS 4 and IFRS 16	Interest Rate Benchmark Reform (Phase 2)	Jan. 1, 2021	The amendments address the impact of modifications of financial instruments required as a direct consequence of the IBOR reform, hedge accounting requirements, and the accompanying disclosures.	No material impact expected.

^a On issuance, the practical expedient was limited to rent concessions for which any reduction in lease payments affects only payments originally due on or before June 30, 2021. The IASB granted an extension to June 30, 2022.

^b Earlier application is permissible. Deutsche Telekom already decided in the 2020 financial year to not apply the practical expedient.

Thanks to intensive preparatory and implementation work, the reform of interbank offered rates (IBORs) is currently generating low residual risks regarding the timing of implementation and the precise content of the planned changes for individual contracts concluded in foreign currencies. Deutsche Telekom is affected by this uncertainty in its hedging of interest rate and currency risks in designated fair value and cash flow hedges where certain IBORs are part of the hedging relationship (EURIBOR, USD LIBOR, GBP LIBOR, and CHF LIBOR). Group Treasury continuously analyzes the latest developments and takes any additional steps needed to transition to the new reference interest rates. EONIA had already been transitioned to €STR, while specific implementation work for the currencies CHF, GBP, and JPY was successfully finalized by the end of 2021, so that these currencies were effectively transitioned to the new reference interest rates at the start of 2022. The transition date for all other currencies affected by the reform will depend on the relevant market liquidity of the new risk free rates. For the USD LIBOR, the market is expected to make the switch by mid-2023.

For information on hedging relationships, please refer to Note 40 "Financial instruments and risk management."

Standards, interpretations, and amendments issued, but not yet to be applied

Pronouncement	Title	To be applied by Deutsche Telekom from	Changes	Expected impact on the presentation of Deutsche Telekom's results of operations and financial position
IFRSs endorsed by the EU				
Amendments to IAS 16	Proceeds before Intended Use	Jan. 1, 2022	The amendment prohibits entities from deducting from the cost of an item of property, plant and equipment any proceeds from selling items produced while bringing that asset to the location and condition necessary for it to be capable of operating in the manner intended by management. Clarification of the definition of the costs of testing. Revenue and cost that relate to items produced that are not an output of the entity's ordinary activities must be presented separately. Disclosure of the line item in the statement of comprehensive item that includes such revenue.	No material impact.
Amendments to IAS 37	Provisions, Contingent Liabilities and Contingent Assets	Jan. 1, 2022	Clarification that the cost of fulfilling a contract includes all directly attributable costs. The cost of fulfilling the contract includes both the incremental costs of fulfilling that contract (such as direct wage and material costs) and an allocation of other costs that relate directly to fulfilling contracts. In addition, it is clarified that before a provision for an onerous contract is established, an entity should recognize any impairment loss that has occurred on assets used in (previously: dedicated to) fulfilling the contract.	No material impact.

^a For standards not yet endorsed by the EU, the date of first-time adoption scheduled by the IASB is assumed for the time being as the likely date of first-time adoption.

Pronouncement	Title	To be applied by Deutsche Telekom from	Changes	Expected impact on the presentation of Deutsche Telekom's results of operations and financial position
Amendments to IFRS 3	Reference to the Conceptual Framework	Jan. 1, 2022	Reference to the revised IFRS Conceptual Framework. Requirement that, for identifying liabilities within the scope of IAS 37 or IFRIC 21, an acquirer should apply IAS 37 or IFRIC 21 (instead of the Conceptual Framework) to identify the liabilities it has assumed in a business combination. Addition of an explicit statement that an acquirer should not recognize contingent assets acquired in a business combination.	No material impact.
Annual Improvements Project	Annual Improvements to IFRSs 2018–2020 Cycle	Jan. 1, 2022	Revision of specific aspects in IFRS 1, IFRS 9, IFRS 16, and IAS 41	No material impact.
IFRS 17	Insurance Contracts	Jan. 1, 2023	IFRS 17 governs the accounting for insurance contracts and replaces IFRS 4.	No material impact expected.
Amendments to IFRS 17	Insurance Contracts	Jan. 1, 2023	Deferral of first-time application of IFRS 17 to January 1, 2023. The fundamental principles under IFRS 17 remain unaffected. The amendments to the standard, which refer to specific topics, are aimed at helping entities implement the standard and, at the same time, avoiding a significant loss of useful information. The option for companies to delay application of IFRS 9 until the initial application of IFRS 17 has also been extended until January 1, 2023.	No material impact.
IFRSs not yet endorsed by the EU^a				
Amendments to IAS 1	Classification of Liabilities as Current or Non-current	Jan. 1, 2023	Clarification that the classification of liabilities as current or non-current should be based on rights that are in existence at the end of the reporting period. The amendment also clarifies the definition of settlement of a liability.	No material impact.
Amendments to IAS 1 and IFRS Practice Statement 2	Presentation of Financial Statements	Jan. 1, 2023	The amendments to IAS 1 will require entities to disclose their material accounting policies in the future rather than their significant accounting policies. The amendments to IFRS Practice Statement 2 "Making Materiality Judgements" contain guidance on applying materiality judgments to accounting policy disclosures.	No material impact.
Amendments to IAS 8	Definition of Accounting Estimates	Jan. 1, 2023	Definition of accounting estimates. Clarification of how entities can distinguish between accounting policies and accounting estimates.	No material impact.
Amendments to IAS 12	Deferred Tax related to Assets and Liabilities arising from a Single Transaction	Jan. 1, 2023	Clarification that deferred tax must be recognized when an entity accounts for transactions that, on initial recognition, give rise to equal taxable and deductible temporary differences. The amendments clarify in particular the recognition of deferred tax arising from transactions such as leases or restoration/decommissioning obligations.	No material impact.
Amendments to IFRS 17	Initial Application of IFRS 17 and IFRS 9 – Comparative information	Jan. 1, 2023	Supplementary transition option relating to comparatives in the first reporting year, which allows for the option of a different classification pursuant to IFRS 9 (classification overlay) for the comparative periods in the year of first-time application of both standards. Under this option, for each financial asset for which the comparative period has not been adjusted to IFRS 9, the classification underlying the information available at the date of transition may be used. In addition, for financial assets that relate to insurance contracts, existing classification options under IFRS 9 can be exercised again if IFRS 9 was applied prior to the first-time application of IFRS 17.	No impact.

^a For standards not yet endorsed by the EU, the date of first-time adoption scheduled by the IASB is assumed for the time being as the likely date of first-time adoption.

Changes in accounting policies, changes in the reporting structure

Deutsche Telekom did not make any major changes to its accounting policies in the reporting year.

Effective January 1, 2021, Deutsche Telekom reassigned the responsibility for business and profit and loss for Deutsche Telekom IoT GmbH from the Systems Solutions operating segment to the business customer unit in the Germany operating segment. Deutsche Telekom IoT GmbH is responsible for the IoT business of Deutsche Telekom. This reassignment makes it possible to serve the IoT market more quickly and thus to strengthen Deutsche Telekom's position on this growth market. Prior-year comparatives in both of the segments affected have accordingly been adjusted retrospectively in segment reporting.

As of January 1, 2021, Deutsche Telekom transferred the Austrian cell tower business from the Europe operating segment to GD Towers in the Group Development operating segment to enhance the management efficiency in cell tower business. In addition, GD Towers will increase its efforts to expand third-party business, increase profitability, and develop growth areas. Furthermore, Deutsche Telekom IT (DT IT) Russia, DT IT Slovakia, and DT IT Hungary were reassigned from the Germany operating segment to the Group Headquarters & Group Services segment effective January 1, 2021. Prior-year comparatives in the segments affected have not been adjusted retrospectively, since the effects are immaterial for the Group and the costs for preparing the adjustment would outweigh the benefit.

Accounting policies

Key assets and liabilities shown in the consolidated statement of financial position are measured as follows:

Items in the statement of financial position	Measurement principle
Assets	
Current assets	
Cash and cash equivalents	Amortized cost
Trade receivables	Depending on the underlying business model in each case: at amortized cost, at fair value through other comprehensive income with recycling to profit or loss, or at fair value through profit or loss
Contract assets	Amortized cost
Current recoverable income taxes	Amount expected to be recovered from the taxation authorities, using the tax rates that have been enacted or substantively enacted by the end of the reporting period
Other financial assets	
Originated loans and other receivables	Depending on the underlying business model in each case: at amortized cost, at fair value through other comprehensive income with recycling to profit or loss, or at fair value through profit or loss
Equity instruments	Fair value through other comprehensive income without recycling to profit or loss
Derivative financial assets	At fair value through profit or loss or, in the case of certain hedging relationships, at fair value through other comprehensive income with recycling to profit or loss
Inventories	Lower of net realizable value and cost
Non-current assets and disposal groups held for sale	Lower of carrying amount or fair value less costs of disposal (including allocable liabilities)
Non-current assets	
Intangible assets	
Of which: with finite useful lives	Amortized cost or lower recoverable amount
Of which: with indefinite useful lives (including goodwill)	Cost or lower recoverable amount (impairment-only approach)
Property, plant and equipment	Amortized cost or lower recoverable amount
Right-of-use assets	Amortized cost or lower recoverable amount
Capitalized contract costs	Amortized cost or lower recoverable amount
Investments accounted for using the equity method	Pro rata value of the investment's equity carried forward or lower recoverable amount
Other financial assets	
Originated loans and other receivables	Depending on the underlying business model in each case: at amortized cost, at fair value through other comprehensive income with recycling to profit or loss, or at fair value through profit or loss
Equity instruments	Fair value through other comprehensive income without recycling to profit or loss
Derivative financial assets	At fair value through profit or loss or, in the case of specific hedge accounting, at fair value through other comprehensive income with recycling to profit or loss
Deferred tax assets	Non-discounted amount measured at the tax rates that are expected to apply to the period when the asset is realized or the liability settled
Liabilities	
Current liabilities	
Financial liabilities	
Non-derivative interest-bearing and non-interest-bearing liabilities	Amortized cost

Items in the statement of financial position	Measurement principle
Derivative financial liabilities	At fair value through profit or loss or, in the case of certain hedging relationships, at fair value through other comprehensive income with recycling to profit or loss
Lease liabilities	Amortized cost
Trade payables	Amortized cost
Income tax liabilities	Amount expected to be paid to the taxation authorities, using the tax rates that have been enacted or substantively enacted by the end of the reporting period
Other provisions	Present value of the settlement amount
Contract liabilities	Amortized cost
Non-current liabilities	
Financial liabilities	
Non-derivative interest-bearing and non-interest-bearing liabilities	Amortized cost
Derivative financial liabilities	At fair value through profit or loss or, in the case of certain hedging relationships, at fair value through other comprehensive income with recycling to profit or loss
Lease liabilities	Amortized cost
Provisions for pensions and other employee benefits	Actuarial projected unit credit method
Other provisions	Present value of the settlement amount
Contract liabilities	Amortized cost
Deferred tax liabilities	Non-discounted amount measured at the tax rates that are expected to apply to the period when the asset is realized or the liability settled

The material principles on recognition and measurement set out below were applied uniformly to all accounting periods presented in these consolidated financial statements.

Intangible assets

Intangible assets with finite useful lives, including 5G, LTE, UMTS, and GSM licenses, are measured at cost and generally amortized on a straight-line basis over their useful lives. Such assets are impaired if their recoverable amount, which is measured at the higher of fair value less costs of disposal and value in use, is lower than the carrying amount. Indefinite-lived intangible assets (mobile communications licenses granted by the Federal Communications Commission in the United States (FCC licenses)) are carried at cost. While FCC licenses are issued for a fixed time, renewals of FCC licenses have occurred routinely and at negligible costs. Moreover, Deutsche Telekom has determined that there are currently no legal, regulatory, contractual, competitive, economic, or other factors that limit the useful lives of the FCC licenses, and therefore treats the FCC licenses as an indefinite-lived intangible asset. They are not amortized, but tested for impairment annually or whenever there are indications of impairment and, if necessary, written down to the recoverable amount. If the reasons for recognizing the original impairment loss no longer apply, impairment losses are reversed taking amortization into account, i.e., not exceeding the value that would have been applied if no impairment losses had been recognized in prior periods.

Intangible assets may also be acquired in connection with a frequency or spectrum exchange. The costs of intangible assets acquired in such a barter transaction are measured at fair value if the swap has commercial substance and the fair value of the asset received and the asset given up is reliably measurable. If the barter transaction lacks commercial substance or the fair value of neither the asset received nor the asset given up is reliably measurable, the carrying amount of the asset given up is used as the fair value of the asset received.

Limited-term spectrum leases normally satisfy the recognition criteria because the lessors fulfill their performance obligations on entering into the contract, which means there are no more executory contracts. Acquired television, film, and sports rights (media broadcasting rights) are recognized if the content is sufficiently developed to satisfy the identifiability criterion.

On initial recognition, the intangible asset and the corresponding financial liability are measured only on the basis of the minimum contract term. Where a right of termination exists, the period beyond the effective date of the earliest possible termination is not considered on initial recognition. Where a right of renewal exists, the renewal period is not considered on initial recognition.

The useful lives and the amortization methods of the intangible assets are reviewed at least at each financial year-end. If expectations differ from previous estimates, the changes are recognized as changes in accounting estimates in accordance with IAS 8.

Amortization of mobile communications licenses begins as soon as the related network is ready for use. The useful lives of mobile communications licenses are determined based on several factors, including the term of the licenses granted by the respective regulatory body in each country, the availability and expected cost of renewing the licenses, as well as the development of future technologies.

The useful lives of Deutsche Telekom's most important mobile communications licenses are as follows:

Mobile communications licenses	Years
FCC licenses	Indefinite
5G licenses	19 to 23
LTE licenses	6 to 25
UMTS licenses	17 to 19
GSM licenses	7 to 27

Expenditures for internally generated intangible assets incurred during the development phase are capitalized if they meet the criteria for recognition as assets, and are amortized over their useful lives. Research expenditures are expensed as incurred. Development is the application of research findings or other knowledge to a plan or design for the production of new or substantially improved materials, devices, products, processes, systems, or services prior to the commencement of commercial production or use. Examples of activities typically included in development are the design, construction, and testing of pre-production or pre-use prototypes and models involving new technology. The development phase is deemed complete when the IT department has formally documented that the capitalized asset is ready for its intended use.

Goodwill is not amortized, but is tested for impairment based on the recoverable amount of the cash-generating unit to which the goodwill is allocated (impairment-only approach). The impairment test is carried out on a regular basis at the end of each financial year, as well as whenever there are indications that a carrying amount of the cash-generating unit is impaired.

Property, plant and equipment

Property, plant and equipment is carried at cost less straight-line depreciation, and impairment losses, if applicable. The depreciation period is based on the expected useful life of the assets. Items of property, plant and equipment are depreciated pro rata temporis in the year of acquisition. The residual values, useful lives, and the depreciation methods of the assets are reviewed at least at each financial year-end. If expectations differ from previous estimates, the changes are recognized as changes in accounting estimates in accordance with IAS 8. In addition to directly attributable costs, the costs of internally developed assets include proportionate indirect material and labor costs, as well as administrative expenses relating to production or the provision of services. In addition to the purchase price and costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management, costs also include the estimated costs for dismantling and removing the asset, and restoring the site on which it is located. If an item of property, plant and equipment consists of several components with different estimated useful lives, those components that are significant are depreciated over their individual useful lives. Maintenance and repair costs are expensed as incurred. If an asset is owned and a portion is used as an item of property, plant and equipment while another physically distinct portion of the owned asset is leased under an operating lease (e.g., office floors of a building or individual optical fibers of a cable), the portion of the asset that is leased is not presented separately.

Public investment grants reduce the cost of the property, plant and equipment for which the grants were made.

Investment grants are recognized when there is reasonable assurance that the entity will comply with the conditions attached to them, and the grants will be received in the full amount. If this reasonable assurance already exists when the contract is being concluded, the grant is recognized in full under other financial assets upon conclusion of the agreement, with a matching non-financial other liability for the build-out obligation. In subsequent periods, the financial asset measured at amortized cost is reduced upon receipt of the payments. The other liability is derecognized on a pro rata basis as the build-out progresses, reducing the carrying amount of the publicly funded property, plant and equipment. If there is not yet reasonable assurance, only the installment payments received are recognized, with a matching non-financial other liability. As soon as there is reasonable assurance, outstanding grants are recognized under other financial assets, and the carrying amounts of the other liability and the publicly funded property, plant and equipment are adjusted in accordance with the actual build-out progress. All grants received are recognized in net cash used in/from investing activities.

On disposal of an item of property, plant and equipment or when no future economic benefits are expected from its use or disposal, the carrying amount of the item is derecognized. The gain or loss arising from the disposal of an item of property, plant and equipment is the difference between the net disposal proceeds, if any, and the carrying amount of the item and is recognized as other operating income or other operating expenses when the item is derecognized. The useful lives of the main asset classes are shown in the table below:

Asset classes	Years ^a
Buildings	25 to 50
Technical equipment and machinery	2 to 35
Other equipment, operating and office equipment	2 to 23

^a The useful lives indicated represent the maximum number of years as specified by the Group. The actual useful lives may be shorter due to contractual arrangements or other specific factors such as time and location.

Leasehold improvements are depreciated over the shorter of their useful lives or terms of the lease.

Borrowing costs

Borrowing costs that are directly attributable to the acquisition, construction, or production of a qualifying asset are capitalized as part of the cost of that asset. Deutsche Telekom defines qualifying assets as construction projects or other assets for which a period of at least twelve months is necessary in order to get them ready for their intended use or sale. Borrowing costs relating to assets measured at fair value and to inventories that are manufactured or produced in large quantities on a repetitive basis are not capitalized.

Impairments of intangible assets, items of property, plant and equipment, and right-of-use assets

Impairments are identified by comparing the carrying amount with the recoverable amount. If individual assets do not generate future cash flows independently of other assets, recoverability is assessed on the basis of the larger cash-generating unit to which the assets belong. At each reporting date, Deutsche Telekom assesses whether there is any indication that an asset may be impaired. If any such indication exists, the recoverable amount of the asset or cash-generating unit must be determined. In addition, annual impairment tests are carried out for intangible assets with indefinite useful lives (goodwill and FCC licenses) at regular intervals. For the purpose of impairment testing, goodwill acquired in a business combination is allocated to each of the cash-generating units that are expected to benefit from the synergies of the combination. If the carrying amount of the cash-generating unit to which goodwill is allocated exceeds its recoverable amount, goodwill allocated to this cash-generating unit must be reduced in the amount of the difference. Impairment losses for goodwill must not be reversed. If the impairment loss recognized for the cash-generating unit exceeds the carrying amount of the allocated goodwill, the additional amount of the impairment loss is to be distributed on a pro rata basis to the assets allocated to the cash-generating unit. The fair values or values in use (if measurable) of the individual assets shall be considered to be the minimum values. If the reasons for previously recognized impairments no longer exist, the impairment losses on the assets concerned (with the exception of goodwill) must be reversed.

The recoverable amount of a cash-generating unit is measured at the higher of fair value less costs of disposal and the value in use. The recoverable amount is generally determined by means of a discounted cash flow (DCF) calculation, unless it can be determined on the basis of a market price. These DCF calculations use projections that are based on financial budgets approved by management covering a ten-year period and are also used for internal purposes. The planning horizon reflects the assumptions for short- to mid-term market developments. Cash flows beyond the ten-year period are extrapolated using appropriate growth rates. For the key assumptions on which management has based its calculation of the recoverable amount, please refer to the explanations provided under "Judgments and estimates," further on in this section.

Inventories

Inventories are carried at cost at initial recognition and are subsequently measured at the lower of cost and net realizable value. Cost comprises all costs of purchase, costs of conversion, and other costs incurred in bringing the inventories to their present location and condition. Cost is measured using the weighted average cost method. Net realizable value is the estimated standalone selling price in the ordinary course of business less the estimated costs of completion and the necessary estimated selling expenses.

Non-current assets and disposal groups held for sale

Non-current assets and disposal groups held for sale are classified as such if their carrying amount will be recovered principally through a sale transaction rather than through continuing use. These assets are measured at the lower of the carrying amount and fair value less costs of disposal and classified as non-current assets and disposal groups held for sale. Such assets are no longer depreciated. Impairment of such assets is recognized if fair value less costs of disposal is lower than the carrying amount. If fair value less costs of disposal subsequently increases, the impairment loss previously recognized must be reversed. The reversal of impairment losses is limited to the impairment losses previously recognized for the assets concerned. If the requirements for the classification of assets as held for sale are no longer met, the assets may no longer be shown as held for sale. The assets are to be measured at the lower of the carrying amount that would have applied if the asset had not been classified as held for sale, and the recoverable amount at the date at which the requirements for the classification as held for sale are no longer met.

Employee benefits

Deutsche Telekom maintains **defined benefit pension plans** in various countries on the basis of the pensionable compensation of its employees and their length of service. Some of these pension plans are financed through external pension funds and some through incorporation in a contractual trust agreement (CTA). Provisions for pensions are actuarially measured using the projected unit credit method for defined benefit pension plans, taking into account not only the pension obligations and vested pension rights known at the reporting date, but also expected future salary and benefit increases. The interest rate used to determine the present value of the obligations is generally set on the basis of the yields on high-quality corporate bonds in the respective currency area. The return on plan assets and interest expenses resulting from the unwinding of the discount are reported in profit/loss from financial activities. Service cost is classified as operating expenses. Past service cost resulting from a change in the pension plan shall immediately be recognized in the income statement in the period in which the change took effect. Gains and losses arising from adjustments and changes in actuarial assumptions are recognized immediately and in full in the period in which they occur outside profit or loss within equity. Some Group entities grant defined contribution plans to their employees in accordance with statutory or contractual requirements, with the payments being made to state or private pension insurance funds. Under defined contribution plans, the employer does not assume any other obligations above and beyond the payment of contributions to an external fund. The amount of the future pension payments will exclusively depend on the contribution made by the employer (and their employees, if applicable) to the external fund, including income from the investment of such contributions. The amounts payable are expensed when the obligation to pay the amounts is established, and classified as expenses.

Up until December 31, 2012, Deutsche Telekom maintained a joint pension fund, **Bundes-Pensions-Service für Post und Telekommunikation e.V.**, Bonn (Federal Pension Service for Post and Telecommunications – BPS-PT), together with Deutsche Post AG and Deutsche Postbank AG for civil-servant pension plans. BPS-PT made pension and allowance payments to retired employees and their surviving dependents who are entitled to pension payments as a result of civil-servant status. The German Act on the Reorganization of the Civil Service Pension Fund (Gesetz zur Neuordnung der Postbeamtenversorgungskasse – PVKNeuG) transferred the functions of BPS-PT relating to civil-servant pensions (organized within the Civil Service Pension Fund) to the German Federal Posts and Telecommunications Agency effective January 1, 2013. The level of Deutsche Telekom AG's payment obligations to the Civil Service Pension Fund is defined under § 16 of the German Act on the Legal Provisions for the Former Deutsche Bundespost Staff (Postpersonalrechtsgesetz). Deutsche Telekom AG has been legally obligated since 2000 to make an annual contribution to the special pension fund amounting to 33 % of the pensionable gross emoluments of active civil servants and the notional pensionable gross emoluments of civil servants on leave of absence. Deutsche Telekom is not required to fulfill any other obligations in respect of pensions for civil servants. The payment obligations are therefore to be considered defined contribution plans.

In the past, Deutsche Telekom AG and its domestic subsidiaries agreed on **phased retirement arrangements** with varying terms and conditions, predominantly based on what is known as the block model. Two types of obligations, both measured at their present value in accordance with actuarial principles, arise and are accounted for separately. The first type of obligation relates to the cumulative outstanding settlement amount, which is recorded on a pro rata basis during the active or working phase. The cumulative outstanding settlement amount is based on the difference between the employee's remuneration before entering phased retirement (including the employer's social security contributions) and the remuneration for the part-time service (including the employer's social security contributions, but excluding top-up payments). The second type of obligation relates to the employer's obligation to make top-up payments plus an additional contribution to the statutory pension scheme. Top-up payments are often hybrid in nature, i.e., although the agreement is often considered a form of compensation for terminating the employment relationship at an earlier date, payments to be made at a later date are subject to the performance of work in the future. Despite having the characteristics of severance payments, the top-up payments must be recognized ratably over the vesting period due to their dependency on the performance of work in the future. If the block model is used, the vesting period for top-up payments starts when the employee is granted the entitlement to participate in the phased retirement program and ends upon entry into the passive phase (leave from work).

Obligations arising from the granting of termination benefits are recognized when Deutsche Telekom does not have a realistic possibility of withdrawal from the granting of the corresponding benefits. **Severance payments for employees and obligations arising in connection with early retirement arrangements** in Germany are mainly granted in the form of offers to the employees to leave the Company voluntarily. As a rule, such obligations are not recognized before the employees have accepted an offer from the Company, unless the Company is prevented by legal or other restrictions from withdrawing its offer at an earlier date. Obligations arising from the sole decision by the Company to shed jobs are recognized when the Company has announced a detailed formal plan to terminate employment relationships. If termination benefits are granted in connection with restructuring measures within the meaning of IAS 37, a liability under IAS 19 is recognized at the same time as a restructuring provision. Where termination benefits fall due more than twelve months after the reporting date, the expected amount to be paid is discounted to the reporting date. If the timing or the amount of the payment is still uncertain at the reporting date, the obligations are reported under other provisions.

Other provisions

Other provisions are recognized for current legal or constructive obligations to third parties that are uncertain with regard to their timing or their amount. Provisions are recognized for these obligations provided they relate to past transactions or events, will more likely than not require an outflow of resources to settle, and this outflow can be reliably measured. Provisions are carried at their expected settlement amount, taking into account all identifiable risks and uncertainties. The settlement amount is calculated on the basis of a best estimate; suitable estimation methods and sources of information are used depending on the characteristics of the obligation. In the case of a number of similar obligations, the group of obligations is treated as one single obligation. The expected value method is used as the estimation method. If there is a range of potential events with the same probability of occurrence, the average value is taken. Individual obligations (e.g., legal and litigation risks) are regularly evaluated based on the most probable outcome, provided an exceptional probability distribution does not mean that other estimates would lead to a more appropriate evaluation. The measurement of provisions is based on past experience, current costing, and price information, as well as estimates and reports from experts. If experience or current costing or price information is used to determine the settlement amount, these values are extrapolated to the expected settlement date. Suitable price trend indicators (e.g., construction price indexes or inflation rates) are used for this purpose. Provisions are discounted when the effect of the time value of money is material. Provisions are discounted using pre-tax market interest rates that reflect the term of the obligation and the risk associated with it (insofar as not already taken into consideration in the calculation of the settlement amount). Reimbursement claims are not netted against provisions; they are recognized separately as soon as their realization is virtually certain.

Provisions for decommissioning, restoration, and similar obligations arising from the acquisition of property, plant and equipment are offset by a corresponding increase in the capitalized cost of the relevant asset. Changes at a later date in estimates of the amount or timing of payments or changes to the interest rate applied in measuring such obligations also result in retrospective increases or decreases in the carrying amount of the relevant item of property, plant and equipment. These in turn change the depreciation of the asset to be recognized in the future, which leads to the changes in estimates being recognized in profit or loss over the remaining useful life. Where the decrease in the amount of a provision exceeds the carrying amount of the related asset, the excess is recognized immediately in profit or loss.

Financial instruments

Financial instruments are recognized as soon as Deutsche Telekom becomes a party to the contractual regulations of the financial instrument. However, in the case of regular way purchase or sale, the settlement date is relevant for the initial recognition and derecognition. This is the day on which the asset is delivered to or by Deutsche Telekom. In general, financial assets and financial liabilities are offset and the net amount presented in the statement of financial position when, and only when, the entity currently has a right to offset the recognized amounts and intends to settle on a net basis. Transferred financial assets are derecognized in full if substantially all the risks and rewards of ownership are transferred or if some of the risks and rewards of ownership are transferred (risk sharing) and the acquirer has both the legal and the practical ability to sell the assets to a third party. If, in cases where risk is shared, the acquirer is unable to sell the assets to a third party, the assets will continue to be recognized to the extent of the maximum risk retained. Financial liabilities are derecognized when the obligation specified in the contract expires or if there is a substantial modification of the terms of the contract.

Financial assets include cash and cash equivalents, trade receivables, originated loans and other receivables, investments in equity instruments, and derivative financial assets. They are measured at fair value upon initial recognition. For all financial assets not subsequently measured at fair value through profit or loss, the transaction costs directly attributable to the acquisition are taken into account plus, in the case of debt instruments held, a loss account for expected credit losses. The fair values recognized in the statement of financial position are generally based on market prices of the financial assets. If these are not available, the fair value is determined using standard valuation models on the basis of current market parameters. For the classification and measurement of debt instruments held, the respective business model for managing the debt instruments and whether the instruments have the characteristics of a standard loan, i.e., whether the cash flows are solely payments of principal and interest, is relevant. Assuming the assets have these characteristics and if the business model is to hold to collect the asset's contractual cash flows, they are measured at amortized cost. If the objective of the business model is to hold to collect and sell the contractual cash flows, they are measured at fair value through other comprehensive income with recycling to profit or loss. In all other cases, financial assets are measured at fair value through profit or loss. There may be different business models for separate portfolios of the same types of debt instruments, for example if factoring transactions exist for certain trade receivables.

Cash and cash equivalents include cash accounts and short-term cash deposits at banks; they have maturities of up to three months at initial recognition.

Trade receivables and **originated loans and other receivables** are measured at their transaction price at initial recognition if they do not contain a significant financing component. Instruments with a significant financing component are initially measured at fair value.

Investments in **equity instruments** represent strategic investments. Deutsche Telekom has exercised the option of generally measuring these through other comprehensive income without recycling to profit or loss. This is due to the fact that Deutsche Telekom's primary goal for strategic investments is not a short-term maximization of profit (trading). The acquisition and disposal of strategic investments is based on business policy considerations.

Dividends received are recognized immediately in profit or loss unless they constitute a repayment of capital.

Derivative financial assets that are not part of an effective hedging relationship are measured at fair value through profit or loss.

In the **consolidated statement of cash flows**, Deutsche Telekom reports cash flows from interest and dividends received as cash inflows or outflows in net cash from operating activities.

Financial liabilities are measured at fair value on initial recognition. For all financial liabilities not subsequently measured at fair value through profit or loss, the transaction costs directly attributable to the acquisition are also a component of the carrying amount.

If the contractual payment term for **liabilities to suppliers** is longer than the normal credit period in the relevant procurement market at this point in time, this liability is reported under other interest-bearing liabilities in financial liabilities instead of under trade payables. A financing agreement of this nature is shown as a non-cash transaction in the consolidated statement of cash flows and the relevant repayment of the financial liability reported under net cash from/used in financing activities. This applies regardless of whether the supplier sells its receivable or not.

For further information on the effects on the consolidated statement of cash flows, please refer to Note 35 "[Notes to the consolidated statement of cash flows.](#)"

Derivative financial liabilities that are not part of an effective hedging relationship are measured at fair value through profit or loss.

Deutsche Telekom has not yet made use of the option to designate financial instruments upon initial recognition as **at fair value through profit or loss**.

At initial recognition, debt instruments that are not measured at fair value through profit or loss are measured including a loss allowance account for expected **credit losses**. For trade receivables with and without a significant financing component, contract assets, and lease assets, the loss allowance is calculated at an amount equal to the lifetime expected credit losses. For all other instruments, the loss allowance is determined at an amount equal to the lifetime expected credit losses if the credit risk on that financial instrument has increased significantly since initial recognition. Otherwise, the loss allowance is calculated at an amount equal to twelve-month expected credit losses. In this case, losses incurred later than twelve months after the reporting date would therefore not be considered.

When a loss allowance for expected credit losses is being determined, the historical probability of default supplemented by the relevant future parameters for the credit risk is used as the basis for the calculation. For debt instruments traded in an active market, publicly available market data is used to determine the loss allowance for expected credit losses.

The loss allowance takes adequate account of the future expected credit risk; write-offs lead to the derecognition of the respective receivables. For allowances, financial assets are grouped together on the basis of similar credit risk characteristics, tested collectively for impairment, and written off, if necessary. The cash flows are discounted on the basis of the weighted average of the original effective interest rates of the financial assets in the relevant portfolio. Impairments of trade receivables are recognized in some cases using allowance accounts. The decision to account for credit risks using an allowance account or by directly reducing the receivable will depend on the reliability of the risk assessment. As there are a variety of operating segments and regional circumstances, this decision is the responsibility of the respective portfolio managers.

Deutsche Telekom uses **derivatives** to hedge the interest rate and currency risks resulting from its operating, financing, and investing activities. The Company does not hold or issue derivatives for speculative trading purposes. Derivatives are carried at their fair value upon initial recognition and also for subsequent measurement. The fair value of traded derivatives is equal to their market price, which can be positive or negative. If there is no market price available, the fair value is determined using standard financial valuation models.

The fair value of derivatives is the price that Deutsche Telekom would receive or have to pay if the financial instrument were transferred at the reporting date. This is calculated on the basis of the counterparties' relevant exchange rates and interest rates at the reporting date. Calculations are made using average rates. In the case of interest-bearing derivatives, a distinction is made between the clean price and the dirty price (full fair value). In contrast to the clean price, the dirty price also includes the interest accrued. The fair values carried correspond to the dirty price.

Embedded derivatives must be separated from financial liabilities and other non-financial contracts that are not measured at fair value through profit or loss if the economic characteristics and risks of the embedded derivative are not closely related to the economic characteristics and risks of the host contract. These derivatives must then be recognized separately and measured at fair value through profit or loss. Derivatives embedded in financial assets do not need to be separated, however. In such cases, the entire instrument must be measured at fair value through profit or loss.

Recording the changes in the fair values – either in profit or loss or directly in equity – depends on whether or not the derivative is part of an effective hedging relationship as set out in IFRS 9. If hedge accounting is not applied, the changes in the fair values of the derivatives must be recognized immediately in profit or loss. If, on the other hand, effective hedge accounting exists, the hedge will be recognized as such.

Deutsche Telekom applies hedge accounting to hedged items in the statement of financial position and future cash flows, thus reducing income statement volatility. A distinction is made between fair value hedges, cash flow hedges, and hedges of a net investment in a foreign operation depending on the nature of the hedged item. Hedging relationships are exclusively accounted for in accordance with the requirements of IFRS 9. Deutsche Telekom has exercised the option of designating cross-currency basis spreads as hedging costs rather than as part of the hedging relationship and presenting them separately in equity. To hedge the currency risk of an unrecognized firm commitment, Deutsche Telekom makes use of the option to recognize it as a cash flow hedge rather than a fair value hedge. In the case of fair value hedges, the cumulative adjustments to the carrying amount of the hedged item are amortized when the hedging relationship has been discontinued.

IFRS 9 sets out strict requirements on the use of hedge accounting. Deutsche Telekom complies with these requirements by documenting, at the inception of a hedge, both the relationship between the financial instrument used as the hedging instrument and the hedged item, as well as the risk management objective and the risk strategy of the hedge. This involves concretely assigning the hedging instruments to the corresponding assets or liabilities or (firmly committed/highly probable) future transactions and also assessing the effectiveness of the hedging instruments designated. The effectiveness of existing hedging relationships is monitored on an ongoing basis. If the criteria for applying hedge accounting are no longer met, the hedging relationship will be de-designated immediately.

Deutsche Telekom does not use hedge accounting in accordance with IFRS 9 to hedge the foreign-currency exposure of recognized monetary assets and liabilities, because the gains and losses on the hedged item from currency translation that are recognized in profit or loss in accordance with IAS 21 are shown in the income statement together with the gains and losses on the derivatives used as hedging instruments.

Contingencies (contingent liabilities and assets)

Contingencies (contingent liabilities and assets) are potential liabilities or assets arising from past events whose existence will be confirmed by the occurrence or non-occurrence of one or more uncertain future events not entirely within the control of Deutsche Telekom. Contingent liabilities are also present obligations that arise from past events for which an outflow of resources embodying economic benefits is not probable or for which the amount of the obligation cannot be measured with sufficient reliability. Contingent liabilities are only recognized at their fair value if they were assumed in the course of a business combination. Contingent liabilities not assumed in the course of a business combination are not recognized. Contingent assets are not recognized. However, when the realization of income is virtually certain, then the related asset is no longer a contingent asset, but it is recognized as an asset. Information on contingent liabilities is disclosed in the notes to the consolidated financial statements, unless the possibility of an outflow of resources embodying economic benefits is remote. The same applies to contingent assets where an inflow of economic benefits is probable.

Leases

A lease is a contract in which the lessor conveys the right to use an asset for a period of time to the lessee in exchange for consideration, typically a payment or series of payments. The scope of IFRS 16 applies to standard lease, rental, and tenancy agreements as well as agreements in which the lessee is granted other rights to use assets, such as certain easements. A lease only exists if the contract conveys the right to control the use of an identified asset to the lessee. The lessee has control when it has the right to obtain substantially all of the economic benefits from use of the identified asset and the right to direct the use of the identified asset.

Lessee. At the commencement date of the lease, a lessee recognizes a right-of-use asset and a lease liability in the statement of financial position for all leases. The right-of-use asset is measured applying the cost model and the lease liability is measured at the present value of the future lease payments. This measurement concept also applies to leases for which the underlying asset is of low value and to short-term leases for which the lease term is no longer than twelve months. Non-lease components are not separated from lease components, i.e., all non-lease payments due under the contract are also recognized in the statement of financial position. This practical expedient does not include contracts relating to data centers, which due to their special requirements in terms of equipment and premises form their own separate class of underlying asset. For this class of assets, the non-lease payments are recognized as an expense. IAS 38 is applied for leases of intangible assets rather than IFRS 16.

The lease liability is recognized at the present value of the future lease payments to be made over the reasonably certain lease term. Lease payments are all of the fixed and in-substance fixed payments, less any future lease incentives payable by the lessor. Variable lease payments that depend on an index or a rate, amounts expected to be payable under residual value guarantees, and payment for the exercise of reasonably certain purchase and termination options are also measured and recognized as part of the lease liability. The series of payments is discounted at the interest rate implicit in the lease or, if that rate cannot be readily determined, at the lessee's incremental borrowing rate. The incremental borrowing rate is determined by deriving benchmark interest rates for a period of up to 30 years from maturity-related risk-free interest rates which are increased by a credit-risk premium and adjusted for a liquidity and country-risk premium. All other variable payments are recognized as an expense. The lease liability is subsequently measured using the effective interest method.

The cost of the right-of-use asset comprises: the amount of the initial measurement of the lease liability; any lease payments made at or before the commencement date, less any lease incentives received from the lessor; any initial direct costs incurred for obtaining the lease; the costs for preparing the leased asset for its intended use; and an estimate of any future dismantling and restoration costs. The right-of-use asset is subsequently depreciated on a straight-line basis over the lease term and, if applicable, reduced by any impairment losses. If ownership of the leased asset is transferred to the lessee at the end of the lease term, or if it is reasonably certain that a purchase or put option will be exercised, the right-of-use asset is depreciated from the commencement date to the end of the useful life of the underlying asset.

The lease term is the period during which it is reasonably certain that an underlying asset will be used by the lessee. The lease term includes the non-cancelable period of a lease together with periods covered by options to extend the lease, if their exercise is reasonably certain, and periods covered by termination options, if it is reasonably certain that the termination option will not be exercised. This estimate is reassessed either upon the occurrence of an event or a significant change in circumstances that is within the control of the lessee and affects a change in lease term. The lease term will be revised if an extension option not previously included in the entity's determination of the lease term is exercised or a termination option not previously included in the entity's determination of the lease term is not exercised. The revision of the lease term leads to a change in the future series of lease payments and therefore to a remeasurement of the lease liability using a revised current discount rate. The amount of the resulting difference is recognized outside profit or loss as an adjustment to the right-of-use asset or is offset against it. Derecognition amounts that exceed the carrying amount of the right-of-use asset are recognized as an income in profit or loss.

A lease modification that substantially increases the scope of the original lease is accounted for as a separate lease if both the lessee is granted an additional right to use one or more underlying assets and the consideration for the lease increases by an amount commensurate with the stand-alone price for the increase in scope that the lessee would otherwise have to pay for use if it had leased these assets from a third party under a separate lease.

For lease modifications that increase the scope of a lease but are not accounted for as a separate lease, the required remeasurement of the lease liability is accounted for outside profit or loss as an adjustment to the carrying amount of the right-of-use asset and the lease liability for the existing lease. If a lease modification decreases the scope of the lease, the lessee also remeasures both the right-of-use asset and the lease liability and recognizes any gain or loss in profit or loss. The modified amounts are measured at the modification date with a revised discount rate.

Lessor. If a lease does not transfer substantially all risks and rewards incidental to ownership of an underlying asset to the lessee (**operating lease**), the leased asset is recognized in the statement of financial position by the lessor. Measurement of the leased asset is then based on the accounting policies applicable to the underlying asset. The lease payments, including contractually defined future changes in the lease payments, are recognized in profit or loss by the lessor. Contractually defined future changes in the lease payments during the term of the lease are recognized as lease revenue on a straight-line basis over the lease term, which is assessed at the commencement date of the contract. Where extension options exist, the exercise of those extension options that are reasonably certain is initially taken into account at the time the lease is concluded. If, contrary to the original expectation, these options are exercised or not exercised during the lease term, the previously assessed term will be revised and taken into account in the recognition of future lease revenue from operating lease transactions.

If substantially all risks and rewards incidental to ownership of the underlying leased asset are transferred to the lessee (**finance lease**), the lessor recognizes at the commencement date, in place of the leased asset, a finance lease receivable at an amount equal to the net investment in the lease. The net investment is defined as the discounted aggregate of future lease payments and any unguaranteed residual value accruing to the lessor (gross investment). The lease payments made by the lessees are split into an interest component and a principal component using the effective interest method. In subsequent measurement, the lease receivable is reduced by the principal lease payments received. The interest component of the payments received is recognized as finance income over the lease term in the consolidated income statement.

Under business models in which Deutsche Telekom is classified as a manufacturer or dealer lessor within the meaning of IFRS 16, revenue from finance leases is recognized at the date at which the asset is made available for use to the lessee at the fair value of the underlying leased asset or, if lower, the present value of the payments including any guaranteed residual value and presented as lease revenue. The selling profit or loss from the finance lease is realized in the amount of the difference between the revenue and the carrying amount of the underlying asset less the present value of the unguaranteed residual value. The finance income (interest income) is subsequently also presented as lease revenue.

For sale and leaseback transactions, if there is a transfer of control within the meaning of IFRS 15, Deutsche Telekom as the seller-lessee measures the right-of-use asset arising from the leaseback at the proportion of the previous carrying amount of the asset that relates to the right of use retained by the seller-lessee. Any gain or loss that relates to the rights transferred to the buyer-lessor is recognized in profit or loss. If there is no transfer of control, the seller-lessee recognizes the transaction as a financing transaction. While the transaction is legally subject to a lease contract, it is not accounted for as a lease and the underlying asset is not derecognized.

Share-based payment programs

Equity-settled share-based payment transactions are measured at fair value on the grant date. The fair value of the obligation is recognized as personnel costs over the vesting period and offset against capital reserves. For equity-settled share-based payment transactions, the fair value is determined using internationally accepted valuation techniques, such as the Black-Scholes model or the Monte Carlo model. For cash-settled share-based payment transactions, the goods and services acquired and the liability incurred are recognized at the fair value of the liability. The fair value of the liability has to be newly determined at each reporting date and at the settlement date, and the changes in the fair value have to be recognized in profit and loss, until the liability is settled.

Net revenue, contract assets and liabilities/contract costs

Revenues include all revenues from the ordinary business activities of Deutsche Telekom. Ordinary activities do not only refer to the core business but also to other recurring sales of goods or rendering of services. However, gains from sales of items of property, plant and equipment or intangible assets are not classified as revenue but as other operating income. All ancillary income in connection with the delivery of goods and rendering of services in the course of an entity's ordinary activities is also presented as revenue. Examples include dunning fees, contractual penalties, and default interest. Income from interest added back from long-term customer receivables and contract assets is also considered ancillary income in the course of an entity's ordinary activities where the underlying receivables or contract assets have resulted in the recognition of revenue. Revenues are recorded net of value-added tax and other taxes collected from customers that are remitted to governmental authorities. They are recognized in accordance with the provision of goods or services, provided that collectability of the consideration is probable. For service contracts with a continuous service provision, the contractually agreed total consideration is recognized as revenue on a straight-line basis over the minimum contract term, regardless of the payment pattern.

A **contract asset** must be recognized when Deutsche Telekom recognized revenue for fulfillment of a contractual performance obligation before the customer paid consideration or before – irrespective of when payment is due – the requirements for billing and thus the recognition of a receivable exist.

A **contract liability** must be recognized when the customer paid consideration or a receivable from the customer is due before Deutsche Telekom fulfilled a contractual performance obligation and thus recognized revenue. In a customer contract, contract liabilities must be set off against contract assets.

Multiple-element arrangements involving the delivery or provision of multiple products or services must be separated into distinct performance obligations, each with its own separate revenue contribution that is recognized as revenue on fulfillment of the obligation to the customer. At Deutsche Telekom, this especially concerns the sale or lease of a mobile handset or other telecommunications equipment combined with the conclusion of a mobile or fixed-network telecommunications contract. The total transaction price of the bundled contract is allocated among the individual performance obligations based on their relative – possibly estimated – standalone selling prices, i.e., based on a ratio of the standalone selling price of each separate element to the aggregated standalone selling prices of the contractual performance obligations. As a result, the revenue to be recognized for products (often delivered in advance) such as mobile handsets that are sold at a subsidized price in combination with a long-term service contract is higher than the amount billed or collected. This leads to the recognition of what is known as a contract asset – a receivable arising from the customer contract that has not yet legally come into existence – in the statement of financial position. The contract asset is reversed and reduced over the remaining minimum contract period, reducing revenue from the other performance obligations (in this case: mobile service revenues) compared with the amounts billed. In contrast to the amounts billed, this results in higher revenue from the sale of goods and merchandise and lower revenue from the provision of services.

Customer activation fees and other advance one-time payments by the customer that do not constitute consideration for a separate performance obligation are deferred as contract liabilities and recognized as revenue over the minimum contract term or, in exceptional cases (e.g., in the case of contracts that can be terminated at any time) over the expected contract period. The same applies to fees for installation and set-up activities that do not have an independent value for the customer.

As distinct from promotional offers, **options to purchase additional goods or services free of charge or at a discount** are separate performance obligations (material rights) for which part of the revenue is deferred as a contract liability until the option is exercised or expires, providing the discount on future purchases is an implicit component of the consideration for the current contract and is also significant. The measure of significance is whether the decision by the (average) customer to enter into the current contract is likely to have been significantly influenced by their right to the future discount. Offers for volume discounts for the purchase of additional core products of an entity (e.g., a discount offered on an additional fixed-network contract for mobile customers) are considered by Deutsche Telekom as promotional offers for which customers do not (implicitly) pay as part of the current contract.

Long-term customer receivables (e.g., arising from sales of handsets in installments), contract assets (e.g., arising from the subsidized sale of a handset in connection with the conclusion of a long-term customer contract), or contract liabilities (e.g., arising from a prepayment by the customer) are recognized at present value if the **financing component** is significant in relation to the total contract value (i.e., including those performance obligations that do not contain a financing component). The discount rate also reflects the customer credit risk. Deutsche Telekom makes use of the option not to recognize a significant financing component if the period between when a good or service is transferred to the customer and when the customer pays for that good or service will be one year or less.

Payments to customers including credits or subsequent discounts are recognized as a reduction in revenue unless the payment constitutes consideration for a distinct good or service from the customer, for which the fair value can be reasonably estimated.

Gross vs. net presentation. In cases where a company is in an intermediary position between another supplier/vendor (e.g., manufacturer, wholesaler) and a retail customer, it must be assessed whether the company itself supplies the relevant product or provides the service requested by the customer as the principal or whether the company merely acts as the agent for the supplier. The outcome determines whether the entity can recognize revenue on a gross basis (as the principal) or on a net basis after deducting the costs to the supplier (as the agent). For Deutsche Telekom, the question arises particularly in the case of digital services (e.g., streaming services, cloud-based software as a service) purchased from third parties and sold to retail customers as part of Deutsche Telekom's product portfolio. In summary, in case of rights to another party's goods or services, Deutsche Telekom considers itself to be the principal vis-à-vis the retail customer if all of the following conditions are met and thus reports gross revenues:

- Deutsche Telekom has a contractual enforceable right to receive the predefined services "on demand" at predefined (fixed or variable) prices, and accordingly the other party has entered into an enforceable ongoing commitment to provide them.
- Deutsche Telekom sells access to the other party's services in its own name and for its own account under a contract between Deutsche Telekom and the retail customer.
- Deutsche Telekom has discretion in setting the price for the other party's services sold for its own account.

Contract costs comprise the incremental costs of obtaining a contract (mainly sales commission paid to employees and third-party retailers in the direct and indirect sales channel) and the costs to fulfill a contract. These must be capitalized if it can be assumed that the costs will be compensated by future revenue from the contract. Incremental costs of obtaining a contract are additional costs that would not have been incurred had the contract not been concluded. Costs to fulfill a contract are costs relating directly to a contract that are incurred after contract inception and serve the purpose of fulfilling the contract but are incurred prior to fulfillment and cannot be capitalized under any other standard. Deutsche Telekom makes use of the option to immediately recognize contract costs whose amortization period would not be more than one year as an expense.

The capitalized contract costs are generally recognized on a straight-line basis over the expected contract period. The expenses are disclosed in Deutsche Telekom's income statement, not under depreciation and amortization but – depending on the sales channel – as goods and services purchased or personnel costs.

In the **indirect sales channel**, third-party retailers often arrange service contracts on behalf of and for the account of Deutsche Telekom (as the agent) in connection with the sale of subsidized handsets in their own name and for their own account (as the principal). In such cases, the retailers receive commission in an amount that explicitly or implicitly compensates them for the handset subsidy granted. As in the case of multiple-element arrangements in the direct sales channel, the customer ultimately covers the handset subsidy by paying a price above the standalone selling price for the service contract. Deutsche Telekom considers this an implicit promise to the customer that on conclusion of this service contract they will be able to purchase a handset at a discounted price. The only difference between this promise and the purchase of a service in the direct sales channel is that it is not Deutsche Telekom that is granting the discount as part of a multiple-element arrangement but a third-party retailer that is compensated for it by Deutsche Telekom through the commission it receives for arranging the service contract. As, from an economic substance perspective, these payments constitute indirect payments by Deutsche Telekom to customers, the portion of the commission payments attributable to the (implicit) cost reimbursements to the retailer is not capitalized as contract costs but as a contract asset and is therefore recognized as a reduction of the service revenues over the contract term rather than as an expense. This ensures that the amount of the service revenues generated with retail customers for identical rate plans does not depend on the type of sales channel.

Depending on the business model, **revenue recognition** at Deutsche Telekom is as follows:

The **mobile and fixed-network business** of the Germany, United States, Europe, and Group Development operating segments includes mobile services, narrow- and broadband access to the fixed network and the internet, television via internet, connection and roaming fees billed to other fixed-network and mobile operators (wholesale business), and sales or lease of mobile handsets, other telecommunications equipment, and accessories. Revenue generated from the use of voice and data communications as well as television via internet is recognized upon rendering of the agreed service. The services rendered relate to use by customers (e.g., call minutes), availability over time (e.g., monthly flat rates), or other agreed rate plans. Revenue and expenses associated with the sale of telecommunications equipment and accessories are recognized when the products are delivered, provided there are no unfulfilled company obligations that affect the customer's final acceptance of the arrangement. Revenue from the lease of mobile handsets and telecommunications equipment that is not considered a sale in economic terms is recognized monthly as the entitlement to the fees accrued. Advertising revenues are recognized in the period in which the advertisements are exhibited.

Trade-in rights for used handsets which are granted to customers upon contract conclusion under the condition of a new purchase transaction (including renewal of an existing service contract) do not constitute repurchase arrangements; however, if the repurchase prices exceed the fair value of the handsets these rights must be recognized as separate performance obligations for which part of the contractual revenue is deferred until they are exercised or expire.

Particularly in the mobile communications business, the timing of payments for mobile handsets purchased in connection with the conclusion of a service contract differs from the timing of the delivery and hence from revenue recognition. Where a significant financing component exists, revenue is measured at the present value. Whereas the sale of subsidized handsets in connection with the conclusion of service contracts in the consumer business is still common in the Germany operating segment and also to some extent in the Europe operating segment, handsets are not sold at a discount at all, or only to a limited extent, in the United States and to some extent in the Europe operating segments; payment-by-installment models or lease models are offered to customers instead. In both the subsidy model and the payment-by-installment model, an asset must thus be recognized at the date of revenue recognition and is generally settled over a 24-month service contract term through payments made by the customer. The only difference is that with the subsidy model it is a contract asset that is repaid through the portion of the monthly bill that exceeds the allocated monthly service revenues. By contrast, the payment-by-installment model involves an existing legal customer receivable that is settled based on an installment plan – separately from the monthly billing for telecommunications services.

The **Systems Solutions** operating segment provides, among other things, IT services and network services for corporate customers including IT outsourcing services and the sale of hardware including desktop services. Revenue from service contracts is recognized as the service is performed, i.e., normally on a pro rata basis over the contract term. Revenue from service contracts billed on the basis of time and material used is recognized at the contractual hourly rates as labor hours are delivered and direct expenses are incurred.

Revenue from hardware sales or sales-type leases is recognized when the product is shipped to the customer, provided there are no unfulfilled company obligations that affect the customer's final acceptance of the arrangement. Any costs of these obligations are recognized when the corresponding revenue is recognized.

Revenue from construction contracts and construction-type service contracts (or elements of service contracts), for which a defined output is promised (e.g., IT developments), is recognized using the percentage-of-completion method. The measure of progress or stage of completion of a contract is generally determined as the percentage of cost incurred up until the reporting date relative to the total estimated cost at the reporting date (cost-to-cost method). In particular for complex outsourcing contracts with corporate customers, a reliable estimate of the total cost and therefore of the stage of completion is not possible in many cases, so revenue is only recognized in the amount of the contract costs expensed. This means that a proportionate profit is not realized until the contract has been completed (zero-profit method).

Revenue from non-sales-type rentals and leases is recognized on a straight-line basis over the lease term.

Income taxes

Income taxes include current income taxes as well as deferred taxes. Current and deferred tax assets and liabilities must be recognized where they are probable. They are measured in accordance with the tax laws applicable or already announced as of the reporting date, provided said announcement has the effect of actual enactment. Where uncertain tax assets or uncertain tax liabilities are recognized because they are probable, these must be measured at their most probable amount. In exceptional cases the expected value is considered. Where current and deferred taxes are recognized, they must be reported as income or expense except to the extent that the tax arises from a transaction which is recognized outside the consolidated income statement, either in other comprehensive income or directly in equity, or in connection with a business combination. Current tax assets and current tax liabilities and deferred tax assets and deferred tax liabilities are offset in the statement of financial position if Deutsche Telekom has a legally enforceable right to set off current tax assets against current tax liabilities, has an intention to settle net, and the deferred tax assets and the deferred tax liabilities relate to income taxes levied by the same taxation authority.

Current tax assets and current tax liabilities must be recognized in the amount that Deutsche Telekom expects to settle with or recover from the tax authorities. They include liabilities/receivables for the current period as well as for prior periods.

Deferred taxes are recognized for temporary differences between the carrying amounts in the consolidated statement of financial position and the tax base, as well as for tax loss carryforwards and tax credits. As an exception to this principle, a deferred tax liability is not recognized for temporary differences if the deferred tax liability arises from the initial recognition of an asset or a liability in a transaction which is not a business combination and, at the time of the transaction, affects neither IFRS accounting profit (before taxes) nor taxable profit/tax loss. Nor is a deferred tax liability recognized for temporary differences arising from the initial recognition of goodwill. A deferred tax liability is generally recognized for temporary differences associated with investments in subsidiaries, joint arrangements, and associates, unless Deutsche Telekom is able to control the timing of the reversal of the temporary difference and it is probable that the temporary differences will not reverse in the foreseeable future.

Judgments and estimates

The presentation of the results of operations or financial position in the consolidated financial statements is dependent upon and sensitive to the accounting policies, assumptions, and estimates. The actual amounts may differ from those estimates. The following critical accounting estimates and related assumptions and uncertainties inherent in accounting policies applied are essential to understand the underlying financial reporting risks and the effects that these accounting estimates, assumptions, and uncertainties may have on the consolidated financial statements.

Measurement of **property, plant and equipment, and intangible assets** involves the use of estimates for determining the fair value at the acquisition date, provided they were acquired in a business combination. Furthermore, the expected useful lives of these assets must be estimated. The determination of the fair values of assets and liabilities, as well as of the useful lives of the assets is based on management's judgment. The measurement of intangible assets acquired in barter transactions is based on management's judgment as to whether a barter transaction has commercial substance. For this, an analysis is performed to determine to what extent the future cash flows (risk, timing, and amount) are expected to change as a consequence of the transaction. Information from external experts is obtained for this analysis and for the determination of the fair values of assets.

The determination of **impairments of property, plant and equipment, intangible assets, and right-of-use assets** involves the use of estimates that include, but are not limited to, the cause, timing, and amount of the impairment. Impairment is based on a large number of factors, such as changes in current competitive conditions, expectations of growth in the telecommunications industry, increased cost of capital, changes in the future availability of financing, technological obsolescence, discontinuance of services, current replacement costs, prices paid in comparable transactions, and other changes in circumstances that may indicate an impairment. Management is required to make significant judgments concerning the identification and validation of impairment indicators, as well as the estimation of future cash flows and the determination of fair values for assets (or groups of assets), applicable discount rates, useful lives, and residual values of the relevant assets. Specifically, the estimation of cash flows underlying the fair values from the mobile business considers the continued investment in network infrastructure required to generate future revenue growth through the offering of new data products and services, for which only limited historical information on customer demand is available. If the demand for these products and services did not materialize as expected, this would result in less revenue, less cash flow, and potential impairment. In addition, when determining fair values, further planning uncertainties that reflect the risks of macroeconomic development could adversely affect future results of operations.

The determination of the **recoverable amount of a cash-generating unit** involves the use of estimates by management. Methods used to calculate the recoverable amount include discounted cash flow-based methods and methods that use market prices as a basis. The discounted cash flow valuations refer to projections that are based on financial plans that have been approved by management and are also used for internal purposes. The chosen planning horizon reflects the assumptions for short- to medium-term market developments and is selected to achieve a steady state in the business outlook that is necessary for calculating the perpetual annuity. This steady state will only be reached based on the planning horizon selected, in particular due to the sometimes long investment cycles in the telecommunications industry and the investments planned and expected in the long run to acquire and extend spectrum licenses. Cash flows beyond the internal mid-term planning are extrapolated using appropriate growth rates defined separately for each cash-generating unit. These growth rates are based on real growth and inflation expected in the long term for the countries in which the respective unit operates. To achieve the sustainable growth rates set for the period of the perpetual annuity, additional sustainable investments derived specifically for each cash-generating unit are taken into account. The key assumptions on which management has based its calculation of the recoverable amount include the following assumptions that were primarily derived from internal sources and are based on past experience and extended by current internal expectations, and that are underscored by external market data and estimates: development of revenue, customer acquisition and retention costs, churn rates, capital expenditure, market share, and growth rates. Discount rates are determined on the basis of external figures derived from the market, taking account of the risks associated with the cash-generating unit (market and country risks). Any future changes in the aforementioned assumptions could have a significant impact on the fair values of the cash-generating units. Changes in the assumptions may have a negative impact, as a result of future macroeconomic trends, continued intense competition, further possible legislation changes (e.g., as part of national austerity programs), and regulatory intervention.

Management recognizes an **allowance for doubtful accounts** to account for expected losses resulting from payment default of customers. When evaluating the adequacy of an allowance for doubtful accounts, management bases its estimates on the aging of accounts receivable balances and historical write-off experience, customer creditworthiness, and changes in customer payment terms. If the financial condition of customers were to deteriorate, actual write-offs might be higher than expected.

In each tax jurisdiction in which Deutsche Telekom operates, management must make judgments for the calculation of **current and deferred taxes**. This is relevant, for example, when it comes to a decision on recognizing deferred tax assets because it must be probable that a taxable profit will be available against which the deductible temporary differences, loss carryforwards, and tax credits can be utilized. In addition to the estimate of future earnings, various factors are used to assess the probability of the future utilization of deferred tax assets, including past results of operations, the reliability of planning, and tax planning strategies. The period used for the assessment of the recoverability depends on the circumstances at the respective Group company and typically is in a range of five to ten years.

Pension obligations for benefits to non-civil servants are generally satisfied by defined benefit plans. Pension benefit costs for non-civil servants are determined in accordance with actuarial valuations, which rely on assumptions regarding the discount rate, the expected salary increase rate, the expected pension trend, and life expectancy. In the event that changes in the assumptions regarding these parameters are required, the future amounts of the pension benefit costs may be affected materially.

Deutsche Telekom is obligated, under the German Federal Posts and Telecommunications Agency Reorganization Act (Gesetz zur Reorganisation der Bundesanstalt für Post und Telekommunikation Deutsche Bundespost), to pay for its share of any operating cost shortfalls between the income of the **Civil Service Health Insurance Fund** (Postbeamtenkrankenkasse) and benefits paid. The Civil Service Health Insurance Fund provides services mainly in cases of illness, birth, or death for its members, who are civil servants employed by or retired from Deutsche Telekom AG, Deutsche Post AG, and Deutsche Postbank AG, and their relatives. When Postreform II came into effect, participation in the Civil Service Health Insurance Fund was closed to new members. The insurance premiums collected by the Civil Service Health Insurance Fund must not exceed the insurance premiums imposed by alternative private health insurance enterprises for comparable insurance benefits, and, therefore, do not reflect the changing age distribution of the participants in the fund. Deutsche Telekom recognizes provisions in the amount of the actuarially determined present value of Deutsche Telekom's share in the fund's future deficit, using a discount rate and making assumptions about life expectancies and projections for contributions and future increases in general health care costs in Germany. Since the calculation of these provisions involves long-term projections over periods of more than 50 years, the present value of the liability may be highly sensitive even to small variations in the underlying assumptions.

Deutsche Telekom exercises considerable judgment in measuring and recognizing **provisions** and **contingent liabilities** related to pending litigation or other outstanding claims subject to negotiated settlement, mediation, arbitration, or government regulation. Judgment is necessary in assessing the likelihood that a pending claim will succeed, or a liability will arise, and to quantify the possible range of the final settlement. Provisions are recognized for losses from executory contracts, provided a loss is considered probable and can be reasonably estimated. Because of the inherent uncertainties in this evaluation process, actual losses may be different from the originally estimated provision. In addition, significant estimates are involved in the determination of provisions related to taxes and litigation risks. These estimates are subject to change as new information becomes available, primarily with the support of internal specialists or with the support of outside consultants, such as actuaries or legal counsel. Revisions to the estimates of these losses from executory contracts may significantly affect future results of operations.

Significant judgments: revenue recognition, contract assets and liabilities/contract costs

The standalone selling prices of individual products or services that are part of **multiple-element arrangements** are complex to determine, because some of the elements are price-sensitive and, thus, volatile in a competitive marketplace. In many cases, standalone selling prices can also not be observed for the company's own products. Due to the fact that comparability is generally not completely assured, the use of market prices for similar products is subject to an element of uncertainty, as is an estimate using a cost-plus-margin approach. Changes in estimates of standalone selling prices can significantly influence the allocation of the transaction price for the entire multiple-element arrangement among the individual performance obligations and therefore affect both the financial position, i.e., the carrying amount of contract assets and contract liabilities, and the current and future results of operations.

One-time payments by the customer for contracts that can be terminated at any time are recognized over an expected contract period, the length of which depends on the period over which, from a commercial perspective, the customer is expected to renew or not terminate the contract on a monthly basis.

Contract costs are deferred and generally recognized as expense over the expected contract period. The estimate of the expected average contract period is based on historical customer turnover. However, this is subject to fluctuations and has only limited informative value with regard to future customer behavior, particularly if new products are rolled out. If management's estimates are revised, material differences may result in the amount and timing of expenses for subsequent periods.

The significance of material rights is an estimate that is based on both quantitative and qualitative factors. This is ultimately a matter of judgment, even though it is supported by quantitative facts. Depending on the decision as to whether or not the customer has a material right to be deferred, there may be material differences in the amount and timing of revenues for the current and subsequent periods.

Gross vs. net presentation. The assessment of whether Deutsche Telekom presents revenue gross as the principal or net after deduction of costs as the agent, i.e., only in the amount of the remaining margin, requires an analysis of both the legal form and the substance of contracts. After all of the relevant facts and circumstances of the individual case have been weighed up, in many cases the decision also involves a degree of discretion, even if a uniform Group method of assessment is applied. Depending on the conclusion reached, there may be material differences in the amounts of revenues and expenses for the current and subsequent periods. This has no bearing on profit/loss from operations, however.

Judgments: extension and termination options for the lessee

Extension and termination options are included in many lease arrangements across the Deutsche Telekom Group. Local teams are responsible for negotiating contracts and managing their individual leases. As a result, lease contracts include a wide range of different terms and conditions in order to provide local management with the flexibility needed to run their business, i.e., to give them operational flexibility in terms of managing the underlying lease assets used in their operations and to allow them to react to changing business needs.

The main population of lease contracts in the Deutsche Telekom Group comprises arrangements for cell site infrastructure, land/ground underneath the infrastructure, switch sites, office buildings, and retail stores, which are mainly located in the United States and Germany. The length of the lease term in these contracts is the main factor in measuring the lease liabilities.

The majority of cell site leases in the United States have an initial non-cancelable term of 5 to 15 years, with several renewal options that can extend the lease term from five to 35 years. Cell site leases in Germany, on the other hand, typically have an initial non-cancelable period of 1 to 15 years, during which the lease cannot be terminated. After the initial period of time, the lease extends automatically if neither party terminates the lease or if Deutsche Telekom, as lessee, exercises an extension option, which is typically for five years. Leases can be extended on up to three occasions. The majority of extension options are exercisable by the relevant business units of the Deutsche Telekom Group.

In **determining the lease term**, management applies judgment and considers all facts and circumstances that create an economic incentive for Deutsche Telekom to exercise an extension option, or not to exercise a termination option. Extension options (or periods after termination options) are only included in the lease term if Deutsche Telekom is reasonably certain to exercise an option to extend the lease, or not to exercise an option to terminate the lease. The threshold for a “reasonably certain” exercise is lower than “virtually certain” and higher than “more likely than not.”

In determining the duration of leases of cell site space, land/ground, switch sites, office buildings, and retail stores, which are the most relevant lease contracts in the Deutsche Telekom Group, the following are the most relevant factors that are considered:

- Rapidly advancing and ever-changing technology in the telecommunications industry requires flexible lease contracts, i.e., management tries to minimize longer periods during which the contracts cannot be canceled.
- When determining whether an extension of a lease contract is reasonably certain, in addition to any significant penalties for terminating (or not extending) the lease, business plans and the business model are considered, e.g., cost/benefit analysis, consolidation plans for the mobile network and office facilities, new mobile network standards, significance of the property for the underlying operations, replacement or usage of additional technology, as well as the availability and cost of alternative locations.
- Often leasehold improvements can be used in alternative locations. In many cases, the costs of moving or replacing the asset or initial construction costs are not the main factor considered when determining whether to extend or not to extend the lease.
- Significant investments made in a location, e.g., construction of towers and masts on the leased land, are economic penalties typically considered when determining the lease term.

After having considered all of the factors above, for cell site contracts in the United States as of the lease commencement date, Deutsche Telekom concluded that it is generally not reasonably certain that an option to extend the lease term beyond the initial non-cancelable lease term will be exercised. For cell site contracts – including the land/ground underneath the infrastructure – in Germany, a lease term of 10 to 15 years is considered reasonably certain. Extension options after that period are typically not considered reasonably certain at commencement of the lease. Payments associated with these optional periods are not included in the measurement of the lease liabilities.

Most extension options for office and shop leases are not included in the lease liability because Deutsche Telekom could replace the leased assets without significant cost or business disruption.

Exposure to future additional cash outflows will only arise when an extension option (not determined to be reasonably certain) is exercised or when a termination option (determined to be reasonably certain) is not exercised.

After the commencement date, the likelihood of exercising an option is only reassessed if a significant event or a significant change in circumstances occurs that affects this judgment, and this is within the control of the lessee. Deutsche Telekom reassesses the lease term when an option is exercised (or not exercised) or Deutsche Telekom becomes obligated to exercise or not to exercise it.

For further information on undiscounted future lease payments, please refer to Note 13 "[Financial liabilities and lease liabilities.](#)"

Consolidation methods

Subsidiaries

Subsidiaries are companies that are directly or indirectly controlled by Deutsche Telekom. Control only exists if an investor has power over the investee, is exposed to variable returns or has rights to variable returns, and is able to use its power to affect the amount of variable returns. The existence and effect of substantive potential voting rights that are currently exercisable or convertible, including potential voting rights held by other Group companies, are considered when assessing whether an entity is controlled.

All subsidiaries are included in the consolidated financial statements, unless the costs of preparing the reporting required for inclusion by means of full consolidation would outweigh the benefits of such reporting, which is primarily the case for subsidiaries which an operating segment or the Group considers to be insignificant based on the following criterion: the sum of all unconsolidated subsidiaries must not account for more than 1% of the Group's total assets, revenue, profit/loss for the year, contingent assets/liabilities, and other financial obligations. If the 1% limit is exceeded, Deutsche Telekom determines which companies are to be included in the consolidated financial statements, taking the long-term development of the investment and consolidation effects into account. Aside from the quantitative criteria, qualitative criteria will also be used to assess the materiality of an entity for the consolidated group. Excluding a subsidiary must not significantly change the segment result or the Group's profit/loss for the year, nor may other significant trends be ignored. Subsidiaries that are not included in the consolidated financial statements due to their subordinate significance are recognized under other assets.

Income and expenses of a subsidiary are included in the consolidated financial statements from the acquisition date and remain included in the consolidated financial statements until the date on which the parent company ceases to control the subsidiary. If necessary, the subsidiaries' accounting principles will be aligned with the uniform accounting principles applied by the Deutsche Telekom Group. Intercompany income and expenses, receivables and liabilities, and profits or losses are eliminated.

Upon loss of control, a gain or loss from the disposal of the subsidiary is recognized in the consolidated income statement in the amount of the difference between (i) the proceeds from the disposal of the subsidiary, the fair value of the remaining shares, the carrying amount of the non-controlling interests, and the cumulative amounts of other comprehensive income attributable to the subsidiary, and (ii) the carrying amount of the subsidiary's net assets to be disposed of.

Joint operations, joint ventures, and associates

Joint arrangements, in which two or more parties have joint control over an activity, must be classified as either joint operations or joint ventures.

A **joint operation** is characterized by the fact that the parties that have joint control of the arrangement (joint operators) have rights to the assets, and obligations for the liabilities, relating to the arrangement. A joint operator shall account for the assets, liabilities, revenues and expenses relating to its interest in the joint operation as well as its share of the joint assets, liabilities, revenues, and expenses.

In a **joint venture**, on the other hand, the parties that have joint control of the arrangement (partners) have rights to the net assets of the entity. **Associates** are companies on which Deutsche Telekom has a significant influence, and that are neither subsidiaries nor joint ventures. As with joint ventures, associates are accounted for using the **equity method**.

Investments in joint ventures and associates that are included in the consolidated financial statements using the equity method are recognized at cost at the time of acquisition. The carrying amount of the investment may include goodwill as the positive difference between the cost of the investment and Deutsche Telekom's proportionate share in the fair values of the entity's identifiable net assets. If necessary, the accounting principles of joint ventures and associates will be aligned with the uniform accounting principles applied by the Deutsche Telekom Group. The carrying amount of the investment accounted for using the equity method is tested for impairment provided there are indications of impairment. If the carrying amount of the investment exceeds its recoverable amount, an impairment loss must be recognized in the amount of the difference. The recoverable amount is measured at the higher of fair value less costs of disposal and value in use.

Upon loss of significant influence, a gain or loss from the disposal of the joint venture/associate is recognized in the amount of the difference between (i) the proceeds from the disposal of the shares, the fair value of the remaining shares, and the cumulative amounts of other comprehensive income attributable to the joint venture or associate, and (ii) the carrying amount of the investment to be disposed of.

The materiality assessment for jointly controlled entities and associates is generally performed using the same methods as for subsidiaries, but is limited to the criteria of profit/loss for the year, contingent assets and liabilities, and other financial obligations.

Business combinations

A business combination exists when Deutsche Telekom obtains control of another entity. All business combinations must be accounted for using the acquisition method. The cost of an acquired subsidiary is measured at the fair value of the consideration transferred, i.e., the sum of the assets transferred, liabilities assumed, and equity instruments issued. Transaction costs are generally recognized as expense. The acquisition cost is allocated to the acquired assets, liabilities, and contingent liabilities. The identifiable assets acquired and the liabilities and contingent liabilities assumed are recognized in full at their fair values at the acquisition date, regardless of the level of the investment held by Deutsche Telekom.

Goodwill arising in a business combination is measured as the excess of the aggregate of the cost of acquisition, the amount of any non-controlling interest in the acquiree, and, in a business combination achieved in stages, the fair value of the equity interest held by Deutsche Telekom in the acquiree prior to the acquisition date over the fair value of the net assets acquired. Any difference arising on the revaluation of equity interests previously held by Deutsche Telekom is recognized in profit or loss.

For all business combinations there is an option in relation to the measurement of the non-controlling interests. These can be recognized either directly at their fair value (i.e., the non-controlling interest in the enterprise value of the acquiree) or at the non-controlling interest in the fair value of the net assets acquired. As a result, in the first case, the non-controlling interests also have a share in the goodwill arising from the business combination, while in the second case the non-controlling interest is limited to the remeasured assets and liabilities and the goodwill is therefore recognized only as the amount attributable to Deutsche Telekom.

Transactions relating to the further acquisition or sale of equity interests with other shareholders that do not affect Deutsche Telekom's controlling interest do not lead to any change in goodwill. The difference between the fair value of the consideration transferred or received (i.e., the purchase price of the interests) and the carrying amount of the equity attributable to the non-controlling interests must be offset directly against consolidated shareholders' equity in capital reserves or increases the capital reserves.

Changes in the composition of the Group and other transactions

In the 2021 financial year, the following developments were recorded in the Group in connection with transactions conducted by Deutsche Telekom in prior periods.

Business combination of T-Mobile US and Sprint

Together with their respective majority shareholders Deutsche Telekom AG and SoftBank K.K., T-Mobile US and Sprint Corp. concluded a binding agreement on April 29, 2018 to combine their companies. On July 26, 2019 and on February 20, 2020, further conditions for the business combination were agreed. The transaction was consummated on April 1, 2020. Prior to this, the approvals required from the national and regional regulatory and antitrust authorities and courts in the United States had been obtained and additional closing conditions met. The last approval was granted by the California Public Utilities Commission (CPUC) on April 16, 2020. As a consequence of the business combination, T-Mobile US took over all shares in Sprint.

The business combination of T-Mobile US and Sprint was executed by means of a share exchange without a cash component (all-stock transaction). For every 9.75 Sprint shares held, the Sprint shareholders, with the exception of SoftBank, received one new share in T-Mobile US in return. Pursuant to the supplementary agreement dated February 20, 2020, SoftBank agreed to surrender to T-Mobile US immediately, for no additional consideration, an aggregate of 48,751,557 ordinary shares in T-Mobile US, received in connection with this transaction, such that SoftBank received one new share in T-Mobile US for every 11.31 Sprint shares. Taking these adjustments into account, a total of 373,396,310 new ordinary shares in T-Mobile US were issued to Sprint shareholders.

The purchase price allocation and the measurement of Sprint's assets and liabilities at the acquisition date were finalized as of March 31, 2021.

The consideration transferred is comprised as follows:

millions of €	Fair value at the acquisition date
T-Mobile US ordinary shares issued	28,649
+ Vested rights from share-based remuneration plans	350
+ Contingent consideration paid to SoftBank	1,721
– Payment received in relation to cost allocation from SoftBank in connection with CPUC	(93)
= Consideration transferred	30,627

Based on the closing T-Mobile US share price of USD 83.90 as of March 31, 2020 – which was the most recent publicly available closing price at the time of consummation – the total value of T-Mobile US ordinary shares issued in exchange for Sprint ordinary shares was USD 31.3 billion (EUR 28.6 billion). In addition, one component of the consideration transferred was the replacement of share-based remuneration for certain Sprint employees for services provided prior to the business combination and contingent consideration payable to SoftBank. The contingent consideration results from the agreement concluded on February 20, 2020 that if the trailing 45-day volume-weighted average price of the T-Mobile US ordinary share at any time during the period commencing on April 1, 2022 and ending on December 31, 2025 reaches or exceeds the value of USD 150.00, then T-Mobile US will issue to SoftBank for no additional consideration 48,751,557 ordinary shares, i.e., the number of shares that SoftBank surrendered to T-Mobile US in the course of the closing of the transaction. The Monte Carlo simulation method was used to measure the contingent consideration. The main inputs and assumptions are the volatility of 28.5 %, the risk-free interest rate of 0.44 %, the period for fulfillment of conditions, the 45-day volume-weighted average price per ordinary share of T-Mobile US, and the corresponding share price at the date of acquisition. Thus, the maximum value of the undiscounted contingent consideration equals the number of shares to be transferred multiplied by the price at the time the contingency is met. The consideration transferred is reduced by a pro rata reimbursement of costs by SoftBank to Deutsche Telekom related to the fulfillment of closing conditions vis-à-vis the CPUC. The financing structure was also reorganized in the course of combining the businesses of T-Mobile US and Sprint. Immediately after the transaction, liabilities of the former Sprint totaling USD 9.8 billion (around EUR 8.9 billion) were repaid, of which USD 7.4 billion (around EUR 6.8 billion) fell due pursuant to a binding change-in-control clause. The amounts repaid are included in current financial liabilities as of the date of consummation and are recognized, in the statement of cash flows as of December 31, 2020, under net cash used in/from investing activities (mandatory repayments) and net cash used in/from financing activities (optional repayments). Thus the total costs of the acquisition, including the mandatory repayment of financial liabilities as of the acquisition date, amounted to EUR 37.4 billion.

On completion of the transaction, Deutsche Telekom and SoftBank held approximately 43.6 % and 24.7 %, respectively, and other shareholders approximately 31.7 % of the shares in the “new” T-Mobile US. Due to a proxy agreement concluded with SoftBank and the fact that persons nominated by Deutsche Telekom hold a majority on the Board of Directors of the new company, T-Mobile US will continue to be included in the consolidated financial statements of Deutsche Telekom as a fully consolidated subsidiary.

The fair values of Sprint's acquired assets and liabilities recognized at the acquisition date are presented in the following table:

millions of €	Fair value at the acquisition date
Assets	
Current assets	7,903
Cash and cash equivalents	1,904
Trade receivables	2,924
Contract assets	141
Other financial assets	205
Other assets	364
Current recoverable income taxes	18
Inventories	602
Non-current assets and disposal groups held for sale	1,745
Non-current assets	85,678
Goodwill	8,704
Other intangible assets	50,322
Of which: FCC spectrum licenses	41,629
Of which: customer base	4,481
Of which: other	4,212
Property, plant and equipment	13,660
Right-of-use assets	6,287
Other financial assets	224
Deferred tax assets	6,269
Other assets	212
Assets	93,581
Liabilities	
Current liabilities	18,978
Financial liabilities	11,988
Lease liabilities	1,669
Trade and other payables	2,948
Income tax liabilities	136
Other provisions	890
Contract liabilities	249
Other liabilities	664
Liabilities associated with assets and disposal groups held for sale	434
Non-current liabilities	43,976
Financial liabilities	27,068
Lease liabilities	5,146
Provisions for pensions and other employee benefits	816
Other provisions	1,057
Deferred tax liabilities	9,809
Other liabilities	55
Contract liabilities	25
Liabilities	62,954

The acquired intangible assets mainly comprise FCC spectrum licenses and customer relationships, which were measured at fair value in the amount of EUR 41,629 million and EUR 4,481 million, respectively. Spectrum licenses were measured using the greenfield method. Under the greenfield method, the value of an intangible asset is determined using a hypothetical cash flow scenario. The scenario projects the development of an entity's operating business on the assumption that the entity owns only this intangible asset at inception. FCC spectrum licenses have an indefinite useful life. The multi-period excess earnings method was used to measure customer relationships. Under this method, the fair value of the customer base is calculated by determining the present value of earnings after tax attributable to existing customers. The expected useful life of customer relationships is 8 years on average. Other intangible assets include, among other things, limited-term spectrum leases, the measurement of which includes the contractual payment obligations and also reflects the extent to which contractual terms are favorable compared to current market values. The average remaining lease term at the acquisition date was 20 years for non-cancelable leases, generally with a term of 30 years, and 7 years for cancelable leases, generally with a minimum term of 10 years.

The fair value of the acquired trade and other receivables amounts to EUR 2,924 million. The gross amount of trade receivables totals EUR 3,076 million, of which EUR 152 million is expected to be bad debt.

In the first quarter of 2021, measurement adjustments were made to the acquired assets and liabilities, which mainly related to taxes, contingent liabilities, and spectrum leases and resulted in an immaterial change in goodwill.

The acquired goodwill of EUR 8,704 million is calculated as follows:

millions of €	Fair value at the acquisition date
Consideration transferred	30,627
– Fair value of assets acquired	(84,877)
+ Fair value of the liabilities recognized	62,954
= Goodwill	8,704

Non-controlling interests participated fully in the transaction by means of the share exchange. As a result of the issuance of T-Mobile US ordinary shares to the former Sprint shareholders, the total non-controlling interest increased. The carrying amount of the cumulative non-controlling interests in T-Mobile US was calculated on the basis of the revalued interests in the shareholders' equity of T-Mobile US and was EUR 34.7 billion as of April 1, 2020 (December 31, 2019: EUR 11.0 billion) based on the purchase price allocation. Since the shares issued to the former Sprint shareholders as part of the share exchange are measured at fair value, the full goodwill method was applied. The goodwill comprises the synergies anticipated in connection with the acquisition, expected new customer additions, and the combined workforce. No part of the recognized goodwill is deductible for income tax purposes.

For further information on the business combination of T-Mobile US and Sprint, please refer to the section "[Group organization](#)" in the combined management report and the section "[Changes in the composition of the Group and other transactions](#)" under "Summary of accounting policies" in the notes to the consolidated financial statements in the 2020 Annual Report.

Acquisition of Simpel by T-Mobile Netherlands

On October 16, 2020, T-Mobile Netherlands B.V. signed an agreement for the acquisition of 100 % of the shares in Complex Bidco B.V. including its 100 % stake in the Dutch MVNO and SIM provider Simpel.nl B.V. On November 16, 2020, the Dutch Authority for Consumers and Markets approved the acquisition without conditions. The acquisition was closed on December 1, 2020. Complex Bidco B.V. including Simpel.nl B.V. has been included in Deutsche Telekom's consolidated financial statements since December 1, 2020.

The purchase price allocation and the measurement of Simpel's assets and liabilities at the acquisition date were finalized as of June 30, 2021. The finalization of the purchase price allocation did not result in any material changes to the fair values of the assets acquired and the liabilities assumed at the acquisition date compared with those reported in the notes to the consolidated financial statements as of December 31, 2020.

The consideration transferred is comprised as follows:

millions of €	Fair value at the acquisition date
Cash payment	259
+ Fair value of the purchase option	26
+ Settlement of the pre-existing relationships	8
= Consideration transferred	293

The purchase option resulted from the call option agreement concluded in July 2019, which secured T-Mobile Netherlands the right to acquire 100 % of the shares in Complex Bidco B.V. including its 100 % stake in Simpel.

The fair values of Simpel's acquired assets and liabilities recognized at the acquisition date are presented in the following table:

millions of €	Fair value at the acquisition date
Assets	
Current assets	6
Cash and cash equivalents	4
Trade receivables	1
Other assets	1
Non-current assets	336
Goodwill	196
Other intangible assets	138
Of which: customer base	114
Of which: brand	15
Of which: other	9
Property, plant and equipment	1
Deferred tax assets	1
Assets	342
Liabilities	
Current liabilities	15
Trade and other payables	4
Income tax liabilities	7
Other liabilities	4
Non-current liabilities	34
Deferred tax liabilities	34
Liabilities	49

The customer base was measured using the multi-period excess earnings method. Under this method, the fair value of the customer base is calculated by determining the present value of earnings after tax attributable to existing customers. The customer base is amortized over the remaining useful life of around 8 years. The brand was measured using the license price analogy method. Under this method, the value of the brand is calculated by making an assumption about which license costs would be notionally payable if the company did not own the relevant asset. The brand is amortized over the remaining useful life of 10 years.

The carrying amounts of the acquired receivables are based on the fair values. No material contingent liabilities have been identified.

The deferred tax liabilities comprise the tax effect on the temporary differences between the fair value of the different assets and liabilities on the one hand, and the respective carrying amount for tax purposes on the other.

The acquired goodwill of EUR 196 million is calculated as follows:

millions of €	Fair value at the acquisition date
Consideration transferred	293
– Fair value of assets acquired	(146)
+ Fair value of the liabilities recognized	49
= Goodwill	196

The goodwill reflects the value of new customer additions anticipated in connection with the acquisition. No part of the recognized goodwill is deductible for income tax purposes.

For further information on the acquisition of Simpel, please refer to the section “Changes in the composition of the Group and other transactions” under “Summary of accounting policies” in the notes to the consolidated financial statements in the 2020 Annual Report.

In the 2021 financial year, Deutsche Telekom conducted the following transactions, which had an impact on the composition of the Group. Other changes to the composition of the Group not shown here were of no material significance for Deutsche Telekom's interim consolidated financial statements.

Combination of the cell tower business in the Netherlands and creation of an infrastructure fund

Deutsche Telekom has set up a fund for investments in digital infrastructure in Europe. On January 21, 2021, Deutsche Telekom, Cellnex Telecom S.A. (Cellnex), the newly established independently managed investment company Digital Infrastructure Vehicle II SICAF-RAIF (DIV), and others signed an agreement to merge Deutsche Telekom's and Cellnex's respective Dutch subsidiaries for passive mobile infrastructure, T-Mobile Infra B.V. and Cellnex Netherlands B.V. (Cellnex NL), into Cellnex NL. In a first step, Deutsche Telekom and Cellnex carried out an increase in capital at DIV. As a result, Deutsche Telekom holds 66.67 % and Cellnex 33.33 % of the shares in DIV. Since Deutsche Telekom has control over DIV, DIV is included in the consolidated financial statements of Deutsche Telekom as a subsidiary. T-Mobile Infra B.V. was then sold to DIV. Immediately before the sale, Deutsche Telekom received a dividend of EUR 0.3 billion from T-Mobile Infra B.V. In the next step, DIV contributed its stake in T-Mobile Infra B.V. into Cellnex NL. In return, DIV received a stake of 37.65 % in the "new" company Cellnex NL. The transaction was consummated on June 1, 2021, after the responsible antitrust authority had granted all the necessary approvals. As a consequence, Deutsche Telekom lost control over T-Mobile Infra B.V. and EUR 0.2 billion of the resulting gain on deconsolidation of EUR 0.3 billion was included in other operating income as of December 31, 2021. EUR 0.1 billion will be recognized pro rata in later periods through the sale-and-leaseback transaction described below. Since June 1, 2021, the stake in Cellnex NL has been indirectly included in the consolidated financial statements through the investment in DIV as an investment accounted for using the equity method. The non-controlling interest of 33.33 % in DIV is recognized under non-current financial liabilities due to the existing put options. The carrying amount of the non-controlling interest in DIV amounted to EUR 0.1 billion as of December 31, 2021.

For further information on the stake in Cellnex NL, please refer to Note 10 "[Investments accounted for using the equity method.](#)"

For further information on the carrying amount of the non-controlling interest in DIV, please refer to Note 40 "[Financial instruments and risk management.](#)"

T-Mobile Netherlands will continue to have full access to the contributed passive mobile infrastructure by means of a long-term agreement at arm's length conditions, primarily on the lease of the corresponding infrastructure. The lease component included in the agreement with a non-cancelable basic lease term of around 12 years fulfills the conditions of a sale-and-leaseback transaction. Right-of-use assets in the amount of EUR 0.3 billion and lease liabilities in the amount of EUR 0.4 billion were recognized in this context as of June 1, 2021. The gain from the sale-and-leaseback transaction totaled EUR 0.1 billion, EUR 12 million of which was recognized directly in profit or loss; the remainder will be released to profit or loss over the residual useful lives of the rights-of-use assets. The cash inflow totaling EUR 377 million resulting from the sale of T-Mobile Infra B.V. is recognized in the consolidated statement of cash flows as of December 31, 2021, with EUR 135 million relating to the sale of the business operation recognized under net cash used in investing activities and EUR 242 million relating to the sale and leaseback of the passive mobile infrastructure recognized under net cash from/used in financing activities.

In future, further institutional investors in addition to Deutsche Telekom and Cellnex will be given the opportunity to buy a stake in DIV. Deutsche Telekom plans to maintain around 25 % of the fund in its target structure. Until control is lost, DIV will be included in Deutsche Telekom's consolidated financial statements as a subsidiary.

Acquisition of Shentel

Sprint is party to a variety of agreements with Shenandoah Personal Communications Company (Shentel), pursuant to which Shentel is the exclusive provider of Sprint wireless communications network products in certain parts of several U.S. states that are home to approximately 1.1 million subscribers. Pursuant to one such agreement, Sprint was granted an option to purchase Shentel's wireless telecommunications assets. On August 26, 2020, Sprint exercised its option by delivering a binding notice of exercise to Shentel. On May 28, 2021, a purchase agreement was signed between T-Mobile US and Shentel for the acquisition of assets and liabilities directly associated with the aforementioned wireless telecommunications operation of Shentel. The base purchase price is USD 1.9 billion, subject to certain purchase price adjustments prescribed by the agreement as well as additional purchase price adjustments agreed by the parties. The transaction was consummated on July 1, 2021 after obtaining the necessary approvals from the regulatory authorities and satisfying the other closing conditions.

The consideration transferred as of the acquisition date in the form of a cash payment – taking into account the settlement paid for the pre-existing relationships between T-Mobile US and Shentel for a total of USD 0.1 billion (EUR 0.1 billion) – amounted to USD 1.9 billion (EUR 1.6 billion).

The acquisition meets the conditions for a business combination in accordance with IFRS 3. The purchase price allocation and the measurement of Shentel's assets and liabilities at the acquisition date were finalized as of December 31, 2021. The fair values of Shentel's acquired assets and liabilities are presented in the following table:

millions of €	Fair value at the acquisition date
Assets	
Current assets	2
Inventories	2
Non-current assets	1,899
Goodwill	872
Other intangible assets	654
Property, plant and equipment	109
Right-of-use assets	259
Deferred tax assets	5
Assets	1,901
Liabilities	
Current liabilities	61
Lease liabilities	61
Non-current liabilities	252
Other provisions	30
Lease liabilities	222
Liabilities	313

The goodwill of EUR 872 million is calculated as follows:

millions of €	Fair value at the acquisition date
Consideration transferred	1,588
– Fair value of assets acquired	(1,029)
+ Fair value of the liabilities recognized	313
= Goodwill	872

Other intangible assets primarily include reacquired rights for the provision of telecommunications services in Shentel's former area of business activities. The reacquired rights are attributable to the fact that the management and service agreement with Shentel, due to expire in 2029, was terminated prematurely in connection with the business combination. As a result, T-Mobile US recovered the rights of distribution and operation transferred to Shentel for this period of time and thus the cash flows from the customer contracts. The reacquired rights were measured using the multi-period excess earnings method. These rights are amortized over their remaining useful life of around 9 years.

The goodwill comprises the cost savings anticipated in connection with the acquisition, from the integration of the network infrastructure and the telecommunications systems, the staff hired and the expected cash flows from the customer contracts, to the extent that they go beyond the period through 2029 and are therefore not included in the measurement of reacquired rights. No part of the recognized goodwill is deductible for income tax purposes.

No material contingent liabilities have been identified.

Transaction-related costs totaling EUR 11 million were incurred in the Group in the reporting period. These mainly comprised legal and consulting fees and are included under other operating expenses.

Deutsche Telekom's net revenue increased by EUR 261 million in the reporting period due to the acquisition. Net profit for the reporting period includes Shentel's total profit before non-controlling interests of EUR 10 million. If the business combination had taken place at the beginning of the 2021 financial year, net revenue and net profit before non-controlling interests would have been respectively EUR 202 million and EUR 24 million higher than reported.

Sale of Telekom Romania Communications

On November 6, 2020, OTE concluded an agreement with Orange Romania concerning the sale of the 54 % stake in Telekom Romania Communications S.A. (TKR), which operates the Romanian fixed-network business, to Orange Romania. The transaction was consummated on September 30, 2021 after obtaining the necessary approvals from the authorities and satisfying the other closing conditions. The purchase price is EUR 296 million. The loss on deconsolidation resulting from the sale amounts to EUR 29 million. TKR's 30 % stake in Telekom Romania Mobile Communications (TKRM) had previously been acquired by OTE on September 9, 2021 as agreed for a purchase price of EUR 59 million.

The composition of the Deutsche Telekom Group changed as follows in the 2021 financial year:

	Domestic	International	Total
Consolidated subsidiaries			
January 1, 2021	61	364	425
Additions	2	4	6
Disposals (including mergers)	1	54	55
December 31, 2021	62	314	376
Associates accounted for using the equity method			
January 1, 2021	3	12	15
Additions	2	3	5
Disposals	1	3	4
December 31, 2021	4	12	16
Joint ventures accounted for using the equity method			
January 1, 2021	4	5	9
Additions	1	0	1
Disposals	0	0	0
December 31, 2021	5	5	10
Total			
January 1, 2021	68	381	449
Additions	5	7	12
Disposals (including mergers)	2	57	59
December 31, 2021	71	331	402

The following transactions will change the composition of the Deutsche Telekom Group in future.

Agreed sale of T-Mobile Netherlands

On September 6, 2021, Deutsche Telekom and Tele2 agreed to sell T-Mobile Netherlands to WP/AP Telecom Holdings IV, a private equity consortium advised by Apax Partners and Warburg Pincus. The preliminary sale price is based on an enterprise value of EUR 5.1 billion. The cash inflow – based on a shareholding of 75 % – is expected to be around EUR 3.8 billion. The transaction is subject to approval by the authorities as well as other closing conditions. The assets and liabilities of T-Mobile Netherlands as of December 31, 2021 are reported in the consolidated statement of financial position as “held for sale.” The transaction is expected to be completed in the first quarter of 2022.

Fiber-optic build-out through joint venture with IFM

On November 5, 2021, Deutsche Telekom announced that IFM Global Infrastructure Fund – advised by IFM Investors – will acquire a stake of 50 % in GlasfaserPlus GmbH, a fiber-optic build-out entity. The agreed purchase price for the 50 % stake in the subsidiary amounts to EUR 0.9 billion, half of which is to be settled upon conclusion of the transaction, and the remainder once progress has been made in the build-out. The newly established joint venture is to build out an additional 4 million gigabit-capable FTTH lines in rural and development areas between 2022 and 2028. As a consequence of the agreed sale of the 50 % stake in the company and the concomitant future loss of control of the company on completion of the transaction, the assets and liabilities of GlasfaserPlus as of December 31, 2021 are recognized in the consolidated statement of financial position as “held for sale.” On completion of the transaction, the stake in the joint venture will be included in the consolidated financial statements using the equity method. Following its approval by the European Commission on January 25, 2022, the transaction is expected to be completed before the end of the first quarter of 2022.

Other transactions that had no effect on the composition of the Group

OTE share buy-back

As a consequence of a share buy-back program implemented between March 4, 2020 and October 31, 2020, OTE acquired a total of 9,965,956 treasury shares with an aggregate value of EUR 121 million. The extraordinary shareholders' meeting of OTE S.A. on December 4, 2020 resolved to withdraw 9,965,956 shares from circulation with a corresponding capital reduction of around EUR 28 million. The shares were retired from the Athens Stock Exchange on January 15, 2021. As a result, Deutsche Telekom's share in OTE increased from 46.91 % to 47.90 %.

In addition, between November 1, 2020 and April 30, 2021, OTE acquired another 3,469,500 of its own shares with an aggregate value of EUR 47 million as part of the continued share buy-back program. The shareholders' meeting of OTE S.A. on June 9, 2021 resolved to retire 3,469,500 treasury shares with a corresponding capital reduction of around EUR 10 million. The shares were retired from the Athens Stock Exchange on July 19, 2021. As a result, Deutsche Telekom's share in OTE increased from 47.90 % to 48.29 %.

Increase in Deutsche Telekom's stake in T-Mobile US in a deal positioning SoftBank as a new shareholder and strategic partner

On September 6, 2021, Deutsche Telekom and SoftBank Group (SoftBank) agreed a two-part transaction. This deal is in line with Deutsche Telekom's strategy of increasing its stake in T-Mobile US to more than 50 % in order to secure its existing entrepreneurial control over the U.S. company and full consolidation in the long term.

In the deal, Deutsche Telekom acquired a total of around 45.4 million T-Mobile US shares from SoftBank. To this end Deutsche Telekom exercised, on September 23, 2021, a portion of the stock options it had received from SoftBank in June 2020 to purchase shares in T-Mobile US. SoftBank received in return 225 million new shares in Deutsche Telekom AG from the 2017 Authorized Capital, excluding subscription rights for existing shareholders. The capital increase against a non-cash contribution amounted to EUR 576 million. The capital increase of Deutsche Telekom AG was carried out with effect upon entry into the commercial register on September 28, 2021. As a result of this transaction, SoftBank is a shareholder in Deutsche Telekom AG with around 4.5 % of the outstanding shares. In connection with the exercise of the existing stock options, the weighted average price for the total around 45.4 million T-Mobile US shares acquired as part of this share swap calculates to around USD 118 per T-Mobile US share. For the 225 million Deutsche Telekom shares received by SoftBank, which are subject to a lock-up until 2024, the two companies agreed a value of EUR 20 per share. This capital increase against a non-cash contribution brings the number of outstanding shares of Deutsche Telekom AG up from 4,761 million shares to 4,986 million shares. Upon its completion, the transaction raised Deutsche Telekom's stake in T-Mobile US by 3.6 percentage points to 46.8 %. The fair value of the consideration transferred to SoftBank (within the meaning of the IFRSs) amounts to EUR 4.8 billion and is measured based on Deutsche Telekom AG's share price on the date the shares were transferred to SoftBank and on the fair value of the stock options exercised on the date of exercise. The percentage of T-Mobile US shares for which Deutsche Telekom can exercise voting rights, including an agreement concluded with SoftBank in connection with the acquisition of Sprint, amounted to 52.0 % as of December 31, 2021. The aim is to support SoftBank in their efforts to take a seat on Deutsche Telekom AG's Supervisory Board.

For the presentation of the effects in connection with the capital increase against a non-cash contribution and the partial exercising and subsequent measurement of the stock options, please refer to the Notes 19 "Shareholders' equity," 11 "Other financial assets," and 40 "Financial instruments and risk management."

Deutsche Telekom is also weighing plans to invest up to USD 2.4 billion (around EUR 2.1 billion) of the proceeds from the planned sale of T-Mobile Netherlands, which was agreed on September 6, 2021, to exercise further fixed-price and variable stock options to purchase T-Mobile US shares. These depend, in half, on the average share price of T-Mobile US, and a fixed price has been set for the other half. This would further increase Deutsche Telekom's stake in T-Mobile US by approximately 1.6 percentage points, depending on the number of shares to be acquired. Deutsche Telekom expects its total stake to be around 48.4 % upon completion of these two transactions.

Principal subsidiaries

The Group's principal subsidiaries are presented in the following table:

Name and registered office		Deutsche Telekom share %	Net revenue ^a millions of €	Profit (loss) from operations ^a millions of €	Shareholders' equity ^a millions of €	Average number of employees	Assigned to segment
Telekom Deutschland GmbH, Bonn, Germany	Dec. 31, 2021/2021	100.00	22,037	4,852	7,762	3,816	Germany
	Dec. 31, 2020/2020	100.00	22,215	4,604	7,290	3,836	
T-Mobile US, Inc., Bellevue, Washington, United States ^{b, c}	Dec. 31, 2021/2021	46.75	68,359	7,217	67,259	70,793	United States
	Dec. 31, 2020/2020	43.37	61,208	9,187	59,084	65,015	
T-Systems International GmbH, Frankfurt/Main, Germany	Dec. 31, 2021/2021	100.00	2,248	(365)	716	6,661	Systems Solutions
	Dec. 31, 2020/2020	100.00	2,462	(573)	575	8,042	
Hellenic Telecommunications Organization S.A. (OTE), Athens, Greece ^b	Dec. 31, 2021/2021	48.29	3,775	865	2,652	13,736	Europe
	Dec. 31, 2020/2020	46.91	3,878	448	2,826	16,441	
Magyar Telekom Telecommunications Public Limited Company, Budapest, Hungary ^{b, c}	Dec. 31, 2021/2021	59.21	1,952	259	2,243	6,933	Europe
	Dec. 31, 2020/2020	59.21	1,914	240	2,177	7,349	
T-Mobile Netherlands Holding B.V., The Hague, Netherlands ^{b, c}	Dec. 31, 2021/2021	75.00	2,071	414	2,328	1,863	Group Development
	Dec. 31, 2020/2020	75.00	1,946	178	2,030	1,832	
T-Mobile Polska S.A., Warsaw, Poland ^{b, c}	Dec. 31, 2021/2021	100.00	1,427	91	1,940	3,895	Europe
	Dec. 31, 2020/2020	100.00	1,453	87	2,111	4,117	
T-Mobile Czech Republic a.s., Prague, Czech Republic ^{b, c}	Dec. 31, 2021/2021	100.00	1,146	317	2,040	3,229	Europe
	Dec. 31, 2020/2020	100.00	1,072	246	1,885	3,272	
Hrvatski Telekom d.d., Zagreb, Croatia ^{b, c}	Dec. 31, 2021/2021	52.17	982	106	2,179	4,668	Europe
	Dec. 31, 2020/2020	51.71	989	81	2,199	4,957	
T-Mobile Austria Holding GmbH, Vienna, Austria ^{b, c}	Dec. 31, 2021/2021	100.00	1,351	93	3,168	1,876	Europe
	Dec. 31, 2020/2020	100.00	1,302	83	4,776	2,016	
Slovak Telekom a.s., Bratislava, Slovakia ^{b, c}	Dec. 31, 2021/2021	100.00	790	161	1,548	3,211	Europe
	Dec. 31, 2020/2020	100.00	773	139	1,523	3,336	

^a IFRS figures of the respective subgroup.

^b Consolidated subgroup.

^c Indirect shareholding of Deutsche Telekom AG.

In accordance with § 313 HGB, the full statement of investment holdings, which forms part of the notes to the consolidated financial statements, is published in the Federal Gazette (Bundesanzeiger) together with the consolidated financial statements. It is available upon request from Deutsche Telekom AG, Bonn, Investor Relations, and on Deutsche Telekom's website (www.telekom.com). Furthermore, the statement of investment holdings includes a full list of all subsidiaries that exercise simplification options in accordance with § 264 (3) HGB or disclosure simplification options in accordance with § 264b HGB.

The following table shows the non-controlling interests for principal subsidiaries:

Name and registered office		Percentage of shareholding for non-controlling interests %	Percentage of voting rights for non-controlling interests %	Cumulative non-controlling interests ^a millions of €	Dividends paid out to non-controlling interests millions of €
T-Mobile US, Inc., Bellevue, Washington, United States ^{b, c}	Dec. 31, 2021/2021	53.25	47.98	35,640	0
	Dec. 31, 2020/2020	56.63	47.67	33,306	0
Hellenic Telecommunications Organization S.A. (OTE), Athens, Greece ^b	Dec. 31, 2021/2021	51.71	50.00	1,129	219
	Dec. 31, 2020/2020	53.09	50.00	1,317	135
Magyar Telekom Telecommunications Public Limited Company, Budapest, Hungary ^{b, c}	Dec. 31, 2021/2021	40.79	40.79	605	27
	Dec. 31, 2020/2020	40.79	40.79	600	33
T-Mobile Netherlands Holding B.V., The Hague, Netherlands ^{b, c}	Dec. 31, 2021/2021	25.00	25.00	582	0
	Dec. 31, 2020/2020	25.00	25.00	507	0
Hrvatski Telekom d.d., Zagreb, Croatia ^{b, c}	Dec. 31, 2021/2021	47.83	47.83	831	41
	Dec. 31, 2020/2020	48.29	48.29	854	42

^a IFRS figures at the level of the consolidated financial statements of Deutsche Telekom.

^b Consolidated subgroup.

^c Indirect shareholding of Deutsche Telekom AG.

Deutsche Telekom held 46.75 % of the shares in T-Mobile US as of the reporting date. Due to a proxy agreement concluded with SoftBank and the fact that persons nominated by Deutsche Telekom hold a majority on the Board of Directors of the new company, T-Mobile US is being included in the consolidated financial statements of Deutsche Telekom as a fully consolidated subsidiary. The proportion of T-Mobile US shares for which Deutsche Telekom can exercise voting rights totaled around 52.0 % as of December 31, 2021.

For further information, please refer to the section "Changes in the composition of the Group and other transactions" under "Summary of accounting policies."

Deutsche Telekom held 48.29 % plus one vote of the shares in the OTE group as of the reporting date. In accordance with shareholder agreements between Deutsche Telekom and the Hellenic Republic, Deutsche Telekom controls 50 % plus two voting shares and therefore the OTE group's financial and operating policy. Consequently, the OTE group companies are fully consolidated subsidiaries.

Summarized financial information for subsidiaries with significant non-controlling interests:

millions of €							
Name and registered office		Current assets ^a	Non-current assets ^a	Current liabilities ^a	Non-current liabilities ^a	Profit (loss) ^a	Total comprehensive income ^a
T-Mobile US, Inc., Bellevue, Washington, United States ^{b, c}	Dec. 31, 2021/2021	21,532	175,248	21,671	107,851	2,508	7,714
	Dec. 31, 2020/2020	21,983	154,782	18,849	98,832	4,160	(2,510)
Hellenic Telecommunications Organization S.A. (OTE), Athens, Greece ^b	Dec. 31, 2021/2021	1,434	4,619	1,984	1,417	603	615
	Dec. 31, 2020/2020	1,787	4,917	2,093	1,785	343	327
Magyar Telekom Telecommunications Public Limited Company, Budapest, Hungary ^{b, c}	Dec. 31, 2021/2021	691	3,482	800	1,129	174	149
	Dec. 31, 2020/2020	775	3,315	873	1,041	129	(56)
Hrvatski Telekom d.d., Zagreb, Croatia ^{b, c}	Dec. 31, 2021/2021	709	1,779	208	101	80	89
	Dec. 31, 2020/2020	703	1,849	244	109	51	20
T-Mobile Netherlands Holding B.V., The Hague, Netherlands ^{b, c}	Dec. 31, 2021/2021	749	4,118	746	1,905	186	193
	Dec. 31, 2020/2020	704	3,769	852	1,591	157	157

- ^a IFRS figures of the respective subgroup.
- ^b Consolidated subgroup.
- ^c Indirect shareholding of Deutsche Telekom AG.

millions of €				
Name and registered office		Net cash from operating activities ^a	Net cash (used in) from investing activities ^a	Net cash (used in) from financing activities ^a
T-Mobile US, Inc., Bellevue, Washington, United States ^{b, c}	2021	19,663	(19,816)	(3,042)
	2020	13,501	(14,001)	8,469
Hellenic Telecommunications Organization S.A. (OTE), Athens, Greece ^b	2021	1,204	(320)	(842)
	2020	1,214	(565)	(1,114)
Magyar Telekom Telecommunications Public Limited Company, Budapest, Hungary ^{b, c}	2021	548	(288)	(345)
	2020	525	(422)	(61)
Hrvatski Telekom d.d., Zagreb, Croatia ^{b, c}	2021	381	(207)	(191)
	2020	334	(98)	(204)
T-Mobile Netherlands Holding B.V., The Hague, Netherlands ^{b, c}	2021	664	(273)	(337)
	2020	609	(737)	148

- ^a IFRS figures of the respective subgroup.
- ^b Consolidated subgroup.
- ^c Indirect shareholding of Deutsche Telekom AG.

Structured entities

Deutsche Telekom processes factoring transactions by means of structured entities.

For further information, please refer to Note 40 "Financial instruments and risk management."

Since 2014, Deutsche Telekom has consolidated four structured leasing SPEs, and since 2018 two more such SPEs, for real estate as well as operating and office equipment at two sites for the operation of data centers in Germany. The two data centers were built under the management of an external leasing company and are operated by T-Systems International GmbH. Apart from the contractual obligations to make lease payments to the leasing SPEs, Deutsche Telekom has no obligation to give them further financial support.

T-Mobile USA Tower LLC and T-Mobile West Tower LLC, which are included in the consolidated financial statements as investments accounted for using the equity method, are also structured entities.

For further information, please refer to Note 10 "Investments accounted for using the equity method."

Joint operations

On the basis of a contractual arrangement concluded by T-Mobile Polska S.A., Deutsche Telekom combined the activities for the planning, building, and operation of the Polish mobile communications network with a partner in 2011 to generate savings. Deutsche Telekom recognizes its share (50 %) of the corresponding assets in line with the economic substance in the consolidated statement of financial position.

Currency translation

Foreign-currency transactions are translated into the functional currency at the exchange rate at the date of transaction. At the reporting date, monetary items are translated at the closing rate, and non-monetary items are translated at the exchange rate at the date of transaction. Exchange rate differences are recognized in profit or loss.

The assets and liabilities of Group entities whose functional currency is not the euro are translated into euros from the local currency using the middle rates at the reporting date. The income statements and corresponding profit or loss of foreign-currency denominated Group entities are translated at monthly average exchange rates for the period. The differences that arise from the use of both rates are recognized directly in equity.

The exchange rates of certain significant currencies changed as follows:

€	Annual average rate			Rate at the reporting date	
	2021	2020	2019	Dec. 31, 2021	Dec. 31, 2020
100 Czech korunas (CZK)	3.89888	3.78060	3.89551	4.02124	3.81076
100 Croatian kuna (HRK)	13.28220	13.26560	13.48050	13.30760	13.24500
1,000 Hungarian forints (HUF)	2.78908	2.84691	3.07429	2.70845	2.74454
100 Macedonian denars (MKD)	1.62324	1.62187	1.62726	1.62339	1.62246
100 Polish zlotys (PLN)	21.90100	22.51210	23.26470	21.75600	21.93370
1 U.S. dollar (USD)	0.84568	0.87553	0.89326	0.88285	0.81510

Coronavirus pandemic

In 2021, the global economy recovered from the coronavirus-induced crisis, although economic development is still feeling the reverberations. Due to higher demand for certain telecommunications services, the impact of the crisis is being felt less severely by the telecommunications industry and Deutsche Telekom than by other industries. Business activities and thus the results of operations and financial position of Deutsche Telekom were impacted by the coronavirus pandemic in various business areas, affecting revenue and earnings, although not to any significant extent. Deutsche Telekom has put in place cost-saving measures to mitigate potential effects on earnings. At this time, we can report only very minor repercussions with respect to payment defaults and customer numbers.

Possible future effects on the measurement of individual assets and liabilities are being analyzed on an ongoing basis. Due to the uncertain path of the coronavirus pandemic, Deutsche Telekom cannot rule out economic implications resulting from possible further developments, such as the emergence of virus mutations. Based on experience so far, the coronavirus pandemic is expected to continue to have only a limited impact on Deutsche Telekom's business going forward.

Climate risks

In the 2021 financial year, Deutsche Telekom analyzed potential sustainability risks in the areas of climate change and scarcity of resources. Deutsche Telekom did not identify any key risks to its business model in either area and, as such, also does not currently anticipate any significant impacts from such risks on its business model or on the presentation of its results of operations or financial position.

Notes to the consolidated statement of financial position

1 Cash and cash equivalents

Cash and cash equivalents have an original maturity of less than three months and mainly comprise fixed-term bank deposits. They also include small amounts of cash-in-hand and checks. Deutsche Telekom obtained cash collateral of EUR 1,616 million (December 31, 2020: EUR 1,530 million) on the basis of collateral contracts as surety for potential credit risks arising from derivative transactions. In the reporting period, cash and cash equivalents decreased by EUR 5.3 billion to EUR 7.6 billion.

For further information, please refer to Note 35 "[Notes to the consolidated statement of cash flows.](#)"

As of December 31, 2021, Deutsche Telekom reported cash and cash equivalents of EUR 36.0 million held by subsidiaries in North Macedonia (December 31, 2020: EUR 38.0 million). These subsidiaries are subject to foreign exchange controls or other legal restrictions. As a result, the cash balances are not fully available for use by the parent or other Group companies.

2 Trade receivables

Trade receivables increased by EUR 1.8 billion to EUR 15.3 billion. The increase was primarily driven by higher receivables under the Equipment Installment Plan and growth in customer numbers in the United States operating segment. The carrying amount also increased in the Germany and Europe operating segments due to the reporting date. Exchange rate effects, primarily from the translation from U.S. dollars into euros, also increased receivables. Lower receivables in the Group Development operating segment, primarily as a result of the reclassification of T-Mobile Netherlands' assets to non-current assets and disposal groups held for sale in connection with the agreed sale, had an offsetting effect. Of the total of trade receivables, EUR 12,462 million (December 31, 2020: EUR 11,473 million) is due within one year.

For further information on the agreed sale of T-Mobile Netherlands, please refer to the section "[Changes in the composition of the Group and other transactions](#)" under "Summary of accounting policies."

For information on allowances, credit ratings, and write-offs of receivables as well as on factoring agreements, please refer to Note 40 "[Financial instruments and risk management.](#)"

3 Contract assets

Contract assets stood at EUR 2.0 billion as of December 31, 2021, unchanged against the prior-year level. Contract assets relate to receivables that have not yet legally come into existence, which arise from the earlier – as compared to billing – recognition of revenue, in particular from the sale of goods and merchandise under long-term multiple-element arrangements (e.g., mobile contract plus handset). Receivables from long-term construction contracts are also recognized under contract assets. Of the total contract assets, EUR 0.2 billion related to contract assets in connection with long-term construction contracts (December 31, 2020: EUR 0.1 billion).

Contract assets were reduced by EUR 51 million in the reporting year due to a change in the business model in Poland from subsidized terminal equipment business to a business model that does not provide for handsets to be sold at a discount.

For information on allowances on contract assets, please refer to Note 40 "[Financial instruments and risk management.](#)"

4 Inventories

millions of €	Dec. 31, 2021	Dec. 31, 2020
Raw materials and supplies	53	49
Work in process	19	23
Finished goods and merchandise	2,783	2,623
	2,855	2,695

The carrying amount of inventories increased by EUR 0.2 billion compared to December 31, 2020 to EUR 2.9 billion, primarily due to increased stockpiling of high-priced handsets for planned marketing campaigns in the United States operating segment. Exchange rate effects, in particular from the translation of U.S. dollars into euros, also contributed to the increase. A decrease in inventories in the Group Development operating segment, primarily as a result of the reclassification of T-Mobile Netherlands' assets to non-current assets and disposal groups held for sale in connection with the agreed sale, had an offsetting effect. Write-downs of EUR 23 million (2020: EUR 42 million, 2019: EUR 20 million) on the net realizable value were recognized in profit or loss in 2021. The carrying amount of inventories expensed during the reporting period was EUR 22,532 million (2020: EUR 16,693 million, 2019: EUR 14,340 million).

For further information on the agreed sale of T-Mobile Netherlands, please refer to the section [“Changes in the composition of the Group and other transactions”](#) under “Summary of accounting policies.”

Finished goods and merchandise primarily comprise retail products (e.g., terminal equipment and accessories) not manufactured by Deutsche Telekom and services rendered but not yet invoiced, primarily to business customers.

5 Non-current assets and disposal groups held for sale and liabilities directly associated with non-current assets and disposal groups held for sale

As of December 31, 2021, current assets recognized in the consolidated statement of financial position included EUR 4.9 billion (December 31, 2020: EUR 1.1 billion) in non-current assets and disposal groups held for sale. Current liabilities in the consolidated statement of financial position included liabilities directly associated with non-current assets and disposal groups held for sale of EUR 1.4 billion as of December 31, 2021 (December 31, 2020: EUR 0.4 billion). The change in carrying amounts resulted from the transactions described below.

	Dec. 31, 2021					Dec. 31, 2020				
	T-Mobile Netherlands B.V.	Glasfaser-Plus GmbH	T-Mobile US spectrum	Other	Total	Telekom Romania Communications S.A.	T-Mobile Infra B.V.	T-Mobile US spectrum	Other	Total
Non-current assets and disposal groups held for sale										
Cash and cash equivalents	8	3			11	73				73
Trade receivables	396				396	120			1	121
Inventories	44				44	10				10
Other current assets	64				64	76	9		2	87
Intangible assets	2,253	120	27	5	2,405	32	259	39		330
Of which: goodwill	876	120		2	998		259			259
Property, plant and equipment	746			18	764	176	123		8	307
Right-of-use assets	612				612	102	34			136
Investments accounted for using the equity method					0					0
Deferred tax assets	414				414					0
Other non-current assets	117			29	146	17			32	49
Total	4,654	123	27	52	4,856	606	425	39	43	1,113
Liabilities directly associated with non-current assets and disposal groups held for sale										
Trade and other payables	324				324	155	3			158
Income tax liabilities					0		4			4
Other current provisions	81				81	14				14
Other current liabilities	247				247	71	22		2	95
Lease liabilities	634				634					0
Provisions and similar obligations					0	11				11
Other non-current provisions	32				32	1	35			36
Deferred tax liabilities	39				39		3			3
Other non-current liabilities	8				8	43	85			128
Total	1,365	0	0	0	1,365	295	152	0	2	449

As of December 31, 2021, the carrying amounts included the reclassified assets and liabilities of T-Mobile Netherlands B.V. in the Group Development operating segment, and of GlasfaserPlus GmbH in the Germany operating segment. Both these companies were classified as held for sale as of December 31, 2021 on account of the specific intention to sell them.

The assets and liabilities of both companies were measured at the lower of the carrying amount and fair value less costs of disposal. The fair values were determined on the basis of the sale agreements concluded with the contracting parties (Level 1 inputs).

For further information on the two agreed transactions, please refer to the section [“Changes in the composition of the Group and other transactions”](#) under “Summary of accounting policies.”

In September and December 2021, transactions were agreed between T-Mobile US and two competitors for the exchange of mobile spectrum licenses in order to improve mobile network coverage. In the prior year, a transaction was agreed between T-Mobile US and a competitor for the exchange of mobile spectrum licenses, which was consummated in the reporting year. The measurement uses parameters for which there are no observable market parameters (Level 3).

As of December 31, 2020, the carrying amounts included the reclassified assets and liabilities of Telekom Romania Communications S.A. (TKR), which at that time operated the Romanian fixed-network business in the Europe operating segment. They also included the assets and liabilities of the Dutch company T-Mobile Infra B.V., which at that time was assigned to the Group Development operating segment.

For further information on the disposals consummated in the reporting year, please refer to the section [“Changes in the composition of the Group and other transactions”](#) under “Summary of accounting policies.”

No reversals of impairments of the carrying amounts of the non-current assets and disposal groups held for sale were recognized either in the reporting year or in the prior year.

6 Intangible assets

millions of €

	Internally generated intangible assets	Acquired intangible assets		
		Total	Acquired concessions, industrial and similar rights and assets	LTE licenses
Cost				
At December 31, 2019	8,200	83,687	1,542	6,404
Changes in accounting standards	0	0	0	0
Currency translation	(529)	(10,209)	(52)	(138)
Changes in the composition of the Group	292	49,575	243	0
Additions	448	2,752	149	259
Disposals	(723)	(11,362)	(134)	(20)
Change from non-current assets and disposal groups held for sale	0	(317)	0	0
Reclassifications	1,506	2,640	53	284
At December 31, 2020	9,195	116,766	1,801	6,789
Changes in accounting standards	0	0	0	0
Currency translation	505	8,072	43	(15)
Changes in the composition of the Group	0	659	(21)	0
Additions	612	10,075	455	286
Disposals	(609)	(2,654)	(773)	(75)
Change from non-current assets and disposal groups held for sale	(664)	(2,849)	(15)	(1,093)
Reclassifications	1,344	1,973	128	(0)
At December 31, 2021	10,383	132,041	1,618	5,893
Accumulated amortization and impairment losses				
At December 31, 2019	(5,171)	(33,110)	(1,066)	(2,294)
Changes in accounting standards	0	0	0	0
Currency translation	356	1,282	28	49
Changes in the composition of the Group	0	6	0	0
Additions (amortization)	(1,432)	(5,039)	(377)	(436)
Additions (impairment)	(180)	(252)	(4)	(99)
Disposals	723	11,357	132	20
Change from non-current assets and disposal groups held for sale	0	248	0	0
Reclassifications	(2)	(6)	(25)	0
Reversal of impairment losses	0	1,605	0	0
At December 31, 2020	(5,707)	(23,908)	(1,311)	(2,759)
Changes in accounting standards	0	0	0	0
Currency translation	(345)	(840)	(35)	7
Changes in the composition of the Group	0	7	13	0
Additions (amortization)	(1,599)	(4,869)	(424)	(410)
Additions (impairment)	(63)	(42)	0	0
Disposals	608	2,596	773	75
Change from non-current assets and disposal groups held for sale	607	1,593	1	505
Reclassifications	(53)	34	(55)	2
Reversal of impairment losses	0	0	0	0
At December 31, 2021	(6,552)	(25,429)	(1,038)	(2,581)
Net carrying amounts				
At December 31, 2020	3,488	92,858	490	4,030
At December 31, 2021	3,832	106,611	580	3,313

Acquired intangible assets					Goodwill	Advance payments and intangible assets under development	Total
UMTS licenses	GSM licenses	FCC licenses (T-Mobile US)	5G licenses	Other acquired intangible assets			
9,937	1,390	42,283	2,237	19,895	30,796	2,161	124,844
0	0	0	0	0	0	0	0
(21)	(15)	(8,215)	0	(1,768)	(2,270)	(93)	(13,100)
0	0	41,629	0	7,703	8,867	565	59,300
0	0	1,107	387	851	0	3,635	6,836
(8,541)	(128)	0	(29)	(2,510)	0	(224)	(12,308)
0	0	(68)	0	(249)	(279)	0	(596)
0	0	0	41	2,262	0	(4,082)	63
1,375	1,247	76,736	2,635	26,184	37,115	1,962	165,038
0	0	0	0	0	0	0	0
5	1	6,806	0	1,233	1,655	54	10,286
0	0	5	0	675	890	0	1,548
0	0	8,353	0	979	0	3,091	13,778
(178)	(11)	0	0	(1,618)	0	(9)	(3,273)
(641)	(10)	(26)	(233)	(831)	(1,884)	(47)	(5,445)
167	29	(0)	47	1,603	0	(3,287)	30
727	1,256	91,873	2,449	28,225	37,775	1,764	181,963
(9,244)	(781)	(4,232)	(13)	(15,480)	(18,360)	0	(56,641)
0	0	0	0	0	0	0	0
17	11	345	0	831	1,070	0	2,708
0	0	0	0	6	0	0	6
(579)	(55)	0	(71)	(3,523)	0	0	(6,472)
(24)	0	(29)	0	(96)	(26)	(67)	(525)
8,541	128	0	29	2,507	0	5	12,085
0	0	29	0	219	20	0	268
0	0	0	0	19	0	0	(8)
0	0	1,604	0	1	0	0	1,605
(1,289)	(697)	(2,282)	(55)	(15,515)	(17,295)	(62)	(46,972)
0	0	0	0	0	0	0	0
(4)	(1)	(198)	0	(610)	(834)	0	(2,020)
0	0	0	0	(7)	0	0	7
(44)	(54)	0	(97)	(3,839)	0	0	(6,468)
0	(4)	0	0	(38)	0	(51)	(155)
178	11	0	0	1,559	0	(0)	3,204
480	10	0	12	585	886	0	3,086
(0)	(1)	0	0	89	0	21	3
0	0	0	0	0	0	0	0
(679)	(737)	(2,480)	(139)	(17,774)	(17,243)	(91)	(49,315)
85	550	74,454	2,580	10,668	19,819	1,900	118,066
48	519	89,393	2,310	10,450	20,531	1,673	132,647

The carrying amount of intangible assets increased by EUR 14.6 billion to EUR 132.6 billion, primarily due to the following effects: additions of EUR 13.8 billion, EUR 8.4 billion of which resulted from the acquisition of mobile spectrum in the United States operating segment, primarily in connection with the conclusion of the FCC C-band auction in the United States. T-Mobile US purchased 142 licenses for EUR 7.8 billion (USD 9.3 billion) in the auction and made initial “relocation payments” of EUR 0.2 billion to relocate incumbent licensees. T-Mobile US anticipates additional “relocation payments” of USD 1.0 billion (around EUR 0.9 billion), which will be paid out by 2024. In the Europe operating segment, licenses were purchased for a total value of EUR 0.3 billion. The 5G licenses acquired at auction in November 2020 by T-Mobile Czech Republic were purchased in 2021 for EUR 0.1 billion. In Hungary, proceedings to re-award 900 and 1,800 MHz spectrum licenses were held on January 28, 2021 and concluded the same day. Magyar Telekom acquired spectrum licenses for EUR 0.1 billion. In addition, further spectrum licenses were acquired and rights to use spectrum were extended in Croatia and Romania. Exchange rate effects of EUR 8.3 billion, primarily from the translation of U.S. dollars into euros, and effects of changes in the composition of the Group of EUR 1.6 billion, mainly from the first-time inclusion of Shentel, acquired by T-Mobile US, also increased the carrying amount. This also includes goodwill of EUR 0.9 billion arising from the transaction. The reclassification of assets worth EUR 2.4 billion to non-current assets and disposal groups held for sale reduced the carrying amount. These reclassifications mainly resulted from the agreed sale of T-Mobile Netherlands and the agreed sale of the 50 % stake in GlasfaserPlus GmbH. The carrying amount was further reduced by amortization totaling EUR 6.5 billion and impairment losses of EUR 0.2 billion.

For further information on amortization and impairment losses, please refer to Note 27 “[Depreciation, amortization and impairment losses.](#)”

For further information on the aforementioned business combinations and the agreed sale of T-Mobile Netherlands, please refer to the section “[Changes in the composition of the Group and other transactions](#)” under “Summary of accounting policies.”

In the 2021 financial year, the **carrying amount of goodwill in cash-generating units** in the operating segments increased by EUR 0.7 billion to EUR 20.5 billion. This was the result of the following effects:

Germany operating segment. In the Germany operating segment, goodwill decreased by EUR 0.1 billion to EUR 4.8 billion. As a consequence of the agreed sale of the 50 % stake in fiber-optic build-out company GlasfaserPlus GmbH and the concomitant future loss of control of the company on completion of the transaction, the assets and liabilities of GlasfaserPlus as of December 31, 2021 were disclosed in the consolidated statement of financial position as “held for sale.”

For further information on the fiber-optic build-out through the joint venture with IFM, please refer to the section “[Changes in the composition of the Group and other transactions](#)” under “Summary of accounting policies.”

United States operating segment. The increase in goodwill of EUR 1.7 billion compared with December 31, 2020 was due to an increase of EUR 0.9 billion from the acquisition of Shentel by T-Mobile US, consummated on July 1, 2021. Exchange rate effects from the translation of U.S. dollars to euros also have an increasing effect. A further acquisition of a company was immaterial for the United States operating segment.

For further information on the acquisition of Shentel, please refer to the section “[Changes in the composition of the Group and other transactions](#)” under “Summary of accounting policies.”

Europe operating segment. Goodwill of the Austria cash-generating unit decreased by EUR 0.3 billion. As part of the transfer of the Austrian cell tower business from the Europe operating segment to GD Towers in the Group Development operating segment, the cell towers and roof-top sites were spun off to the newly created cash-generating unit Magenta Telekom Infra. Consequently, the carrying amount of the goodwill was also transferred on a pro rata basis. Changes in goodwill in the cash-generating units Poland, Hungary, Croatia, and the Czech Republic result from exchange rate effects.

Group Development operating segment. Goodwill in the Netherlands cash-generating unit decreased by EUR 0.9 billion on account of the agreed sale of T-Mobile Netherlands. As of December 31, 2021, this item was recognized as “held for sale” in the consolidated statement of financial position. Goodwill in the Magenta Telekom Infra cash-generating unit, which was newly created in the 2021 financial year, increased by EUR 0.3 billion due to the transfer of the Austrian cell tower business.

For further information on the agreed sale of T-Mobile Netherlands, please refer to the section “[Changes in the composition of the Group and other transactions](#)” under “Summary of accounting policies” and to Note 5 “[Non-current assets and disposal groups held for sale and liabilities directly associated with non-current assets and disposal groups held for sale.](#)”

Impairment losses in the Systems Solutions operating segment. As part of the realignment of the B2B telecommunications business, the assets and liabilities assigned to the relevant business areas were transferred to the Germany operating segment at the start of the third quarter of 2020, primarily from the Systems Solutions and Europe operating segments. The goodwill previously allocated to the Systems Solutions and Telekom Global Carrier cash-generating units was thereby allocated in full to the telecommunications business being transferred to the Germany cash-generating unit. The realignment of the B2B telecommunications business in combination with the effects of the coronavirus pandemic triggered ad hoc impairment testing in the prior year of the assets assigned to the Systems Solutions cash-generating unit, which identified a deterioration in the business outlook for IT operations. The result was the recognition in the 2020 financial year of an impairment loss of EUR 470 million on non-current assets of the Systems Solutions cash-generating unit. The recoverable amount – determined as fair value less costs of disposal – was calculated at EUR -976 million, which is EUR 1,428 million lower than the carrying amount of the Systems Solutions cash-generating unit. The fair values of the individual assets were set as the lower limit for the amount of the impairment loss. EUR 299 million of the impairment loss recognized in the Systems Solutions operating segment related to intangible assets, and EUR 127 million to property, plant and equipment. Another EUR 44 million related to intangible assets in the Group Headquarters & Group Services segment that are subject to use by the Systems Solutions operating segment and are allocated to the Systems Solutions cash-generating unit for the purposes of impairment testing. An external expert opinion was obtained to determine the fair values of the individual assets. The value was calculated using Level 3 input parameters. A discount rate of 4.32 % was used.

Impairment losses recognized in the 2021 financial year on intangible assets and property, plant and equipment totaled EUR 0.2 billion. This was a consequence of several factors, including the ad hoc impairment testing carried out in the Systems Solutions cash-generating unit in the prior year and related to follow-up investments in the reporting year. In addition, despite the marginal improvement in the business outlook, the increase in the cost of capital in the reporting year prompted further impairment losses to be recognized on non-current assets in the Systems Solutions cash-generating unit at the end of 2021. The recoverable amount – determined as fair value less costs of disposal – was calculated at EUR 186 million, which is EUR 328 million lower than the carrying amount of the Systems Solutions cash-generating unit. The fair values of the individual assets were set as the lower limit for the amount of the impairment loss. An external expert opinion was obtained to determine the fair values of the individual assets. The value was calculated using Level 3 input parameters. A discount rate of 6.22 % was used.

EUR 118 million of the total impairment losses recognized in the reporting year in the Systems Solutions operating segment related to intangible assets, and EUR 61 million to property, plant and equipment. Another EUR 21 million related to intangible assets in the Group Headquarters & Group Services segment that are subject to use by the Systems Solutions operating segment and are allocated to the Systems Solutions cash-generating unit for the purposes of impairment testing.

Reversal in 2022 of impairment losses recognized in prior years on FCC licenses in the United States operating segment.

In the prior year, the partial reversal of impairment losses on FCC licenses previously acquired by T-Mobile US increased the carrying amount by EUR 1.6 billion before deferred taxes. These FCC licenses were impaired as of September 30, 2012 following ad hoc impairment testing of the United States cash-generating unit. As the impairment of the FCC licenses related entirely to the PCS licenses, only these licenses were subject to the reversal of the impairment loss. Regular assessments had to be made in subsequent periods to determine whether the reasons for impairment still existed – in full or in part. The fair value less costs of disposal of the United States cash-generating unit derived from the share price of T-Mobile US, which has been listed since 2013, has increased significantly over the last few years and exceeded its carrying amount. However, the reversal was limited to the lower of the recoverable amount of the impaired spectrum licenses determined by the fair value less costs of disposal on the one hand and the acquisition cost of these licenses on the other. An initial reversal of the impairment loss in the amount of EUR 1.7 billion (before deferred taxes) was recognized in the third quarter of 2017, which was indicated back then by the results of the 600 MHz spectrum auction completed in 2017.

The measurement of Sprint's FCC licenses at fair value in connection with the purchase price allocation following the business combination of T-Mobile US and Sprint effective April 1, 2020 indicated a further increase in the PCS licenses' value. This triggered a remeasurement in 2020 of the PCS licenses held by T-Mobile US, which was performed using a market value approach. The value was calculated on the basis of Level 2 inputs in accordance with the fair value hierarchy under IFRS 13. The market approach on which the remeasurement was based drew on market prices from comparable auctions and secondary market transactions, as well as analyst estimates. Analyst estimates were used because they included estimated market values for the individual frequency ranges of mobile companies in the United States. These analyst estimates also covered T-Mobile US' PCS licenses. Transactions for PCS and AWS spectrum were included to the extent that they related to similar frequency ranges and a comparable population density. Multipliers were derived from these market prices for the price in U.S. dollars per MHz per member of the population (price per MHz/pop). Based on the bandwidth of observable multipliers, a multiplier of USD 1.84 per MHz/pop, derived from current analyst estimates and past transactions, was used to derive the fair value of T-Mobile US' PCS licenses. A recoverable amount of USD 18.1 billion (EUR 14.7 billion) was calculated from this for the FCC licenses previously impaired. Taking the carrying amount of USD 16.1 billion (EUR 13.1 billion) into account, a partial reversal of the impairment losses of USD 2.0 billion (EUR 1.6 billion) was recorded in 2020 under other operating income.

Agreed sale of Telekom Romania Communications in 2020. An ad hoc impairment test was conducted in 2020 at the Romania – Fixed network (Telekom Romania Communications S.A. (TKR)) and Romania – Mobile communications (Telekom Romania Mobile Communications S.A. (TKRM)) cash-generating units, which are assigned to the Europe operating segment. TKR operates the Romanian fixed-network business and TKRM the Romanian mobile communications business. Even though these two entities are essentially independent companies, each with their own commercial focus, the sale of the fixed-network business agreed in November 2020 had economic and strategic implications for the mobile business in Romania, which remains in the Deutsche Telekom Group. For example, since the sale of TKR on September 30, 2021, there is no longer an MVNO agreement between the two entities allowing TKR to offer FMC products to its own fixed-network customers. Furthermore, terminal equipment revenues that TKRM previously generated from sales to TKR, as well as synergies arising from joint procurement and sales activities, are no longer realized. Consequently, an ad hoc impairment test was conducted in 2020 on TKRM's assets, which resulted in the recognition of an impairment loss of EUR 160 million on TKRM's non-current assets. The recoverable amount – determined as fair value less costs of disposal – was calculated at EUR 171 million, which is EUR 160 million lower than the carrying amount of TKRM. EUR 126 million of the impairment loss related to intangible assets and EUR 34 million to property, plant and equipment. An expert opinion was obtained to determine the fair values of the individual assets. The value was calculated using Level 3 input parameters. A discount rate of 7.78 % was used. No goodwill remained at the cash-generating unit Romania – Mobile communications. In the Romanian fixed-network business, the sale of TKR, planned since 2020, resulted in a reversal of impairment losses recognized in the past on property, plant and equipment of EUR 50 million. The sale of TKR was consummated on September 30, 2021.

For further information, please refer to the section [“Changes in the composition of the Group and other transactions”](#) under “Summary of accounting policies.”

Disclosures on annual impairment tests. As of December 31, 2021, Deutsche Telekom carried out its annual impairment tests on the goodwill and intangible assets with an indefinite useful life (in particular, FCC licenses in the United States) assigned to the cash-generating units.

The recoverable amounts to be identified for the impairment tests were largely determined on the basis of the fair values less costs of disposal. With the exception of the United States cash-generating unit (Level 1 measurement), these figures were calculated using the net present value method. The main parameters are shown in the following table. The impairment test on goodwill as of December 31, 2021 did not result in any need for impairment in the cash-generating units.

The recoverable amounts at the cash-generating units Croatia, Montenegro, and North Macedonia were determined using the value in use. The market price of an active and liquid market (share price) of T-Mobile US was used to determine the fair value less costs of disposal in the case of the United States cash-generating unit. The measurements of all other cash-generating units are founded on projections for a ten-year projection period that are based on financial plans that have been approved by management and are also used for internal purposes.

A need for a partial impairment of goodwill of EUR 26 million was identified in the Europe operating segment at the Montenegro cash-generating unit as of December 31, 2020 on the basis of information available at the reporting date and expectations with respect to the future development of the market and competitive environment. The need for impairment was primarily attributable to the difficult economic situation in Montenegro, which had been intensified by the coronavirus pandemic. As a result, the market has not developed as positively as originally assumed. Accordingly, an adjustment was made to the EBITDA planning to include additional need for investment, which will be reflected in lower future cash flows. The recoverable amount (prior to the deduction of net debt) for the Montenegro cash-generating unit was EUR 133 million as of December 31, 2020 (December 31, 2019: EUR 202 million). This amount was calculated on the basis of the value in use.

For further information on the determination of the recoverable amounts of the cash-generating units, please refer to the section [“Accounting policies”](#) under “Summary of accounting policies.”

The following table provides an overview of the main factors affecting the measurement and the classification of the input parameters (levels) used to determine the recoverable amounts in accordance with IFRS 13.

		Goodwill carrying amount millions of €	Impairment millions of €	Detailed planning period years	Discount rates ^a %	Sustainable growth rate p. a. Ø in %	Level allocation of input parameters ^b
Germany	2021	4,845	0	10	3.19	0.0	Level 3
	2020	4,964	0	10	3.49	0.0	Level 3
United States	2021	10,654	0	n.a.	n.a.	n.a.	Level 1
	2020	8,964	0	n.a.	n.a.	n.a.	Level 1
Europe							
Poland	2021	189	0	10	6.17	1.0	Level 3
	2020	191	0	10	5.24	2.0	Level 3
Hungary	2021	900	0	10	7.24	1.0	Level 3
	2020	914	0	10	6.38	2.0	Level 3
Czech Republic	2021	812	0	10	5.24	1.0	Level 3
	2020	769	0	10	5.12	2.0	Level 3
Croatia	2021	508	0	10	5.75	1.0	Value in use
	2020	518	0	10	5.67	2.0	Value in use
Slovakia	2021	424	0	10	3.95	1.0	Level 3
	2020	424	0	10	3.85	2.0	Level 3
Greece	2021	422	0	10	4.91	1.0	Level 3
	2020	422	0	10	5.01	2.0	Level 3
Austria ^c	2021	613	0	10	4.16	1.0	Level 3
	2020	877	0	10	3.71	2.0	Level 3
Other ^d	2021	53	0	10	7.42–7.48	1.0	Value in use
	2020	53	26	10	7.30–7.43	2.0	Value in use
Group Development							
Netherlands ^e	2021						
	2020	876	0	10	3.65	0.5	Value in use
Deutsche Funkturm	2021	259	0	10	4.15	1.0	Level 3
	2020	259	0	10	3.74	1.0	Level 3
Magenta Telekom Infra ^c	2021	264	0	10	4.69	1.0	Level 3
	2020						
Group Headquarters & Group Services							
Deutsche Telekom IT	2021	590	0	10	6.94	1.0	Level 3
	2020	590	0	10	6.63	1.0	Level 3
Deutsche Telekom in total	2021	20,531	0				
	2020	19,819	26				

^a Discount rate consistently after taxes. The discount rate before taxes for the calculation of the value in use amounts to 6.92 % (2020: 6.82 %) for Croatia, and 8.32 to 8.33 % (2020: 8.18 to 8.27 %) for "Other."

^b Level of input parameters in the case of fair value less costs of disposal.

^c As part of the transfer of the Austrian cell tower business from the Europe operating segment to the GD Towers unit of the Group Development operating segment, the cell towers and roof-top sites were divested to the newly created cash-generating unit Magenta Telekom Infra. This involved the transfer of goodwill of EUR 264 million.

^d This includes goodwill from the cash-generating units Montenegro and North Macedonia.

^e Reclassification of goodwill to non-current assets and disposal groups held for sale due to the agreed sale of T-Mobile Netherlands.

The sensitivity analyses for the need for impairment resulting from a change in the main parameters affecting measurement did not result in any need for impairment for any cash-generating unit to which goodwill is allocated. Changes of plus or minus 50 basis points in the discount rate and in the sustainable growth rate, and of 5 percentage points in net cash flows, were each analyzed separately.

Deutsche Telekom had commitments for the acquisition of intangible assets in the amount of EUR 2.0 billion (December 31, 2020: EUR 1.1 billion) as of the reporting date. The majority of this related to commitments entered into by T-Mobile US.

Expenditure on research and development recognized as an expense by Deutsche Telekom amounted to EUR 32.5 million in the reporting year (2020: EUR 33.1 million).

7 Property, plant and equipment

millions of €					
	Land and equivalent rights, and buildings including buildings on land owned by third parties	Technical equipment and machinery	Other equipment, operating and office equipment	Advance payments and construction in progress	Total
Cost					
At December 31, 2019	16,522	132,885	9,839	4,174	163,421
Changes in accounting standards	0	0	0	0	0
Currency translation	(562)	(4,304)	(318)	(229)	(5,413)
Changes in the composition of the Group	2,002	11,222	261	168	13,653
Additions	116	5,711	571	9,337	15,734
Disposals	(182)	(7,414)	(717)	(199)	(8,512)
Change from non-current assets and disposal groups held for sale	(131)	(1,443)	(71)	(79)	(1,723)
Reclassifications	738	8,111	679	(8,428)	1,100
At December 31, 2020	18,503	144,769	10,244	4,745	178,261
Changes in accounting standards	0	0	(0)	0	0
Currency translation	456	3,491	252	191	4,390
Changes in the composition of the Group	36	(17)	(0)	5	25
Additions	187	3,638	487	11,149	15,461
Disposals	(1,100)	(10,111)	(828)	(98)	(12,137)
Change from non-current assets and disposal groups held for sale	(430)	(914)	(110)	(143)	(1,597)
Reclassifications	547	9,503	910	(10,526)	433
At December 31, 2021	18,197	150,360	10,956	5,322	184,835
Accumulated depreciation and impairment losses					
At December 31, 2019	(10,923)	(96,176)	(6,761)	(13)	(113,872)
Changes in accounting standards	0	0	0	0	0
Currency translation	228	2,080	192	0	2,499
Changes in the composition of the Group	0	11	8	0	19
Additions (depreciation)	(725)	(11,787)	(985)	0	(13,496)
Additions (impairment)	(28)	(140)	(27)	(16)	(210)
Disposals	172	6,069	655	7	6,903
Change from non-current assets and disposal groups held for sale	60	1,337	64	5	1,466
Reclassifications	4	(641)	(12)	(0)	(649)
Reversal of impairment losses	4	48	1	0	53
At December 31, 2020	(11,207)	(99,198)	(6,864)	(17)	(117,286)
Changes in accounting standards	0	0	(0)	0	(0)
Currency translation	(206)	(1,910)	(147)	(0)	(2,263)
Changes in the composition of the Group	(0)	52	1	1	54
Additions (depreciation)	(792)	(12,748)	(1,055)	0	(14,595)
Additions (impairment)	(11)	(53)	(13)	(15)	(92)
Disposals	1,059	8,720	741	4	10,525
Change from non-current assets and disposal groups held for sale	185	566	97	12	860
Reclassifications	68	(225)	(111)	0	(269)
Reversal of impairment losses	1	0	0	0	1
At December 31, 2021	(10,903)	(104,796)	(7,351)	(15)	(123,065)
Net carrying amounts					
At December 31, 2020	7,296	45,571	3,380	4,728	60,975
At December 31, 2021	7,294	45,564	3,605	5,307	61,770

The carrying amount of property, plant and equipment increased by EUR 0.8 billion compared to December 31, 2020 to EUR 61.8 billion. Additions of EUR 15.5 billion to upgrade and build out the network and acquire mobile devices in our United States operating segment and in connection with the broadband/fiber-optic build-out and mobile infrastructure build-out in the Germany and Europe operating segments increased the carrying amount. Exchange rate effects of EUR 2.1 billion, primarily from the translation of U.S. dollars into euros, and effects of changes in the composition of the Group of EUR 0.1 billion, mainly in connection with the acquisition of Shentel, also increased the carrying amount, while depreciation totaling EUR 14.6 billion and disposals of EUR 1.6 billion had an offsetting effect. The reclassification of assets worth EUR 0.7 billion to non-current assets and disposal groups held for sale reduced the carrying amount. These reclassifications mainly resulted from the agreed sale of T-Mobile Netherlands. In addition, impairment losses decreased the carrying amount by EUR 0.1 billion.

For further information on depreciation, amortization and impairment losses, please refer to Notes 6 “Intangible assets” and 27 “Depreciation, amortization and impairment losses.”

For further information on the aforementioned business combinations and the agreed sale of T-Mobile Netherlands, please refer to the section “Changes in the composition of the Group and other transactions” under “Summary of accounting policies.”

In 2020, ad hoc impairment tests were conducted at the Romania – Fixed network TKR and Romania – Mobile communications TKRM cash-generating units, which were assigned to the Europe operating segment. In the Romanian fixed-network business TKR, the agreed sale of TKR resulted in a reversal of impairment losses recognized in the past on property, plant and equipment of EUR 50 million. The recoverable amount was calculated at EUR 242 million, which is EUR 50 million higher than the carrying amount of TKR. The observable market price (Level 1 input parameter/agreed purchase price) was used to determine the recoverable amount. The reversal of impairment losses was recognized as other operating income.

Deutsche Telekom had commitments for the acquisition of property, plant and equipment in the amount of EUR 5.9 billion as of the reporting date (December 31, 2020: EUR 7.0 billion). Restoration obligations of EUR 0.7 billion were recognized as of December 31, 2021 (December 31, 2020: EUR 0.9 billion), mainly attributable to restoration obligations of T-Mobile US.

8 Right-of-use assets – lessee relationships

millions of €					
	Land and equivalent rights, and buildings including buildings on land owned by third parties	Land and buildings from sale and leaseback transactions	Technical equipment and machinery	Other equipment, operating and office equipment	Total
Carrying amounts of right-of-use assets by class of underlying asset					
At December 31, 2019	6,163	529	11,171	135	17,998
Currency translation	(254)	(2)	(1,849)	(6)	(2,111)
Changes in the composition of the Group	580	0	5,674	36	6,291
Additions	1,409	93	12,727	49	14,278
Disposals	(237)	(64)	(79)	(7)	(386)
Depreciation	(1,352)	(112)	(3,518)	(82)	(5,064)
Impairment losses	(1)	0	(62)	0	(63)
Reclassifications	0	0	(500)	(7)	(507)
Reversal of impairment losses	2	0	0	0	2
Change from non-current assets and disposal groups held for sale	(118)	0	(12)	(6)	(136)
At December 31, 2020	6,193	445	23,552	111	30,302
Currency translation	175	0	1,882	1	2,058
Changes in the composition of the Group	1	0	256	(1)	256
Additions	1,282	319	3,844	41	5,486
Disposals	(235)	(17)	(154)	(14)	(419)
Depreciation	(1,373)	(103)	(4,607)	(51)	(6,134)
Impairment losses	(10)	0	(26)	0	(37)
Reclassifications	(1)	0	(197)	0	(198)
Reversal of impairment losses	0	0	0	0	0
Change from non-current assets and disposal groups held for sale	(237)	(273)	0	(28)	(537)
At December 31, 2021	5,796	371	24,550	60	30,777

The carrying amount of the right-of-use assets increased by EUR 0.5 billion compared to December 31, 2020 to EUR 30.8 billion. The carrying amount was increased by additions of EUR 5.5 billion, including as a result of a sale and leaseback transaction concluded after the combination of the cell tower business in the Netherlands and the set-up of an infrastructure fund. The carrying amount was also increased by exchange rate effects of EUR 2.1 billion, primarily from the translation of U.S. dollars into euros, and effects from changes in the composition of the Group of EUR 0.3 billion, mainly in connection with the acquisition of Shentel. The carrying amount was decreased by depreciation, amortization and impairment losses of EUR 6.2 billion. This included a EUR 0.8 billion increase in depreciation and amortization due to a reduction in the useful life of leased network technology for cell sites in the United States operating segment following the business combination of T-Mobile US and Sprint. The reclassification of T-Mobile Netherlands' assets to non-current assets and disposal groups held for sale in the amount of EUR 0.5 billion and disposals of EUR 0.4 billion also reduced the carrying amount. In addition, reclassifications of lease assets at the end of the contractual lease term to property, plant and equipment, in the United States operating segment in particular, reduced the carrying amount by EUR 0.2 billion.

For further information on the aforementioned business combinations and the agreed sale of T-Mobile Netherlands, please refer to the section [“Changes in the composition of the Group and other transactions”](#) under [“Summary of accounting policies.”](#)

For information on corresponding lease liabilities, please refer to Note 13 [“Financial liabilities and lease liabilities.”](#)

The right-of-use assets recognized in the statement of financial position relate in particular to leases for cell sites, network infrastructure, and real estate in the United States operating segment.

The right-of-use assets for land and equivalent rights, and buildings including buildings on land owned by third parties, include right-of-use assets related to data centers with a carrying amount of EUR 76 million (December 31, 2020: EUR 86 million). The corresponding depreciation amounted to EUR 18 million in the reporting year (December 31, 2020: EUR 18 million). In addition, the right-of-use assets for technical equipment and machinery also include right-of-use assets related to data centers with a carrying amount of EUR 23 million (December 31, 2020: EUR 30 million). The corresponding depreciation amounted to EUR 7 million in the reporting year (December 31, 2020: EUR 13 million).

Right-of-use assets in connection with sale and leaseback transactions mainly relate to office and technical facilities in the Group Headquarters & Group Services segment, with Group companies selling real estate and then leasing back the facilities and buildings required for business. The gain from the aforementioned sale-and-leaseback transaction in connection with the combination of the cell tower business in the Netherlands and the set-up of an infrastructure fund totaled EUR 0.1 billion, EUR 12 million of which was recognized directly in profit or loss; the remainder will be released to profit or loss over the residual useful lives of the rights-of-use assets. No other significant gains and losses from sale and leaseback transactions were recorded in the 2021 and 2020 financial years.

Leases can include extension and termination options that can have a substantial impact on the period of depreciation of the right-of-use assets if it is deemed to be reasonably certain that extension options will be exercised or termination options will not be exercised.

For further information, please refer to the section [“Accounting policies”](#) under [“Summary of accounting policies.”](#)

9 Capitalized contract costs

millions of €	Dec. 31, 2021	Dec. 31, 2020
Costs of obtaining a contract	2,574	2,182
Costs to fulfill a contract	11	10
	2,585	2,192

As of December 31, 2021, the carrying amount of capitalized contract costs stood at EUR 2.6 billion and was thus EUR 0.4 billion higher than at the end of the prior year. This increase was attributable in particular to a higher level of capitalized costs of obtaining a contract in postpaid customer business in the United States operating segment. The costs of obtaining a contract mainly include sales commissions paid to employees and third-party retailers in the direct and indirect sales channel. Overall, capitalized contract costs of EUR 1,832 million (2020: EUR 1,668 million) were written down on a straight-line basis over the estimated customer retention period.

10 Investments accounted for using the equity method

Deutsche Telekom publishes the following information on significant investments included in the consolidated financial statements using the equity method:

Name and registered office	Deutsche Telekom share		Percentage of voting rights		Assigned to segment	Fair value of the investment, if a listed market price is available	
	Dec. 31, 2021 %	Dec. 31, 2020 %	Dec. 31, 2021 %	Dec. 31, 2020 %		Dec. 31, 2021 millions of €	Dec. 31, 2020 millions of €
Hrvatske telekomunikacije d.d. Mostar, Mostar, Bosnia-Herzegovina ^a	39.10	39.10	39.10	39.10	Europe	28	30
Stratospheric Platforms Ltd., Isle of Man, United Kingdom	38.05	38.05	38.05	38.05	Group Development	n.a.	n.a.
T-Mobile USA Tower LLC, Wilmington, United States ^b	100.00	100.00	100.00	100.00	United States	n.a.	n.a.
T-Mobile West Tower LLC, Wilmington, United States ^b	100.00	100.00	100.00	100.00	United States	n.a.	n.a.
Cellnex Netherlands B.V., Utrecht, Netherlands ^c	37.65	n.a.	37.65	n.a.	Group Development	n.a.	n.a.

^a Indirect shareholding via Hrvatski Telekom d.d., Croatia (Deutsche Telekom AG's share: 52.17 %).

^b Indirect shareholding via T-Mobile US, Inc., United States (Deutsche Telekom AG's share: 46.75 %).

^c Indirect shareholding via Digital Infrastructure Vehicle II SICAF-RAIF, Luxembourg (Deutsche Telekom AG's share: 66.67 %). The shareholding has been included in Deutsche Telekom's consolidated financial statements using the equity method since June 1, 2021.

Description of the nature of the activities of the joint arrangement or associate

Hrvatske telekomunikacije d.d. (HT Mostar d.d.) provides mobile and fixed-network communications services in Bosnia-Herzegovina.

Stratospheric Platforms Ltd. develops new communications technologies for stationary and mobile use.

T-Mobile USA Tower LLC and T-Mobile West Tower LLC are structured entities founded by T-Mobile US in each of which it holds a 100 % stake for the purpose of contributing cell sites in accordance with a framework agreement signed in 2012 between T-Mobile US and Crown Castle International Corp., Houston, United States, concerning the leasing and use of the cell sites. The sole right to continue to use and lease out these sites was transferred to Crown Castle. T-Mobile US continues to operate its mobile equipment on these cell towers and, to this end, leases back the required capacity from Crown Castle. Previously unused infrastructure is thus available for Crown Castle to lease to third parties. In return, the owners of the land on which the cell towers are built will no longer receive lease payments from T-Mobile US for those cell towers that were contributed to the two associates and those companies that were disposed of. Both entities were deconsolidated as of the date of the closing of the transaction in 2012, because Crown Castle independently operates the cell towers, generates revenues from leasing out the sites for an average of 27 years, and determines the finance and business activities of both entities that are relevant for consolidation purposes. It is expected that the leasing of tower space will allow Crown Castle to generate sufficient ongoing profits and cash flows to be able to meet its contractual obligations. Thus Deutsche Telekom has only a significant influence and includes these companies in the consolidated financial statements as associates. Under certain conditions, T-Mobile US will continue to be held liable for any default in the lease payment by Crown Castle to the owners of the underlying land of the cell sites. The agreement includes an extremely low maximum guarantee amount for Deutsche Telekom, since in the unlikely event that this case occurs, T-Mobile US could take over the further use of the relevant cell sites or alternatively terminate the contracts with the owners of the cell site land at short notice. At closing, T-Mobile US established an immaterial cash reserve in the entities sufficient to fund the payment of ongoing administrative expenses not payable by Crown Castle. Aside from the guarantee and the payment of administrative expenses, there is no other funding obligation by T-Mobile US.

Cellnex Netherlands B.V. (Cellnex NL) operates telecommunications infrastructure in the Netherlands.

For further information on the acquisition of the stake in Cellnex NL in connection with the combination of the cell tower business in the Netherlands and the set-up of an infrastructure fund, please refer to the section "Changes in the composition of the Group and other transactions" under "Summary of accounting policies."

The following tables provide summarized financial information on the main companies included in the consolidated financial statements and accounted for using the equity method. The data is not based on the stakes attributable to Deutsche Telekom AG, but represents the shareholdings on an assumed 100 % basis.

Summarized financial information on the main entities accounted for using the equity method

millions of €

	HT Mostar d.d.		Stratospheric Platforms Ltd. ^a	
	Dec. 31, 2021/ 2021	Dec. 31, 2020/ 2020	Dec. 31, 2021/ 2021	Dec. 31, 2020/ 2020
Current assets	38	45	5	11
Of which: cash and cash equivalents	10	12	5	11
Non-current assets	173	165	0	5
Current liabilities	26	22	1	3
Non-current liabilities	15	18	0	0
Net revenue	39	38	0	0
Profit (loss)	0	0	(14)	(24)
Other comprehensive income	0	0	0	0
Total comprehensive income	0	0	(14)	(24)
Depreciation, amortization and impairment losses	(10)	(9)	0	0
Dividends paid to Deutsche Telekom	0	0	0	0

^a As financial data of Stratospheric Platforms Ltd. as of December 31, 2021 was not yet available to Deutsche Telekom at the date of preparation, the company's annual financial statements as of December 31, 2020 were used as a basis for the summarized financial information. The comparatives as of December 31, 2020 were similarly based on the company's annual financial statements as of December 31, 2019.

millions of €

	T-Mobile USA Tower LLC		T-Mobile West Tower LLC	
	Dec. 31, 2021/ 2021	Dec. 31, 2020/ 2020	Dec. 31, 2021/ 2021	Dec. 31, 2020/ 2020
Current assets	0	0	0	0
Non-current assets	138	117	184	157
Current liabilities	0	0	0	0
Non-current liabilities	0	0	0	0
Net revenue	0	0	0	0
Profit (loss)	0	0	0	0
Other comprehensive income	0	0	0	0
Total comprehensive income	0	0	0	0
Dividends paid to Deutsche Telekom	0	0	0	0

millions of €

	Cellnex NL ^a	
	Dec. 31, 2021/ 2021	Dec. 31, 2020/ 2020
Current assets	60	n.a.
Of which: cash and cash equivalents	3	n.a.
Non-current assets	1,622	n.a.
Current liabilities	52	n.a.
Of which: financial liabilities	2	n.a.
Non-current liabilities	571	n.a.
Of which: financial liabilities	250	n.a.
Net revenue	37	n.a.
Profit (loss)	(2)	n.a.
Other comprehensive income	0	n.a.
Total comprehensive income	(2)	n.a.
Depreciation, amortization and impairment losses	(22)	n.a.
Dividends paid to Deutsche Telekom	0	n.a.

^a As financial data of Cellnex NL as of December 31, 2021 was not yet available in its entirety to Deutsche Telekom at the date of preparation, the interim financial statements of Cellnex NL as of June 30, 2021 were used as a basis for the summarized financial information and for the reconciliation statement to the carrying amount reported in Deutsche Telekom's consolidated statement of financial position.

Reconciliation to the carrying amount included in the consolidated statement of financial position

millions of €

	HT Mostar d.d.		Stratospheric Platforms Ltd. ^a	
	2021	2020	2021	2020
Net assets as of January 1	170	170	14	20
Profit (loss)	0	0	(14)	(24)
Other comprehensive income	0	0	0	0
Share-based payment	0	0	2	0
Change in interest without loss of control	0	0	0	0
Dividends paid	0	0	0	0
Capital increase	0	0	3	17
Exchange rate effects	1	0	(1)	1
Net assets as of December 31^b	171	170	4	14
Share of net assets attributable to Deutsche Telekom as of December 31^b	67	66	2	5
Goodwill – equity method	0	0	56	55
Impairment	0	0	(58)	0
Other reconciliation effects	(17)	(16)	0	0
Carrying amount as of December 31	50	50	0	60

^a As financial data of Stratospheric Platforms Ltd. as of December 31, 2021 was not yet available to Deutsche Telekom at the date of preparation, the company's annual financial statements as of December 31, 2020 were used as a basis for the summarized financial information and for the reconciliation statement to the carrying amount reported in Deutsche Telekom's consolidated statement of financial position. The resulting effects for the extrapolation of the carrying amount as of December 31, 2021 were estimated and are included under other reconciliation effects. Similarly, the comparatives as of December 31, 2020 are summarized financial information determined on the basis of the company's annual financial statements as of December 31, 2019 and the reconciliation statement.

^b The figures for net assets and the share of the net assets of Stratospheric Platforms Ltd. relate to December 31, 2020 and December 31, 2019, respectively.

millions of €

	T-Mobile USA Tower LLC		T-Mobile West Tower LLC	
	2021	2020	2021	2020
Net assets as of January 1	117	118	157	160
Profit (loss)	11	10	14	11
Other comprehensive income	0	0	0	0
Dividends paid	0	0	0	0
Exchange rate effects	10	(10)	14	(14)
Net assets as of December 31	138	117	185	157
Share of net assets attributable to Deutsche Telekom as of December 31	138	117	185	157
Adjustment of carrying amount	0	0	0	0
Other reconciliation effects	0	0	0	0
Carrying amount as of December 31	138	117	185	157

millions of €

	Cellnex NL ^a	
	2021	2020
Net assets as of January 1^b	0	n.a.
Net assets as of date of inclusion in the consolidated financial statements using the equity method ^{b, c}	1,058	n.a.
Profit (loss)	0	n.a.
Other comprehensive income	0	n.a.
Dividends paid	0	n.a.
Net assets as of December 31^c	1,058	n.a.
Share of net assets attributable to Deutsche Telekom as of December 31^c	398	n.a.
Other reconciliation effects	(1)	n.a.
Carrying amount as of December 31	397	n.a.

^a As financial data of Cellnex NL as of December 31, 2021 was not yet available in its entirety to Deutsche Telekom at the date of preparation, the interim financial statements of Cellnex NL as of June 30, 2021 were used as a basis for the summarized financial information and for the reconciliation statement to the carrying amount reported in Deutsche Telekom's consolidated statement of financial position. The resulting effects for the extrapolation of the carrying amount as of December 31, 2021 were estimated and are included under other reconciliation effects.

^b The shareholding has been included in Deutsche Telekom's consolidated financial statements using the equity method since June 1, 2021.

^c The purchase price allocation related to the acquisition had not yet been completed as of December 31, 2021. The net assets of Cellnex NL and the share of net assets attributable to Deutsche Telekom are based on preliminary carrying amounts determined on the basis of the interim financial statements of Cellnex NL as of June 30, 2021.

In the 2021 and 2020 financial years, the consolidated financial statements did not include any unrecognized losses in connection with investments accounted for using the equity method.

Summarized aggregate financial information on non-significant entities accounted for using the equity method

The figures relate to the interests attributable to Deutsche Telekom.

millions of €	Joint ventures		Associates	
	Dec. 31, 2021/ 2021	Dec. 31, 2020/ 2020	Dec. 31, 2021/ 2021	Dec. 31, 2020/ 2020
Total carrying amounts	56	42	112	117
Total share in profit (loss)	(34)	(16)	(5)	(12)
Other comprehensive income	0	0	0	0
Total comprehensive income	(34)	(16)	(5)	(12)

11 Other financial assets

millions of €	Dec. 31, 2021		Dec. 31, 2020	
	Total	Of which: current	Total	Of which: current
Originated loans and receivables	3,426	3,026	3,043	2,666
Other receivables – publicly funded projects	1,794	743	1,676	420
Derivative financial assets	2,762	189	4,038	45
Of which: derivatives with a hedging relationship	1,560	89	2,047	15
Of which: derivatives without a hedging relationship	1,202	100	1,992	30
Equity instruments – measured at fair value through profit or loss	3	0	3	0
Equity instruments – measured at fair value through other comprehensive income	437	0	425	0
Debt instruments – measured at fair value through profit or loss	233	6	203	5
Lease assets	228	88	248	87
Other	4	0	4	0
	8,888	4,051	9,640	3,224

The carrying amount of current and non-current other financial assets decreased by EUR 0.8 billion compared with December 31, 2020 to EUR 8.9 billion. The carrying amount of derivatives with a hedging relationship decreased by EUR 0.5 billion to EUR 1.6 billion, mainly due to the decrease in positive fair values from interest rate swaps in fair value hedges, which is primarily the result of a rise in the interest rate level. The carrying amount of derivatives without a hedging relationship decreased by a net effect of EUR 0.8 billion to EUR 1.2 billion. Taking into account the partial exercising of the stock options received from SoftBank in June 2020 to purchase shares in T-Mobile US, as well as measurement effects, the carrying amount of these stock options decreased by EUR 0.6 billion compared with December 31, 2020 to EUR 0.2 billion for the following reasons. Due to the negative development of the T-Mobile US share price, a remeasurement loss of EUR 0.3 billion was recorded in other financial income/expense in 2021. Furthermore, the amortization from the initial measurement of the stock options at fair value resulted in current income of EUR 0.2 billion and, in connection with the exercise of the options, in one-time income of EUR 0.4 billion in other financial income/expense. At the time of exercising the stock options, they had a fair value of EUR 0.8 billion. This amount was recognized directly in equity as part of the consideration (within the meaning of the IFRSs) paid to SoftBank, as a result of the derecognition of the exercised options. The carrying amount of other financial assets decreased as a result. In addition, the carrying amount of the derivatives without a hedging relationship decreased by EUR 0.4 billion due to negative measurement effects from embedded derivatives of T-Mobile US, including from the premature repayment of bonds. By contrast, the carrying amount was increased by positive measurement effects of EUR 0.1 billion from energy forward agreements embedded in contracts.

Subsidiaries of Deutsche Telekom deposited cash collateral of EUR 90 million as of December 31, 2021 (December 31, 2020: EUR 446 million) in connection with auctions for the planned acquisition of spectrum licenses. At the reporting date, cash and cash equivalents of EUR 76 million when translated into euros (December 31, 2020: EUR 63 million) were pledged as collateral for liabilities with right of creditors to priority repayment in the event of default. Collateral agreements as surety for potential credit risks arising from derivative transactions in connection with forward-payer swaps gave rise to receivables of EUR 423 million as of the reporting date (December 31, 2020: EUR 34 million).

For further information on allowances and the credit ratings of originated loans and receivables, please refer to Note 40 "Financial instruments and risk management."

12 Other assets

The carrying amount of current and non-current other assets increased by EUR 0.5 billion to EUR 3.1 billion. As of December 31, 2021, the carrying amount mainly included advance payments in connection with agreements on services for certain mobile communications equipment that do not fall within the scope of IFRS 16, as well as further deferred expenses totaling EUR 2.6 billion (December 31, 2020: EUR 2.2 billion). Exchange rate effects, in particular from the translation of U.S. dollars into euros, raised the carrying amount by EUR 0.1 billion.

13 Financial liabilities and lease liabilities

The following table shows the composition and maturity structure of **financial liabilities** as of December 31, 2021:

	Dec. 31, 2021				Dec. 31, 2020			
	Total	Due within 1 year	Due > 1 year ≤ 5 years	Due > 5 years	Total	Due within 1 year	Due > 1 year ≤ 5 years	Due > 5 years
Bonds and other securitized liabilities	93,857	5,941	24,673	63,242	87,702	5,282	25,681	56,739
Liabilities to banks	4,003	1,540	1,646	817	5,257	2,152	1,666	1,439
Of which: promissory notes	655	28	312	315	737	58	287	392
Of which: loans from the European Investment Bank	2,141	524	1,192	425	3,240	1,073	1,276	891
Of which: other loans	1,207	988	142	77	1,280	1,021	103	156
	97,860	7,481	26,319	64,060	92,959	7,435	27,347	58,178
Liabilities to non-banks from promissory note bonds	483	53	150	280	490	0	53	437
Liabilities with the right of creditors to priority repayment in the event of default	3,248	463	2,288	496	3,886	859	2,257	769
Other interest-bearing liabilities	7,343	2,700	2,165	2,478	7,206	2,711	1,958	2,537
Other non-interest-bearing liabilities	1,829	1,499	145	185	1,703	1,563	134	6
Derivative financial liabilities	703	47	625	31	864	85	252	527
	13,607	4,762	5,374	3,471	14,149	5,217	4,655	4,277
Financial liabilities	111,466	12,243	31,693	67,531	107,108	12,652	32,002	62,455
Lease liabilities	33,133	5,040	13,517	14,577	32,715	5,108	12,610	14,997

The carrying amount of current and non-current financial liabilities increased by EUR 4.4 billion compared with year-end 2020 to EUR 111.5 billion, primarily due to the factors described below. Exchange rate effects, in particular from the translation of U.S. dollars into euros, raised the carrying amount by EUR 5.0 billion.

The carrying amount of bonds and other securitized liabilities increased by EUR 6.2 billion. The main factors in this increase were senior notes issued in the reporting period by T-Mobile US with a total volume of USD 14.8 billion (EUR 12.5 billion) with terms ending between 2026 and 2060 and bearing interest of between 2.25 and 3.6 %. The carrying amount was also increased by AUD bonds with a volume of AUD 0.1 billion (EUR 0.1 billion) issued by Deutsche Telekom AG and euro bonds with a volume of EUR 0.1 billion. The early repayment by T-Mobile US in the reporting period of bonds with a volume of USD 5.8 billion (EUR 4.8 billion) with terms originally ending between 2023 and 2026 and bearing interest of between 4.5 and 6.5 %, and scheduled repayments by T-Mobile US of bonds with a volume of USD 3.3 billion (EUR 2.8 billion) and repayments in the Group of euro bonds with a volume of EUR 2.3 billion and U.S. dollar bonds with a volume of USD 0.6 billion (EUR 0.5 billion) had a contrasting effect. The carrying amount of bonds and other securitized liabilities increased by EUR 4.4 billion due to exchange rate effects, especially from the translation of U.S. dollars into euros.

The carrying amount of liabilities to banks decreased by EUR 1.3 billion compared with December 31, 2020 to EUR 4.0 billion, mainly due to scheduled repayments of EUR 1.2 billion made in the reporting period and a decline of EUR 0.2 billion in connection with factoring in the United States operating segment. Exchange rate effects, mainly from the translation of U.S. dollars into euros, raised the carrying amount by EUR 0.1 billion.

The liabilities with the right of creditors to priority repayment in the event of default of EUR 3.2 billion (December 31, 2020: EUR 3.9 billion) relate primarily to bonds issued by Sprint. Collateral was provided for these bonds, hence they constitute a separate class of financial instruments. Repayments in the reporting period in the amount of EUR 0.9 billion when translated into euros reduced the carrying amount. Exchange rate effects, in particular from the translation of U.S. dollars into euros, raised the carrying amount by EUR 0.3 billion. At the reporting date, cash and cash equivalents with a carrying amount of EUR 76 million (December 31, 2020: EUR 63 million) when translated into euros were pledged as collateral for these bonds.

The carrying amount of other interest-bearing liabilities increased by EUR 0.1 billion compared with December 31, 2020 to EUR 7.3 billion. The carrying amount of other interest-bearing liabilities increased by a total of EUR 0.1 billion in connection with collateral received for derivative financial instruments.

For further information on cash collateral, please refer to Note 40 "[Financial instruments and risk management](#)."

The carrying amount of derivative financial liabilities decreased by EUR 0.2 billion to EUR 0.7 billion, mainly in connection with positive measurement effects in the reporting period.

For further information on derivative financial liabilities, please refer to Note 40 "[Financial instruments and risk management](#)."

Deutsche Telekom has established ongoing liquidity management. To ensure the Group's and Deutsche Telekom AG's solvency and financial flexibility at all times, Deutsche Telekom maintains a liquidity reserve in the form of credit lines and cash. This liquidity reserve is to cover the capital market maturities of the next 24 months at any time. Since the successful business combination between T-Mobile US and Sprint, T-Mobile US has pursued its own separate financing and liquidity strategy.

At December 31, 2021, Deutsche Telekom (excluding T-Mobile US) had standardized bilateral credit agreements with 21 banks for a total of EUR 12.6 billion. As of December 31, 2021, EUR 0.1 billion of these credit lines had been utilized. Pursuant to the credit agreements, the terms and conditions depend on Deutsche Telekom's rating. The bilateral credit agreements have an original maturity of 36 months and can, after each period of 12 months, be extended by a further 12 months to renew the maturity of 36 months. From today's perspective, access to the international debt capital markets is not jeopardized.

Furthermore, bilateral credit lines with an aggregate total volume of USD 5.5 billion (EUR 4.9 billion) plus a cash balance of USD 6.6 billion (EUR 5.9 billion) were available to T-Mobile US as of December 31, 2021. None of these credit lines had been utilized as of December 31, 2021.

The carrying amount of current and non-current **lease liabilities** increased by EUR 0.4 billion to EUR 33.1 billion compared with December 31, 2020. Exchange rate effects, in particular from the translation of U.S. dollars into euros, raised the carrying amount by EUR 2.2 billion. Effects of changes in the composition of the Group, mainly from the first-time inclusion of Shentel, acquired by T-Mobile US, also increased the carrying amount by EUR 0.3 billion. This was offset in particular by an advance payment for the lease of cell sites of EUR 0.9 billion made by T-Mobile US to a U.S. cell tower company in September 2021 in connection with a change to the existing lease agreed in the reporting period. The carrying amount was further reduced by EUR 0.6 billion, in part in connection with the decommissioning of former Sprint cell sites and the closure of some former Sprint shops in the United States operating segment. The reclassification of T-Mobile Netherlands's liabilities to liabilities directly associated with non-current assets and disposal groups held for sale, decreases of EUR 0.2 billion in the Group Headquarters & Group Services segment and of EUR 0.1 billion in the Europe operating segment also reduced the carrying amount.

For further information on lessee relationships, please refer to Note 8 "[Right of use assets – lessee relationships](#)."

For further information on the agreed sale of T-Mobile Netherlands, please refer to the section "[Changes in the composition of the Group and other transactions](#)" under "Summary of accounting policies."

In the reporting year and in the 2020 financial year, there were no significant expenses for variable lease payments that were not included in the measurement of lease liabilities.

As of December 31, 2021, future payment obligations for leases that have not yet begun and which are not taken into account in the measurement of lease liabilities amounted to EUR 0.1 billion (December 31, 2020: EUR 0.2 billion).

The following tables show the contractually agreed (undiscounted) interest payments and repayments of the non-derivative financial liabilities, the lease liabilities, and the derivatives with positive and negative fair values:

millions of €

	Carrying amount Dec. 31, 2021	Cash flows in 2022			Cash flows in 2023		
		Fixed interest rate	Variable interest rate	Repayment	Fixed interest rate	Variable interest rate	Repayment
		Non-derivative financial liabilities (excluding lease liabilities)					
Bonds, other securitized liabilities, liabilities to banks and liabilities to non-banks from promissory notes and similar liabilities	(98,343)	(2,747)	0	(6,529)	(3,411)	0	(7,108)
Liabilities with the right of creditors to priority repayment in the event of default	(3,248)	(63)	0	(463)	(122)	0	(707)
Other interest-bearing liabilities	(7,343)	(23)	(2)	(2,700)	(23)	(1)	(796)
Other non-interest-bearing liabilities	(1,829)	0	0	(1,499)	0	0	(120)
Lease liabilities	(33,133)	(563)	0	(5,044)	(902)	0	(4,432)
Derivative financial liabilities and assets							
Derivative financial liabilities:							
Currency derivatives without a hedging relationship	(15)			(13)			0
Currency derivatives in connection with cash flow hedges	(1)			(3)			0
Embedded derivatives without a hedging relationship	(7)	0	0	(8)			(1)
Other derivatives without a hedging relationship	(455)	0	(22)	0	0	(22)	0
Interest rate derivatives without a hedging relationship	(109)	(27)	6	(6)	(3)	(7)	(7)
Interest rate derivatives in connection with fair value hedges	(11)	22	(5)	0	22	(5)	(4)
Interest rate derivatives in connection with cash flow hedges	(105)	(122)	61	0	(122)	61	0
Derivative financial assets^a:							
Currency derivatives without a hedging relationship	44			42			
Currency derivatives in connection with cash flow hedges	17			14			
Embedded derivatives without a hedging relationship	191	0	0	26	0	0	20
Other derivatives without a hedging relationship	3			2			1
Interest rate derivatives without a hedging relationship	235	16	2	49	7	9	0
Interest rate derivatives in connection with fair value hedges	1,195	559	(188)	0	554	(190)	4
Interest rate derivatives in connection with cash flow hedges	348	61	(11)	63	53	(6)	0

millions of €

	Cash flows in 2024–2026			Cash flows in 2027–2031			Cash flows in 2032 and thereafter		
	Fixed interest rate	Variable interest rate	Repayment	Fixed interest rate	Variable interest rate	Repayment	Fixed interest rate	Variable interest rate	Repayment
Non-derivative financial liabilities (excluding lease liabilities)									
Bonds, other securitized liabilities, liabilities to banks and liabilities to non-banks from promissory notes and similar liabilities	(8,291)	0	(18,714)	(8,683)	0	(39,301)	(10,612)	0	(23,238)
Liabilities with the right of creditors to priority repayment in the event of default	(165)	0	(1,553)	(16)	0	(406)	0	0	0
Other interest-bearing liabilities	(51)	0	(1,370)	(54)	0	(2,444)	(30)	0	(34)
Other non-interest-bearing liabilities	0	0	(26)	0	0	(178)	0	0	(7)
Lease liabilities	(2,091)	0	(9,198)	(2,683)	0	(14,052)	(76)	0	(427)
Derivative financial liabilities and assets									
Derivative financial liabilities:									
Currency derivatives without a hedging relationship	0	0	0	0	0	0	0	0	0
Currency derivatives in connection with cash flow hedges	0	0	0	0	0	0	0	0	0
Embedded derivatives without a hedging relationship	0	0	(3)	0	0	(20)	0	0	(8)
Other derivatives without a hedging relationship	0	(13)	(409)	0	0	0	0	0	0
Interest rate derivatives without a hedging relationship	2	15	(35)	0	12	(9)	0	5	69
Interest rate derivatives in connection with fair value hedges	62	(15)	0	75	(25)	(16)	213	(84)	4
Interest rate derivatives in connection with cash flow hedges	(246)	114	0	0	0	0	0	0	0
Derivative financial assets^a:									
Currency derivatives without a hedging relationship									
Currency derivatives in connection with cash flow hedges									
Embedded derivatives without a hedging relationship	0	0	38	0	0	68	0	0	62
Other derivatives without a hedging relationship			1						
Interest rate derivatives without a hedging relationship	16	25	63	42	22	11	8	95	62
Interest rate derivatives in connection with fair value hedges	1,500	(567)	18	1,562	(666)	(9)	1,624	(709)	30
Interest rate derivatives in connection with cash flow hedges	139	(3)	0	110	0	244	(10)	0	65

^a This does not include payments that Deutsche Telekom would have to make or would receive in the event of exercising options to buy or sell company shares. It is unclear whether, when, and to what extent such options will be exercised. This mainly relates to the stock options to buy shares in T-Mobile US received from SoftBank. If Deutsche Telekom were to exercise the maximum number of these stock options, it would have to make a payment of EUR 5,509 million when translated into euros, based on the share price at the reporting date. For further information on these stock options, please refer to Note 40 "Financial instruments and risk management" in the disclosures on financial liabilities assigned to Level 3. Deutsche Telekom also holds other immaterial options to buy or sell company shares.

millions of €	Carrying amount Dec. 31, 2020	Cash flows in				2031 and thereafter
		2021	2022	2023–2025	2026–2030	
Non-derivative financial liabilities (excluding lease liabilities)						
Bonds, other securitized liabilities, liabilities to banks and liabilities to non-banks from promissory notes and similar liabilities	(93,449)	(8,954)	(9,871)	(27,948)	(42,226)	(30,107)
Liabilities with the right of creditors to priority repayment in the event of default	(3,886)	(1,019)	(563)	(2,022)	(642)	0
Other interest-bearing liabilities	(7,206)	(2,734)	(800)	(1,232)	(1,861)	(748)
Other non-interest-bearing liabilities	(1,703)	(1,563)	(106)	(28)	(5)	(1)
Lease liabilities	(32,715)	(6,218)	(5,285)	(10,466)	(17,153)	(648)
Derivative financial liabilities and assets						
Derivative financial liabilities:						
Currency derivatives without a hedging relationship	(41)	(32)	(6)	0	0	0
Currency derivatives in connection with cash flow hedges	(28)	(26)	0	0	0	0
Embedded derivatives without a hedging relationship	(129)	(18)	(7)	(28)	(65)	(37)
Other derivatives without a hedging relationship	(13)	(2)	(10)	(2)	0	0
Interest rate derivatives without a hedging relationship	(295)	(18)	(17)	(40)	(52)	33
Interest rate derivatives in connection with fair value hedges	(52)	37	37	101	13	(1)
Interest rate derivatives in connection with cash flow hedges	(307)	(44)	(41)	(94)	146	24
Derivative financial assets^a:						
Currency derivatives without a hedging relationship	15	16	0	0	0	0
Currency derivatives in connection with cash flow hedges	8	4	0	0	0	0
Embedded derivatives without a hedging relationship	77	0	(1)	19	40	25
Other derivatives without a hedging relationship	0	0	0	0	0	0
Interest rate derivatives without a hedging relationship	191	9	118	31	36	76
Interest rate derivatives in connection with fair value hedges	2,025	317	309	828	813	1,043
Interest rate derivatives in connection with cash flow hedges	12	6	12	5	0	0

^a This does not include payments that Deutsche Telekom would have to make or would receive in the event of exercising options to buy or sell company shares. It is unclear whether, when, and to what extent such options will be exercised. This mainly relates to the stock options to buy shares in T-Mobile US received from SoftBank. If Deutsche Telekom were to exercise the maximum number of these stock options, it would have to make a payment of EUR 5,509 million when translated into euros, based on the share price at the reporting date. For further information on these stock options, please refer to Note 40 "Financial instruments and risk management" in the disclosures on financial liabilities assigned to Level 3. Deutsche Telekom also holds other immaterial options to buy or sell company shares.

All instruments held at December 31, 2021 and for which payments were already contractually agreed were included. Planning data for future, new liabilities were not included. Amounts in foreign currency were each translated at the closing rate at the reporting date. The variable interest payments arising from the financial instruments were calculated using the last interest rates fixed before December 31, 2021. Financial liabilities that can be repaid at any time are always assigned to the earliest possible time period. In accordance with § 2 (4) of the German Act on the Transformation of the Deutsche Bundespost Enterprises into the Legal Structure of Stock Corporation (Stock Corporation Transformation Act – Postumwandlungsgesetz), the Federal Republic is guarantor of all Deutsche Telekom AG's liabilities that were already outstanding as at January 1, 1995. At December 31, 2021, this figure was a nominal EUR 0.1 billion (December 31, 2020: EUR 0.1 billion).

14 Trade and other payables

millions of €	Dec. 31, 2021	Dec. 31, 2020
Trade payables	10,396	9,691
Other liabilities	56	68
	10,452	9,760

The carrying amount of trade and other payables increased year-on-year by EUR 0.7 billion to EUR 10.5 billion, mainly due to higher liabilities to suppliers of mobile terminal equipment in the United States operating segment and exchange rate effects, in particular from the translation of U.S. dollars into euros. By contrast, liabilities in the Group Development operating segment decreased as a result of the reclassification of T-Mobile Netherlands' liabilities to liabilities directly associated with non-current assets and disposal groups held for sale.

For further information on the agreed sale of T-Mobile Netherlands, please refer to the section “Changes in the composition of the Group and other transactions” under “Summary of accounting policies.”

Of the total of trade and other payables, EUR 10,396 million (December 31, 2020: EUR 9,691 million) is due within one year.

15 Provisions for pensions and other employee benefits

Defined benefit plans

The Group’s pension obligations are based on direct and indirect pension commitments mainly in Germany, the United States, and Switzerland. Deutsche Telekom’s provisions for pensions are comprised as follows:

millions of €	Dec. 31, 2021	Dec. 31, 2020
Defined benefit liability	6,134	7,684
Defined benefit asset	(54)	(19)
Net defined benefit liability (asset)	6,080	7,665
Of which: provisions for direct commitments	5,622	7,042
Of which: provisions for indirect commitments	458	623

Defined benefit liabilities are disclosed under non-current liabilities in the consolidated statement of financial position. The defined benefit asset is recognized under other non-current assets in the consolidated statement of financial position.

The decrease in defined benefit liabilities compared with the prior year was mainly due to the positive trend in the prices of plan assets, as well as discount rate adjustments. Overall, this resulted in an actuarial gain of EUR 1.4 billion from the remeasurement of defined benefit plans.

Calculation of net defined benefit liabilities/assets

millions of €	Dec. 31, 2021	Dec. 31, 2020
Present value of the obligations fully or partially funded by plan assets	11,825	12,140
Plan assets at fair value	(7,937)	(6,698)
Defined benefit obligations in excess of plan assets	3,888	5,441
Present value of the unfunded obligations	2,150	2,222
Defined benefit liability (asset) according to IAS 19.63	6,038	7,663
Effect of asset ceiling (according to IAS 19.64)	42	2
Net defined benefit liability (asset)	6,080	7,665

millions of €	2021	2020
Net defined benefit liability (asset) as of January 1	7,665	5,810
Service cost	148	41
Net interest expense (income) on the net defined benefit liability (asset)	89	86
Remeasurement effects	(1,423)	1,358
Pension benefits paid directly by the employer	(378)	(287)
Employer contributions to plan assets	(80)	(61)
Changes attributable to business combinations/transfers of operation/acquisitions and disposals	10	816
Reclassifications to liabilities directly associated with non-current assets and disposal groups held for sale	0	(10)
Administration costs actually incurred (paid from plan assets)	0	0
Exchange rate fluctuations for plans in foreign currency	48	(89)
Net defined benefit liability (asset) as of December 31	6,080	7,665

Key assumptions for the measurement of the defined benefit obligations are the discount rate, the salary increase rate, the pension increase rate, and life expectancy. The following table shows the assumptions on which the measurement of defined benefit obligations as of December 31 of the respective year are based. The assumptions made as of December 31 of the respective prior year are used to measure the expected pension expense (defined benefit cost) of a given financial year. The discount rate as of April 1, 2020 was used for the first-time inclusion of the obligations and to measure the expected pension expense in the United States in 2020.

Assumptions for the measurement of defined benefit obligations

%		Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2019
Discount rate	Germany	1.18	0.85	1.14
	United States	3.05	2.75	n.a.
	Switzerland	0.33	0.07	0.29
Salary increase rate	Germany	2.50	2.50	2.50
	United States ^a	4.25	4.25	n.a.
	Switzerland	1.00	1.00	1.00
Pension increase rate	Germany (general)	1.70	1.50	1.50
	Germany (according to articles of association)	1.00	1.00	1.00
	United States	n.a.	n.a.	n.a.
	Switzerland	0.10	0.10	0.10

^a The salary increase rate in the United States only has a marginal impact on the amount of the pension obligations, since almost all commitments are frozen.

years		Dec. 31, 2021	Dec. 31, 2020
Duration	Germany	12.3	12.9
	United States	13.6	14.4
	Switzerland	14.9	15.7

The following biometric assumptions were essential for the measurement of pension obligations:

Germany: Heubeck 2018G, Switzerland: BVG 2020 Generational, United States: Pri-2012 tables. In Switzerland, the generally recognized demographic assumptions used when measuring pension obligations were revised as part of a regular review in 2020, and applied for the first time in 2021. This resulted in actuarial gains of EUR 6 million or 2.6 % of the Swiss obligations.

The aforementioned discount rates were used as of December 31, 2021 when calculating the present value of defined benefit obligations, taking into account future salary increases. The rates were determined in line with the average weighted duration of the respective obligation.

The discount rate is determined based on the yields of high-quality corporate bonds with AA rating, mapped in a yield curve showing the corresponding spot rates. The underlying method is routinely reviewed and refined as required (e.g., further development of the bond markets, automation of the availability of corresponding data in terms of quantity and quality).

Development of defined benefit obligations

millions of €	2021	2020
Defined benefit obligations as of January 1	14,362	12,290
Current service cost	235	256
Interest cost	179	183
Remeasurement effects	(421)	663
Of which: experience-based adjustments	15	57
Of which: adjusted financial assumptions ^a	(451)	617
Of which: adjusted demographic assumptions	15	(11)
Total benefits actually paid	(483)	(503)
Contributions by plan participants	4	4
Changes attributable to business combinations/transfers of operation/acquisitions and disposals	10	1,925
Past service cost (due to plan amendments/curtailments) ^b	(87)	(223)
Settlements	0	8
Reclassifications to liabilities directly associated with non-current assets and disposal groups held for sale	0	(10)
Taxes to be paid as part of pensions	0	0
Exchange rate fluctuations for plans in foreign currency	176	(232)
Defined benefit obligations as of December 31	13,975	14,362
Of which: active plan participants	5,596	5,803
Of which: plan participants with vested pension rights who left the Group	2,982	3,099
Of which: benefit recipients	5,397	5,459

^a In addition to the majority discount-rate adjustments, the effect from adjusted financial assumptions also includes adjusted assumptions regarding the payment of VAP pension entitlements, resulting in actuarial losses of EUR 93 million.

^b The past service cost due to plan amendments in 2020 and 2021 relates primarily to a restructuring of risk benefits in Germany (please refer to the following section "Global Pension Policy and description of the plans").

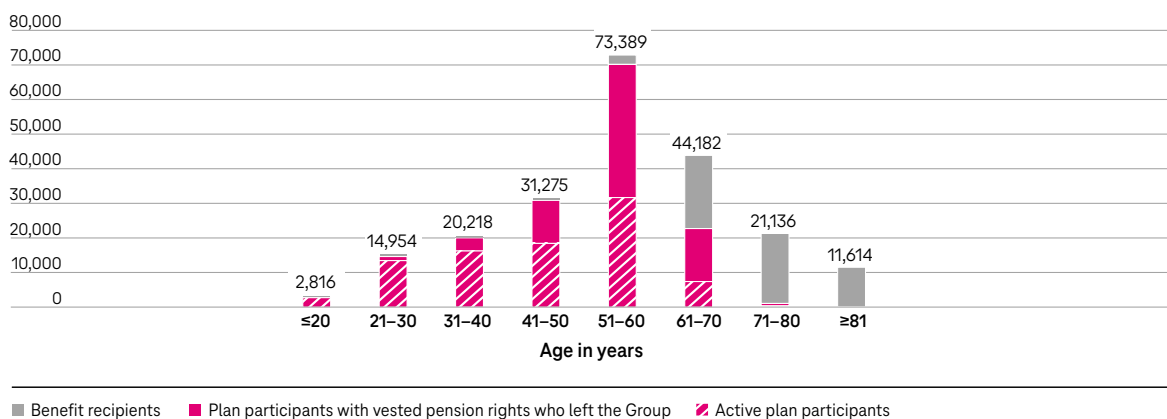
Distribution of obligations relating to Deutsche Telekom's most significant plans

millions of €

	Dec. 31, 2021				Dec. 31, 2020			
	Germany	United States	Switzerland	Other plans	Germany	United States	Switzerland	Other plans
Defined benefit obligations	11,316	1,905	230	525	11,763	1,846	235	518
Plan assets at fair value	(6,007)	(1,346)	(271)	(313)	(5,013)	(1,171)	(237)	(278)
Effect of asset ceiling	0	0	42	0	0	0	2	0
Net defined benefit liability (asset)	5,309	559	0	212	6,750	675	0	240

The following comments on the age structure and sensitivity analysis, as well as descriptions of plans and the risks associated with them, relate to the relevant pension obligations (Germany, United States, and Switzerland).

Age structure of plan participants in the most significant pension plans



Sensitivity analysis for the defined benefit obligations

The following sensitivity analysis describes the effects of possible adjustments in the material actuarial assumptions for measurement on the defined benefit obligations determined as of December 31, 2021. A change in the measurement assumptions to the extent described below, with otherwise unchanged assumptions, would have impacted the defined benefit obligations as of December 31, 2021 as follows:

millions of €

	Increase (decrease) of the defined benefit obligations as of Dec. 31, 2021			Increase (decrease) of the defined benefit obligations as of Dec. 31, 2020		
	Germany	United States	Switzerland	Germany	United States	Switzerland
Increase of discount rate by 100 basis points	(1,224)	(234)	(25)	(1,291)	(232)	(26)
Decrease of discount rate by 100 basis points	1,499	291	31	1,575	287	34
Increase of salary increase rate by 50 basis points	1	0	1	3	0	1
Decrease of salary increase rate by 50 basis points	0	0	(1)	(2)	0	(1)
Increase of pension increase rate by 25 basis points	5	0	5	6	0	6
Decrease of pension increase rate by 25 basis points	(5)	0	(2)	(6)	0	(2)
Life expectancy increase by 1 year	288	56	6	299	58	6
Life expectancy decrease by 1 year	(288)	(57)	(6)	(298)	(60)	(6)

The sensitivity analysis was carried out separately for the discount rate, the salary increase rate, and the pension increase rate. For this purpose, further actuarial evaluations were made for both the increase and for the decrease of the assumptions. It can be assumed that the life expectancy of the plan members will not change significantly within a year. Nevertheless, the effect of a change in life expectancy on the obligations was additionally determined from a risk perspective. Evaluations were carried out based on the assumption that the life expectancy of the plan members aged 65 would increase or decrease by one year. The life expectancy of the remaining plan members was adjusted accordingly. Variations in the assumed retirement age or turnover rates would only have an immaterial effect, especially in Germany.

Global Pension Policy and description of the plans

Deutsche Telekom manages its pension commitments based on the Group-wide Global Pension Policy. It ensures on a worldwide basis that Group minimum standards regarding the granting and management of company pension benefits are complied with, plans are harmonized, and financial and other risks to the core business are avoided or reduced. In addition, the policy provides guidelines for the implementation and management of pension commitments and defines requirements for the launch, adjustment, and closure of corresponding plans. The regulations and provisions laid down in this Group policy take into account the national differences in state pension and other commitments under labor, tax, and social law and the common business practices in the area of pension commitments.

Defined benefit plans based on final salaries in the Group have largely been replaced by plans with contribution-based promises to minimize the risks involved. In addition, a corporate CTA (Deutsche Telekom Trust e.V.) is used in Germany for additional funding of pension obligations. A CTA is a legally structured trust agreement to cover unfunded pension commitments with plan assets, and to provide greater protection against insolvency for these obligations.

In **Germany** there are commitments for pension and disability benefits for a majority of employees as well as pension benefits for their surviving dependents. As part of a reorganization of the company pension plan, a capital account plan was introduced across Germany in 1997 for active employees. Furthermore, in subsequent years, commitments acquired through company acquisitions were also transferred to the capital account plan scheme. The capital account plan is an employer-financed, contribution-based benefit promise. The salary-linked contributions granted annually earn interest in advance for each year of provision up to age 60, calculated using age-based factors, converting the contribution into a guaranteed insured amount. The advance interest rate currently stands at 3.50 % p. a. (target interest rate for the capital account plan).

The period for providing contributions is initially limited to ten future contribution years. The contribution period will be extended automatically every year by a further year, unless terminated. The insured amounts accumulated over the period of active service are paid out if an insured event arises, primarily in the form of a lump sum. Hence there is only a limited longevity risk for these commitments. Based on the payment guidelines and the structure of the capital account plan, the employer can plan for this, and there is only a small risk inherent in the plan with regard to the volatility of remuneration dynamics.

In October 2020, Deutsche Telekom and the ver.di trade union had agreed to restructure the collectively agreed risk benefits (death in the active phase and/or disability) in the company pension scheme for employees covered by collective agreements in Germany. Under the previous structure, the pension credit accrued through the capital account plan was paid out in the case of a risk event. The revised rules abolish this in favor of paying out a sum equivalent to an annual target salary of the employee. This provides a better outcome than the previous structure in particular for employees with a shorter length of service with the company. Grandfather clauses have been included for employees who have worked for the company for longer periods and part-time employees. These changes took effect in October 2021. As a result of the change from an annual (pro rata) contribution to payment of a lump sum, the employer will in future grant the risk benefit irrespective of the employee's length of service with the company. Future risk benefit payments will thus directly be recognized as expenses in the payout year. Provisions recognized according to the previous rules under provisions for pensions and other employee benefits for entitlements after the restructuring takes effect were measured under the new rules using the discount rate at the transition date and reversed through profit or loss in the fourth quarter of 2020. This discount rate was also used to measure the pension expense from the remaining provisions for pensions and other employee benefits for the remainder of the financial year.

In the first quarter of 2021, the risk benefits (death in the active phase and/or disability) for employees not covered by collective agreements in Germany were restructured effective April 1, 2021, as had already been done for employees covered by collective agreements in the fourth quarter of 2020. Provisions recognized according to the previous rules were measured under the new rules using the discount rate at the transition date and reversed through profit or loss in the first quarter of 2021. This discount rate was also used to measure the pension expense from the remaining provisions for pensions and other employee benefits for the remainder of the financial year.

In addition, in Germany there are various closed legacy commitments, which generally provide for old-age and disability benefits as well as benefits for surviving dependents in the form of life-long pensions. The commitments predominantly comprise the overall pension of the supplementary retirement pensions institution (Versorgungsanstalt der Deutschen Bundespost – VAP) that takes into account the statutory pension. Most of the plan members of these commitments are former employees with vested rights and retirees for whom the amount of benefits has already been determined. So the VAP overall pension scheme continues to apply to former employees who were already retired or who had left with vested claims in 1997.

To the extent that defined benefit plans in Germany grant annuities, the future adjustment for these pensions, except for insignificant exceptions, is bindingly defined in the existing benefit regulations. A change in the assumptions for the general pension trend in Germany therefore only has an immaterial impact on the defined benefit obligations.

As a change in life expectancy mainly impacts on the obligations from legacy pension commitments and, since 1997, commitments have been granted in the form of capital, the significance of the risk resulting from the change in life expectancy is expected to decline for the Group over subsequent years.

To cover pension obligations over the long term, Deutsche Telekom has transferred funds to a corporate CTA and a corporate pension fund.

The main pension plans in the **United States** comprise medical plans, life insurance (for pensioners and active employees) and pension commitments. The commitments have been almost entirely frozen and replaced by contribution plans (401(k) plans) within the meaning of IAS 19 for future vested rights.

The pension commitments in the United States mainly relate to two defined benefit plans: the Sprint Retirement Pension Plan (SRPP) and the Supplemental Executive Retirement Plan (SERP). The benefit amount under the SRPP is calculated primarily on the basis of 1.5 % of the beneficiary's total salary up to December 31, 2005. Furthermore, the additional SERP was set up for contributions above the tax exemption limits for the relevant eligible persons. Both plans have been frozen since December 31, 2005, such that plan participants have not been able to earn any more vested rights since that date.

The SRPP is financed through a pension fund within the framework of U.S. regulations. The level of financing of the SRPP is regularly reviewed, with the company paying additional contributions into the pension fund on top of the minimum contributions if necessary, depending on the financing status.

Under the medical plans, the Company grants allowances for medical care after retirement to top up statutory benefits. In addition to the existing pensioners, there is a group of active employees who are near retirement, who can also access benefits from these plans.

Under the life insurance policies, the Company pays a benefit in the event of the death of a pensioner (basic coverage for pensioners prior to 2004) of 50 % of the final allowable income drawn (taking into account a cap for the maximum amount payable) as well as other coverage for a small group of employees who are still active.

In addition, the Company grants defined benefit plans for individuals abroad. The majority of these benefits comprise benefits prescribed by law in the respective countries or benefits under the FAP (Financial Accumulation Plan – a capital account plan). Almost all of these individual commitments have likewise been frozen.

Under the company pension system in **Switzerland**, a defined benefit plan is in place that is financed by employer and employee contributions (within the meaning of IAS 19). This plan is granted by the legally independent T-Systems pension fund. As is often the case in Switzerland, the companies grant higher benefits than legally required. The Swiss Federal Law on Occupational Retirement, Surviving Dependents' and Disability Pension (Bundesgesetz über die berufliche Alters-, Hinterlassenen- und Invalidenvorsorge – BVG) sets out minimum requirements for the pay to be insured, the age-based contributions, and a minimum annuity factor for the obligatory portion of the accrued retirement assets to be annuitized. In addition, the Swiss Federal Council defines a minimum interest rate for the obligatory retirement assets (2022: 1.00 %, 2021: 1.00 %).

The foundation board (Stiftungsrat) presides over the Swiss pension fund. It ensures the day-to-day running of the pension fund and decides on fundamental aspects, such as the amount and the structure of the pension benefits and the asset investment strategy. The foundation board is equally composed of employer and employees' representatives.

Due to the minimum yield for the obligatory retirement assets, a risk exists for the plans in Switzerland that additional resources would have to be allocated to the pension fund if it were to be underfinanced. The pension fund offers the plan members the option to choose a life-long pension instead of a one-time payment. This option gives rise to longevity and investment risks, since at the time of retirement, assumptions must be made regarding life expectancy and return on assets. As of January 1, 2018, T-Systems Schweiz decided to apply the risk-sharing method when measuring its pension obligations. The measurement of obligations was changed such that employee participation in funding a possible deficit can be taken into account when measuring the employer's obligation. The general option for employee participation in funding a deficit is covered by Art. 28 of the pension regulations.

Development of plan assets at fair value

millions of €	2021	2020
Plan assets at fair value as of January 1	6,698	6,489
Changes attributable to business combinations/transfers of operation/acquisitions and disposals	0	1,108
Interest income on plan assets (calculated using the discount rate)	90	98
Amount by which the actual return exceeds (falls short of) the interest income on plan assets (remeasurement)	1,040	(702)
Contributions by employer	80	61
Contributions by plan participants	4	4
Benefits actually paid from plan assets	(105)	(217)
Settlements	0	0
Administration costs	0	0
Tax payments	0	0
Exchange rate fluctuations for plans in foreign currency	130	(143)
Plan assets at fair value as of December 31	7,937	6,698

Breakdown of plan assets at fair value by investment category

millions of €	Dec. 31, 2021	Of which: price in an active market	Of which: price without an active market	Dec. 31, 2020	Of which: price in an active market	Of which: price without an active market
Equity securities	5,346	5,346	0	4,264	4,264	0
Of which: shares in BT	2,414	2,414	0	1,762	1,762	0
Debt securities	2,030	2,030	0	1,853	1,853	0
Real estate	85	13	72	102	38	64
Derivatives	2	2	0	0	0	0
Investment funds	40	40	0	14	14	0
Asset-backed securities	0	0	0	0	0	0
Structured debt instruments	1	1	0	0	0	0
Cash and cash equivalents	64	64	0	43	43	0
Other	370	328	43	422	378	45
Plan assets at fair value	7,937	7,823	115	6,698	6,590	109

The investment policy and risk management is set in line with the risk and development characteristics of the pension obligations. On the basis of a systematic, integrated asset/liability management analysis, potential results from different investment portfolios, which can cover a large number of asset classes, are compared with the stochastically simulated development of the pension obligations, thereby explicitly considering the relative development of plan assets against the pension obligations. The investment strategy is mainly characterized by the objective of satisfying future obligations from granted pension commitments on time by systematically setting up and professionally managing a suitable portfolio for the plan assets. It essentially aims to establish a widely diversified investment portfolio that generates a risk profile appropriate to the overall objective, by means of corresponding risk factors and diversification. The management of investments is subject to continuous monitoring to ensure active risk management. Cost-efficient investment management is effected by means of professional portfolio management involving external service providers.

At the reporting date, the plan assets at fair value included shares amounting to EUR 5 million (December 31, 2020: EUR 5 million) and bonds amounting to EUR 10 million (December 31, 2020: EUR 8 million) issued by Deutsche Telekom AG and its subsidiaries.

Development of the effect of the asset ceiling

millions of €	2021	2020
Effect of asset ceiling as of January 1	2	9
Interest expense on asset ceiling (recognized in the income statement)	0	0
Changes in asset ceiling ((gains) losses recognized in equity)	38	(7)
Currency gain (loss)	2	0
Effect of asset ceiling as of December 31	42	2

Breakdown of defined benefit costs in the income statement

millions of €				
	Disclosure in income statement	2021	2020	2019
Current service cost	Personnel costs	235	256	250
Past service cost (due to plan amendments/curtailments)	Personnel costs	(87)	(223)	(8)
Settlements	Personnel costs	0	8	3
Service cost		148	41	245
Interest cost	Other financial income (expense)	179	183	186
Interest income on plan assets (calculated using the discount rate)	Other financial income (expense)	(90)	(98)	(99)
Interest expense on the effect of the asset ceiling	Other financial income (expense)	0	0	0
Net interest expense (income) on net defined benefit liability (asset)		89	86	87
Defined benefit cost		237	126	332
Administration costs actually incurred (paid from plan assets)	Personnel costs	0	0	0
Total amounts recognized in profit or loss		237	126	332

Amounts recognized in the consolidated statement of comprehensive income

millions of €				
	2021	2020	2019	
Remeasurement ((gain) loss recognized in other comprehensive income in the financial year)	(1,423)	1,358	603	
Of which: remeasurement due to a change in defined benefit obligations	(421)	663	656	
Of which: remeasurement due to a change in plan assets	(1,040)	702	(62)	
Of which: remeasurement due to changes in the effect of asset ceiling (according to IAS 19.64)	38	(7)	9	

Total benefit payments expected

millions of €					
	2022	2023	2024	2025	2026
Benefits paid from pension provisions	301	531	581	652	596
Benefits paid from plan assets	182	106	109	110	113
Total benefits expected	483	637	690	762	709

Since 2018, benefit payments for direct pension commitments have also been funded using CTA assets. Furthermore, Deutsche Telekom reserves the right to claim reimbursement from CTA assets in the following year, as required, for payments made directly by the employer. The last time this happened was in 2018.

For 2022, Deutsche Telekom does not plan any allocations to plan assets at fair value in Germany. Deutsche Telekom is planning an international allocation of at least EUR 43 million in 2022.

Defined contribution plans

The employer's contribution paid to the statutory pension scheme (Deutsche Rentenversicherung) in Germany in the 2021 financial year totaled EUR 0.4 billion (2020: EUR 0.4 billion, 2019: EUR 0.4 billion). Group-wide, EUR 191 million (2020: EUR 164 million, 2019: EUR 145 million) from current contributions for additional defined contribution plans was recognized in the consolidated income statement in 2021.

Civil-servant retirement arrangements at Deutsche Telekom

An expense of EUR 343 million was recognized in the 2021 financial year (2020: EUR 374 million, 2019: EUR 405 million) for the annual contribution to the Civil Service Pension Fund, which generally amounts to 33 % of the pensionable gross emoluments of active civil servants and the notional pensionable gross emoluments of civil servants on leave of absence. The present value of future payment obligations was EUR 1.1 billion as of the reporting date (December 31, 2020: EUR 1.8 billion, December 31, 2019: EUR 2.1 billion) and is shown under other financial obligations.

For further information, please refer to Note 39 "Other financial obligations."

16 Other provisions

millions of €							
	Provisions for termination benefits	Other provisions for personnel costs	Provisions for restoration obligations	Provisions for litigation risks	Provisions for sales and procurement support	Miscellaneous other provisions	Total
At December 31, 2019	160	3,361	1,707	284	466	685	6,663
Of which: current	159	1,694	31	261	466	471	3,082
Transfer resulting from changes in accounting standards	0	0	0	0	0	0	0
Changes in the composition of the Group	81	490	1,016	234	67	20	1,907
Currency translation adjustments	(21)	(99)	(170)	(24)	(24)	(9)	(348)
Addition	251	2,625	288	119	605	294	4,183
Use	(47)	(1,930)	(67)	(231)	(507)	(192)	(2,974)
Reversal	(122)	(307)	(59)	(61)	(50)	(92)	(690)
Interest effect	0	397	100	(3)	0	1	494
Other changes	0	(155)	(35)	(2)	0	(9)	(202)
At December 31, 2020	302	4,382	2,778	317	557	697	9,033
Of which: current	302	1,992	46	288	557	454	3,638
Transfer resulting from changes in accounting standards	0	0	0	0	0	0	0
Changes in the composition of the Group	0	0	29	27	0	7	64
Currency translation adjustments	4	93	126	7	18	8	257
Addition	38	2,830	452	143	491	266	4,220
Use	(113)	(1,830)	(265)	(54)	(483)	(181)	(2,926)
Reversal	(199)	(316)	(53)	(38)	(25)	(98)	(729)
Interest effect	0	(220)	(45)	2	0	0	(264)
Other changes	100	(224)	(32)	0	0	(36)	(192)
At December 31, 2021	133	4,714	2,990	405	558	663	9,463
Of which: current	47	2,260	236	381	558	420	3,903

In the measurement of the other provisions, Deutsche Telekom is exposed to interest rate fluctuations, which is why the effect of a possible change in the interest rate on the principal non-current provisions was simulated. The other, non-staff-related provisions are discounted using maturity-related discount rates specific to the respective currency area. To this end, Deutsche Telekom determines discount rates with maturities of up to 30 years. In 2021, the discount rates ranged from 0.00 to 1.59 % (2020: from 0.00 to 1.21 %) in the euro currency area and from 1.14 to 4.14 % (2020: from 0.78 to 3.61 %) in the U.S. dollar currency area. If the discount rate were increased by 50 basis points with no other change in the assumptions, the present value of the principal other non-current provisions would decrease by EUR 159.5 million (December 31, 2020: EUR 123.2 million). If the discount rate were decreased by 50 basis points with no other change in the assumptions, the present value of the principal other non-current provisions would increase by EUR 173.8 million (December 31, 2020: EUR 126.2 million).

The carrying amount of current and non-current other provisions increased by EUR 0.4 billion compared with December 31, 2020 to EUR 9.5 billion.

Provisions for termination benefits and other personnel provisions include, among other components, provisions for staff restructuring. These have developed as follows in the 2021 financial year:

millions of €							
	Jan. 1, 2021	Changes in the composition of the Group	Addition	Use	Reversal	Other changes	Dec. 31, 2021
Severance and voluntary redundancy models	302	0	38	(113)	(199)	104	133
Phased retirement	866	0	700	(469)	(2)	(94)	1,001
	1,168	0	738	(582)	(201)	10	1,134
Of which: current	553						315

Within provisions for termination benefits, provisions were reduced by, among other factors, the reversal of other provisions for personnel costs of EUR 0.1 billion, which had been recognized by OTE in 2010 and 2011 for an additional payment to the Greek social insurance fund IKA-ETAM, as a result of proceedings concluded in September 2021.

Other personnel provisions increased by EUR 0.3 billion, which was attributable, in part, to short-term variable remuneration, phased retirement, and vacation. By contrast, the provisions recognized for the Civil Service Health Insurance Fund (Postbeamtenkrankenkasse – PBeaKK) decreased by EUR 0.1 billion, which is mainly attributable to the subsequent measurement of the present value determined using actuarial principles (interest effect). Other provisions for personnel costs also include provisions for deferred compensation and allowances, as well as for anniversary gifts.

The provisions for restoration obligations increased by EUR 0.2 billion. These include the estimated costs for dismantling and removing assets, and restoring the sites on which they are located. The estimated costs are included in the costs of the relevant assets. The provisions for litigation risks primarily relate to possible settlements attributable to pending lawsuits. Provisions for sales and procurement support are recognized for dealer commissions, market development funds (advertising subsidies and refunds). Miscellaneous other provisions include a large number of low-value individual items, such as provisions related to executory contracts, the disposal of businesses and site closures, in particular in prior financial years, as well as warranty and environmental damage provisions.

For further information on litigation risks from pending lawsuits, please refer to Note 37 “Contingencies.”

17 Other liabilities

millions of €				
	Dec. 31, 2021	Of which: current	Dec. 31, 2020	Of which: current
Early retirement	877	352	1,145	411
Deferred revenue	71	37	105	51
Liabilities from other taxes	1,877	1,877	1,702	1,702
Other deferred revenue	328	195	386	240
Liabilities from severance payments	59	58	102	102
Liabilities – publicly funded projects	1,520	473	1,445	183
Miscellaneous other liabilities	811	592	746	524
	5,543	3,584	5,631	3,213

The carrying amount of current and non-current other liabilities decreased by EUR 0.1 billion to EUR 5.5 billion. Liabilities from early retirement arrangements for civil servants exist vis-à-vis the Civil Service Pension Fund and arise from payment obligations under agreements that had already been concluded. The obligations are payable in up to seven annual installments following retirement. Other liabilities increased the carrying amount by EUR 0.1 billion due to existing build-out obligations in connection with grants to be received from funding projects for the broadband build-out in the Germany operating segment.

18 Contract liabilities

The carrying amount of current and non-current contract liabilities increased year-on-year from EUR 2.0 billion to EUR 2.2 billion. These mainly comprise deferred revenues. The increase resulted from higher contract liabilities in the Germany, Europe, Systems Solutions, and United States operating segments. A decrease in carrying amounts in the Group Development operating segment, primarily as a result of the reclassification of T-Mobile Netherlands’ assets to non-current assets and disposal groups held for sale in connection with the agreed sale, had an offsetting effect. Revenue of EUR 2,573 million (2020: EUR 1,343 million) from contract liabilities that were still outstanding as of December 31, 2020 was realized in the reporting year. Of the total of contract liabilities, EUR 1,668 million (December 31, 2020: EUR 1,625 million) is due within one year.

For further information on the agreed sale of T-Mobile Netherlands, please refer to the section “Changes in the composition of the Group and other transactions” under “Summary of accounting policies.”

19 Shareholders' equity

Issued capital

As of December 31, 2021, the share capital of Deutsche Telekom AG totaled EUR 12,765 million. The share capital is divided into 4,986,458,596 no par value registered shares.

	2021		2020	
	thousands	%	thousands	%
Federal Republic of Germany – Berlin, Germany ^a	689,601	13.8	689,601	14.5
KfW Bankengruppe, Frankfurt/Main, Germany ^a	829,179	16.6	829,179	17.4
Free float	3,467,679	69.6	3,242,679	68.1
Of which: BlackRock, Inc. – Wilmington, DE, United States ^b	234,194		234,194	
Of which: SoftBank Group Corp. – Tokyo, Japan ^c	225,000			
	4,986,459	100.0	4,761,459	100.0

^a The stake in Deutsche Telekom AG was reduced upon the entry in the commercial register on September 28, 2021 of the capital increase against contribution in kind.

^b According to the last notification from BlackRock published on September 22, 2017, the reporting threshold of 3 % of the voting rights was exceeded. The stake in Deutsche Telekom AG was thus 4.92 % of the voting rights on September 15, 2017. In connection with the capital increase carried out on September 28, 2021 against contribution in kind, the stake decreased to 4.70 % of the voting rights, on the assumption of an unchanged number of shares.

^c According to the last notification from SoftBank published on October 7, 2021, the reporting threshold of 3 % of the voting rights was exceeded. The stake in Deutsche Telekom AG was thus 4.51 % of the voting rights on October 7, 2021.

Treasury shares. The amount of issued capital assigned to treasury shares was approximately EUR 37 million at December 31, 2021. This equates to 0.3 % of share capital. 14,517,728 treasury shares were held at December 31, 2021.

The shareholders' meeting resolved on April 1, 2021 to authorize the Board of Management to purchase shares in the Company by March 31, 2026, with the amount of share capital accounted for by these shares totaling up to EUR 1,218,933,400.57, provided the shares to be purchased on the basis of this authorization in conjunction with the other shares of the Company that the Company has already purchased and still possesses or are to be assigned to it under § 71d and § 71e AktG do not at any time account for more than 10 % of the Company's share capital. Moreover, the requirements under § 71 (2) sentences 2 and 3 AktG must be complied with. Shares shall not be purchased for the purpose of trading in treasury shares. This authorization may be exercised in full or in part. The purchase can be carried out in partial tranches spread over various purchase dates within the authorization period until the maximum purchase volume is reached. Dependent Group companies of Deutsche Telekom AG within the meaning of § 17 AktG or third parties acting for the account of Deutsche Telekom AG or for the account of dependent Group companies of Deutsche Telekom AG within the meaning of § 17 AktG are also entitled to purchase the shares. The shares are purchased through the stock exchange in adherence to the principle of equal treatment (§ 53a AktG). Shares can instead also be purchased by means of a public purchase or share exchange offer addressed to all shareholders, which, subject to a subsequently approved exclusion of the right to offer shares, must also comply with the principle of equal treatment.

The shares may be used for one or several of the purposes permitted by the authorization granted by the shareholders' meeting on April 1, 2021 under item 7 on the agenda. The shares may also be used for purposes involving an exclusion of subscription rights. In addition, they may be sold on the stock market or by way of an offer to all shareholders, or withdrawn. The shares may be used to fulfill the rights of Board of Management members to receive shares in Deutsche Telekom AG, which the Supervisory Board has granted to these members as part of the arrangements governing the remuneration of the Board of Management, on the basis of a decision by the Supervisory Board to this effect. Furthermore, under the authorization granted on April 1, 2021, the Board of Management is authorized to offer and/or grant shares to employees of Deutsche Telekom AG and of lower-tier affiliated companies as well as to managing board members of lower-tier affiliated companies; this also includes the authorization to offer or grant shares free of charge or on other special conditions.

Under the resolution of the shareholders' meeting on April 1, 2021, the Board of Management is also authorized to acquire the shares through the use of equity derivatives.

No treasury shares were acquired in the reporting period and in the prior year. Currently, the treasury shares for participants of the Share Matching Plan and of the employee share program Shares2You are issued from the pool of shares previously held in a trust deposit.

As part of the acquisition of VoiceStream Wireless Corp., Bellevue, and Powertel, Inc., Bellevue, in 2001, Deutsche Telekom AG issued new shares from authorized capital to a trustee, for the benefit of holders of warrants, options, and conversion rights, among others. These options or conversion rights expired in full in the 2013 financial year. As a result, the trustee no longer had any obligation to fulfill any claims in accordance with the purpose of the deposit. The trust relationship was terminated at the start of 2016 and the deposited shares were transferred free of charge to a custody account of Deutsche Telekom AG. The previously deposited shares are accounted for in the same way as treasury shares in accordance with § 272 (1a) HGB. On the basis of authorization by the shareholders' meetings on May 25, 2016 and April 1, 2021, the treasury shares acquired free of charge may be used for the same purposes as the treasury shares acquired for a consideration. In the reporting year, 3,462 thousand previously deposited shares were reallocated for issue to eligible participants of the Share Matching Plan (prior year: 558 thousand shares).

For matching shares from the Share Matching Plan and for free shares from the employee share program Shares2You, treasury shares are transferred free of charge to the custody accounts of employees of Deutsche Telekom AG. In cases where treasury shares are transferred to the custody accounts of employees of other Group companies, the costs have been transferred at fair value to the respective Group company since the 2016 financial year. Where treasury shares were transferred to the custody accounts of employees that were bought by way of the personal investment as part of the employee share program Shares2You, a conversion rate of EUR 16.72 per share was used. The conversion is determined using the lowest price at which a trade actually took place on an official German exchange on the date of conversion.

In all months of the reporting year, except for October, treasury shares (3,485 thousand in total) were reallocated and transferred to the custody accounts of eligible participants (prior year: 523 thousand treasury shares). As of December 31, 2021, disposals of treasury shares resulting from the transfers in the reporting period accounted for 0.07 %, or EUR 8,921 thousand, of share capital. Gains on disposal arising from transfers of treasury shares amounted to EUR 57,717 thousand. The transfers of treasury shares increased the capital reserve by EUR 48,796 thousand. In the reporting year, 1,042 thousand treasury shares with a fair value of EUR 17,585 thousand were billed to other Group companies.

Voting rights. Each share entitles the holder to one vote. These voting rights are restricted, however, in relation to treasury shares (at December 31, 2021: around 15 million in total).

Authorized capital and contingent capital. Authorized capital and contingent capital comprised the following components as of December 31, 2021:

	Amount millions of €	No par value shares thousands	Purpose
2017 Authorized Capital ^a	3,024	1,181,250	Capital increase against cash contribution/contribution in kind until May 30, 2022
2018 Contingent Capital	1,200	468,750	Servicing convertible bonds and/or bonds with warrants issued on or before May 16, 2023

^a Following the capital increase against contribution in kind, the 2017 Authorized Capital was reduced to EUR 3,024 million. The remaining 2017 authorized capital was entered in the commercial register on September 28, 2021.

Changes in the composition of the Group, transactions with owners, and capital increase

The following table shows the changes in the composition of the Group, the development of transactions with owners, and the capital increase made against contribution in kind:

	2021			2020		
	Issued capital and reserves attributable to owners of the parent	Non-controlling interests	Total shareholders' equity	Issued capital and reserves attributable to owners of the parent	Non-controlling interests	Total shareholders' equity
millions of €						
Changes in the composition of the Group	0	(181)	(181)	0	17,329	17,329
Acquisition of Sprint	0	0	0	0	17,331	17,331
Sale of Telekom Romania Communications	0	(170)	(170)	0	0	0
Other effects	0	(11)	(11)	0	(2)	(2)
Transactions with owners	(179)	(48)	(227)	7,299	5,967	13,266
Acquisition of Sprint	0	0	0	7,474	5,915	13,389
T-Mobile US stock-based compensation	(157)	165	9	(207)	249	42
Magyar Telekom share buy-back	9	(38)	(29)	68	(83)	(15)
OTE share buy-back	(62)	(131)	(193)	(40)	(103)	(143)
Hrvatski Telekom share buy-back	(1)	(12)	(13)	5	(17)	(12)
T-Mobile Netherlands sale and leaseback	33	(33)	0	0	0	0
Other effects	0	0	0	(1)	6	5
Capital increase of Deutsche Telekom AG	1,511	(2,358)	(847)	0	0	0

In connection with the agreement concluded on September 6, 2021 between Deutsche Telekom AG and SoftBank for the acquisition of around 45.4 million T-Mobile US shares, an increase in issued capital was entered in the commercial register and executed on September 28, 2021 by issuing 225 million no-par-value shares at the lowest issue price of EUR 2.56 per share against contribution in kind. Issued capital was increased by EUR 576 million in total. The number of Deutsche Telekom AG's outstanding shares increased as a result from 4,761 million to 4,986 million shares.

The non-cash capital increase was executed by SoftBank contributing 45.4 million T-Mobile US shares to Deutsche Telekom AG in return for the transfer of 225 million Deutsche Telekom AG shares from the 2017 authorized capital. As a result of the transaction, Deutsche Telekom AG's stake in T-Mobile US increased by 3.6 percentage points to 46.8 %. Because T-Mobile US was already included in Deutsche Telekom's consolidated financial statements as a fully consolidated subsidiary, the increase in the stake merely led to a decrease in the non-controlling interests in consolidated shareholders' equity by EUR 2,358 million and to an increase in the share of equity held by the owners of the parent company by a net total of EUR 1,511 million.

In order to acquire the some 45.4 million T-Mobile US shares, on September 23, 2021, Deutsche Telekom AG exercised some of the stock options received from SoftBank in June 2020. On the exercise date, these stock options had a fair value of EUR 847 million. This amount was recognized directly in equity as part of the consideration (within the meaning of the IFRSs) paid to SoftBank, as a result of the derecognition of the exercised options (issued capital and reserves attributable to owners of the parent). The carrying amount of other financial assets decreased as a result.

For further information on the capital increase against contribution in kind of Deutsche Telekom AG with SoftBank, please refer to the section "[Changes in the composition of the Group and other transactions](#)" under "Summary of accounting policies."

The amounts recognized in the prior-year period as changes in the composition of the Group and transactions with owners mainly related to the business combination of T-Mobile US with Sprint, consummated on April 1, 2020.

For further information, please refer to the section "[Changes in the composition of the Group and other transactions](#)" under "Summary of accounting policies."

Non-controlling interests: total other comprehensive income

Total other comprehensive income of non-controlling interests primarily comprises remeasurement effects as part of the acquisition of the OTE group totaling EUR 0.3 billion (December 31, 2020: EUR 0.4 billion), as well as offsetting currency translation effects of EUR 0.3 billion (December 31, 2020: EUR 3.2 billion), and remeasurement losses recognized directly in equity in connection with forward-payer swaps concluded for borrowings at T-Mobile US, which were terminated prematurely in April 2020.

Notes to the consolidated income statement

20 Net revenue

Net revenue breaks down into the following revenue categories:

millions of €	2021	2020	2019 ^a
Revenue from the rendering of services	85,087	79,807	65,593
Germany	20,484	20,017	19,821
United States	50,418	45,653	31,313
Europe	9,386	9,428	9,613
Systems Solutions	3,081	3,087	3,277
Group Development	1,634	1,545	1,497
Group Headquarters & Group Services	83	77	71
Revenue from the sale of goods and merchandise	19,595	16,054	12,907
Germany	2,399	2,187	2,298
United States	15,153	11,922	8,569
Europe	1,558	1,484	1,553
Systems Solutions	67	72	93
Group Development	417	389	394
Group Headquarters & Group Services	1	0	0
Revenue from the use of entity assets by others	4,112	5,138	2,031
Germany	694	815	829
United States	2,785	3,631	536
Europe	219	227	229
Systems Solutions	24	78	47
Group Development	281	269	266
Group Headquarters & Group Services	109	118	124
Net revenue^b	108,794	100,999	80,531

^a The breakdown of revenue categories for the 2019 financial year was adjusted retrospectively in connection with the realignment of the B2B telecommunications business.

^b Revenue includes interest income of EUR 276 million in the reporting year, calculated using the effective interest method (2020: EUR 278 million, 2019: EUR 345 million). This income is primarily attributable to accrued interest on receivables in connection with handsets sold under installment plans in the United States operating segment.

Net revenue for the reporting year was EUR 108.8 billion, up EUR 7.8 billion on the prior-year level. The United States operating segment in particular contributed to the positive revenue trend, mainly thanks to the positive business performance and the inclusion of Sprint for the full year for the first time. But the other operating segments also achieved positive growth rates, with the only exception being Systems Solutions, where revenue was negatively impacted by the expected decline in traditional IT infrastructure business.

For information on changes in net revenue, please refer to the section “Development of business in the Group” in the combined management report.

The total transaction price attributable to performance obligations that have not been fulfilled or, in some cases, not yet fulfilled at the end of the reporting year (hereinafter: outstanding transaction price) amounts to EUR 19,955 million (2020: EUR 23,055 million; this figure was adjusted retrospectively in the reporting year).

The portion of the outstanding transaction price attributable to performance obligations that have not been fulfilled or not yet completely fulfilled at the end of the reporting year is generally recognized as revenue over the remaining term of the service contracts concluded. Since most service contracts – unless they can be canceled at any time – have a minimum contract term of 24 months, an average remaining term of approximately 12 months can be assumed, provided the course of business in the mass business remains virtually unchanged. The disclosures only refer to transactions within the scope of IFRS 15, i.e., they do not include portions of the transaction price being allocated to performance obligations outside the scope of the standard, e.g., leases.

Deutsche Telekom generally makes use of the practical expedients in IFRS 15, according to which outstanding performance obligations under contracts with an expected original term of no more than one year and revenues recognized in accordance with the billed amounts are exempt from the disclosure requirement. Individual subsidiaries deviate from this general approach and have not made use of these practical expedients for groups of contracts with similar characteristics.

Service concession arrangements

Satellic NV, Machelen, Belgium, is a fully consolidated subsidiary of Deutsche Telekom and on July 25, 2014 signed a contractual arrangement with Viapass, the public agency responsible for toll collection in Belgium, for the set-up, operation, and financing of an electronic toll collection system. After Viapass accepted the system on March 30, 2016, the set-up phase was completed on March 31, 2016. The operation phase that follows will have a duration of 12 years, with the additional option for Viapass to extend the term three times by one year. Satellic has no entitlement to the toll revenue collected but will receive contractually agreed fees for setting up and operating the system. Viapass is authorized to terminate the arrangement giving notice of six months with payment of reasonable compensation. In the event of regular or premature termination of the agreement, Satellic has an obligation to hand over to Viapass, on request, material assets for the operation of the toll collection system that have not yet passed to the ownership of Viapass; in such an event, however, the software platform for toll collection would not be handed over to Viapass. The agreement was classified as a service concession arrangement within the meaning of IFRIC 12. Since the start of the operation phase on April 1, 2016, the separate fees for operation and maintenance services have been recognized as revenue in the respective periods, which totaled EUR 75 million in the reporting year (2020: EUR 79 million, 2019: EUR 66 million).

21 Other operating income

millions of €	2021	2020	2019
Income from the reversal of impairment losses on non-current assets	1	1,661	7
Income from the disposal of non-current assets	116	129	101
Income from reimbursements	127	140	144
Income from insurance compensation	86	73	122
Income from ancillary services	21	19	25
Miscellaneous other operating income	948	858	722
Of which: gains resulting from deconsolidations and from the sale of stakes accounted for using the equity method	214	10	145
	1,299	2,879	1,121

In the prior year, income from the reversal of impairment losses on non-current assets of EUR 1.6 billion resulted from the partial reversal of impairment losses on spectrum licenses at T-Mobile US, which increased their carrying amount. This item also included income of EUR 50 million from reversals of impairment losses in connection with the sale of the Romanian fixed-network business. Miscellaneous other operating income in the prior year had included a structuring fee received from SoftBank of EUR 0.3 billion, which T-Mobile US received in return for support in the immediate sale of T-Mobile US shares by SoftBank. Gains resulting in the reporting year from deconsolidations and from the sale of stakes accounted for using the equity method were attributable to the sale of the Dutch cell tower company T-Mobile Infra to the independently managed investment company Digital Infrastructure Vehicle (DIV) and its subsequent contribution into Cellnex NL in connection with the combination of the cell tower business in the Netherlands. Miscellaneous other operating income includes a large number of individual items accounting for marginal amounts.

For further information on the reversals of impairment losses, please refer to Note 6 “Intangible assets.”

For further information on the combination of the cell tower business in the Netherlands and the set-up of an infrastructure fund, please refer to the section “Changes in the composition of the Group and other transactions” under “Summary of accounting policies.”

22 Changes in inventories

Changes in inventories comprise both volume- and value-based increases and decreases in inventories of finished goods and merchandise, and work in process. There were no significant changes in inventories in the reporting year or in prior years.

23 Own capitalized costs

Own capitalized costs amounted to EUR 2.9 billion in the reporting year (2020: EUR 2.8 billion, 2019: EUR 2.4 billion) and mainly relate to investments in network build-out and the development of platforms for cell sites.

24 Goods and services purchased

millions of €	2021	2020	2019
Expenses for raw materials and supplies	2,202	1,954	1,679
Expenses for merchandise	24,069	19,498	15,532
Expenses for services purchased	23,413	23,222	19,746
	49,683	44,674	36,956

25 Average number of employees and personnel costs

		2021	2020	2019
Group (total)		220,840	223,539	212,846
Germany		87,276	91,512	96,018
International		133,564	132,027	116,827
Non-civil servants		210,791	212,148	200,174
Civil servants (domestic, active service relationship)		10,049	11,391	12,672
Trainees and students on cooperative degree courses		5,375	4,905	6,136
Personnel costs	millions of €	18,463	18,853	16,723
Of which: wages and salaries	millions of €	15,217	15,929	13,655
Of which: social security contributions and pension benefit costs	millions of €	3,245	2,924	3,068

The average headcount decreased by 1.2 % compared with the prior year. It decreased in Germany by 4.6 % due in particular to efficiency enhancement measures and the take-up of socially responsible instruments in connection with staff restructuring in the Germany and Systems Solutions operating segments, and in the Group Headquarters & Group Services segment. By contrast, the average headcount outside Germany increased by 1.2 %, driven mainly by the integration of Sprint employees following the business combination with Sprint as of April 1, 2020. There was an offsetting effect in the Europe operating segment from the 9.4 % reduction in employees working abroad, due to the socially responsible staff restructuring as well as to the sale of Telekom Romania Communications as of September 30, 2021. In the Systems Solutions operating segment, the 4.0 % reduction abroad was driven by the disposal of a business operation.

Personnel costs decreased by EUR 0.4 billion year-on-year to EUR 18.5 billion. This still includes an increase resulting from the business combination of T-Mobile US and Sprint in the United States. In most other operating segments, lower headcount resulted in reduced personnel costs. The agreed salary increases from the collective agreements concluded in 2020 had an offsetting effect. All segments, especially the Germany and Europe operating segments, also recorded lower restructuring expenses. In the Europe operating segment, the reversal of other provisions for personnel costs recognized by OTE in 2010 and 2011 in connection with an additional payment of EUR 0.1 billion to the Greek social insurance fund IKA-ETAM also had a reducing effect.

26 Other operating expenses

millions of €				
		2021	2020	2019
Impairment losses on financial assets		638	862	452
Gains (losses) from the write-off of financial assets measured at amortized cost		123	188	42
Other		3,510	3,425	2,807
Of which: legal and audit fees		616	510	328
Of which: losses from asset disposals		277	497	213
Of which: income (losses) from the measurement of factoring receivables		4	6	129
Of which: other taxes		496	452	427
Of which: cash and guarantee transaction costs		547	491	355
Of which: insurance expenses		138	117	98
Of which: miscellaneous other operating expenses		1,431	1,354	1,258
Of which: losses resulting from deconsolidations and from the sale of stakes accounted for using the equity method		70	0	10
		4,271	4,476	3,301

Miscellaneous other operating expenses comprise a large number of low-value individual items, including other administrative expenses and fees totaling EUR 146 million (2020: EUR 162 million, 2019: EUR 176 million).

The year-on-year decrease in impairment losses on financial assets was mainly attributable to impairment losses on customer receivables due to lowered credit ratings recognized in the first half of 2020 as a consequence of the coronavirus pandemic in the United States operating segment; by contrast, no such impairment losses had to be recognized in 2021. The losses from asset disposals incurred in 2021 resulted in part from the derecognition of damaged non-current assets such as telephone lines, central offices, and cell sites in the aftermath of the catastrophic flooding in Germany in July 2021. In the prior-year period, losses from asset disposals of EUR 0.2 billion had resulted from the derecognition of billing software for postpaid customers in the United States, which had still been in development. Prior to the migration of Sprint contract customers to the T-Mobile US billing software, it had been decided that this software was not suitable for the joint customer base and would not be put into operation. The losses resulting from deconsolidations and from the sale of stakes accounted for using the equity method were attributable, among others, to the sale of the 54 % stake in Telekom Romania Communications (TKR) as of September 30, 2021 (EUR 29 million), the derecognition of the associated currency reserve in the Group (EUR 20 million), and the sale of a business operation in the Systems Solutions operating segment. Miscellaneous other operating expenses include a large number of individual items accounting for marginal amounts.

27 Depreciation, amortization and impairment losses

The following table provides a breakdown of depreciation, amortization and impairment losses:

millions of €	2021	2020	2019
Amortization and impairment of intangible assets	6,623	6,997	4,806
Of which: impairment losses	155	525	74
Of which: impairment losses on mobile licenses	4	152	0
Of which: amortization of mobile licenses	606	1,140	1,080
Depreciation and impairment of property, plant and equipment	14,687	13,706	9,208
Of which: impairment losses	92	210	319
Depreciation and impairment of right-of-use assets	6,171	5,126	3,649
Of which: impairment losses	37	63	0
	27,482	25,829	17,663

Impairment losses break down as follows:

millions of €	2021	2020	2019
Intangible assets	155	525	74
Of which: goodwill from the year-end impairment test	0	26	0
Of which: in connection with the ad hoc impairment test in the Systems Solutions cash-generating unit ^a	140	343	n.a.
Of which: in connection with the ad hoc impairment test in the Romania cash-generating unit	0	126	24
Property, plant and equipment	92	210	319
Of which: in connection with the ad hoc impairment test in the Systems Solutions cash-generating unit	60	127	0
Of which: in connection with the ad hoc impairment test in the Romania cash-generating unit	0	34	296
Of which: from the year-end impairment test	0	0	0
Right-of-use assets	37	63	0
	284	798	393

^a Of the impairment losses, EUR 21 million (2020: EUR 44 million) relates to intangible assets in the Group Headquarters & Group Services segment that are subject to use by the Systems Solutions operating segment and are allocated to the Systems Solutions cash-generating unit for the purposes of impairment testing.

Depreciation, amortization and impairment losses on intangible assets, property, plant and equipment, and right-of-use assets increased by EUR 1.7 billion year-on-year to EUR 27.5 billion. Amortization of intangible assets remained unchanged at EUR 6.5 billion, depreciation of property, plant and equipment increased by EUR 1.1 billion to EUR 14.6 billion, while depreciation of right-of-use assets increased by EUR 1.1 billion to EUR 6.2 billion. These increases are all largely due to the first-time inclusion of Sprint for the full year. In addition, in the United States operating segment, a reduction in the useful life of leased network technology for cell sites following the business combination of T-Mobile US and Sprint increased depreciation of the corresponding right-of-use assets by EUR 0.8 billion. By contrast, depreciation and amortization were reduced by EUR 0.2 billion overall in connection with non-current assets and disposal groups held for sale and the associated suspension of depreciation and amortization. This primarily related to T-Mobile Netherlands and Telekom Romania Communications.

Impairment losses decreased by EUR 0.8 billion year-on-year to EUR 0.3 billion. In 2020, impairment losses on goodwill resulting from year-end impairment tests related to the Montenegro cash-generating unit. EUR 0.5 billion of the impairment losses in 2020 resulted from an ad hoc impairment test of assets assigned to the Systems Solutions cash-generating unit and related to intangible assets and property, plant and equipment in the Systems Solutions operating segment and in the Group Headquarters & Group Services segment. EUR 0.2 billion of this was attributable to another ad hoc impairment test in 2020 of the assets assigned to the Romania cash-generating unit. This also related to intangible assets and property, plant and equipment. Impairment losses recognized in the reporting year on intangible assets and property, plant and equipment totaled EUR 0.2 billion. This was a consequence of several factors, including the ad hoc impairment testing carried out in the Systems Solutions cash-generating unit in the prior year and related to follow-up investments in the reporting year. In addition, despite the marginal improvement in the business outlook, the increase in the cost of capital in the reporting year prompted further impairment losses to be recognized on non-current assets in the Systems Solutions cash-generating unit at the end of 2021.

For further information, please refer to Notes 6 “Intangible assets,” 7 “Property, plant and equipment,” and 8 “Right-of-use assets – lessee relationships.”

28 Finance costs

millions of €	2021	2020	2019
Interest income	451	414	348
Interest expense	(5,052)	(4,638)	(2,712)
	(4,601)	(4,224)	(2,364)
Of which: from leases	(1,155)	(996)	(870)
Of which: from financial instruments relating to measurement categories in accordance with IFRS 9			
Debt instruments measured at amortized cost	16	15	23
Debt instruments measured at fair value through other comprehensive income	0	0	0
Debt instruments measured at fair value through profit or loss	11	16	14
Financial liabilities measured at amortized cost ^a	(3,453)	(3,235)	(1,525)

^a Interest expense calculated according to the effective interest method and adjusted for accrued interest from derivatives recognized in the reporting year that were used as hedging instruments against interest rate-based changes in the fair values of financial liabilities measured at amortized cost in the reporting year for hedge accounting in accordance with IFRS 9 (2021: interest income of EUR 417 million and interest expense of EUR 284 million; 2020: interest income of EUR 377 million and interest expense of EUR 101 million; 2019: interest income of EUR 297 million and interest expense of EUR 54 million).

The increase in finance costs is mainly due to the financial liabilities assumed and the restructuring begun in connection with the acquisition of Sprint, and the related increase in financing. In this context, between April 2020 and the end of 2021, T-Mobile US bonds with terms originally ending between 2023 and 2026 and bearing interest of between 4.5 and 6.5 % were repaid prematurely and new bonds were issued with terms ending between 2026 and 2060 and bearing interest of between 2.05 and 3.6 %. In connection with the premature termination of forward-payer swaps by T-Mobile US at the start of April 2020 and the associated losses recorded directly in equity, reclassifications to profit or loss of EUR 0.2 billion were made in 2021 (2020: EUR 0.1 billion).

EUR 211 million (2020: EUR 334 million, 2019: EUR 343 million) was capitalized as part of acquisition costs in the reporting year. The amount was calculated on the basis of an interest rate in the average range between 3.6 % at the start of the year and 3.4 % at the end of the year (2020: between 3.2 and 3.6 %, 2019: between 3.5 and 3.2 %) applied across the Group.

Interest payments (including capitalized interest) of EUR 6.4 billion (2020: EUR 7.6 billion, 2019: EUR 4.3 billion) were made in the reporting year.

Accrued interest payments from derivatives (interest rate swaps) that were designated as hedging instruments in a fair value hedge in accordance with IFRS 9 are netted per swap contract and recognized as interest income or interest expense depending on the net amount. Finance costs are assigned to the measurement categories on the basis of the hedged item. Only financial liabilities were hedged in the reporting period.

29 Share of profit/loss of associates and joint ventures accounted for using the equity method

millions of €	2021	2020	2019
Share of profit (loss) of joint ventures	(34)	(16)	(7)
Share of profit (loss) of associates	(68)	4	93
	(102)	(12)	87

The share of profit/loss of associates and joint ventures included in the consolidated financial statements using the equity method decreased by EUR 0.1 billion compared with the prior year. The main factor in this was an impairment loss of EUR 58 million recognized in the reporting year on the carrying amount of the stake in Stratospheric Platforms Ltd.

For further information, please refer to Note 10 "Investments accounted for using the equity method."

30 Other financial income/expense

millions of €	2021	2020	2019
Income from investments (without share of profit (loss) of associates and joint ventures accounted for using the equity method)	4	12	(11)
Gains (losses) from financial instruments	(593)	628	321
Interest component from measurement of provisions and liabilities	165	(531)	(229)
Impairment losses on other financial assets	(13)	0	0
Gains (losses) from the write-off of other financial assets measured at amortized cost	0	0	0
	(437)	109	81

As a rule, all income/expense components including interest income and expense from financial instruments classified as at fair value through profit or loss in accordance with IFRS 9 are reported under other financial income/expense.

Other financial income decreased by EUR 0.5 billion year-on-year to other financial expense of EUR 0.4 billion. On the one hand, gains from financial instruments decreased by EUR 1.2 billion to losses from financial instruments of EUR 0.6 billion, due in part to negative measurement effects resulting, among other factors, from the premature repayment of bonds and the resulting derecognition of embedded derivatives at T-Mobile US and from a forward transaction to hedge the price of acquiring T-Mobile US shares in the future. On the other, net positive measurement effects resulted from the amortization and subsequent measurement of the stock options received from SoftBank in June 2020 to purchase shares in T-Mobile US. The interest component from the measurement of provisions and liabilities increased, in particular in the Group Headquarters & Group Services segment by EUR 0.7 billion. This increase was mainly attributable to the subsequent measurement using actuarial principles of the present value of the provision recognized for the Civil Service Health Insurance Fund.

EUR -282 million (2020: EUR 341 million, 2019: EUR -14 million) of other financial income/expense related to currency translation effects, including gains/losses from derivatives used as hedges in foreign-currency hedge accounting, and EUR -310 million (2020: EUR 287 million, 2019: EUR 335 million) to gains/losses from other derivatives as well as measurements of equity investments.

For further information on financial instruments, please refer to Note 40 "Financial instruments and risk management."

31 Income taxes

Income taxes in the consolidated income statement

A tax expense of EUR 1.8 billion was recorded in the 2021 financial year. The tax amount essentially reflects the shares of the different countries in profit before income taxes and their respective national tax rates. Tax was furthermore reduced by deferred tax effects for prior years for local taxes in the United States segment of EUR 0.4 billion. In the prior year, a tax expense of EUR 1.9 billion was recognized on the somewhat higher profit/loss before income taxes.

The following table provides a breakdown of income taxes in Germany and internationally:

millions of €	2021	2020	2019
Current taxes	977	924	883
Germany	286	391	488
International	691	533	395
Deferred taxes	838	1,005	1,110
Germany	593	145	314
International	245	860	796
	1,815	1,929	1,993

Deutsche Telekom's combined income tax rate for 2021 amounts to 31.4 % (2020: 31.4 %, 2019: 31.4 %). It consists of corporate income tax at a rate of 15.0 %, the solidarity surcharge of 5.5 % on corporate income tax, and trade tax at an average multiplier of 445 % (2020: 445 %, 2019: 445 %).

Reconciliation of the effective tax rate. Income taxes of EUR -1,815 million (as expense) in the reporting year (2020: EUR -1,929 million (as expense), 2019: EUR -1,993 million (as expense)) are derived as follows from the expected income tax expense/benefit that would have arisen had the statutory income tax rate of the parent company (combined income tax rate) been applied to profit/loss before income taxes:

millions of €	2021	2020	2019
Profit (loss) before income taxes	7,918	8,677	7,260
Expected income tax expense (benefit) (Income tax rate applicable to Deutsche Telekom AG: 2021: 31.4 %; 2020: 31.4 %; 2019: 31.4 %)	2,486	2,724	2,280
Adjustments to expected tax expense (benefit)			
Effect of changes in statutory tax rates	(39)	(139)	(41)
Tax effects from prior years	(51)	36	(18)
Tax effects from other income taxes	(178)	297	258
Non-taxable income	(106)	(32)	(26)
Tax effects from equity investments	27	8	(46)
Non-deductible expenses	153	192	140
Permanent differences	73	(457)	(23)
Goodwill impairment losses	0	(6)	(14)
Tax effects from loss carryforwards	(36)	1	43
Tax effects from additions to and reductions of local taxes	56	62	71
Adjustment of taxes to different foreign tax rates	(570)	(755)	(633)
Other tax effects	0	(2)	2
Income tax expense (benefit) according to the consolidated income statement	1,815	1,929	1,993
Effective income tax rate	% 23	22	27

Current income taxes in the consolidated income statement

The following table provides a breakdown of current income taxes:

millions of €	2021	2020	2019
Current income taxes	977	924	883
Of which: current tax expense	982	729	803
Of which: prior-period tax expense	(5)	195	80

Deferred taxes in the consolidated income statement

Deferred taxes developed as follows:

millions of €	2021	2020	2019
Deferred tax expense (benefit)	838	1,005	1,110
Of which: from temporary differences	1,158	2,819	446
Of which: from loss carryforwards	(337)	(1,891)	654
Of which: from tax credits	17	77	10

Income taxes in the consolidated statement of financial position

Current income taxes in the consolidated statement of financial position

millions of €	Dec. 31, 2021	Dec. 31, 2020
Recoverable taxes	321	349
Tax liabilities	(549)	(690)
Current taxes recognized in other comprehensive income:		
Hedging instruments	(252)	(252)

Deferred taxes in the consolidated statement of financial position

millions of €	Dec. 31, 2021	Dec. 31, 2020
Deferred tax assets	7,906	7,972
Deferred tax liabilities	(19,809)	(17,260)
	(11,903)	(9,288)
Of which: recognized in other comprehensive income:		
Gains (losses) from the remeasurement of defined benefit plans	1,328	1,582
Revaluation surplus	120	241
Hedging instruments	502	581
Recognized in other comprehensive income before non-controlling interests	1,950	2,404
Non-controlling interests	(250)	(286)
	1,700	2,118

Development of deferred taxes

millions of €	Dec. 31, 2021	Dec. 31, 2020
Deferred taxes recognized in the statement of financial position	(11,903)	(9,288)
Difference to prior year	(2,615)	(3,039)
Of which: recognized in income statement	(838)	(1,005)
Of which: recognized in other comprehensive income	(474)	507
Of which: recognized in capital reserves	(121)	74
Of which: acquisitions (disposals) (including assets and disposal groups held for sale)	(325)	(3,211)
Of which: currency differences	(857)	596

Development of deferred taxes on loss carryforwards

millions of €	Dec. 31, 2021	Dec. 31, 2020
Deferred taxes on loss carryforwards before allowances	4,190	4,108
Difference to prior year	82	2,817
Of which: recognition (derecognition)	(153)	1,869
Of which: acquisitions (disposals) (including assets and disposal groups held for sale)	(42)	1,071
Of which: currency differences	277	(123)

Deferred taxes relate to the following key items in the statement of financial position, loss carryforwards, and tax credits:

millions of €	Dec. 31, 2021		Dec. 31, 2020	
	Deferred tax assets	Deferred tax liabilities	Deferred tax assets	Deferred tax liabilities
Current assets	2,199	(1,438)	1,726	(1,116)
Trade receivables	1,362	(235)	791	(116)
Inventories	89	0	120	0
Other assets	742	(391)	808	(287)
Contract assets	6	(812)	7	(713)
Non-current assets	3,388	(31,692)	3,636	(29,780)
Intangible assets	392	(20,690)	675	(18,369)
Property, plant and equipment	1,338	(1,991)	1,379	(1,899)
Other financial assets	1,656	(8,634)	1,580	(9,157)
Capitalized contract costs	2	(377)	2	(355)
Current liabilities	2,495	(1,355)	1,974	(733)
Financial liabilities	603	(105)	698	(208)
Trade and other payables	167	(99)	60	(16)
Other provisions	371	(115)	346	(91)
Other liabilities	1,097	(958)	623	(337)
Contract liabilities	257	(78)	247	(81)
Non-current liabilities	13,328	(3,169)	13,986	(2,953)
Financial liabilities	2,946	(1,086)	3,301	(1,051)
Provisions for pensions and other employee benefits	1,919	(1,758)	2,159	(1,531)
Other provisions	1,089	(251)	992	(231)
Other liabilities	7,269	(20)	7,397	(111)
Contract liabilities	105	(54)	137	(29)
Retained earnings	0	0	1	(67)
Tax credits	334	0	310	0
Loss carryforwards	3,741	0	3,404	0
Interest and other carryforwards	265	0	324	0
Total	25,750	(37,654)	25,361	(34,649)
Of which: non-current	21,709	(34,807)	22,956	(33,247)
Netting	(17,844)	17,844	(17,389)	17,389
Recognition	7,906	(19,809)	7,972	(17,260)

The loss carryforwards amount to:

millions of €	Dec. 31, 2021	Dec. 31, 2020
Loss carryforwards for corporate income tax purposes	15,312	14,954
Expiry within		
1 year	0	179
2 years	3	18
3 years	3	8
4 years	7	11
5 years	3	176
After 5 years	1,449	1,538
Unlimited carryforward period	13,847	13,023

Loss carryforwards and temporary differences for which no deferred taxes were recorded amount to:

millions of €	Dec. 31, 2021	Dec. 31, 2020
Loss carryforwards for corporate income tax purposes	1,769	1,757
Expiry within		
1 year	0	7
2 years	2	6
3 years	0	0
4 years	5	6
5 years	2	2
After 5 years	1,018	950
Unlimited carryforward period	742	786
Temporary differences in corporate income tax	429	595

In addition, no deferred taxes are recognized on trade tax loss carryforwards of EUR 117 million (December 31, 2020: EUR 85 million) and on temporary differences for trade tax purposes in the amount of EUR 6 million (December 31, 2020: EUR 7 million). Furthermore, apart from corporate income tax loss carryforwards, no deferred taxes amounting to EUR 163 million (December 31, 2020: EUR 431 million) were recognized for other foreign income tax loss carryforwards and, apart from temporary differences for trade tax purposes, no deferred taxes amounting to EUR 7 million (December 31, 2020: EUR 10 million) were recognized for other foreign income taxes.

No deferred tax assets were recognized on the aforementioned tax loss carryforwards and temporary differences as it is not probable that taxable profit will be available in the foreseeable future against which these tax loss carryforwards can be utilized.

A positive tax effect in the amount of EUR 3 million (2020: EUR 3 million, 2019: EUR 6 million) attributable to the utilization of tax loss carryforwards on which deferred tax assets had not yet been recognized was recorded in the reporting year.

The write-up of deferred tax assets resulted in a positive effect of EUR 427 million in the reporting year (2020: EUR 14 million).

Deferred tax assets from the business combination of T-Mobile US with Sprint were recognized for the first time. Their recognition was mainly attributable to legal entities restructuring, which resulted in the reutilization of loss carryforwards acquired in particular.

No deferred tax liabilities were recognized on temporary differences in connection with equity interests in subsidiaries amounting to EUR 721 million (December 31, 2020: EUR 817 million) as it is unlikely that these differences will be recognized in the near future.

Disclosure of tax effects relating to each component of other comprehensive income

millions of €	2021			2020			2019		
	Before tax amount	Tax (expense) benefit	Net of tax amount	Before tax amount	Tax (expense) benefit	Net of tax amount	Before tax amount	Tax (expense) benefit	Net of tax amount
Items not subsequently reclassified to profit or loss (not recycled)									
Gains (losses) from the remeasurement of defined benefit plans	1,426	(256)	1,170	(1,358)	142	(1,216)	(603)	134	(469)
Gains (losses) from the remeasurement of equity instruments	112	(5)	107	62	0	62	99	0	99
Share of profit (loss) of investments accounted for using the equity method	0	0	0	0	0	0	0	0	0
	1,538	(261)	1,278	(1,296)	142	(1,154)	(504)	134	(369)
Items subsequently reclassified to profit or loss (recycled), if certain reasons are given									
Exchange differences on translating foreign operations									
Recognition of other comprehensive income in income statement	61	0	61	0	0	0	(8)	0	(8)
Change in other comprehensive income (not recognized in income statement)	5,142	0	5,142	(6,578)	0	(6,578)	463	0	463
Gains (losses) from the remeasurement of debt instruments									
Recognition of other comprehensive income in income statement	417	(36)	381	491	(26)	465	(47)	0	(47)
Change in other comprehensive income (not recognized in income statement)	(497)	64	(433)	(481)	30	(451)	34	(9)	25
Gains (losses) from hedging instruments (IAS 39 until December 2017, designated risk component)									
Recognition of other comprehensive income in income statement	17	3	20	431	(130)	301	(148)	46	(102)
Change in other comprehensive income (not recognized in income statement)	296	(92)	204	(1,446)	400	(1,046)	(483)	115	(368)
Gains (losses) from hedging instruments (IFRS 9 from January 2018, hedging costs)									
Recognition of other comprehensive income in income statement	2	(1)	1	2	(1)	1	2	(1)	1
Change in other comprehensive income (not recognized in income statement)	60	(19)	41	(30)	10	(20)	(9)	3	(6)
Share of profit (loss) of investments accounted for using the equity method									
Recognition of other comprehensive income in income statement	0	0	0	0	0	0	(7)	0	(7)
Change in other comprehensive income (not recognized in income statement)	0	0	0	1	0	1	11	0	11
	5,498	(81)	5,417	(7,610)	283	(7,327)	(192)	154	(38)
Other comprehensive income	7,036	(342)	6,694	(8,906)	425	(8,481)	(696)	289	(407)
Profit (loss)			6,103			6,747			5,268
Total comprehensive income			12,798			(1,734)			4,861

32 Profit/loss attributable to non-controlling interests

millions of €	2021	2020	2019
T-Mobile US	1,408	2,287	1,325
Hrvatski Telekom	38	26	49
Hellenic Telecommunications Organization (OTE)	337	189	(27)
Magyar Telekom	73	58	63
T-Mobile Netherlands Holding B.V.	75	39	3
Other	(4)	(10)	(12)
	1,927	2,589	1,401

33 Earnings per share

Basic and diluted earnings per share are calculated in accordance with IAS 33 as follows:

		2021	2020	2019
Profit attributable to the owners of the parent (net profit (loss))	millions of €	4,176	4,158	3,867
Adjustment	millions of €	0	0	0
Adjusted net profit (loss) (basic/diluted)	millions of €	4,176	4,158	3,867
Number of ordinary shares issued	millions	4,831	4,761	4,761
Treasury shares	millions	(17)	(18)	(19)
Adjusted weighted average number of ordinary shares outstanding (basic/diluted)	millions	4,813	4,743	4,743
Earnings per share (basic/diluted)	€	0.87	0.88	0.82

The calculation of earnings per share (basic/diluted) is based on the time-weighted number of all ordinary shares outstanding. Furthermore, the weighted average number of ordinary shares outstanding is determined by deducting the weighted average number of treasury shares held by Deutsche Telekom AG. There are currently no significant diluting effects.

34 Dividend per share

For the 2021 financial year, the Board of Management proposes a dividend of EUR 0.64 for each no par value share carrying dividend rights. On the basis of this payout volume, total dividends in the amount of EUR 3,182 million would be appropriated to the no par value shares carrying dividend rights as of February 15, 2022. The final amount of the total dividend payment depends on the number of no par value shares carrying dividend rights as of the date of the resolution on the appropriation of net income as adopted on the day of the shareholders' meeting.

A dividend of EUR 0.60 for the 2020 financial year for each no par value share carrying dividend rights was paid out in 2021.

Other disclosures

35 Notes to the consolidated statement of cash flows

Net cash from operating activities

Net cash from operating activities increased by EUR 8.4 billion year-on-year to EUR 32.2 billion. The strong performance both in the United States and outside of the United States had a positive effect here. In addition, the increase is attributable to the business combination of T-Mobile US and Sprint effective April 1, 2020. Net cash from operating activities had been negatively affected in the prior year by interest payments totaling EUR 1.6 billion for zero-coupon bonds. Net cash from operating activities had also been negatively impacted in the amount of EUR 2.2 billion in the prior year as a result of the premature termination of forward-payer swaps for borrowings raised at T-Mobile US as well as by a net increase of EUR 0.7 billion in interest payments, mainly as a result of the financial liabilities assumed and the restructuring carried out in connection with the acquisition of Sprint, and the related increase in financing. Income tax payments increased by EUR 0.2 billion compared with the prior year. Factoring agreements of EUR 0.1 billion had a negative impact on net cash from operating activities in the 2021 financial year. In the prior year, factoring agreements had had negative effects of EUR 0.8 billion, mainly as a result of the contractual termination of a revolving factoring agreement in the Germany operating segment.

Deutsche Telekom's working capital measures are focused on improvements in the area of liabilities as well as in the management of receivables and inventories. However, they are not used for active liquidity management. The positive effect on the change in assets carried as working capital is mainly attributable to lower cash outflows for mobile terminal equipment in the United States operating segment, due in part to the planned withdrawal from the terminal equipment lease model. By contrast, factors including higher receivables under the Equipment Installment Plan in the United States operating segment and in Europe had a negative impact on the change in assets carried as working capital. The development of liabilities carried as working capital in the financial year was neutral. The prior year had been negatively impacted by high cash outflows to terminal equipment manufacturers and to other telecommunications companies in the United States operating segment due to seasonal effects.

For further information on individual assets carried as working capital, please refer to Note 2 "Trade receivables" and Note 4 "Inventories."

For further information, please refer to Note 14 "Trade and other payables."

Net cash used in/from investing activities

millions of €	2021	2020	2019
Cash capex			
Germany	(4,116)	(4,191)	(4,447)
United States	(18,594)	(10,394)	(6,369)
Europe	(1,905)	(2,216)	(1,816)
Systems Solutions	(237)	(235)	(324)
Group Development	(572)	(699)	(452)
Group Headquarters & Group Services	(1,007)	(990)	(1,010)
Reconciliation	65	32	61
	(26,366)	(18,694)	(14,357)
Payments for publicly funded investments in the broadband build-out ^a	(436)	(507)	(401)
Proceeds from public funds for investments in the broadband build-out ^a	420	431	341
Net cash flows for collateral deposited and hedging transactions	89	268	365
Changes in cash and cash equivalents in connection with the consummated business combination of T-Mobile US and Sprint	0	(4,767)	0
Of which: cash and cash equivalents acquired from Sprint ^b	0	1,997	0
Of which: repayment of Sprint loans pursuant to change-in-control clause	0	(6,764)	0
Changes in cash and cash equivalents in connection with the acquisition of Shentel at T-Mobile US	(1,588)	0	0
Cash outflows for the acquisition of shares in Simpel ^c	0	(255)	0
Cash outflows for the acquisition of shares in Tele2 Netherlands ^d	0	0	(195)
Other changes in cash and cash equivalents in connection with the acquisition of control of subsidiaries and associates	(29)	0	0
Changes in cash and cash equivalents in connection with the contribution of the stake in T-Mobile Infra into Cellnex Netherlands ^e	135	0	0
Changes in cash and cash equivalents in connection with the sale of the stake in Telekom Romania Communications ^f	202	0	0
Changes in cash and cash equivalents in connection with the sale of Sprint's prepaid business to DISH ^g	0	1,072	0
Changes in cash and cash equivalents in connection with the loss of control of subsidiaries and associates	37	22	62
Payment in relation to settlement reached in Toll Collect arbitration proceedings	0	0	(200)
Proceeds from the disposal of property, plant and equipment, and intangible assets	116	236	176
Other	16	(456)	(21)
	(27,403)	(22,649)	(14,230)

^a For further information on the change in estimates made in 2019, please refer to the section "Changes in accounting policies, changes in estimates" in the notes to the consolidated financial statements in the 2019 Annual Report.

^b Also includes a payment of EUR 93 million received in relation to a cost allocation from SoftBank in connection with CPUC.

^c Includes, in addition to the purchase price of EUR 259 million, inflows of cash and cash equivalents in the amount of EUR 4 million.

^d Includes, in addition to the purchase price of EUR 199 million, inflows of cash and cash equivalents in the amount of EUR 4 million.

^e Includes, in addition to the cash inflow for the sale of the business operation of EUR 113 million (cash inflow of EUR 118 million less outflows of cash and cash equivalents of EUR 5 million), the cash inflow from the sale-and-leaseback transaction of EUR 23 million.

^f Includes, in addition to the cash inflow for the sale of the business operation of EUR 292 million, outflows of cash and cash equivalents in the amount of EUR 89 million.

^g Of the overall purchase price payment of EUR 1,208 million, EUR 136 million are recognized under net cash used in/ from financing activities. This relates to receivables from customers in connection with the Equipment Installment Plan in Sprint's sold prepaid business.

At EUR 26.4 billion, cash capex was EUR 7.7 billion higher than in the prior year. In the United States operating segment, FCC mobile licenses were acquired mainly as part of the concluded C-band auction for a total of EUR 8.3 billion and, in the Europe operating segment, mobile spectrum licenses were acquired for a total of EUR 0.1 billion in the 2021 financial year. The figure for the prior year included EUR 1.7 billion for the acquisition of mobile spectrum licenses, EUR 1.1 billion of which related to the United States operating segment, EUR 0.4 to the Europe operating segment, and EUR 0.2 billion to the Group Development operating segment. Excluding investments in mobile spectrum licenses, cash capex was up EUR 1.0 billion year-on-year. This change was primarily attributable to an increase in the United States operating segment on account of the inclusion of Sprint and as a result of the further build-out of the 5G network.

The contractually promised government grants from publicly funded projects for the broadband build-out in Germany were recognized in full as receivables as of the start of the second half of 2019. They reduce the cost of the relevant property, plant and equipment. The grants received and payments made for the build-out continue to be recognized in net cash used in/from investing activities, however, they are not part of cash capex, because the payments made do not result in additions to property, plant and equipment. Since the payments are not made at the same point in time as the proceeds are received, the net amounts can be positive or negative in the individual periods.

Interest payments (including capitalized interest) of EUR 6.4 billion (2020: EUR 7.6 billion, 2019: EUR 4.3 billion) were made in the 2021 financial year. Capitalized interest of EUR 0.2 billion (2020: EUR 0.3 billion, 2019: EUR 0.3 billion) was reported within cash capex in net cash used in/from investing activities, together with the associated assets.

Net cash used in/from financing activities

millions of €

	2021	2020	2019
Repayment of bonds	(11,318)	(8,958)	(2,718)
Dividend payments (including to other shareholders of subsidiaries)	(3,145)	(3,067)	(3,561)
Repayment of financial liabilities from financed capex and opex	(108)	(358)	(699)
Repayment of EIB loans	(1,093)	(193)	(660)
Net cash flows for collateral deposited and hedging transactions	0	(4)	112
Principal portion of repayment of lease liabilities	(6,458)	(5,371)	(3,835)
Repayment of financial liabilities for media broadcasting rights	(338)	(375)	(407)
Cash flows from continuing involvement factoring, net	(72)	(77)	(21)
Loans taken out with the EIB	0	425	500
Promissory notes, net	(58)	(202)	144
Issuance of bonds	12,678	9,202	5,479
Commercial paper, net	0	0	(467)
Overnight borrowings from banks	0	0	(626)
Repayment of liabilities from 5G spectrum acquired in Germany	(195)	(110)	0
Repayment of liabilities from 5G spectrum acquired in the Netherlands	(204)	0	0
Changes in cash and cash equivalents in connection with the sale and leaseback of the passive mobile infrastructure of T-Mobile Infra	242	0	0
Issue of senior secured notes in connection with the acquisition of Sprint	0	20,942	0
Raising of secured term loan in connection with the acquisition of Sprint	0	3,562	0
Repayment of secured term loan in connection with the acquisition of Sprint	0	(3,389)	0
Raising of bridge loan facility in connection with the acquisition of Sprint	0	17,405	0
Repayment of bridge loan facility in connection with the acquisition of Sprint	0	(17,493)	0
Repayment of Sprint loans (raised prior to acquisition by T-Mobile US)	0	(3,572)	0
Cash inflows from transactions with non-controlling entities			
T-Mobile US stock options	9	42	2
Cellnex Netherlands capital contributions	4	0	0
Toll4Europe capital contributions	0	11	10
Other	1	0	1
	14	53	13
Cash outflows from transactions with non-controlling entities			
T-Mobile US share buy-backs	(261)	(391)	(139)
OTE share buy-back program	(190)	(142)	(110)
Other	(54)	(32)	(12)
	(506)	(565)	(261)
Other	(218)	(293)	(134)
	(10,779)	7,561	(7,141)

Non-cash transactions in the consolidated statement of cash flows

In the deal signed between Deutsche Telekom and SoftBank on September 6, 2021, Deutsche Telekom acquired a total of around 45.4 million T-Mobile US shares from SoftBank on September 28, 2021. SoftBank received in return 225 million new shares in Deutsche Telekom AG by way of a capital increase against a non-cash contribution.

For further information on the increase of the stake in T-Mobile US by way of the agreement concluded with SoftBank, please refer to the section "Other transactions that had no effect on the composition of the Group."

In the 2021 financial year, Deutsche Telekom did not make use of financing options under which the payments for trade payables from operating and investing activities mainly become due at a later point in time by involving banks in the process (2020: EUR 0.2 billion). These are shown under financial liabilities in the statement of financial position. As soon as the payments have been made, they are disclosed under net cash used in/from financing activities.

In the 2021 financial year, Deutsche Telekom leased assets totaling EUR 5.7 billion, mainly network equipment, cell sites, and land and buildings. As a result, these assets are recognized in the statement of financial position under right-of-use assets and the related liabilities under lease liabilities. Future repayments of the liabilities will be recognized in net cash used in/from financing activities. In the prior year, this figure stood at EUR 14.3 billion, EUR 9.4 billion of which related to a modified agreement with American Tower for the lease of around 20,729 cell towers, resulting in an increase in the same amount in the carrying amount of the right-of-use assets and the lease liabilities. Excluding this effect, there was a year-on-year increase of EUR 0.8 billion, which was mainly attributable to the further build-out of the 5G network and the inclusion of Sprint in the United States operating segment, and to the sale-and-leaseback agreements in connection with the combination of the cell tower business in the Netherlands.

Consideration for the acquisition of broadcasting rights is paid by Deutsche Telekom in accordance with the terms of the contract on the date of its conclusion or spread over the term of the contract. Financial liabilities of EUR 0.5 billion were recognized in the 2021 financial year for future consideration for acquired broadcasting rights (2020: EUR 0.4 billion). The payment of the consideration will be recognized in net cash used in/from financing activities.

In the United States operating segment, EUR 1.0 billion was recognized for mobile terminal equipment under property, plant and equipment in the 2021 financial year (2020: EUR 2.5 billion). This relates to the terminal equipment lease model at T-Mobile US, under which customers do not purchase the devices but lease them. The cash outflows are presented under net cash from operating activities. The decline was primarily due to the withdrawal from the terminal equipment lease model.

The combination of the cell tower business in the Netherlands and the set-up of an infrastructure fund in the Group Development operating segment resulted in the following non-cash transactions: First, the stake in T-Mobile Infra was contributed into Cellnex Netherlands in exchange for the granting of a stake of 37.65% in the “new” company, Cellnex Netherlands. Second, in order to ensure T-Mobile Netherlands’ continued access to the contributed passive mobile infrastructure, a long-term agreement, primarily on the lease of corresponding infrastructure components, was concluded in the form of a sale-and-leaseback transaction.

For further information on the combination of the cell tower business in the Netherlands and the set-up of an infrastructure fund, please refer to the section “Changes in the composition of the Group and other transactions” under “Summary of accounting policies.”

The carrying amounts of the financial liabilities associated with net cash used in/from financing activities, divided into carrying amount changes having and not having an effect on cash flows, developed as follows in the reporting year:

	As of Jan. 1, 2021	Of which: payments to be disclosed in net cash used in/from financing activities ^a	Total carrying amount changes having an effect on cash flows	Changes in the composition of the Group
Bonds and other securitized liabilities	87,702	87,702	2,091	(4)
Liabilities to banks	5,257	4,581	(888)	(21)
	92,959	92,283	1,203	(25)
Liabilities to non-banks from promissory note bonds	490	490	0	0
Liabilities with the right of creditors to priority repayment in the event of default	3,886	3,886	(811)	0
Other interest-bearing liabilities	7,206	6,036	(1,389)	(3)
Other non-interest-bearing liabilities	1,703	3	48	136
Derivative financial liabilities	864	827	(6)	0
	14,149	11,242	(2,158)	133
Financial liabilities	107,108	103,525	(955)	108
Lease liabilities	32,715	32,715	(6,458)	285
Derivative financial assets	4,038	(142)	(1)	0

^a Deutsche Telekom exercised the option pursuant to IAS 7.33 and presented interest paid and interest received under net cash from operating activities.

millions of €

Carrying amount changes not having an effect on cash flows							Carrying amount on Dec. 31, 2021 of the payments to be disclosed in net cash used in/from financing activities ^a	As of Dec. 31, 2021
	Currency translation	Fair value	Carrying amount changes according to the effective interest method	Other	Total carrying amount changes not having an effect on cash flows	Carrying amount on Dec. 31, 2021		
Bonds and other securitized liabilities	5,325	(1,000)	(235)	(23)	4,063	93,857	93,857	
Liabilities to banks	0	(51)	29	(11)	(54)	3,640	4,003	
	5,325	(1,051)	(206)	(34)	4,009	97,497	97,860	
Liabilities to non-banks from promissory note bonds	(7)	0	0	0	(7)	483	483	
Liabilities with the right of creditors to priority repayment in the event of default	283	0	(32)	(77)	174	3,248	3,248	
Other interest-bearing liabilities	206	0	174	1,060	1,437	6,084	7,343	
Other non-interest-bearing liabilities	1	0	0	0	137	187	1,829	
Derivative financial liabilities	0	(642)	0	0	(642)	179	703	
	483	(642)	142	983	1,099	10,181	13,606	
Financial liabilities	5,808	(1,693)	(64)	949	5,108	107,678	111,466	
Lease liabilities	2,225	0	0	4,366	6,876	33,133	33,133	
Derivative financial assets	0	(181)	0	0	(181)	(324)	2,762	

^a Deutsche Telekom exercised the option pursuant to IAS 7.33 and presented interest paid and interest received under net cash from operating activities.

Total carrying amount changes having an effect on cash flows of EUR -7.4 billion reported in net cash used in/from financing activities deviate from net cash used in/from financing activities due in particular to the dividend entitlements of Deutsche Telekom AG's shareholders having an effect on cash flows, the interest paid in connection with financial liabilities reported in cash generated from operations, and the changes in non-controlling interests having an effect on cash flows. The other carrying amount changes in lease liabilities not having an effect on cash flows are mainly attributable to additions in connection with the recognition of right-of-use assets. The other carrying amount changes in financial liabilities not having an effect on cash flows include additions of EUR 0.5 billion for the acquisition of broadcasting rights.

In the 2021 financial year, Deutsche Telekom made total interest payments of EUR 6.4 billion to service interest obligations. This figure includes interest payments for derivative and non-derivative financial liabilities, interest payments for lease liabilities, and interest payments recognized under intangible assets and property, plant and equipment. The above reconciliation only shows the carrying amounts of the financial liabilities, lease liabilities, and derivative financial assets allocated to net cash used in/from financing activities.

For further information, please refer to the previous section "Non-cash transactions in the consolidated statement of cash flows."

The carrying amounts of the financial liabilities disclosed in net cash used in/from financing activities, divided into carrying amount changes having and not having an effect on cash flows, developed as follows in 2020:

	As of Jan. 1, 2020	Of which: payments to be disclosed in net cash used in/from financing activities ^a	Total carrying amount changes having an effect on cash flows	Changes in the composition of the Group
Bonds and other securitized liabilities	51,644	51,295	16,754	24,631
Liabilities to banks	6,516	4,393	(1,265)	0
	58,160	55,688	15,489	24,631
Liabilities to non-banks from promissory note bonds	699	699	(200)	0
Liabilities with the right of creditors to priority repayment in the event of default	0	0	(148)	4,832
Other interest-bearing liabilities	4,369	3,264	(477)	9,177
Other non-interest-bearing liabilities	1,476	10	(8)	0
Derivative financial liabilities	1,645	232	(2)	0
	8,189	4,205	(835)	14,009
Financial liabilities	66,349	59,893	14,654	38,640
Lease liabilities	19,835	20,165	(5,371)	6,819
Derivative financial assets	2,333	(306)	(19)	0

millions of €

	Carrying amount changes not having an effect on cash flows					Carrying amount on Dec. 31, 2020 of the payments to be disclosed in net cash used in/from financing activities ^{a, b}	As of Dec. 31, 2020
	Currency translation	Fair value ^b	Carrying amount changes according to the effective interest method ^b	Other ^b	Total carrying amount changes not having an effect on cash flows ^b		
Bonds and other securitized liabilities	(6,600)	977	234	411	19,653	87,702	87,702
Liabilities to banks	0	25	32	1,396	1,453	4,581	5,257
	(6,600)	1,002	266	1,807	21,106	92,283	92,959
Liabilities to non-banks from promissory note bonds	(9)	0	0	0	(9)	490	490
Liabilities with the right of creditors to priority repayment in the event of default	(885)	0	(21)	108	4,034	3,886	3,886
Other interest-bearing liabilities	(222)	0	145	(5,852)	3,248	6,036	7,206
Other non-interest-bearing liabilities	1	0	0	0	1	3	1,703
Derivative financial liabilities	0	597	0	0	597	827	864
	(1,115)	597	124	(5,744)	7,871	11,242	14,149
Financial liabilities	(7,715)	1,559	390	(3,937)	28,977	103,525	107,108
Lease liabilities	(2,295)	0	0	13,397	17,921	32,715	32,715
Derivative financial assets	0	183	0	0	183	(142)	4,038

^a Deutsche Telekom exercised the option pursuant to IAS 7.33 and presented interest paid and interest received under net cash from operating activities.

^b The disclosures hereunder are presented in net terms from the reporting year. The comparatives were retrospectively adjusted accordingly.

36 Segment reporting

Deutsche Telekom reports on five operating segments, as well as on the Group Headquarters & Group Services segment. Three operating segments are distinguished by region (Germany, United States, Europe), one by customers and products (Systems Solutions), and another by tasks (Group Development). For three operating segments, business activities are assigned by customer and product (Germany, Systems Solutions, United States), while one operating segment allocates its activities on a regional basis (Europe) and another allocates them by equity investment (Group Development).

The **Germany** operating segment comprises all fixed-network and mobile business activities for consumers and business customers, including separate sales entities in Germany to allow a customer-centric sales approach. Another focus is on the wholesale business to provide telecommunications services for carriers. Build-out of the mobile and fixed networks is managed by the Technology business unit in this segment. Consistent with our efforts to implement our Group strategy pillar “Lead in business productivity,” the business-to-business (B2B) telecommunications services were realigned in the course of 2020. To this end, TC Services and Classified ICT (with the exception of a few activities in the area of Classified IT project business), portfolio units previously assigned to the Systems Solutions operating segment, as well as Telekom Global Carrier (TGC) and Network Infrastructure, (NWI) – which were previously reported under the Europe operating segment and the Group Headquarters & Group Services segment and which together form the business area designated as Deutsche Telekom Global Carrier (DTGC) – have been combined under the Germany operating segment. Since the start of the third quarter of 2020, the management of the Deutsche Telekom Group and hence also the reporting structure have both been based on this new segment allocation. Prior-year comparatives in the segments affected have been adjusted retrospectively in segment reporting.

The **United States** operating segment combines all mobile activities in the U.S. market. T-Mobile US offers services, terminal equipment, and accessories for consumers. In addition, the company sells devices to dealers and other third-party distributors for resale. In addition to wireless communications services, T-Mobile US also provides complementary products, including device protection, high-speed internet, and wireline communication services. The business combination of T-Mobile US and Sprint was completed on April 1, 2020, forming the all-new, larger T-Mobile US. On July 1, 2021, T-Mobile US acquired assets and liabilities from Shentel that are directly associated with the wireless telecommunications operation of Shentel.

The **Europe** operating segment comprises all fixed-network and mobile operations of the national companies in Greece, Hungary, Poland, the Czech Republic, Croatia, Slovakia, Austria, North Macedonia, and Montenegro. With the approval of the responsible authorities, on September 30, 2021 OTE consummated the sale of its 54 % stake in Telekom Romania Communications to Orange Romania. Thus Deutsche Telekom is focusing on mobile operations in Romania. The national company in Albania was sold as of May 7, 2019. In addition to consumer business, most of the national companies also offer ICT solutions for business customers.

The **Systems Solutions** operating segment offers business customers a focused product and solution portfolio under the T-Systems brand. With its horizontal offerings for advisory services, cloud computing, and digitalization solutions, T-Systems addresses the growth areas in the information technology market. Data sovereignty and security solutions are at the core of the product options, supplemented with strategic partnerships. Focused vertical offerings penetrate deep into the value chains of selected industries (automotive, healthcare, public sector, and transportation).

The goal of the **Group Development** operating segment is to actively manage entities and equity investments to grow their value. This approach led to the creation of GD Towers within the Group Development segment. Following the sale of the Dutch cell tower business in the reporting year, GD Towers has exclusively looked after the German and Austrian cell tower businesses since the second quarter of 2021. Following the integration of Tele2 Netherlands as of the start of 2019, the Dutch MVNO and SIM provider, Simpel, was taken over effective December 1, 2020. The investment management group DTCP; Comfort Charge, which is a provider of e-mobility charging infrastructure; and the Group functions of Mergers & Acquisitions and Strategic Portfolio Management are also assigned to Group Development. The stake in Ströer SE & Co. KGaA was transferred to Deutsche Telekom Trust e.V. in August 2019 as plan assets to cover Deutsche Telekom’s existing pension obligations.

The **Group Headquarters & Group Services** segment comprises all Group units that cannot be allocated directly to one of the operating segments and also reports on the Board of Management department Technology and Innovation. It unites the cross-segment functions of technology, innovation, IT, and Security of the Germany, Europe, and Systems Solutions operating segments. Group Headquarters defines strategic aims for the Group, ensures they are met, and becomes directly involved in selected Group projects. Group Services provides services to the entire Group; in addition to typical services provided by Deutsche Telekom Services Europe, such as financial accounting, human resources services, and operational procurement, Group Services also includes the placement services of personnel services provider Vivento. Further units are Group Supply Services (GSUS) for real estate management and strategic procurement, and MobilitySolutions, which is a full-service provider for fleet management and mobility services.

Changes to the segment and organizational structure in 2021. Effective January 1, 2021, Deutsche Telekom reassigned the responsibility for business and profit and loss for Deutsche Telekom IoT GmbH from the Systems Solutions operating segment to the business customer unit in the Germany operating segment. The subsidiary Deutsche Telekom IoT GmbH is responsible for the IoT business of Deutsche Telekom. Prior-year comparatives in both segments were adjusted retrospectively. As of January 1, 2021, Deutsche Telekom transferred the Austrian cell tower business from the Europe operating segment to GD Towers in the Group Development operating segment. Prior-year comparatives in both of the segments affected have not been adjusted retrospectively. As of January 1, 2021, DT IT Russia, DT IT Slovakia, and DT IT Hungary were reassigned from the Germany operating segment to the Group Headquarters & Group Services segment. Prior-year comparatives in both of the segments affected have not been adjusted retrospectively.

For further information, please refer to the section "[Changes in the composition of the Group and other transactions](#)" under "Summary of accounting policies."

The business segments presented are reviewed at regular intervals by the Deutsche Telekom Board of Management in terms of the allocation of resources and their earnings performance.

The measurement principles for Deutsche Telekom's segment reporting structure are based primarily on the IFRSs adopted in the consolidated financial statements. Deutsche Telekom evaluates the segments' performance based on revenue and profit or loss from operations (EBIT), among other factors. Revenue generated and goods and services exchanged between segments are calculated on the basis of market prices. Services provided by Deutsche Telekom IT are generally charged at cost. Development services are not charged, but capitalized at segment level in accordance with the internal control logic. In accordance with the segments' control logic, intragroup leases are not capitalized by the lessee, but instead recognized as periodic expenses. Segment assets and liabilities include all assets and liabilities that are carried in the financial statements prepared by the segments and included in the consolidated financial statements. Segment investments include additions to intangible assets, property, plant and equipment, and right-of-use assets. Where entities accounted for using the equity method are directly allocable to a segment, their shares of profit or loss after income taxes and their carrying amounts are reported in that segment's accounts. All of the performance indicators shown in the following tables are presented exclusively from the segments' perspective: The effects of intersegment transactions are eliminated and presented in aggregate form in the reconciliation line. The following table shows the performance indicators used by Deutsche Telekom to evaluate the operating segments' performance as well as additional segment-related indicators:

millions of €

		Net revenue	Intersegment revenue	Total revenue	Profit (loss) from operations (EBIT)	Depreciation and amortization	Impairment losses	Interest income
Germany	2021	23,577	587	24,164	4,951	(4,003)	(14)	4
	2020	23,019	771	23,790	3,970	(4,453)	(58)	4
	2019	22,947	803	23,750	4,238	(4,362)	(6)	6
United States	2021	68,357	2	68,359	7,217	(18,292)	(46)	16
	2020	61,206	2	61,208	9,187	(15,574)	(91)	24
	2019	40,418	2	40,420	5,488	(7,777)	0	19
Europe	2021	11,163	221	11,384	1,814	(2,561)	(15)	21
	2020	11,139	196	11,335	1,278	(2,648)	(227)	23
	2019	11,395	192	11,587	1,109	(2,773)	(341)	29
Systems Solutions	2021	3,171	848	4,019	(242)	(245)	(180)	9
	2020	3,237	922	4,159	(534)	(343)	(377)	7
	2019	3,418	993	4,411	(336)	(425)	(28)	11
Group Development	2021	2,333	832	3,165	1,084	(706)	0	2
	2020	2,202	681	2,883	562	(780)	0	1
	2019	2,158	639	2,797	615	(812)	0	0
Group Headquarters & Group Services	2021	193	2,322	2,515	(1,764)	(1,434)	(30)	1,204
	2020	196	2,360	2,556	(1,655)	(1,259)	(45)	1,237
	2019	195	2,432	2,627	(1,631)	(1,141)	(2)	1,330
Total	2021	108,794	4,812	113,606	13,060	(27,241)	(285)	1,256
	2020	100,999	4,932	105,931	12,808	(25,057)	(798)	1,296
	2019	80,531	5,061	85,592	9,483	(17,290)	(377)	1,395
Reconciliation	2021	0	(4,812)	(4,812)	(3)	44	1	(805)
	2020	0	(4,932)	(4,932)	(4)	26	0	(882)
	2019	0	(5,061)	(5,061)	(26)	24	(19)	(1,047)
Group	2021	108,794	0	108,794	13,057	(27,197)	(284)	451
	2020	100,999	0	100,999	12,804	(25,031)	(798)	414
	2019	80,531	0	80,531	9,457	(17,266)	(396)	348

^a Cash outflows for investments in intangible assets (excluding goodwill) and property, plant and equipment, as shown in the statement of cash flows.

^b The average number of employees was adjusted retrospectively for 2020 in the Germany operating segment and the Group Headquarters & Group Services segment.

Interest expense	Share of profit (loss) of associates and joint ventures accounted for using the equity method	Income taxes	Segment assets	Segment liabilities	Segment investments	Investments accounted for using the equity method	Net cash from operating activities	Net cash used in/ from investing activities	Of which: cash capex ^a	Net cash used in/ from financing activities	Average number of employees ^b
(350)	(15)	(5)	46,407	33,071	4,448	33	8,592	(4,208)	(4,116)	431	61,575
(283)	(6)	(6)	45,114	32,725	4,302	34	8,057	(4,214)	(4,191)	(4,098)	67,831
(209)	0	(5)	44,352	32,299	6,363	12	7,633	(4,648)	(4,447)	7,175	70,686
(3,776)	8	(325)	196,781	129,522	25,035	323	19,663	(19,816)	(18,594)	(3,042)	70,793
(3,384)	13	(1,292)	176,765	117,681	26,735	296	13,501	(14,001)	(10,394)	8,469	65,015
(1,623)	116	(1,224)	84,413	54,087	11,413	289	11,438	(6,997)	(6,369)	(4,135)	46,544
(137)	0	(425)	24,135	8,284	2,570	54	3,739	28	(1,905)	(3,776)	38,404
(189)	0	(210)	27,034	9,172	2,911	54	3,725	(3,244)	(2,216)	(655)	42,359
(251)	1	(258)	26,878	10,527	2,415	59	3,503	(1,741)	(1,816)	(1,748)	45,895
(25)	(1)	(40)	4,120	3,619	328	23	182	(143)	(237)	99	27,476
(26)	1	(32)	4,094	3,754	319	23	54	(411)	(235)	656	28,742
(25)	0	(36)	4,439	3,891	470	25	202	(280)	(324)	112	29,184
(280)	(66)	(45)	10,700	6,587	1,303	491	1,356	(809)	(572)	(635)	2,721
(271)	(21)	33	9,212	11,220	1,392	122	1,101	(1,020)	(699)	(215)	2,664
(140)	(30)	9	8,395	10,571	984	96	1,142	(610)	(452)	4,937	2,708
(1,287)	(27)	(977)	38,851	58,470	1,116	14	4,058	(3,922)	(1,007)	(7,805)	19,870
(1,364)	0	(424)	48,047	63,188	1,222	14	1,727	5,227	(990)	(6,035)	16,928
(1,510)	(1)	(491)	54,339	65,244	1,255	9	4,112	(16,669)	(1,010)	(1,727)	17,829
(5,855)	(102)	(1,817)	320,994	239,553	34,800	938	37,590	(28,870)	(26,431)	(14,728)	220,840
(5,517)	(13)	(1,931)	310,266	237,740	36,881	543	28,165	(17,663)	(18,725)	(1,878)	223,539
(3,758)	86	(2,005)	222,816	176,619	22,900	490	28,030	(30,945)	(14,418)	4,614	212,846
803	0	2	(39,367)	(39,394)	(75)	0	(5,419)	1,467	65	3,949	0
879	1	2	(45,349)	(45,373)	(33)	0	(4,422)	(4,986)	31	9,439	0
1,046	1	12	(52,144)	(52,178)	(126)	(1)	(4,956)	16,715	61	(11,755)	0
(5,052)	(102)	(1,815)	281,627	200,159	34,725	938	32,171	(27,403)	(26,366)	(10,779)	220,840
(4,638)	(12)	(1,929)	264,917	192,367	36,848	543	23,743	(22,649)	(18,694)	7,561	223,539
(2,712)	87	(1,993)	170,672	124,441	22,774	489	23,074	(14,230)	(14,357)	(7,141)	212,846

Information on geographic areas. The Group's non-current assets and net revenue are shown by region: Germany, Europe (excluding Germany), North America, and other countries. The North America region comprises the United States and Canada. The Europe (excluding Germany) region covers the entire European Union (excluding Germany) and the other countries in Europe. Other countries include all countries that are not Germany or in Europe (excluding Germany) or North America. Non-current assets are allocated to the regions according to the location of the assets in question. Non-current assets encompass intangible assets; property, plant and equipment; right-of-use assets; capitalized contract costs; investments accounted for using the equity method; as well as other non-current assets. Net revenue is allocated according to the location of the respective customers' operations.

	Non-current assets			Net revenue		
	Dec. 31, 2021	Dec. 31, 2020	Dec. 31, 2019	2021	2020	2019
Germany	42,928	42,941	43,431	25,064	24,730	24,600
International	187,158	170,295	95,852	83,731	76,269	55,930
Europe (excluding Germany)	19,941	23,075	23,858	14,909	14,517	14,858
North America	167,122	147,115	71,886	68,363	61,288	40,445
Other countries	95	106	108	458	463	628
Group	230,086	213,236	139,283	108,794	100,999	80,531

Information on products and services. Revenue generated with external customers for groups of comparable products and services developed as follows:

millions of €	Net revenue		
	2021	2020	2019
Telecommunications	103,567	95,628	74,991
ICT solutions	4,740	4,915	5,086
Other	487	455	454
	108,794	100,999	80,531

37 Contingencies

As part of its ordinary business activities, Deutsche Telekom is involved in various proceedings both in and out of court with government agencies, competitors, and other parties, the outcome of which often cannot be reliably anticipated. As of the reporting date, the Group was exposed to contingent liabilities amounting to EUR 0.1 billion (December 31, 2020: EUR 0.1 billion) and to contingent assets amounting to EUR 0.0 billion (December 31, 2020: EUR 0.0 billion) that, on the basis of the information and estimates available, do not fulfill the requirements for recognition as liabilities or assets in the statement of financial position. Litigation provisions include the costs of legal counsel services and any probable losses. Deutsche Telekom does not believe that any additional costs arising from legal counsel services or the results of proceedings will have a material adverse effect on the results of operations and financial position of the Group. In addition to individual cases that do not have any significant impact on their own, the aforementioned total contingent liabilities include the following items, the sequence of which does not imply an evaluation of their probability of occurrence or potential damage. In the event that in extremely rare cases disclosures required by IAS 37 are not made, Deutsche Telekom comes to the conclusion that these disclosures could seriously undermine the outcome of the relevant proceedings.

Contingent liabilities

On the basis of the information and estimates available, the following issues do not fulfill the requirements for recognition as liabilities in the statement of financial position. As it is not possible to estimate the amount of the contingent liabilities or the group of contingent liabilities with sufficient reliability in each case due to the uncertainties described below, they have not been included in the aforementioned total contingent liabilities.

Claims relating to charges for the shared use of cable ducts. In 2012, Kabel Deutschland Vertrieb und Service GmbH (today Vodafone Deutschland GmbH (VKDG)) filed a claim against Telekom Deutschland GmbH to reduce the annual charge for the rights to use cable duct capacities. According to VKDG's latest estimates, its claims amounted to around EUR 624 million for the period from 2009 to mid-2018, along with around EUR 9 million for the alleged benefit from additional interest, plus interest in each case, and the company is also demanding a considerable reduction of the charges for the following years. In similar proceedings, the then Unitymedia Hessen GmbH & Co. KG, Unitymedia NRW GmbH, and Kabel BW GmbH (today Vodafone Hessen et al.) filed claims against Telekom Deutschland GmbH in January 2013, demanding that it cease charging the plaintiffs more than a specific and precisely stated amount for the shared use of cable ducts, including in the future. The plaintiffs are demanding a refund, most recently calculated at approximately EUR 570 million plus interest for the years 2009 to 2017. The claims were recently rejected by the Frankfurt Higher Regional Court (VKDG) and by the Düsseldorf Higher Regional Court (Vodafone Hessen et al.) and an appeal was not allowed in both cases. In response to the complaints of the plaintiffs against non-allowance of appeal, the Federal Court of Justice allowed the appeal by VKDG to the extent that it relates to claims dating from January 1, 2012; the appeal by Vodafone Hessen et al. was allowed to the extent that it relates to claims dating from January 1, 2016. The claims were rejected with legally binding effect for the time periods prior to this, which leads to a significant reduction in current calculations of claims. In a ruling on December 14, 2021, the Federal Court of Justice referred the proceedings concerning the remaining claims back to the responsible Higher Regional Courts for a new hearing and decision. At present the financial impact of both these proceedings cannot be assessed with sufficient certainty.

Sprint Merger class action. On June 4, 2021, a shareholder class action and derivative action was filed in the Delaware Court of Chancery against Deutsche Telekom AG, SoftBank, T-Mobile US, and all of our officers and directors at that time, asserting breach of fiduciary duties relating to the repricing amendment to the Business Combination Agreement, as well as SoftBank's subsequent monetization of its T-Mobile US shares. On October 29, 2021, the complaint was amended. The amended complaint is directed at the same defendants and the same underlying transactions as in the original action; however, it includes additional submission on alleged facts. At present, the financial impact of these proceedings cannot be assessed with sufficient certainty.

Proceedings against T-Mobile US as a consequence of the cyberattack on T-Mobile US. In August 2021, T-Mobile US confirmed that their systems had been subject to a criminal cyberattack that compromised data of millions of their customers, former customers, and prospective customers. With the assistance of outside cybersecurity experts, T-Mobile US located and closed the unauthorized access to their systems and identified customers whose information was impacted and notified them, consistent with state and federal requirements. As a result of the cyberattack, numerous consumer class actions were filed against T-Mobile US. The class actions brought in before the federal courts were consolidated to one action in December 2021. The plaintiffs are claiming damages in an as yet unspecified amount. Moreover, in November 2021 a derivative action was filed against the members of the Board of Directors of T-Mobile US. T-Mobile US is also named as a nominal defendant in this lawsuit. The plaintiff is making various unquantified claims in relation to the company's cybersecurity practices. In addition, inquiries have been made by various government agencies, law enforcement and other state authorities. At present the financial impact of these proceedings cannot be assessed with sufficient certainty.

Patents and licenses. Like many other large telecommunications and internet providers, Deutsche Telekom is exposed to a growing number of intellectual property rights disputes. There is a risk that Deutsche Telekom may have to pay license fees and/or compensation; Deutsche Telekom is also exposed to a risk of cease-and-desist orders, for example relating to the sale of a product or the use of a technology.

Anti-trust and consumer protection proceedings. Deutsche Telekom and its subsidiaries are subject to proceedings under anti-trust law in various jurisdictions, which may also lead to civil follow-on claims. Taken individually, none of the proceedings have a material impact. Deutsche Telekom believes the respective allegations and claims for damages are unfounded. The outcome of the proceedings cannot be foreseen at this point in time.

Claims for damages against Slovak Telekom following a European Commission decision to impose fines. The European Commission decided on October 15, 2014 that Slovak Telekom had abused its market power on the Slovak broadband market and as a result imposed fines on Slovak Telekom and Deutsche Telekom AG, which were paid in full in January 2015. After the Court of the European Union partially overturned the European Commission's decision in 2018 and reduced the fines by a total of EUR 13 million, the legal recourse following the ruling of the European Court of Justice on March 25, 2021 is exhausted. Following the decision of the European Commission, competitors filed damage actions against Slovak Telekom with the civil court in Bratislava. These claims seek compensation for alleged damages due to Slovak Telekom's abuse of a dominant market position, as determined by the European Commission. At present, two claims totaling EUR 112 million plus interest are still pending. It is currently not possible to estimate the financial impact with sufficient certainty.

Claims for damages against Deutsche Telekom AG, including due to insolvency of Phones4U. Phones4U was an independent British mobile retailer and had declared insolvency in 2013. The insolvency administrator is pursuing claims before the High Court of Justice in London against the mobile providers active on the UK market at that time and their parent companies on the grounds of alleged collusion in violation of anti-trust law and breach of contract. Deutsche Telekom AG, which at that time held 50 % of the mobile company EE Limited, has rejected the claims as unsubstantiated, including at the Case Management Conference in October 2021, but will nevertheless have to take part in the court proceedings, which are expected to begin in May 2022. Phones4U has yet to state the amount of its claim for damages. It is currently not possible to estimate the financial impact with sufficient certainty.

Tax risks. In many countries, Deutsche Telekom is subject to the applicable tax regulations. Risks can arise from changes in local taxation laws or case law and different interpretations of existing provisions. As a result, they can affect Deutsche Telekom's tax expense and benefits as well as tax receivables and liabilities.

38 Lessor relationships

Finance leases. Deutsche Telekom is a lessor in connection with finance leases. Essentially, these relate to the leasing of routers and other hardware, which Deutsche Telekom provides to its customers for data and telephone network solutions.

The following table shows how the amount of the net investment in a finance lease is determined:

millions of €	Dec. 31, 2021	Dec. 31, 2020
Minimum lease payments	240	260
Unguaranteed residual value	2	3
Gross investment	242	262
Unearned finance income	(13)	(15)
Net investment (present value of the minimum lease payments)	228	248

The following table presents the gross investment amounts and the present value of payable minimum lease payments:

Maturity	Dec. 31, 2021		Dec. 31, 2020	
	Gross investment	Present value of minimum lease payments	Gross investment	Present value of minimum lease payments
Within 1 year	93	88	93	87
In 1 to 2 years	78	72	74	69
In 2 to 3 years	45	44	46	44
In 3 to 4 years	15	15	35	34
In 4 to 5 years	6	5	9	8
After 5 years	5	5	5	4
	242	228	262	248

Operating leases. Deutsche Telekom is a lessor in connection with operating leases. The underlying leases mainly relate to mobile terminal equipment in the United States operating segment, cell sites, building and co-location space, and unbundled local loop lines. By contrast, contracts on the provision of the latest generation of modems/routers to consumers in the fixed-network mass-market – where modem and router features are incorporated in one device – are not defined as leases.

Where terminal equipment is leased in the United States operating segment, customers are entitled to receive a new device once per month during the term of the lease. On receipt of the new device or at the end of the contract, the customer either returns or purchases the equipment. The purchase price at the end of the lease is set at the commencement of the lease and is equal to the estimated residual value of the equipment. This value is based on the type of equipment and the advance payment. The contracts do not contain any residual value guarantees or variable lease payments, nor do they contain any restrictions or covenants. Terminal equipment returned by customers is prepared for sale in the secondary market or for use as a replacement for defective devices. This reduces the residual value risk of the returned equipment.

The leasing of local loop lines and space to wholesale fixed-network customers (e.g., co-location space) is also classified as a lease. The regulator requires Deutsche Telekom to make co-location space and unbundled local loop lines available to competitors. In contrast to unregulated products, the residual value risk for these assets is rather low because competitors are economically dependent on the use of these assets. In the unlikely event that co-location space and unbundled local loop lines are not leased, Deutsche Telekom will try to find new tenants for the vacant space or unleased lines. In the case of its own cell sites, Deutsche Telekom will also strive to continue leasing – where possible – all of the free space that it does not itself occupy. The aim here is to reduce the vacancy rate of unused space as far as possible by re-letting and to spread the cost.

Operating leases exist for the following items of property, plant and equipment:

millions of €				
	Land and buildings	Technical equipment and machinery	Other equipment, operating and office equipment	Total
Cost				
At December 31, 2019	80	1,578	0	1,657
Currency translation	(1)	(710)	0	(712)
Changes in the composition of the Group	0	5,124	0	5,124
Additions	0	2,600	0	2,600
Disposals	(14)	(2,490)	0	(2,505)
Change from non-current assets and disposal groups held for sale	(61)	0	0	(61)
Reclassifications	(1)	218	2	219
At December 31, 2020	2	6,318	2	6,322
Currency translation	0	352	0	352
Changes in the composition of the Group	0	0	0	0
Additions	0	1,134	0	1,134
Disposals	0	(3,733)	0	(3,733)
Change from non-current assets and disposal groups held for sale	0	0	0	0
Reclassifications	20	167	2	189
At December 31, 2021	22	4,239	3	4,264
Accumulated depreciation and impairment losses				
At December 31, 2019	(59)	(762)	0	(821)
Currency translation	1	129	0	130
Changes in the composition of the Group	0	0	0	0
Additions (depreciation)	(1)	(2,642)	0	(2,644)
Additions (impairment)	0	0	0	0
Disposals	12	1,215	0	1,227
Change from non-current assets and disposal groups held for sale	44	0	0	44
Reclassifications	3	(96)	0	(94)
Reversal of impairment losses	0	0	0	0
At December 31, 2020	(1)	(2,156)	(1)	(2,157)
Currency translation	0	(157)	0	(157)
Changes in the composition of the Group	0	0	0	0
Additions (depreciation)	(1)	(2,716)	(1)	(2,718)
Additions (impairment)	0	0	0	0
Disposals	0	2,521	0	2,521
Change from non-current assets and disposal groups held for sale	0	0	0	0
Reclassifications	(18)	(92)	0	(109)
Reversal of impairment losses	0	0	0	0
At December 31, 2021	(20)	(2,599)	(2)	(2,621)
Net carrying amounts				
At December 31, 2020	1	4,163	1	4,164
At December 31, 2021	2	1,640	2	1,644

The future minimum lease payments arising from non-cancelable operating leases are as follows:

millions of €		
Maturity	Dec. 31, 2021	Dec. 31, 2020
Within 1 year	771	1,822
In 1 to 2 years	371	393
In 2 to 3 years	255	232
In 3 to 4 years	268	241
In 4 to 5 years	219	203
After 5 years	861	751
	2,745	3,641

The reduction in future minimum lease payments is mainly the result of the decline in terminal equipment leasing in the United States operating segment.

39 Other financial obligations

The following table provides an overview of Deutsche Telekom's other financial obligations:

millions of €

	Dec. 31, 2021			
	Total	Due within 1 year	Due > 1 year ≤ 5 years	Due > 5 years
Purchase commitments regarding property, plant and equipment	5,914	5,098	588	228
Purchase commitments regarding intangible assets	2,038	1,471	566	1
Firm purchase commitments for inventories	7,645	7,635	10	0
Other purchase commitments and similar obligations	20,583	11,723	7,427	1,433
Payment obligations to the Civil Service Pension Fund	1,053	6	726	321
Obligations from the acquisition of interests in other companies	37	4	33	0
Miscellaneous other obligations	125	78	25	22
	37,395	26,015	9,375	2,005

40 Financial instruments and risk management

For further information on financial instruments, please refer in particular to Note 2 "Trade receivables," Note 11 "Other financial assets," Note 13 "Financial liabilities and lease liabilities," Note 28 "Finance costs," and Note 30 "Other financial income/expense."

Carrying amounts, amounts recognized, and fair values by class and measurement category

millions of €

	Measurement category in accordance with IFRS 9	Carrying amount Dec. 31, 2021	Amounts recognized in the statement of financial position in accordance with IFRS 9		
			Amortized cost	Fair value through other comprehensive income without recycling to profit or loss	Fair value through other comprehensive income with recycling to profit or loss
Assets					
Cash and cash equivalents	AC	7,617	7,617		
Trade receivables					
At amortized cost	AC	5,814	5,814		
At fair value through other comprehensive income	FVOCI	9,486		9,486	
At fair value through profit or loss	FVTPL	0			0
Other financial assets					
Originated loans and other receivables					
At amortized cost	AC	5,224	5,224		
Of which: collateral paid	AC	589	589		
Of which: publicly funded projects	AC	1,794	1,794		
At fair value through other comprehensive income	FVOCI	0		0	
At fair value through profit or loss	FVTPL	233			233
Equity instruments					
At fair value through other comprehensive income	FVOCI	437		437	
At fair value through profit or loss	FVTPL	3			3
Derivative financial assets					

^a For energy forward agreements embedded in contracts and options received from third parties for the purchase or sale of shares in subsidiaries and associates, please refer to the detailed comments in the following section.

millions of €

	Measurement category in accordance with IFRS 9	Amounts recognized in the statement of financial position in accordance with IFRS 9			
		Carrying amount Dec. 31, 2021	Amortized cost	Fair value through other comprehensive income without recycling to profit or loss	Fair value through other comprehensive income with recycling to profit or loss
Derivatives without a hedging relationship	FVTPL	1,202			1,202
Of which: termination rights embedded in bonds issued	FVTPL	464			464
Of which: energy forward agreements embedded in contracts	FVTPL	191			191
Of which: options received from third parties for the purchase or sale of shares in subsidiaries and associates	FVTPL	264			264
Derivatives with a hedging relationship	n.a.	1,560		364	1,196
Lease assets	n.a.	228			
Cash and cash equivalents and trade receivables and other financial assets directly associated with non-current assets and disposal groups held for sale	AC	428	428		
Equity instruments within non-current assets and disposal groups held for sale	FVOCI	29		29	
Liabilities					
Trade payables	AC	10,452	10,452		
Bonds and other securitized liabilities	AC	93,857	93,857		
Liabilities to banks	AC	4,003	4,003		
Liabilities to non-banks from promissory note bonds	AC	483	483		
Liabilities with the right of creditors to priority repayment in the event of default	AC	3,248	3,248		
Other interest-bearing liabilities	AC	7,344	7,344		
Of which: collateral received	AC	1,616	1,616		
Other non-interest-bearing liabilities	AC	1,829	1,829		
Of which: puttable shares of non-controlling interests in consolidated partnerships	AC	185	185		
Lease liabilities	n.a.	33,133			
Derivative financial liabilities					
Derivatives without a hedging relationship	FVTPL	586			586
Of which: options granted to third parties for the purchase of shares in subsidiaries and associates	FVTPL	0			0
Of which: energy forward agreements embedded in contracts	FVTPL	7			7
Derivatives with a hedging relationship	n.a.	118		107	11
Trade payables and other financial liabilities directly associated with non-current assets and disposal groups held for sale	AC	1,086	1,086		
Of which: aggregated by measurement category in accordance with IFRS 9					
Assets					
Financial assets at amortized cost	AC	19,083	19,083		
Financial assets at fair value through other comprehensive income with recycling to profit or loss	FVOCI	9,486			9,486
Financial assets at fair value through other comprehensive income without recycling to profit or loss	FVOCI	466		466	
Financial assets at fair value through profit or loss	FVTPL	1,438			1,438
Liabilities					
Financial liabilities at amortized cost	AC	122,301	122,301		
Financial liabilities at fair value through profit or loss	FVTPL	586			586

^a For energy forward agreements embedded in contracts and options received from third parties for the purchase or sale of shares in subsidiaries and associates, please refer to the detailed comments in the following section.

millions of €		Amounts recognized in the statement of financial position in accordance with IFRS 9							
Amounts recognized in the statement of financial position in accordance with IFRS 16	Fair value Dec. 31, 2021 ^b	Measurement category in accordance with IFRS 9	Carrying amount Dec. 31, 2020	Amortized cost	Fair value through other comprehensive income without recycling to profit or loss	Fair value through other comprehensive income with recycling to profit or loss	Fair value through profit or loss ^a	Amounts recognized in the statement of financial position in accordance with IFRS 16	Fair value Dec. 31, 2020 ^b
Assets									
Cash and cash equivalents		AC	12,940	12,940					
Trade receivables									
At amortized cost		AC	6,007	6,007					
At fair value through other comprehensive income	9,486	FVOCI	7,516			7,516			7,516
At fair value through profit or loss	0	FVTPL	0				0		0
Other financial assets									
Originated loans and other receivables									
At amortized cost	5,252	AC	4,722	4,722					4,758
Of which: collateral paid		AC	543	543					
Of which: publicly funded projects		AC	1,676	1,676					
At fair value through other comprehensive income	0	FVOCI	0			0			0
At fair value through profit or loss	233	FVTPL	204				203		203
Equity instruments									
At fair value through other comprehensive income	437	FVOCI	425		425				425
At fair value through profit or loss	3	FVTPL	3				3		3
Derivative financial assets									
Derivatives without a hedging relationship	1,202	FVTPL	1,992				1,992		1,992
Of which: termination rights embedded in bonds issued	464	FVTPL	889				889		889
Of which: energy forward agreements embedded in contracts	191	FVTPL	77				77		77
Of which: options received from third parties for the purchase or sale of shares in subsidiaries and associates	264	FVTPL	819				819		819
Derivatives with a hedging relationship	1,560	n.a.	2,047			21	2,026		2,047
Lease assets	228	n.a.	248						248
Cash and cash equivalents and trade receivables and other financial assets directly associated with non-current assets and disposal groups held for sale		AC	206	206					
Equity instruments within non-current assets and disposal groups held for sale	29	FVOCI	32		32				32
Liabilities									
Trade payables		AC	9,760	9,760					

^a For energy forward agreements embedded in contracts and options received from third parties for the purchase or sale of shares in subsidiaries and associates, please refer to the detailed comments in the following section.

^b The practical expedient under IFRS 7.29a was applied for information on specific fair values.

millions of €		Amounts recognized in the statement of financial position in accordance with IFRS 9							Amounts recognized in the statement of financial position in accordance with IFRS 16	
	Amounts recognized in the statement of financial position in accordance with IFRS 16	Fair value Dec. 31, 2021 ^b	Measurement category in accordance with IFRS 9	Carrying amount Dec. 31, 2020	Amortized cost	Fair value through other comprehensive income without recycling to profit or loss	Fair value through other comprehensive income with recycling to profit or loss	Fair value through profit or loss ^a	Fair value Dec. 31, 2020 ^b	
Bonds and other securitized liabilities		103,397	AC	87,702	87,702				97,655	
Liabilities to banks		4,090	AC	5,257	5,257				5,393	
Liabilities to non-banks from promissory note bonds		565	AC	490	490				586	
Liabilities with the right of creditors to priority repayment in the event of default		3,389	AC	3,886	3,886				4,167	
Other interest-bearing liabilities		7,321	AC	7,206	7,206				7,270	
Of which: collateral received			AC	1,530	1,530					
Other non-interest-bearing liabilities			AC	1,703	1,703					
Of which: puttable shares of non-controlling interests in consolidated partnerships			AC	6	6					
Lease liabilities	33,133		n.a.	32,715				32,715		
Derivative financial liabilities										
Derivatives without a hedging relationship		586	FVTPL	478				478	478	
Of which: options granted to third parties for the purchase of shares in subsidiaries and associates		0	FVTPL	8				8	8	
Of which: energy forward agreements embedded in contracts		7	FVTPL	129				129	129	
Derivatives with a hedging relationship		118	n.a.	386			334	52	386	
Trade payables and other financial liabilities directly associated with non-current assets and disposal groups held for sale			AC	398	398					
Of which: aggregated by measurement category in accordance with IFRS 9										
Assets										
Financial assets at amortized cost		5,252	AC	23,875	23,875				4,758	
Financial assets at fair value through other comprehensive income with recycling to profit or loss		9,486	FVOCI	7,516			7,516		7,516	
Financial assets at fair value through other comprehensive income without recycling to profit or loss		466	FVOCI	456		457			457	
Financial assets at fair value through profit or loss		1,438	FVTPL	2,199				2,199	2,198	
Liabilities										
Financial liabilities at amortized cost		118,762	AC	116,402	116,402				115,071	
Financial liabilities at fair value through profit or loss		586	FVTPL	478				478	478	

^a For energy forward agreements embedded in contracts and options received from third parties for the purchase or sale of shares in subsidiaries and associates, please refer to the detailed comments in the following section.

^b The practical expedient under IFRS 7.29a was applied for information on specific fair values.

Trade receivables include receivables amounting to EUR 2.8 billion (December 31, 2020: EUR 2.0 billion) due in more than one year. The fair value generally equals the carrying amount.

Disclosures on fair value

When determining the fair value, it is important to maximize the use of current inputs observable in liquid markets for the financial instrument in question and minimize the use of other inputs (e.g., historical prices, prices for similar instruments, prices on illiquid markets). A three-level measurement hierarchy is defined for these purposes. If prices quoted in liquid markets are available at the reporting date for the respective financial instrument, these will be used unadjusted for the measurement (Level 1 measurement). Other input parameters are then irrelevant for the measurement. One such example is shares and bonds that are actively traded on a stock exchange. If quoted prices on liquid markets are not available at the reporting date for the respective financial instrument, but the instrument can be measured using other inputs that are observable on the market at the reporting date, a Level 2 measurement will be applied. The conditions for this are that no major adjustments have been made to the observable inputs and no unobservable inputs are used. Examples of Level 2 measurements are collateralized interest rate swaps, currency forwards, and cross-currency swaps that can be measured using current interest rates or exchange rates. If the conditions for a Level 1 or Level 2 measurement are not met, a Level 3 measurement is applied. In such cases, major adjustments must be made to observable inputs or unobservable inputs must be used.

Financial instruments not measured at fair value, the fair values of which are disclosed nevertheless

	Dec. 31, 2021				Dec. 31, 2020			
	Level 1	Level 2	Level 3 ^a	Total	Level 1	Level 2	Level 3 ^a	Total
Assets								
Originated loans and receivables		5,252		5,252		4,758		4,758
Liabilities								
Financial liabilities measured at amortized cost	94,637	23,661	464	118,762	87,384	26,798	889	115,071
Of which: bonds and other securitized liabilities	91,260	11,685	452	103,397	83,238	13,549	868	97,655
Of which: liabilities to banks		4,090		4,090		5,393		5,393
Of which: liabilities to non-banks from promissory notes		565		565		586		586
Of which: liabilities with the right of creditors to priority repayment in the event of default	3,377		12	3,389	4,146	0	21	4,167
Of which: other interest-bearing liabilities		7,321		7,321		7,270		7,270

^a Separation of embedded derivatives; the fair value of the entire instrument must be categorized as Level 1.

Financial instruments measured at fair value

	Dec. 31, 2021				Dec. 31, 2020			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Assets								
Trade receivables								
At fair value through other comprehensive income			9,486	9,486			7,516	7,516
At fair value through profit or loss			0	0			0	0
Other financial assets – Originated loans and other receivables								
At fair value through other comprehensive income			0	0				0
At fair value through profit or loss	145	77	10	232	133	62	8	203
Equity instruments								
At fair value through other comprehensive income	29		437	466			457	457
At fair value through profit or loss			3	3			3	3
Derivative financial assets								
Derivatives without a hedging relationship		286	916	1,202		207	1,785	1,992
Derivatives with a hedging relationship		1,560		1,560		2,047		2,047
Liabilities								
Derivative financial liabilities								
Derivatives without a hedging relationship		579	7	586		341	137	478
Derivatives with a hedging relationship		118		118		386		386

Of the equity instruments measured at fair value through other comprehensive income and recognized under other financial assets, the instruments presented in the different levels constitute separate classes of financial instruments. In each case, the fair values of the total volume of equity instruments recognized as Level 1 are the price quotations at the reporting date.

The listed bonds and other securitized liabilities are assigned to Level 1 or Level 2 depending on the market liquidity of the relevant instrument. Consequently, issues denominated in euros or U.S. dollars with relatively large nominal amounts are to be classified as Level 1, the rest as Level 2. The fair values of the instruments assigned to Level 1 equal the nominal amounts multiplied by the price quotations at the reporting date. The fair values of the instruments assigned to Level 2 are calculated as the present values of the payments associated with the debts, based on the applicable yield curve and Deutsche Telekom's credit spread curve for specific currencies.

The fair values of liabilities to banks, liabilities to non-banks from promissory notes, and other interest-bearing liabilities are calculated as the present values of the payments associated with the debts, based on the applicable yield curve and Deutsche Telekom's credit spread curve for specific currencies.

Since there are no market prices available for the derivative financial instruments in the portfolio assigned to Level 2 due to the fact that they are not listed on the market, the fair values are calculated using standard financial valuation models, based entirely on observable inputs. The fair value of derivatives is the price that Deutsche Telekom would receive or have to pay if the financial instrument were transferred at the reporting date. Interest rates of contractual partners relevant as of the reporting date are used in this respect. The middle rates applicable as of the reporting date are used as exchange rates. In the case of interest-bearing derivatives, a distinction is made between the clean price and the dirty price. In contrast to the clean price, the dirty price also includes the interest accrued. The fair values carried correspond to the full fair value or the dirty price.

The equity instruments measured at fair value through other comprehensive income comprise a large number of investments in strategic, unlisted individual positions. Deutsche Telekom considers the chosen measurement through other comprehensive income without recycling to profit or loss to be appropriate because there are no plans to use the investments for short-term profit-taking. At the date of disposal of an investment, the total cumulative gain or loss is reclassified to retained earnings. Acquisitions and disposals are based on business policy investment decisions.

Investments in equity instruments at fair value through other comprehensive income

millions of €		
	2021	2020
Fair value as of December 31	466	457
Dividends recognized in profit/loss	0	1
Of which: on investments divested in the reporting period	0	0
Of which: on investments still held at the reporting date	0	0
Fair value at the derecognition date of instruments divested in the reporting period	249	52
Cumulative gains reclassified in the reporting period from other comprehensive income to retained earnings	121	7
Of which: from the disposal of investments	121	7
Cumulative losses reclassified in the reporting period from other comprehensive income to retained earnings	1	0
Of which: from the disposal of investments	1	0

Development of the carrying amounts of the financial assets and financial liabilities assigned to Level 3

millions of €						
	Equity instruments at fair value through other comprehensive income	Derivative financial assets at fair value through profit or loss: termination rights embedded in bonds issued	Derivative financial assets at fair value through profit or loss: stock options	Derivative financial assets at fair value through profit or loss: energy forward agreements embedded in contracts	Derivative financial liabilities at fair value through profit or loss: energy forward agreements embedded in contracts	Derivative financial assets at fair value through profit or loss: put option for shares
Carrying amount as of January 1, 2021	457	889	805	77	(129)	0
Additions (including first-time categorization as Level 3)	88	86	0	0	0	0
Decreases in fair value recognized in profit/loss (including losses on disposal)	0	(736)	(509)	(96)	(3)	0
Increases in fair value recognized in profit/loss (including gains on disposal)	0	182	773	194	130	22
Decreases in fair value recognized directly in equity	(133)	0		0	0	0
Increases in fair value recognized directly in equity	261	0		0	0	0
Disposals	(239)	0	(847)	0	0	0
Currency translation effects recognized directly in equity	3	43	0	16	(5)	0
Carrying amount as of December 31, 2021	437	464	222	191	(7)	22

The equity instruments assigned to Level 3 that are measured at fair value through other comprehensive income and carried under other financial assets are equity investments with a carrying amount of EUR 426 million measured using the best information available at the reporting date. As a rule, Deutsche Telekom considers transactions involving shares in those companies to have the greatest relevance. Transactions involving shares in comparable companies are also considered. The proximity of the relevant transaction to the reporting date, and the question of whether it was conducted at arm's length, are relevant for deciding which information is used for the measurement. Furthermore, the degree of similarity between the object being measured and comparable companies must be taken into consideration. Based on Deutsche Telekom's own assessment, the fair values of the equity investments at the reporting date could be determined with sufficient reliability. For the development of the carrying amounts in the reporting period, please refer to the table above. At the reporting date, investments with a carrying amount of EUR 29 million were held for sale, while there were no plans to sell the remaining investments. In the case of investments with a carrying amount of EUR 258 million, transactions involving shares in these companies took place at arm's length sufficiently close to the reporting date, which is why the share prices agreed in the transactions were to be used without adjustment for the measurement as of December 31, 2021. In the case of investments with a carrying amount of EUR 7 million, an analysis of operational indicators (especially revenue, EBIT, and liquidity) revealed that the carrying amounts were equivalent to current fair values. Due to better comparability, previous arm's length transactions involving shares in these companies are preferable to more recent transactions involving shares in similar companies. In the case of investments with a carrying amount of EUR 161 million, for which the last arm's length transactions relating to shares in these companies took place some time ago, a measurement performed more recently relating to shares in similar companies provides the most reliable representation of the fair values. Here, multiples to the reference variable of expected revenue (ranging between 3.1 and 16) were taken. The 25 % quantile, the median, or the 75 % quantile was used for the multiples depending on the specific circumstances. If other values had been used for the multiples and for the expected revenue amounts, the fair values calculated would have been different. These hypothetical deviations (sensitivities) are shown in the table "Sensitivities of the carrying amounts of the financial assets and financial liabilities assigned to Level 3 depending on unobservable inputs." In addition, non-material individual items with a carrying amount of EUR 11 million (when translated into euros) are included with differences in value of minor relevance.

For the development of the carrying amounts in the reporting year, please refer to the table above.

The derivatives without a hedging relationship assigned to Level 3 and carried under derivative financial assets relate to options embedded in bonds issued by T-Mobile US with a carrying amount of EUR 464 million when translated into euros. The options, which can be exercised by T-Mobile US at any time, allow early redemption of the bonds at fixed exercise prices. Observable market prices are available regularly and also at the reporting date for the bonds as entire instruments, but not for the options embedded therein. The termination rights are measured using an option pricing model. Historical interest rate volatilities of bonds issued by T-Mobile US and comparable issuers are used for the measurement because these provide a more reliable estimate at the reporting date than current market interest rate volatilities. The spread curve, which is also unobservable, was derived on the basis of current market prices of bonds issued by T-Mobile US and debt instruments of comparable issuers. Risk-free interest rates and spreads were simulated separately from each other. At the current reporting date, the following interest rate volatility and spreads were used for the various rating levels of the bonds:

For the development of the carrying amounts in the reporting year, please refer to the table above.

Interest rate volatilities and spreads used by rating level

%	Interest volatility (absolute figure)	Spread
BBB+	0.2 %–0.3 %	0.2 %–1.2 %
BBB-	0.6 %–0.8 %	0.3 %–1.8 %
BB+/BB	0.8 %–1.0 %	0.6 %–2.9 %

For the mean reversion input, which is unobservable, 3 % was used. In our opinion, the values used constitute the best estimate in each case. If other values had been used for interest rate volatility, spread curve, or mean reversion, the fair values calculated would have been different. These hypothetical deviations (sensitivities) are shown in the table below. If the risk-free interest rate had been 50 basis points higher (lower) at the reporting date, the fair value of the options would have been EUR 120 million lower (EUR 150 million higher). In the reporting period, a net expense of EUR 82 million when translated into euros was recognized under the Level 3 measurement in other financial income/expense for unrealized losses for the options in the portfolio at the reporting date. In the reporting period, three options were exercised and the relevant bonds canceled prematurely. At the time of termination, the options and their respective total carrying amount of EUR 499 million when translated into euros were expensed and derecognized. Please refer to the table above for the development of the carrying amounts in the reporting period. The changes in value recognized in profit or loss in the reporting period were mainly attributable to fluctuations in the interest rates and historical interest rate volatilities in absolute terms that are relevant for measurement. Due to their distinctiveness, these instruments constitute a separate class of financial instruments.

Sensitivities^a of the carrying amounts of the financial assets and financial liabilities assigned to Level 3 depending on unobservable inputs

millions of €

	Equity instruments at fair value through other comprehensive income	Derivative financial assets at fair value through profit or loss: termination rights embedded in bonds issued	Derivative financial assets at fair value through profit or loss: stock options	Derivative financial assets at fair value through profit or loss: energy forward agreements embedded in contracts	Derivative financial liabilities at fair value through profit or loss: energy forward agreements embedded in contracts	Derivative financial assets at fair value through profit or loss: put option for shares
Multiple next-level-up quantile	111					
Multiple next-level-down quantile	(81)					
Expected revenues +10 %	15					
Expected revenues -10 %	(15)					
Interest rate volatility ^b +10 %		51				
Interest rate volatility ^b -10 %		(46)				
Spread curve ^c +50 basis points		(197)				
Spread curve ^c -50 basis points		254				
Mean reversion ^d +100 basis points		(32)				
Mean reversion ^d -100 basis points		39				
Future energy prices +10 %				60	33	
Future energy prices -10 %				(73)	(33)	
Future energy output +5 %				29	8	
Future energy output -5 %				(40)	(8)	
Future prices for renewable energy credits ^e +100 %				10	6	
Future prices for renewable energy credits ^e from zero				(22)	(6)	
Share price volatility ^f +10 %			33			
Share price volatility ^f -10 %			(32)			
Volatility of the fair value of the shares +10 %						3
Volatility of the fair value of the shares -10 %						(3)
Fair value of the shares +10 %						(20)
Fair value of the shares -10 %						22

^a Change in the relevant input parameter assuming all other input parameters are unchanged.

^b Interest rate volatility shows the magnitude of fluctuations in interest rates over time (relative change). The larger the fluctuations, the higher the interest rate volatility.

^c The spread curve shows, for the respective maturities, the difference between the interest rates payable by T-Mobile US and the risk-free interest rates. A minimum of zero was set for the spread curve for the sensitivity calculation, i.e., negative spreads are excluded.

^d Mean reversion describes the assumption that, after a change, an interest rate will revert to its average over time. The higher the selected value (mean reversion speed), the faster the interest rate will revert to its average in the measurement model.

^e Renewable energy credits is the term used for U.S. emission certificates.

^f The share price volatility shows the range of variation of the basic value over the remaining term of an option.

With a carrying amount of EUR -7 million when translated into euros, the derivatives without a hedging relationship assigned to Level 3 and carried under derivative financial liabilities relate to energy forward agreements embedded in contracts entered into by T-Mobile US. The same applies to derivative financial assets with a carrying amount of EUR 191 million when translated into euros. These agreements consist of two components: the energy forward agreement and the acquisition of renewable energy credits by T-Mobile US. The contracts were entered into with energy producers and will run for terms of between 12 and 15 years from the commencement of commercial operation. In the case of one energy forward agreement, commercial operation is set to begin in 2023; with the others, it has already begun. The terms of the contracts for which operation has already begun end between 2029 and 2035. The respective settlement period of the energy forward agreement, which is accounted for separately as a derivative, also starts when the facility begins commercial operation. Under the energy forward agreements, T-Mobile US receives variable amounts based on the facility's actual energy output and the then current energy prices, and pays fixed amounts per unit of energy generated throughout the term of the contract. The energy forward agreements are measured using valuation models because no observable market prices are available. The value of the derivatives is materially influenced by the facility's future energy output, for which T-Mobile US estimated a value of 4,057 GWh per year at the reporting date. The value of the derivatives is also significantly influenced by future energy prices on the relevant markets. Market prices are generally observable for a period of around five years, beyond that market liquidity is low. Furthermore, the value of the derivatives is materially influenced by the future prices for renewable energy credits, which are generally not observable for the period beyond around three years. For the unobservable portion of the term, T-Mobile US used on-peak energy prices of between EUR 17.09/MWh and EUR 56.99/MWh when translated into euros and off-peak prices of between EUR 15.92/MWh and EUR 50.70/MWh when translated into euros. An average on-peak/off-peak ratio of 52 % was used. In our opinion, the values used constitute the best estimate in each case. At the reporting date, the calculated fair value from Deutsche Telekom's perspective for all energy forward agreements is positive and amounts to a total of EUR 253 million when translated into euros for the assets and EUR 81 million for the liabilities. The valuation model was recalibrated in the reporting year on the basis of recently observed market and price trends. If other values had been used for future energy prices, future energy output, or future prices of renewable energy credits, the fair values calculated would have been different. These hypothetical deviations (sensitivities) are shown in the table above. In the reporting period, net income of EUR 210 million (when translated into euros) was recognized under the Level 3 measurement in other operating income/expense for unrealized gains for the derivatives. Please refer to the corresponding table for the development of the carrying amounts in the reporting period. The market-price changes in the reporting period were largely attributable to changes in observable and unobservable energy prices and to interest rate effects. Due to their distinctiveness, these instruments constitute a separate class of financial instruments. In the view of T-Mobile US, the contracts were entered into at current market conditions, and the most appropriate parameters for the unobservable inputs were used for measurement purposes. The transaction price at inception was zero in each case. Since the unobservable inputs have a material influence on the measurement of the derivatives, the respective amount resulting from initial measurement – with the exception of the agreements concluded by Sprint that are explained below – was not carried on initial recognition. Instead, these amounts are amortized in profit or loss on a straight-line basis over the period of commercial energy generation (for a total amount of EUR 12 million per year when translated into euros). This amortization adjusts the effects from measuring the derivatives in each accounting period using the respective valuation models and updated parameters. All amounts from the measurement of the derivatives are presented in net terms per contract in the statement of financial position (derivative financial assets/liabilities) and in the income statement (other operating income/expenses). The development of the amount yet to be amortized in the income statement in the reporting period is shown in the following table. Unobservable inputs also have a material influence on the measurement of the derivatives for the agreements concluded by Sprint. However, under the requirements for business combinations, the respective amounts resulting from the measurement are recognized as derivative financial assets, as a result of which there are no amounts yet to be amortized for these agreements. On the following reporting dates, the effects from the periodic measurement of the derivatives will be recorded in full in the income statement (other operating expenses or other operating income).

The financial assets assigned to Level 3 include derivative financial assets with a carrying amount of EUR 222 million when translated into euros, resulting from the acquired stock options to purchase shares in T-Mobile US. The stock options, which can be exercised at any time, mature in 2024, can be exercised partially at fixed and partially at variable purchase prices, and are measured using an option pricing model. In addition to the share price observable on the market and the risk-free interest rates, average share price volatilities of T-Mobile US and comparable companies are calculated based on historic and current figures, since these provide a more reliable estimate for these inputs at the reporting date than exclusively using the current market volatilities. The figure used for the share price volatility at the current reporting date was 27.3 % which, in our opinion, constitutes the best estimate. At the reporting date, the calculated fair value for the stock option amounted to EUR 494 million. If another value had been used for the share price volatility, the fair value calculated would have been different. These hypothetical deviations (sensitivities) are shown in the table above. Due to their distinctiveness, these instruments constitute a separate class of financial instruments. The transaction price at inception was zero. Since the unobservable inputs have a material influence on the measurement of the options, the fair value resulting from initial measurement of EUR 1,005 million when translated into euros (before deduction of transaction costs) was not immediately recognized. Instead, this amount will be amortized in profit or loss over the lifetime of the options. This amortization adjusts the effects from measuring the options on an ongoing basis using the valuation model and updated parameters. All amounts from the measurement of the options are presented in net terms in the statement of financial position (other derivative financial assets) and in the income statement (other financial income/expense). The market-price changes in the reporting period are largely attributable to fluctuations in the share price and the risk-free interest rate. The stock options were partially exercised in the reporting period. The development of the amount yet to be amortized in the income statement in the reporting period is shown in the following table.

The financial assets assigned to Level 3 include a derivative financial asset with a carrying amount of EUR 22 million resulting from an option acquired in the reporting period for the sale of shares to Cellnex NL (put option). The option was acquired together with the shares; the option writer is Cellnex. The exercise price of the option essentially corresponds to the fair value of the shares, although fixed minimum exercise prices have been agreed if it is exercised before the end of the fourth year of the term. The option can be exercised at any time, runs until 2026, and is measured using an option pricing model. Taking into account the volatilities of comparable companies, a share price volatility of 20 % was used for the measurement, which in our opinion constitutes the best estimate for these unobservable inputs. The fair value of the shares, which is likewise unobservable, has not changed since the acquisition of the option and amounted to EUR 0.4 billion at the reporting date. The calculated fair value of the option was EUR 133 million at the reporting date. If other values had been used for the share price volatility and the fair value of the shares, the fair value calculated would have been different. These hypothetical deviations (sensitivities) are shown in the table above. The consideration (in the meaning of the IFRSs) paid by Deutsche Telekom to purchase the shares corresponded to the fair value of the shares; the transaction price for the option stood at zero. Since the unobservable inputs have a material influence on the measurement of the option, the fair value resulting from initial measurement of EUR 129 million was not immediately recognized. Instead, this amount will be amortized in profit or loss over four years. This amortization adjusts the effects from measuring the option on an ongoing basis using the valuation model and updated parameters. All amounts from the measurement of the options are presented in net terms in the statement of financial position (other derivative financial assets) and in the income statement (other operating expenses or other operating income). The change in value in the reporting year is mainly attributable to the fact that the fair value of the shares has remained unchanged since their acquisition, while the option is subject to minimum exercise prices. The development of the amount yet to be amortized in the income statement in the reporting period is shown in the following table.

For further information on this transaction, please refer to “Combination of the cell tower business in the Netherlands and creation of an infrastructure fund” in the section “Changes in the composition of the Group and other transactions” under “Summary of accounting policies.”

Development of the not yet amortized amounts

millions of €	Energy forward agreements	Stock options	Put option for shares
Measurement amounts on initial recognition	173	1,005	0
Measurement amounts on initial recognition (additions during the reporting period)	0	0	129
Measurement amounts amortized in profit or loss in prior periods	(18)	(127)	0
Measurement amounts amortized in profit or loss in the current reporting period	(10)	(201)	(19)
Currency translation adjustments	1	(49)	0
Disposals in the current reporting period	0	(372)	0
Measurement amounts not amortized as of December 31, 2021	146	256	111

For the trade receivables, loans issued, and other receivables assigned to Level 3, which are measured either at fair value through other comprehensive income or at fair value through profit or loss, the main factor in determining fair value is the credit risk of the relevant counterparties. If the default rates applied as of the reporting date had been 1 % higher (lower) with no change in the reference variables, the fair values of the instruments would have been 1 % lower (higher).

The financial assets measured at fair value through profit or loss and assigned to Level 3 include additional options acquired from third parties for the purchase of company shares, with a carrying amount of EUR 20 million. No notable fluctuations in value are expected from these individual items. Due to their distinctiveness, these instruments constitute a separate class of financial instruments.

Net gain/loss by measurement category

millions of €

		Recognized in profit or loss from interest and dividends	Recognized in profit or loss from subsequent measurement			Recognized directly in equity from subsequent measurement	Recognized in profit or loss from derecognition	Net gain (loss)
			At fair value	Currency translation	Impairments/allowances ^a			
Debt instruments measured at amortized cost	2021	16	n.a.	1,140	(288)	n.a.	(123)	745
	2020	15	n.a.	(1,207)	(418)	n.a.	(188)	(1,798)
Debt instruments measured at fair value through profit or loss	2021	11	0	n.a.	n.a.	n.a.	3	14
	2020	16	0	n.a.	n.a.	n.a.	10	26
Debt instruments measured at fair value through other comprehensive income	2021	0	n.a.	n.a.	(351)	(80)	(63)	(494)
	2020	0	n.a.	n.a.	(435)	(19)	(64)	(518)
Equity instruments measured at fair value through profit or loss	2021	0	0	n.a.	n.a.	n.a.	0	0
	2020	0	0	n.a.	n.a.	n.a.	8	8
Equity instruments measured at fair value through other comprehensive income	2021	0	n.a.	n.a.	n.a.	112	n.a.	112
	2020	1	n.a.	n.a.	n.a.	62	n.a.	63
Derivatives measured at fair value through profit or loss	2021	n.a.	(38)	n.a.	n.a.	n.a.	n.a.	(38)
	2020	n.a.	297	n.a.	n.a.	n.a.	n.a.	297
Financial liabilities measured at amortized cost	2021	(3,587)	n.a.	(1,417)	(41)	n.a.	n.a.	(5,045)
	2020	(3,510)	n.a.	1,462	n.a.	n.a.	n.a.	(2,048)
	2021	(3,560)	(38)	(278)	(680)	32	(182)	(4,706)
	2020	(3,477)	296	255	(853)	43	(234)	(3,970)

^a The amount recognized under financial liabilities measured at amortized cost corresponds to the change in the carrying amount of puttable shares of non-controlling interests in consolidated partnerships, recognized under other non-interest-bearing liabilities.

^b The amount reported under debt instruments measured at fair value through other comprehensive income is the net amount after deduction of the effects recognized in profit or loss for impairment losses in the amount of EUR -414 million.

Interest from financial instruments is recognized in finance costs, dividends in other financial income/expense (income from investments).

For further information, please refer to Note 28 "Finance costs" and Note 30 "Other financial income/expense."

The other components of the net gain/loss are generally recognized in other financial income/expense, except for allowances on trade receivables that are classified as debt instruments measured at amortized cost and debt instruments measured at fair value through other comprehensive income, which are reported under other operating expenses. The loss/gain from energy forward agreements and from options received from third parties for the purchase or sale of shares in associates are reported under other operating expenses/other operating income.

For further information, please refer to Note 2 "Trade receivables."

The net loss from the subsequent measurement for financial instruments allocated to the measurement category at fair value through profit or loss (EUR 288 million) also includes interest and currency translation effects. The net currency translation gains on financial assets classified as debt instruments measured at amortized cost (EUR 1,140 million) are primarily attributable to the Group-internal transfer of foreign-currency loans taken out by Deutsche Telekom's financing company, Deutsche Telekom International Finance B.V., on the capital market. These are offset by corresponding currency translation losses on capital market liabilities of EUR 1,417 million. These include currency translation gains from derivatives that Deutsche Telekom used as hedging instruments for hedge accounting in foreign currency (EUR 446 million; 2020: losses of EUR 452 million). Finance costs from financial liabilities measured at amortized cost (expense of EUR 3,587 million) primarily consist of interest expense on bonds and other (securitized) financial liabilities. The item also includes interest expense from the addition of accrued interest and interest income from interest discounted from trade payables. However, it does not include the interest expense and interest income from interest rate derivatives Deutsche Telekom used in the reporting year to hedge the fair value risk of financial liabilities.

For further information, please refer to Note 28 "Finance costs."

Principles of risk management. Deutsche Telekom is exposed in particular to risks from changes in exchange rates, interest rates, and market prices that affect its assets, liabilities, and forecast transactions. Financial risk management aims to limit these market risks through ongoing operational and finance activities. Selected derivative and non-derivative hedging instruments are used for this purpose, depending on the risk assessment. However, Deutsche Telekom only hedges the risks that affect the Group's cash flow. Derivatives are exclusively used as hedging instruments, i.e., not for trading or other speculative purposes. To reduce the credit risk, hedging instruments are generally only concluded with leading financial institutions whose credit rating is at least BBB+/Baa1. In addition, the credit risk for derivatives with a positive market value is generally minimized through collateral agreements with all core banks. Furthermore, the limits for deposits are also set and monitored on a daily basis depending on the rating, share price performance, and credit default swap level of the respective counterparty.

The fundamentals of Deutsche Telekom's financial policy are established by the Board of Management and overseen by the Supervisory Board. Group Treasury is responsible for implementing the financial policy and for ongoing risk management. Certain transactions require the prior approval of the Board of Management, which is also regularly briefed on the severity and amount of the current risk exposure.

Group Treasury regards effective management of the market risk as one of its main tasks. The main risks relate to foreign currencies and interest rates.

Currency risks. Deutsche Telekom is exposed to currency risks from its investing, financing, and operating activities. Risks from foreign currencies are hedged to the extent that they influence the Group's cash flows. Foreign-currency risks that do not influence the Group's cash flows (i.e., the risks resulting from the translation of assets and liabilities of foreign operations into the Group's reporting currency) are generally not hedged, however. Deutsche Telekom may nevertheless also hedge this foreign-currency risk under certain circumstances.

Foreign-currency risks in the area of investment result, for example, from the acquisition and disposal of investments in foreign companies. Deutsche Telekom hedges these risks. If the risk position exceeds EUR 100 million, the Board of Management must make a special decision on how the risk shall be hedged. If the risk position is below EUR 100 million, Group Treasury performs the currency hedging itself. At the reporting date, Deutsche Telekom was not exposed to any significant risks from foreign-currency transactions in the field of investments.

Foreign-currency risks in the financing area are caused by financial liabilities in foreign currency and loans in foreign currency that are issued to Group entities for financing purposes. Group Treasury hedges these risks. Cross-currency swaps and currency derivatives are used to convert financial obligations and intragroup loans denominated in foreign currencies into the Group entities' functional currencies.

At the reporting date, the foreign-currency liabilities for which currency risks were hedged mainly consisted of bonds in U.S. dollars and pounds sterling. On account of these hedging activities, Deutsche Telekom was not exposed to any significant currency risks in the area of financing at the reporting date.

The Group entities predominantly execute their operating activities in their respective functional currencies. Payments made in a currency other than the respective functional currency result in foreign-currency risks in the Group. These mainly relate to payments for telecommunications services (procurement of network technology and mobile communications equipment as well as payments to international telecommunications companies and for the provision of connection services) and IT services (procurement of IT hardware, software, and services). Deutsche Telekom generally uses currency derivatives for hedging purposes. On account of these hedging activities, Deutsche Telekom was not exposed to any significant exchange rate risks from its operating activities at the reporting date.

For the presentation of market risks, IFRS 7 requires sensitivity analyses that show the effects of hypothetical changes of relevant risk variables on profit or loss and shareholders' equity. In addition to currency risks, Deutsche Telekom is exposed to interest rate risks and price risks in its investments. The periodic effects are determined by relating the hypothetical changes in the risk variables to the balance of financial instruments at the reporting date. It is assumed that the balance at the reporting date is representative for the year as a whole.

Currency risks as defined by IFRS 7 arise on account of financial instruments being denominated in a currency that is not the functional currency and being of a monetary nature; differences resulting from the translation of financial statements into the Group's presentation currency are not taken into consideration. Relevant risk variables are generally all non-functional currencies in which Deutsche Telekom has contracted financial instruments.

The currency sensitivity analyses are based on the following assumptions: Major non-derivative monetary financial instruments (liquid assets, receivables, interest-bearing securities and/or debt instruments held, interest-bearing liabilities, lease liabilities, non-interest-bearing liabilities) are either directly denominated in the functional currency or are transferred to the functional currency through the use of derivatives. Exchange rate fluctuations therefore have no effects on profit or loss, or shareholders' equity.

Equity instruments held are of a non-monetary nature and therefore are not exposed to a currency risk as defined by IFRS 7.

Interest income and interest expense from financial instruments are also either recorded directly in the functional currency or transferred to the functional currency using derivatives. For this reason, there can be no effects on the variables considered in this connection.

In the case of fair value hedges designated to hedge currency risks, the changes in the fair values of the hedged item and the hedging instrument attributable to changes in exchange rates balance out almost completely in the income statement in the same period. As a consequence, these financial instruments are not exposed to currency risks with an effect on profit or loss, or shareholders' equity, either.

Cross-currency swaps are always assigned to non-derivative hedged items, so these instruments do not have any currency effects, either.

Deutsche Telekom is therefore only exposed to currency risks from specific currency derivatives. Some of these are currency derivatives that are part of an effective cash flow hedge for hedging payment variability resulting from changes in exchange rates in accordance with IFRS 9. Volatility of exchange rates of the currencies on which these transactions are based affects the hedging reserves in shareholders' equity and the fair value of these hedging instruments. Others are currency derivatives that are neither part of one of the hedges defined in IFRS 9 nor part of a natural hedge. These derivatives are used to hedge planned transactions. Changes in exchange rates of the currencies on which such financial instruments are based affect other financial income or expense (net gain/loss from remeasurement of financial assets and liabilities to fair value).

If the euro had gained (lost) 10 % against all currencies at December 31, 2021, the hedging reserves in shareholders' equity and the fair values of the hedging instruments before taxes would have been EUR 13 million higher (lower) (December 31, 2020: EUR 23 million higher (lower)). The hypothetical effect of EUR 13 million on profit or loss primarily results from the currency sensitivities EUR/USD: EUR 16 million, EUR/GBP: EUR -7 million, and EUR/CHF: EUR 4 million. If the euro had gained (lost) 10 % against all currencies at December 31, 2021, other financial income and the fair value of the hedging instruments before taxes would have been EUR 31 million lower (higher) (December 31, 2020: EUR 137 million higher (lower)). The hypothetical effect of EUR -31 million on profit or loss primarily results from the currency sensitivities EUR/USD: EUR -72 million, EUR/GBP: EUR 34 million, and EUR/HUF: EUR 5 million.

Interest rate risks. Deutsche Telekom is exposed to interest rate risks, mainly in the euro zone and in the United States. The interest rate risks are managed as part of the interest rate management activities. For the debt position in euros a maximum variable percentage is set on an annual basis. The debt position of T-Mobile US in U.S. dollars is primarily determined through partially cancelable, fixed-income debt instruments. The composition of the liabilities portfolio (ratio of fixed to variable) is managed by issuing non-derivative financial instruments and, where necessary, also deploying derivative financial instruments.

Including derivative hedging instruments, an average of 46 % (2020: 44 %) of the debt position denominated in euros had a variable rate of interest in 2021. There were no significant fluctuations in the course of the reporting year. In U.S. dollars, – compared to 2020 – the average variable share decreased from 8 % to 0 %, mainly due to the issuing of new fixed-interest bonds by T-Mobile US.

Interest rate risks are presented by way of sensitivity analyses in accordance with IFRS 7. These show the effects of changes in market interest rates on interest payments, interest income and expense, other income components, and, if appropriate, shareholders' equity. The interest rate sensitivity analyses are based on the following assumptions: Changes in the market interest rates of non-derivative financial instruments with fixed interest rates only affect income if these are measured at their fair value. As such, all financial instruments with fixed interest rates that are carried at amortized cost are not subject to interest rate risk as defined in IFRS 7.

In the case of fair value hedges designated for hedging interest rate risks, the changes in the fair values of the hedged item and the hedging instrument attributable to changes in interest rates balance out almost completely in the income statement in the same period. This means that interest-rate-based changes in the measurement of the hedged item and the hedging instrument largely do not affect income and are therefore not subject to interest rate risk.

In the case of interest rate derivatives in fair value hedges, however, changes in market interest rates affect the amount of interest payments. As a consequence, they have an effect on interest income and are therefore included in the calculation of income-related sensitivities.

Changes in the market interest rate regarding financial instruments that were designated as hedging instruments in a cash flow hedge to hedge payment variability resulting from changes in interest rates affect the hedging reserve in shareholders' equity and are therefore taken into consideration in the equity-related sensitivity calculations.

Changes in market interest rates affect the interest income or expense of non-derivative variable-interest financial instruments, the interest payments of which are not designated as hedged items of cash flow hedges against interest rate risks. As a consequence, they are included in the calculation of income-related sensitivities.

In addition, changes in the market interest rate had an impact on the carrying amount of trade receivables recognized at fair value and originated loans and other receivables. However, this variability is not managed.

Changes in the market interest rate regarding interest rate derivatives (interest rate swaps, cross-currency swaps) that are not part of a hedging relationship as set out in IFRS 9 affect other financial income or expense and are therefore taken into consideration in the income-related sensitivity calculations. Currency derivatives are not exposed to interest rate risks and therefore do not affect the interest rate sensitivities.

If the market interest rates had been 100 basis points higher at December 31, 2021, profit or loss before taxes would have been EUR 272 million (December 31, 2020: EUR 199 million) lower. If the market interest rates had been 100 basis points lower at December 31, 2021, profit or loss before taxes would have been EUR 263 million (December 31, 2020: EUR 198 million) higher. The hypothetical effect of EUR 263 million/EUR -272 million on profit or loss primarily results from potential effects of EUR 262 million/EUR -262 million from interest rate derivatives. In addition, potential effects of EUR -22 million/EUR 23 million result from the stock options received from SoftBank, of EUR 4 million/EUR -4 million from the forward transaction to hedge the price of acquiring T-Mobile US shares in the future, and of EUR 12 million/EUR -23 million from the energy forward agreements entered into by T-Mobile US. Potential effects from interest rate derivatives are partially balanced out by the contrasting performance of non-derivative financial instruments, which cannot, however, be shown as a result of applicable accounting standards. The effects from the options embedded in the bonds issued by T-Mobile US are not included in this simulation. The resulting sensitivities are set out in the above table "Sensitivities of the carrying amounts of the financial assets and financial liabilities assigned to Level 3 depending on unobservable inputs." However, the effects from the other financial instruments assigned to Level 3 described above are included. If the market interest rates had been 100 basis points higher (lower) at December 31, 2021, the hedging and revaluation reserves in equity before taxes would have been EUR 129 million higher (EUR 129 million lower) (December 31, 2020: EUR 271 million higher (EUR 271 million lower)).

Other price risks. As part of the presentation of market risks, IFRS 7 also requires disclosures on how hypothetical changes in risk variables affect the price of financial instruments. Important risk variables are stock exchange prices or indexes.

If the share price of T-Mobile US had been 10 % higher (lower) at December 31, 2021, the fair value of unconditional forward transactions and options held for the purchase of shares in T-Mobile US would have been EUR 350 million higher (EUR 335 million lower) (December 31, 2020: EUR 384 higher (EUR 359 million lower)). In addition, aside from the value-creating factors in the financial instruments assigned to Level 3 described above, there were no other price risks at the reporting date.

Deutsche Telekom is exposed to a credit risk from its operating activities and certain financing activities. As a rule, transactions with regard to financing activities are only concluded with counterparties that have at least a credit rating of BBB+/Baa1, in connection with an operational credit management system. At the level of operations, the outstanding debts are continuously monitored in each area, i.e., locally. Credit risks are taken into account through individual allowances and allowances calculated at portfolio level. The solvency of the business with corporate customers, especially international carriers, is monitored separately. In terms of the overall risk exposure from the credit risk, however, the receivables from these counterparties are not so extensive as to justify extraordinary concentrations of risk.

Maximum credit risk of financial assets

millions of €			
Classes of financial instruments (IFRS 7)	Measurement category (IFRS 9)	2021 ^a	2020
Originated loans and other receivables	AC	5,249	4,733
	FVOCI	0	0
	FVTPL	233	203
Cash and cash equivalents	AC	7,624	13,012
Trade receivables	AC	6,062	6,128
	FVOCI	9,633	7,516
	FVTPL	1	0
Contract assets (IFRS 15)	n.a.	2,054	1,966
Lease receivables	n.a.	228	248

^a Including the assets of T-Mobile Netherlands included under assets directly associated with non-current assets and disposal groups held for sale as of December 31, 2021.

Development of allowances^a

millions of €	General approach									Simplified approach			
	12-month expected credit losses			Lifetime expected credit losses						Trade receivables	Contract assets	Lease assets	
	Stage 1 – No change in credit risk since initial recognition			Stage 2 – Significant increase in credit risk since initial recognition, not credit-impaired			Stage 3 – Credit-impaired at the reporting date (not purchased or originated credit-impaired)						
	Cash and cash equivalents	Originated loans and other receivables	FVOCI	Cash and cash equivalents	Originated loans and other receivables	FVOCI	Cash and cash equivalents	Originated loans and other receivables	FVOCI	AC	FVOCI	n.a.	n.a.
AC	AC	FVOCI	AC	AC	FVOCI	AC	AC	FVOCI	AC	FVOCI	n.a.	n.a.	
January 1, 2021	0	(4)	0	0	0	0	0	(10)	0	(1,313)	(280)	(38)	0
Reclassification due to a change in business model										(1)			
Additions								(5)		(596)	(351)	(34)	
Use										384	305	34	
Reversal		1								213		6	
Other										92		2	
Foreign currency effect										(4)	(31)	(8)	
December 31, 2021	0	(3)	0	0	0	0	0	(15)	0	(1,225)	(357)	(38)	0

^a Including the allowances of T-Mobile Netherlands included under assets directly associated with non-current assets and disposal groups held for sale as of December 31, 2021.

There were no material transfers in the general approach.

Credit rating of financial assets measured at amortized cost or at fair value through other comprehensive income

millions of €

	Dec. 31, 2021 ^a				Dec. 31, 2020			
	Contractual obligations fulfilled to date	Disruptions in performance already occurred	Non-performing	Total	Contractual obligations fulfilled to date	Disruptions in performance already occurred	Non-performing	Total
General approach (short term)								
12-month expected credit losses (stage 1)	11,291			11,291	15,909			15,909
Lifetime expected credit losses								
Significant increase in credit risk, but not credit-impaired (stage 2)		83		83		158		158
Credit-impaired at the reporting date, but not purchased or originated credit-impaired (stage 3)			52	52			42	42
	11,291	83	52	11,426	15,909	158	42	16,109
General approach (long term)								
12-month expected credit losses (stage 1)	1,449			1,449	1,650			1,650
Lifetime expected credit losses								
Significant increase in credit risk, but not credit-impaired (stage 2)		2		2		1		1
Credit-impaired at the reporting date, but not purchased or originated credit-impaired (stage 3)			1	1			0	0
	1,449	2	1	1,452	1,650	1	0	1,651
Simplified approach								
Trade receivables	15,161	696	1,060	16,917	13,379	489	1,080	14,948
Contract assets	2,056	29	8	2,093	1,994	8	8	2,010
Lease receivables	228			228	239	0	8	247
	17,445	725	1,068	19,238	15,612	497	1,096	17,205
Financial assets that are purchased or originated credit-impaired								
Receivables				0	11			11
	30,185	810	1,121	32,116	33,182	656	1,138	34,976

^a Including the assets of T-Mobile Netherlands included under assets directly associated with non-current assets and disposal groups held for sale as of December 31, 2021.

Offsetting of financial instruments

millions of €

	Dec. 31, 2021				Dec. 31, 2020			
	Trade receivables	Trade payables	Derivative financial assets	Derivative financial liabilities	Trade receivables	Trade payables	Derivative financial assets	Derivative financial liabilities
Gross amounts subject to enforceable master netting arrangements or similar agreements	181	158	1,844	696	465	441	2,254	727
Amounts set off in the statement of financial position in accordance with IAS 32.42	(100)	(100)			(119)	(119)		
Net amounts presented in the statement of financial position	81	58	1,844	696	346	322	2,254	727
Amounts subject to enforceable master netting arrangements or similar agreements and not meeting all offsetting requirements in accordance with IAS 32.42								
Of which: amounts related to recognized financial instruments	(23)	(23)	(1,831)	(664)	(28)	(28)	(2,210)	(727)
Of which: amounts related to financial collateral (including cash collateral)	(23)	(23)	(241)	(241)	(28)	(28)	(693)	(693)
			(1,590)	(423)			(1,517)	(34)
Net amounts	58	35	13	32	318	294	44	0

Offsetting is applied in particular to receivables and liabilities at Deutsche Telekom AG and Telekom Deutschland GmbH for the routing of international calls via the fixed network and for roaming fees in the mobile network.

In line with the contractual provisions, in the event of insolvency all derivatives with a positive or negative fair value that exist with the respective counterparty are offset against each other, leaving a net receivable or liability. The net amounts are normally recalculated every bank working day and offset against each other. When the netting of the positive and negative fair values of all derivatives was positive from Deutsche Telekom's perspective, the counterparty provided Deutsche Telekom with cash pursuant to the collateral contracts mentioned in Note 1 "Cash and cash equivalents." The credit risk was thus further reduced.

When the netting of the positive and negative fair values of all derivatives was negative from Deutsche Telekom's perspective, Deutsche Telekom provided cash collateral to counterparties pursuant to collateral agreements. The net amounts are normally recalculated every bank working day and offset against each other. The cash collateral paid is offset by corresponding negative net derivative positions of EUR 423 million at the reporting date, which is why it was not exposed to any credit risks in this amount at the reporting date.

For further information, please refer to Note 11 "[Other financial assets](#)."

The collateral paid is reported under originated loans and other receivables within other financial assets. On account of its close connection to the corresponding derivatives, the collateral paid constitutes a separate class of financial assets. Likewise, the collateral received, which is reported as other interest-bearing liabilities under financial liabilities, constitutes a separate class of financial liabilities on account of its close connection to the corresponding derivatives. There were no other significant agreements reducing the maximum exposure to the credit risk of financial assets. The maximum exposure to the credit risk of the other financial assets thus corresponds to their carrying amounts.

In accordance with the terms of the bonds issued by T-Mobile US, T-Mobile US has the right to terminate the majority of bonds prematurely under specific conditions. The rights of early termination constitute embedded derivatives and are presented separately as derivative financial assets in the consolidated statement of financial position. Since they are not exposed to any credit risk, they constitute a separate class of financial instruments. Please refer to the explanations above for more information on the energy forward agreements for which no collateral is provided. There is also no credit risk on embedded derivatives held.

No collateral is provided for the options received from third parties for the purchase or sale of shares in subsidiaries and associates.

In connection with auctions for the planned acquisition of spectrum licenses, subsidiaries of Deutsche Telekom have deposited additional cash collateral of EUR 90 million when translated into euros. At the reporting date, cash and cash equivalents of EUR 76 million when translated into euros were pledged as collateral for liabilities issued by Sprint with right of creditors to priority repayment in the event of default. This cash collateral is not exposed to any significant credit risk.

For further information, please refer to Note 13 "[Financial liabilities and lease liabilities](#)."

Liquidity risk. For further information, please refer to Note 13 "[Financial liabilities and lease liabilities](#)."

Hedge accounting

Fair value hedges. To hedge the fair value risk of fixed-interest liabilities, Deutsche Telekom primarily uses interest rate swaps and forward interest rate swaps (pay variable, receive fixed) denominated in EUR, GBP, and USD. Fixed-income bonds denominated in EUR, GBP, and USD were designated as hedged items. The changes in the fair values of the hedged items resulting from changes in the EURIBOR, GBP LIBOR, or USD LIBOR swap rate are offset against the changes in the value of these interest rate swaps. In addition, cross-currency swaps mainly in the EUR/USD and EUR/GBP currency pairs, are designated as fair value hedges, which convert fixed-income foreign currency bonds into variable-interest EUR bonds to hedge the interest rate and currency risk. The changes in the fair value of the hedged items resulting from changes in the USD LIBOR and GBP LIBOR swap rate as well as the USD and GBP exchange rate, are offset against the changes in the value of the cross-currency swaps. The aim of the fair value hedges is thus to transform the fixed-income bonds into variable-interest debt, thus hedging the fair value (interest rate risk and currency risk) of these financial liabilities. Credit risks are not part of the hedging.

Cash flow hedges – interest rate risks. Deutsche Telekom mainly uses payer interest rate swaps and forward-payer interest rate swaps (pay fixed, receive variable) to hedge the cash flow risk of existing and future debt. The interest payments to be made in the hedging period are the hedged items and are recognized in profit or loss in the same period. Hedged items may be individual liabilities, portfolios of liabilities, or combinations of liabilities and derivatives (aggregate risk exposure). The changes in the cash flows of the hedged items resulting from changes in the USD LIBOR rate and the EURIBOR rate are offset against the changes in the cash flows of the interest rate swaps. The aim of this hedging is to transform the variable-interest bonds into fixed-income debt, thus hedging the cash flows of the financial liabilities. Credit risks are not part of the hedging.

Cash flow hedges – currency risks. Deutsche Telekom entered into currency derivative and cross-currency swaps (pay fixed, receive variable) to hedge cash flows not denominated in a functional currency. The payments in foreign currency to be made in the hedging period are the hedged items and are recognized in profit or loss in the same period. The terms of the hedging relationships will end in the years 2022 through 2033. In the case of rolling cash flow hedges for hedging currency risks, short-term currency forwards are entered into, which are then extended by means of follow-up transactions.

At each reporting date, the effectiveness of the fair value and cash flow hedges is reviewed prospectively based on the main contractual features and determined retrospectively in the form of a statistical regression analysis; for rolling foreign currency hedges the effectiveness is reviewed using the dollar offset test. All hedging relationships were sufficiently effective as of the reporting date.

Hedging of a net investment. The hedges of the net investment in T-Mobile US against fluctuations in the U.S. dollar spot rate de-designated in prior periods did not generate any effects in 2021. The amounts recognized in total other comprehensive income would be reclassified in the event of the disposal of T-Mobile US.

Conditions of derivative financial instruments in hedging relationships

millions of €

	2022					
	Nominal amount	Average hedge rate	Average swap rate received	Average swap rate paid	Average margin paid	Average margin received
Fair value hedges						
Interest rate risk						
EURIBOR	1,000		0.4715 %	6M EURIBOR	0.3100 %	
USD LIBOR						
GBP LIBOR						
Cross-currency risk						
USD/EUR						
GBP/EUR						
Other						
Cash flow hedges						
Currency risk						
Buy						
USD/EUR	288	1.1740				
GBP/EUR	836	0.9029	6.5000 %	6.5717 %		
Other	3					
Sell						
USD/EUR	222	1.1983				
CHF/EUR	9	1.0578				
Interest rate risk						
EURIBOR	1,400		6M EURIBOR	-0.2574 %		0.3214 %
USD LIBOR	1,104		3M USD LIBOR	5.3750 %		2.8012 %

millions of €						
2023–2026						
	Nominal amount	Average hedge rate	Average swap rate received	Average swap rate paid	Average margin paid	Average margin received
Fair value hedges						
Interest rate risk						
EURIBOR	7,525		0.8730 %	6M EURIBOR	0.4082 %	
USD LIBOR	662		2.4860 %	3M USD LIBOR	1.1020 %	
GBP LIBOR						
Cross-currency risk						
USD/EUR						
GBP/EUR	692	0.8680	1.8750 %	3M EURIBOR	0.5536 %	
Other	79					
Cash flow hedges						
Currency risk						
Buy						
USD/EUR	199	1.1859				
GBP/EUR						
Other						
Sell						
USD/EUR	376	1.2355				
CHF/EUR	27	1.0578				
Interest rate risk						
EURIBOR	5,778		6M EURIBOR	-0.1293 %		0.3844 %
USD LIBOR	1,324		3M USD LIBOR	4.7500 %		2.0707 %

millions of €						
2027 and thereafter						
	Nominal amount	Average hedge rate	Average swap rate received	Average swap rate paid	Average margin paid	Average margin received
Fair value hedges						
Interest rate risk						
EURIBOR	6,300		1.6231 %	6M EURIBOR	0.9189 %	
USD LIBOR	4,736		4.1460 %	3M USD LIBOR	1.6014 %	
GBP LIBOR						
Cross-currency risk						
USD/EUR						
GBP/EUR	1,557	1.1221	8.7500 %	3M EURIBOR	5.8751 %	
Other	925	0.8646	2.8420 %	6M EURIBOR	0.9015 %	
Other	818					
Cash flow hedges						
Currency risk						
Buy						
USD/EUR	1,758	1.3508	8.7832 %	7.7842 %		
GBP/EUR	441	0.9071	7.9337 %	7.5761 %		
Other						
Sell						
USD/EUR	55	1.2357				
CHF/EUR						
Interest rate risk						
EURIBOR						
USD LIBOR						

Nominal and carrying amounts of derivative financial instruments in hedging relationships

millions of €

	2021					2020					Disclosure of the hedging instruments in the statement of financial position
	Nominal amount of the hedging instruments		Carrying amount of the hedging instruments		Change in value of the hedging instruments in the reporting period for determining ineffectiveness	Nominal amount of the hedging instruments		Carrying amount of the hedging instruments		Change in value of the hedging instruments in the reporting period for determining ineffectiveness	
	in foreign currencies	in euros	Financial assets	Financial liabilities		in foreign currencies	in euros	Financial assets	Financial liabilities		
Fair value hedges											Other financial assets/ financial liabilities
Interest rate risk		20,224	972	(3)	(957)		21,680	1,902	0	1,058	
Of which: EUR		14,825					15,463				
Of which: USD	6,115	5,399				6,671	5,438				
Of which: GBP	0	0				700	779				
Cross-currency risk		4,071	223	(8)	(114)		3,191	123	(52)	173	Other financial assets/ financial liabilities
Of which: USD	1,747	1,557				1,747	1,557				
Of which: GBP	1,400	1,617				700	796				
Of which: other		897					839				
Cash flow hedges											Other financial assets/ financial liabilities
Currency risk		4,214	321	(1)	257		4,326	12	(73)	(183)	
Buy											
USD/EUR	2,872	2,245				2,880	2,255				
GBP/EUR	1,155	1,277				1,163	1,282				
Other		3					19				
Sell											
USD/EUR	746	654				895	732				
Other		36					38				
Interest rate risk		9,606	43	(105)	67		10,845	9	(261)	(1,307)	Other financial assets/ financial liabilities
USD LIBOR	2,750	2,428				3,750	3,057				
EURIBOR		7,178					7,788				

In this and the following tables on hedging relationships, losses are shown as negative amounts unless explicitly stated otherwise.

Disclosures on hedged items in hedging relationships

millions of €

		Carrying amount of the hedged items (including cumulative fair value hedge adjustments)	Cumulative adjustments to the carrying amount of the designated fair value hedges	Change in the fair value of the hedged items for determining ineffectiveness in the reporting period	Remaining balance of cumulative adjustments to the carrying amount of the designated fair value hedges	Balance of amounts recognized in other comprehensive income relating to hedged risk (existing hedging relationships) ^a	Balance of amounts recognized in other comprehensive income relating to hedged risk (terminated hedging relationships) ^a	Presentation of the hedged items in the statement of financial position
Fair value hedges								
Interest rate risk	2021	20,923	799	970	277	n.a.	n.a.	Financial liabilities
	2020	23,417	1,741	(1,044)	258	n.a.	n.a.	
Cross-currency risk	2021	4,304	59	129	0	n.a.	n.a.	n.a.
	2020	3,219	188	(164)	0	n.a.	n.a.	
Cash flow hedges								
Currency risk	2021	n.a.	n.a.	(255)	n.a.	129	8	n.a.
	2020	n.a.	n.a.	179	n.a.	132	8	
Interest rate risk	2021	n.a.	n.a.	(42)	n.a.	(43)	(1,847)	n.a.
	2020	n.a.	n.a.	1,267	n.a.	(198)	(2,008)	
Hedges of net investment								
Currency risk	2021	n.a.	n.a.	0	n.a.	794	n.a.	n.a.
	2020	n.a.	n.a.	0	n.a.	794	n.a.	

^a Figures include non-controlling interests.

Gains/losses from hedge accounting

millions of €

		Hedge ineffectiveness of existing hedging relationships recognized in profit or loss	Changes in fair value recognized directly in other comprehensive income	Amounts reclassified to profit or loss from other comprehensive income due to occurrence of the hedged items (designated hedging relationships) ^a	Amounts reclassified to profit or loss from other comprehensive income due to occurrence of the hedged items (dedesignated hedging relationships) ^a	Total change in other comprehensive income	Presentation of the reclassified effective amounts in profit or loss	Presentation of the ineffectiveness in profit or loss
Fair value hedges								
Interest rate risk	2021	13	n.a.	n.a.	n.a.	n.a.	n.a.	Other financial income (expense)
	2020	14	n.a.	n.a.	n.a.	n.a.	n.a.	
Cross-currency risk	2021	15	n.a.	n.a.	n.a.	n.a.	n.a.	
	2020	9	n.a.	n.a.	n.a.	n.a.	n.a.	
Cash flow hedges								
Currency risk	2021	2	255	(258)	0	(4)	Net revenue/goods and services purchased/other financial income (expense)	Other financial income (expense)
	2020	(4)	(179)	229	0	50		
Interest rate risk	2021	25	42	68	207	316	Interest expense	
	2020	(40)	(1,267)	38	163	(1,066)		

^a Negative amounts represent gains in the income statement.

The recorded ineffectiveness in the income statement mainly results from the different discount rates of the hedged items (fixed-income) and designated hedging instruments (fixed-income and variable-interest). Furthermore, cross-currency interest rate hedges are impacted by effects from cross currency basis spreads, which are included in the hedging instruments, but not in the hedged items. For some hedges, the characteristics of hedging instruments and hedged items differ, resulting in ineffectiveness. In the case of interest rate hedges on highly probable future borrowings, ineffectiveness could arise if time shifts occur. The relative amounts of the ineffectiveness are not expected to increase significantly in the future. Furthermore, there are no other potential sources of ineffectiveness.

Reconciliation of total other comprehensive income from hedging relationships^a

millions of €

	Designated risk components (effective portion)			Total designated risk components	Hedging costs ^b	Total other comprehensive income
	Cash flow hedges		Hedges of net investment			
	Currency risk	Interest rate risk	Currency risk			
Balance at January 1, 2021	141	(2,206)	794	(1,271)	24	(1,247)
Changes recognized directly in equity	254	42	0	296	60	356
Reclassification to profit or loss due to occurrence of the hedged item	(258)	275	0	17	2	19
Balance at December 31, 2021	137	(1,889)	794	(958)	86	(872)

^a Figures include non-controlling interests.

^b The hedging costs relate entirely to cross-currency basis spreads.

Derivatives. The following table shows the fair values of the various derivatives. A distinction is made depending on whether these are part of an effective hedging relationship as set out in IFRS 9 (fair value hedge, cash flow hedge, net investment hedge) or not. Other derivatives can also be embedded, i.e., a component of a composite instrument that contains a non-derivative host contract.

millions of €

	Net carrying amounts Dec. 31, 2021	Net carrying amounts Dec. 31, 2020
Assets		
Interest rate swaps		
Without a hedging relationship	8	22
In connection with fair value hedges	972	1,902
In connection with cash flow hedges	43	9
Currency forwards/currency swaps		
Without a hedging relationship	44	15
In connection with cash flow hedges	17	8
Cross-currency swaps		
Without a hedging relationship	227	169
In connection with fair value hedges	223	123
In connection with cash flow hedges	305	3
Other derivatives in connection with cash flow hedges	0	0
Other derivatives without a hedging relationship	246	819
Embedded derivatives	677	966
Liabilities		
Interest rate swaps		
Without a hedging relationship	64	31
In connection with fair value hedges	3	0
In connection with cash flow hedges	105	261
Currency forwards/currency swaps		
Without a hedging relationship	15	41
In connection with cash flow hedges	1	28
In connection with net investment hedges	0	0
Cross-currency swaps		
Without a hedging relationship	45	264
In connection with fair value hedges	8	52
In connection with cash flow hedges	0	46
Other derivatives in connection with cash flow hedges	0	0
Other derivatives without a hedging relationship	454	13
Embedded derivatives	7	129

Transfer of financial assets

Factoring transactions with substantially all risks and rewards being transferred

Deutsche Telekom is party to two factoring agreements under which it sells – on a revolving basis – trade receivables from consumers and business customers relating to both charges already due and charges from sales of handsets payable over a period of up to two years.

In one transaction, receivables are sold directly to a structured entity. This structured entity holds the receivables and allocates the risks and rewards resulting from these to Deutsche Telekom and a bank on the basis of contractual arrangements. It is financed through the issue of commercial paper to third parties outside the Group or, alternatively, through a credit facility provided by a bank. Deutsche Telekom does not consolidate the structured entity because it does not control the relevant activities.

The receivables being sold are selected from a portfolio in compliance with the eligibility criteria set out in the receivables purchase agreement and an obligatory minimum volume, based on the decision of the structured entity. Deutsche Telekom is obligated to buy back aged receivables and receivables for which a write-down is imminent at nominal value. This would not affect the allocation of the credit risk-related losses, as these would be passed back to the buyer in line with the agreed risk allocation. The cash flows resulting from the buy-backs normally occur in the month following the buy-back. The structured entity does not have any business activities other than the purchase or sale of trade receivables or other investments. Deutsche Telekom is not exposed to risks other than the credit risks and late-payment risks resulting from the sold receivables stipulated in the agreement.

The risks relevant for the risk assessment with respect to the sold receivables are based on the credit risk and the late-payment risk. Deutsche Telekom bears certain portions of the credit risk. The other credit risk-related losses are borne by the buyer. The late-payment risk continues to be borne in full by Deutsche Telekom. All receivables sold were derecognized in full, since substantially all risks and rewards were transferred. At the derecognition date, the fair value of the expected losses is expensed as financial liabilities.

Deutsche Telekom continues to perform servicing for the receivables sold, with the structured entity having the right to transfer the servicing to third parties for no specific reason. Please refer to the table below for the disclosures on the continuing involvement resulting from the receivables sold.

In another transaction, receivables are sold directly to a bank, with Deutsche Telekom having the right to decide on a case-by-case basis whether and to what extent the revolving nominal volume will be used. Sales exceeding this amount must be agreed on a case-by-case basis. The risks relevant for the risk assessment with respect to the receivables sold are the credit risk and the late-payment risk, which are transferred to the buyer of the receivables in full in return for payment of a fixed purchase price discount. Losses relating to certain receivables are reimbursed up to a maximum amount under a credit insurance policy, which reduces the credit risk. The receivables sold until the reporting date were derecognized in full. At the derecognition date, the fixed purchase price discount is expensed. Deutsche Telekom continues to perform receivables credit management against payment for the receivables sold. For the disclosures on the receivables sold, please refer to the table below.

For three factoring agreements terminated as planned in the first quarter of the financial year, expenses of EUR 1.5 million have been recognized on a cumulative basis since commencement of the agreements.

Factoring transactions involving the splitting of significant risks and rewards as well as the transfer of control

There is also a revolving factoring transaction in place under which a bank is required to purchase trade receivables from charges from sales of handsets payable over a period of up to two years. Deutsche Telekom has the right to decide on a case-by-case basis whether the revolving nominal volume will be used and to what extent. The risks relevant for the risk assessment with respect to the receivables sold are the credit risk and the late-payment risk. Deutsche Telekom bears credit risk-related losses from the various tranches up to a certain amount in each case; the other credit risk-related losses are borne by the bank. The late-payment risk is borne in full by Deutsche Telekom. Due to the allocation of the material risks between Deutsche Telekom and the bank, substantially all the risks and rewards of ownership of the receivables were neither transferred nor retained. Control of the receivables sold was transferred to the bank because it has the practical ability to resell the receivables. The bank has the right to sell all overdue receivables back to Deutsche Telekom. The purchase price corresponds to the nominal amount and is payable in the month following the buy-back. This does not affect the allocation of the credit risk-related losses, as the losses would be passed back to the bank in line with the agreed risk allocation. All receivables sold have been derecognized. At the derecognition date, the fair value of the expected losses is expensed as financial liabilities. Please refer to the table below for the disclosures on the continuing involvement resulting from the receivables sold.

Factoring transactions involving the splitting of significant risks and rewards with control remaining at Deutsche Telekom

In addition, there are several factoring agreements in place under which Deutsche Telekom sells – on a revolving basis – trade receivables from consumers and business customers relating to both charges already due and charges from sales of handsets payable over a period of up to two years.

In two transactions, subsidiaries of Deutsche Telekom sell receivables to structured entities that are also subsidiaries of Deutsche Telekom and were established for the sole purpose of these factoring agreements. The required funding is provided to these structured entities in the context of Deutsche Telekom's general Group financing. These structured entities have no assets and liabilities other than those resulting from the purchase and sale of the receivables under factoring agreements. The structured entities transfer the legal role of creditor for the receivables in each case to a bank that performs this role on behalf of the respective investors who have beneficial ownership of the receivables (administrative agent). These investors are nine banks and six other structured entities altogether. Deutsche Telekom does not consolidate these six other structured entities because it has no control over their relevant activities. The six other structured entities are financed through the issue of commercial paper to third parties outside the Group or, alternatively, through a credit facility provided in each case by a bank.

In a further transaction, receivables are sold directly to a structured entity. This structured entity holds the receivables and allocates the risks and rewards resulting from these to Deutsche Telekom and a bank on the basis of contractual arrangements. It is financed through the issue of commercial paper to third parties outside the Group or, alternatively, through a credit facility provided by a bank. Deutsche Telekom does not consolidate the structured entity because it does not control the relevant activities.

The receivables being sold are selected from the relevant portfolios, either in an automated process in compliance with the eligibility criteria set out in the receivables purchase agreement or based on the decision of the relevant structured entity taking an obligatory minimum volume into account. Receivables are sold largely on a daily basis and are billed on a monthly basis. The purchase price up to a specific amount will be paid out immediately upon sale; remaining portions of the purchase price will only be paid to the extent that the volume of receivables sold in the relevant portfolio decreases further accordingly or the characteristics of the receivables change. In all transactions, Deutsche Telekom is obligated to buy back aged receivables and receivables for which a write-off is imminent at nominal value. Such buy-backs would not affect the allocation of the credit risk-related losses in any way, as the latter would be passed back to the buyers in line with the agreed risk allocation. The cash flows resulting from the buy-backs normally occur in the month following the buy-back. None of the structured entities has business activities other than the purchase or sale of trade receivables or other investments. In none of the transactions is Deutsche Telekom exposed to risks other than the credit risk and late-payment risk resulting from the sold receivables agreed in the respective agreement.

In other transactions, receivables are sold directly to buyers outside the Group without the involvement of structured entities. If more receivables are purchased in individual portfolios, the purchase price payment is deferred until the maximum program volume decreases further accordingly. In all those transactions, Deutsche Telekom has the right to decide whether receivables are sold and in which volume. In individual portfolios, receivables for which a write-off is imminent are sold back to Deutsche Telekom. Here the purchase price corresponds to the actual proceeds from collection or disposal and is payable after Deutsche Telekom receives these proceeds from collection or disposal. These buy-backs would affect neither the allocation of the credit risk-related losses nor Deutsche Telekom's liquidity situation. In one portfolio, the existing credit insurance reimburses losses relating to certain receivables to a specific maximum amount and thus reduces the exposure to loss.

The risks relevant for the risk assessment with respect to the sold receivables are based on the credit risk and the late-payment risk. Deutsche Telekom bears certain portions of the credit risk in the individual transactions. The other credit risk-related losses are borne by the respective buyers. The late-payment risk in all transactions continues to be borne in full by Deutsche Telekom. Substantially all the risks and rewards of ownership of the receivables were neither transferred nor retained (allocation of the material risks and rewards between Deutsche Telekom and the buyers). Deutsche Telekom continues to perform servicing for the receivables sold. Under the factoring agreements in which structured entities are engaged, buyers have the unilateral right to transfer the servicing to third parties for no specific reason. Although Deutsche Telekom is not authorized to use the receivables sold other than in its capacity as servicer, it retains control over the receivables sold because the buyers and the structured entities do not have the practical ability to resell the purchased receivables. At the time the receivables are sold, the fair value of the expected losses is expensed. Expected future payments are presented as a component of the associated liability. In transactions with structured entities, certain portions of the purchase price are initially held back and, depending on the amount of the actual defaults, are only paid to Deutsche Telekom at a later date. To the extent that such portions of the purchase price are expected to be received in the future, they are recognized at fair value. Deutsche Telekom continues to recognize the trade receivables sold to the extent of its continuing involvement, i.e., in the maximum amount with which it is still liable for the credit risk and late-payment risk inherent in the receivables sold, and recognizes a corresponding associated liability presented in liabilities to banks. The receivables and the associated liability are then derecognized in the extent to which Deutsche Telekom's continuing involvement is reduced (particularly when payment is made by the customer). The carrying amount of the receivables is subsequently reduced by the extent to which the actual losses to be borne by Deutsche Telekom resulting from the credit risk and the late-payment risk exceed the losses initially expected. This amount is recognized as an expense. Please refer to the table below for the disclosures on the continuing involvement resulting from the receivables sold.

Transfer of financial assets

millions of €

	2021					Total
	Transfer of substantially all risks and rewards		Allocation of substantially all risks and rewards			
	Partial transfer of the credit risk and full retention of the late-payment risk	Full transfer of the credit and late-payment risk	Transfer of control	Retention of control		
	With the involvement of structured entities	Without the involvement of structured entities	Partial transfer of the credit risk and full retention of the late-payment risk	Partial or full transfer of the credit risk and full retention of the late-payment risk	Without the involvement of structured entities	
	2023	2022	2022	2022–2025	2022	
End of contract terms						
Contractual maximum volume	95	85	90	8,829	324	9,423
Purchase prices to be paid immediately	95	85	80	2,041	324	2,625
Volume of receivables sold as of the reporting date	101	75	79	2,799	250	3,304
Scope of volume of receivables sold in the reporting year	11–49	26–75	18–32	1,533–2,046	112–296	
Provision for receivables management	0	0	0	0	0	0
Continuing involvement						
Maximum credit risk (before credit insurance)	6	0	15	593	0	614
Credit insurance	0	29	0	0	21	50
Maximum late-payment risk	0	0	0	6	0	6
Carrying amount of the continuing involvement (asset side)	0	0	0	507	0	507
Carrying amount of the associated liability	0	0	0	599	0	599
Fair value of the associated liability	0	0	0	91	0	91
Buy-back agreements						
Nominal value of receivables that can be bought back at the nominal amount	0	0	79	2,743	0	2,822
Nominal value of receivables that can be bought back at the collected amount	101	0	0	56	0	157
Purchase price discounts recognized in profit or loss, program fees, and pro rata loss allocations						
Current reporting year	1	0	1	91	1	94
Cumulative since commencement of the agreement	7	3	7	1,262	4	1,283

millions of €

	2020				Total
	Transfer of substantially all risks and rewards	Allocation of substantially all risks and rewards			
		Transfer of control	Retention of control		
			Partial transfer of the credit risk and retention of most of the late-payment risk	Partial or full transfer of the credit risk and full retention of the late-payment risk	
Full transfer of the credit and late-payment risk	With the involvement of structured entities	Without the involvement of structured entities			
	2021–2022	2021	2021–2024	2022	
End of contract terms					
Contractual maximum volume	180	90	4,637	324	5,231
Purchase prices to be paid immediately	180	80	1,984	324	2,568
Volume of receivables sold as of the reporting date	94	61	2,677	297	3,129
Scope of volume of receivables sold in the reporting year	36–116	22–57	1,703–2,147	185–306	
Provision for receivables management	0	0	0	0	0
Continuing involvement					
Maximum credit risk (before credit insurance)	0	14	819	0	833
Credit insurance	27	0	0	23	50
Maximum late-payment risk	0	0	6	1	7
Carrying amount of the continuing involvement (asset side)	0	0	816	1	817
Carrying amount of the associated liability	0	0	825	1	826
Fair value of the associated liability	0	0	9	0	9
Buy-back agreements					
Nominal value of receivables that can be bought back at the nominal amount	0	61	2,562	0	2,623
Nominal value of receivables that can be bought back at the collected amount	0	0	116	0	116
Purchase price discounts recognized in profit or loss, program fees, and pro rata loss allocations					
Current reporting year	0	1	114	1	116
Cumulative since commencement of the agreement	4	6	1,178	3	1,191

41 Capital management

The overriding aim of Deutsche Telekom's capital management is to strike a balance between the contrasting expectations of the following stakeholders, so that sufficient funding is available for an attractive dividend, debt repayment, responsible staff restructuring, and new investment in a sustainable and positive customer experience:

- **Shareholders** expect an appropriate, reliable return on their capital employed.
- **Providers of debt capital** expect an appropriate return and that Deutsche Telekom is able to repay its debts.
- **Employees** expect jobs that are secure, prospects for the future, and that any necessary staff restructuring will be done in a responsible manner.
- **"Entrepreneurs within the enterprise"** expect sufficient investment funding to be able to shape Deutsche Telekom's future business and develop products, innovations, and services for the customer.
- **Society** expects Deutsche Telekom to do everything within its power to protect the environment, encourage fair and democratic co-existence, and shape the digital transformation in a responsible manner.

An important key performance indicator for the capital market communication with investors, analysts, and rating agencies is relative debt, i.e., net debt to adjusted EBITDA. This ratio stood at 3.06x at December 31, 2021 (December 31, 2020: 2.78x). Deutsche Telekom is expected to exceed the target range for relative debt of 2.25x to 2.75x on account of the business combination of T-Mobile US and Sprint until the end of 2024. Adjusted EBITDA and net debt are non-GAAP figures not governed by International Financial Reporting Standards, and their definition and calculation may vary from one company to another. A further essential key performance indicator is the equity ratio, i.e., the ratio of shareholders' equity to total assets as shown in the consolidated statement of financial position. The equity ratio was 28.9 % as of December 31, 2021 (December 31, 2020: 27.4 %). The target range remains unchanged between 25 and 35 %. In addition, Deutsche Telekom maintains a liquidity reserve covering all maturities of the next 24 months.

For further information, please refer to the sections "Management of the Group" and "Development of business in the Group," in the combined management report.

millions of €	Dec. 31, 2021 ^a	Dec. 31, 2020	Change	Change %
Bonds and other securitized liabilities	93,857	87,702	6,155	7.0
Liabilities to banks	4,003	5,257	(1,254)	(23.9)
Other financial liabilities	13,730	14,149	(419)	(3.0)
Lease liabilities	33,767	32,715	1,052	3.2
Financial liabilities and lease liabilities	145,357	139,823	5,534	4.0
Accrued interest	(1,012)	(1,035)	23	2.2
Other	(855)	(703)	(152)	(21.6)
Gross debt	143,490	138,085	5,405	3.9
Cash and cash equivalents	7,617	12,939	(5,322)	(41.1)
Derivative financial assets	2,762	4,038	(1,276)	(31.6)
Other financial assets	969	881	88	10.0
Net debt	132,142	120,227	11,915	9.9

^a Including the net debt of T-Mobile Netherlands included under liabilities directly associated with non-current assets and disposal groups held for sale as of December 31, 2021.

42 Related-party disclosures

Federal Republic of Germany and other related parties

The Federal Republic of Germany is both a direct and an indirect shareholder (via KfW Bankengruppe) and holds 30.5 % (December 31, 2020: 31.9 %) of the share capital of Deutsche Telekom AG. In previous years, this resulted in the Federal Republic of Germany representing a solid majority at the shareholders' meetings of Deutsche Telekom AG due to its level of attendance, giving it control over Deutsche Telekom. Thanks to higher levels of attendance, the Federal Republic has not had a majority of the voting rights at the shareholders' meetings of Deutsche Telekom AG since 2016. As such, it is no longer deemed to have control over Deutsche Telekom, but rather only a significant influence. Therefore, the Federal Republic and the companies controlled and jointly controlled by the Federal Republic, but not the companies over which the Federal Republic can exercise a significant influence are classified as related parties of Deutsche Telekom. In the course of business, Deutsche Telekom deals directly with these companies, and with authorities and other government agencies as an independent party. Deutsche Telekom participates in the spectrum auctions of the Bundesnetzagentur. The acquisition of mobile spectrum through licenses may result in build-out requirements.

The Federal Posts and Telecommunications Agency (Bundesanstalt für Post und Telekommunikation; Federal Agency) has been assigned certain tasks by law that affect cross-company issues at Deutsche Telekom AG, Deutsche Post AG, and Deutsche Bank AG (as legal successor of Deutsche Postbank AG). The Federal Agency's responsibilities include the continuation of the Civil Service Health Insurance Fund (Postbeamtenkrankenkasse), the Recreation Service (Erholungswerk), the Deutsche Bundespost Institution for Supplementary Retirement Pensions for Salaried Employees and Wage Earners (Versorgungsanstalt der Deutschen Bundespost), and the Welfare Service (Betreuungswerk) for Deutsche Telekom AG, Deutsche Post AG, and Deutsche Bank AG (as legal successor of Deutsche Postbank AG). The coordination and administrative tasks are performed on the basis of agency agreements. Up to and including the 2012 reporting year, Deutsche Telekom AG maintained a joint pension fund, Bundes-Pensions-Service für Post und Telekommunikation e.V., Bonn (Federal Pension Service for Post and Telecommunications – BPS-PT), together with Deutsche Post AG and Deutsche Bank AG (as legal successor of Deutsche Postbank AG) for civil-servant pension plans. The German Act on the Reorganization of the Civil Service Pension Fund (Gesetz zur Neuordnung der Postbeamtenversorgungskasse – PVKNeuG) transferred the functions of BPS-PT relating to civil-servant pensions (organized within the Civil Service Pension Fund) to the existing Federal Agency effective January 1, 2013. The civil-servant pension functions are therefore performed by the Civil Service Pension Fund as an integral part of the Federal Agency. This joint Civil Service Pension Fund works for the funds of all three companies and also handles the financial administration of the pension plan for the Federal Republic on a trust basis. For the 2021 financial year, Deutsche Telekom made payments in the amount of EUR 129 million (2020: EUR 121 million, 2019: EUR 146 million). Furthermore, payments are made to the Civil Service Pension Fund in accordance with the provisions of the Act on the Reorganization of the Civil Service Pension Fund.

For further information, please refer to Note 15 "Provisions for pensions and other employee benefits."

The Federal Republic and the companies controlled and jointly controlled by the Federal Republic are customers or suppliers of Deutsche Telekom and as such have mutual contractual relationships with Deutsche Telekom.

There are no material revenue, receivables, or liabilities from or to **joint ventures** and **associates**.

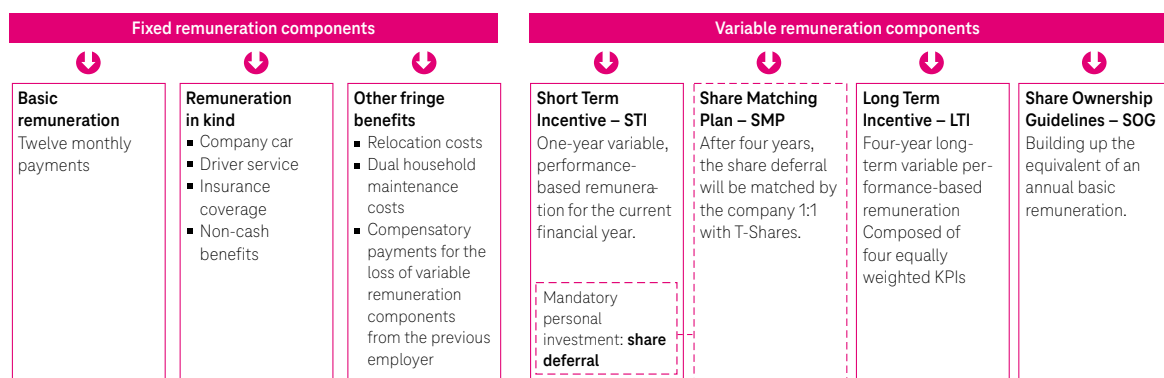
Related individuals

At the Supervisory Board meeting on February 25, 2021, the Supervisory Board adopted a new Board of Management remuneration system which takes into account the updates to the German Corporate Governance Code as amended on December 16, 2019 and the amendments to the German Stock Corporation Act (ARUG II, the Act Implementing the Second Shareholder Rights Directive). This remuneration system was submitted to a vote at the shareholders' meeting of Deutsche Telekom AG on April 1, 2021 and was approved. The detailed presentation of the system for Board of Management and Supervisory Board remuneration, disclosures on the remuneration of each individual Board of Management and Supervisory Board member, and other individual disclosures, form part of the remuneration report published separately by the Board of Management and Supervisory Board in accordance with § 162 of the German Stock Corporation Act (Aktiengesetz – AktG).

Detailed information on the remuneration of the Board of Management and the Supervisory Board is published in the separate [remuneration report](#).

The following graphic provides a simplified, schematic representation of fixed and variable remuneration components:

Remuneration of the Board of Management



In the reporting year, expenses for short-term benefits payable to members of the Board of Management and the Supervisory Board amounted to EUR 23.1 million (2020: EUR 20.5 million). These include, as Board of Management remuneration, the basic remuneration, the fringe benefits, and the Short-Term Incentive (STI) as well as Supervisory Board remuneration in the form of fixed remuneration, committee remuneration, and meeting attendance fees. Expenses of EUR 5.2 million (2020: EUR 7.3 million) for tranches of Variable II from the previous remuneration system were recorded as long-term benefits. Service cost of EUR 0.5 million (2020: EUR 2.3 million) was recorded for Board of Management pensions. In addition, expenses for share-based remuneration for Board of Management members were incurred in the amount of EUR 5.2 million (2020: EUR 2.0 million), which related to participation in the Share Matching Plan and to first-time participation in the Long-Term Incentive Plan (LTI). No termination benefits were expensed in 2021 or 2020.

For further information, please refer to Note 44 “Share-based payment.”

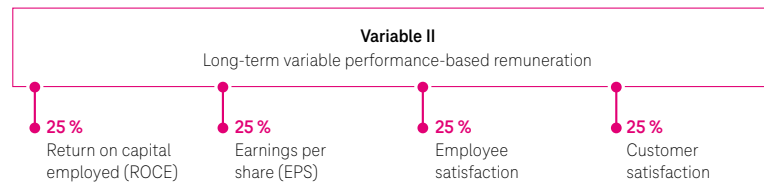
Components of the Short-Term Incentive

GROUP FINANCIAL TARGETS	+	SEGMENT FINANCIAL TARGETS	+	ESG TARGETS	×	PERFORMANCE FACTOR
% of the target amount		% of the target amount		% of the target amount		Strategic personal target
Service revenue	30 %	Service revenue	33 %	CO ₂ emissions	50 %	+
EBITDA AL (unadjusted)	30 %	EBITDA AL (unadjusted)	33 %	Energy consumption	50 %	Value adherence
Free cash flow	40 %	Indirect costs AL (adjusted)	33 %			
0 %–150 %		0 %–150 %		0 %–150 %		0.8–1.2

For details on the financial and non-financial performance indicators relevant for the Short-Term Incentive, please refer to the section “Management of the Group” in the combined management report.

The expenses recorded as long-term benefits relate to participation in the annually issued four-year tranches of Variable II, which was granted for the last time for the 2020 financial year and has been replaced since the 2021 financial year by the share-based LTI. The following graphic shows the target parameters allocated to Variable II, for each of which target achievement can vary between 0 and 150 %.

Components of Variable II



The LTI, granted for the first time in 2021, is based on the share price and is set out in detail together with the Share Matching Plan (SMP) as part of the disclosures on share-based payment.

Details on the components of the Long Term Incentive Plan can be found in Note 44 "[Share-based payment](#)."

As of December 31, 2021, Deutsche Telekom recognized provisions for Board of Management and Supervisory Board remuneration from short-term benefits of EUR 13.4 million (2020: EUR 11.6 million) and from other long-term benefits of EUR 14.8 million (2020: EUR 14.3 million). Furthermore, the present value of the defined benefit obligation (DBO) from the Board of Management pension amounts to EUR 27.3 million (2020: EUR 28.0 million).

The remuneration of the Board of Management and the Supervisory Board totaled EUR 33.9 million in the reporting year (2020: EUR 32.2 million).

Since the introduction of the new Board of Management remuneration system in 2021, new members of the Board of Management are no longer entitled to receive a Board of Management pension. Current members of the Board of Management with a contribution-based pension commitment did not receive any contributions for 2021. The pension credit accrued up to December 31, 2020 is fixed and non-forfeitable. Upon retirement, these Board of Management members shall receive their pension credit in the form of a lump sum. A special arrangement applies for the pension commitment of Timotheus Höttges, which is structured as defined benefits and upon his retirement will be paid out in the form of life-long pension payments with a pension for surviving dependents in the form of entitlements for widows and orphans. The pension commitment may be in the form of a life-long retirement pension upon reaching the age of 62 or in the form of an early retirement pension upon reaching the age of 60. Opting for the early retirement pension scheme is connected with actuarial deductions. The maximum pension level of 50 % of annual basic remuneration was reached in 2018. Since then, an annual dynamic increase of 2.4 % has been applied to the reference variable. The reference variable for both the pension level and the dynamic increase is the basic remuneration applicable as of December 31, 2018. The pension payments to be made upon retirement increase dynamically, at a rate of 1 % per year. In the event of a permanent incapacity for work (invalidity), the beneficiary is also entitled to the pension credit accrued.

Employees elected to the Supervisory Board of Deutsche Telekom AG continue to be entitled to a regular salary as part of their employment contract. The amount of the remuneration is the adequate compensation for their job or activity within the Company. Besides this, no major transactions took place with related individuals.

The members of the Board of Management and Supervisory Board of Deutsche Telekom AG are members of supervisory boards or management boards of other companies or are shareholders of other companies with which Deutsche Telekom AG maintains relations in the ordinary course of business.

All related-party transactions are performed on an arm's length basis.

43 Remuneration of the Board of Management and the Supervisory Board

The disclosure of the total remuneration of current and former members of the Board of Management and the Supervisory Board of Deutsche Telekom AG is made in accordance with the provisions of § 314 (1) No. 6 of the German Commercial Code (Handelsgesetzbuch – HGB).

Board of Management remuneration for the 2021 financial year

Total remuneration of the members of the Board of Management for the 2021 financial year amounted to EUR 36.8 million (2020: EUR 24.1 million). This includes a total of 235,696 entitlements to matching shares with a fair value of EUR 3.0 million on the grant date (2020: EUR 2.5 million). Since 2021, the members of the Board of Management participate in a share price-based Long-Term Incentive Plan (LTI), under which entitlements were granted to a pool of 517,260 phantom shares with a fair value of EUR 8.8 million.

Former members of the Board of Management

A total of EUR 10.6 million (2020: EUR 8.5 million) was included for payments to and entitlements for former members of the Board of Management as well as any surviving dependents. Provisions (measured in accordance with IAS 19) totaling EUR 210.2 million (2020: EUR 223.9 million) were recognized for current pensions and vested rights to pensions for this group of persons and their surviving dependents.

Supervisory Board remuneration for the 2021 financial year

Total remuneration of the members of the Supervisory Board for 2021 amounted to EUR 2.8 million (plus VAT) (2020: EUR 3.0 million (plus VAT)) and is comprised of fixed annual remuneration plus meeting attendance fees.

Other

The Company has not granted any advances or loans to current or former Board of Management members or to current or former Supervisory Board members, nor were any other financial obligations to the benefit of this group of people entered into.

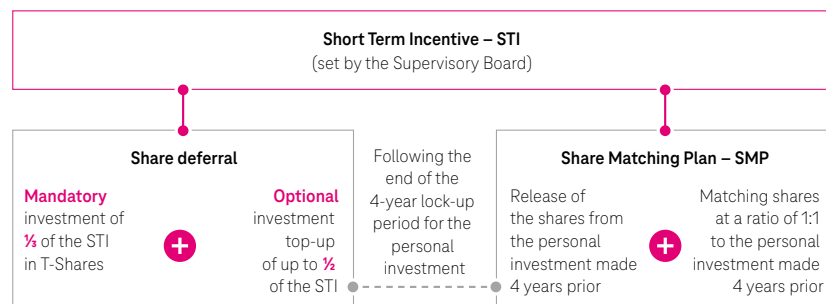
Detailed information on the remuneration of the Board of Management and the Supervisory Board is published in the separate [remuneration report](#).

44 Share-based payment

Share Matching Plan

Since the 2021 financial year, members of the Board of Management have a contractual obligation to invest one third of the Short-Term Incentive (STI) set by the Supervisory Board in shares of Deutsche Telekom AG. There is an option to voluntarily increase the investment volume to up to 50 % of the STI. Deutsche Telekom AG will transfer one additional share for every share acquired as part of this Board of Management member's aforementioned personal investment (Share Matching Plan – SMP) on expiration of the four-year lock-up period starting from the date of purchase. The functioning of STI and SMP is set out in the following chart.

Functioning of the Share Matching Plan and the Short-Term Incentive for Board of Management members



Since the 2011 financial year, specific executives have been contractually obligated to invest a minimum of 10 % of their short-term variable remuneration component, which is based on the achievement of targets set for each person for the financial year (Short-Term Incentive), in Deutsche Telekom AG shares. In the 2019 financial year, the upper limit for personal investment was raised from 33.3 % to 50 % of the short-term variable remuneration component paid. Deutsche Telekom AG will award one additional share for every share acquired as part of this executive's aforementioned personal investment (Share Matching Plan). These shares will be allotted to the beneficiaries of this plan on expiration of the four-year lock-up period.

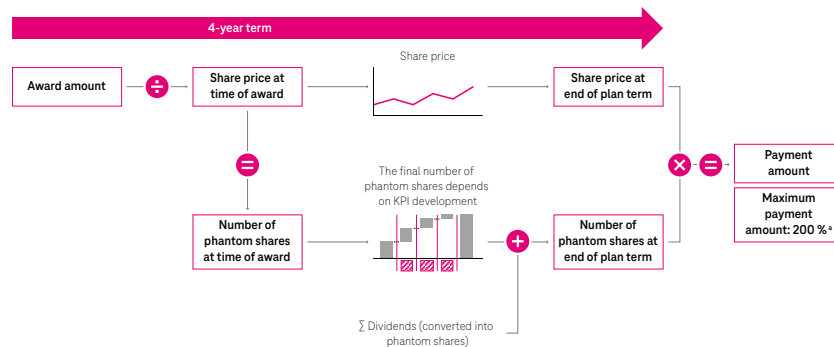
Since the 2015 financial year, further executives who are not contractually obligated to participate in the Share Matching Plan have been given the opportunity to participate on a voluntary basis. This offer is only made when the Group's free cash flow target for the preceding year has been achieved. The conditions of participation in the voluntary Share Matching Plan were updated in the 2019 financial year. Since then, participation has been open to all executives in certain management groups. To participate, the executives invest at least 10 % and – since the 2019 financial year – a maximum of 50 % of the target amount (100 %) of the short-term remuneration component (Short-Term Incentive) in shares of Deutsche Telekom AG. Deutsche Telekom AG will award additional shares for every share acquired as part of this executive's aforementioned personal investment (Share Matching Plan). The number of additional shares granted will depend on the management group to which the executive is assigned. The additional shares will be allotted to the beneficiaries of this plan on expiration of the four-year lock-up period.

The individual Share Matching Plans are each recognized for the first time at fair value on the grant date. To determine the fair value, the expected dividend entitlements are deducted from Deutsche Telekom AG's share price, as there are no dividend entitlements until the matching shares have been allocated. In the 2021 financial year, a total of 0.9 million (2020: 1.0 million) matching shares were allocated to beneficiaries of the plan at a weighted average fair value of EUR 13.20 (2020: EUR 12.22). The cost is to be recognized against the capital reserves pro rata temporis until the end of the service period and amounted to EUR 10.1 million in total for all tranches as of December 31, 2021 (December 31, 2020: EUR 9.0 million). In the reporting year, reserves were reduced by transfers of shares to plan participants in a total value of EUR 5.8 million (2020: EUR 7.0 million). The capital reserves recognized for the Share Matching Plan as of December 31, 2021 amounted to EUR 23.4 million (December 31, 2020: EUR 19.1 million).

Long-Term Incentive Plan

Since the introduction of the new Board of Management remuneration system in 2021, Board of Management members also participate in the Group's existing Long-Term Incentive Plan (LTI). The amount of the annual participation is contractually defined individually for each Board of Management member. The functioning of the LTI is summarized below:

Functioning of the Long-Term Incentive Plan for Board of Management members



^a For members of the Board of Management, the maximum payment amount is set at 200 %.

Executives from the Deutsche Telekom AG Group also participate in the LTI provided they meet certain eligibility requirements or have an individual contractual commitment. At the inception of the plan, the participating executives receive a package of phantom shares with a value between 10 and 43 % of the participant's annual target salary depending on the extent to which defined criteria are fulfilled. The number of phantom shares is contingent on the participant's annual target salary, management group assignment, and, since the 2019 financial year, on the achievement of the collective targets (financial and strategic targets) of the organizational unit to which the executive is assigned.

Over the term of the four-year plan, the value of the phantom shares changes in line with Deutsche Telekom AG's share price development. The number of phantom shares will change in line with the achievement of the targets for four equally weighted key performance indicators (return on capital employed, adjusted earnings per share, employee satisfaction, and customer satisfaction), to be determined at the end of each year. In addition, a dividend is granted for the phantom shares over the term of the plan. This dividend is reinvested in phantom shares, increasing the number of phantom shares held by each plan participant. At the end of the four-year plan term, the final number of phantom shares will be converted on the basis of a share price calculated in a reference period at the end of the plan and paid out in cash together with the dividend for the last year of the plan, which is not converted into phantom shares.

The individual LTIs are each recognized for the first time at fair value on the grant date. The fair value of a plan is calculated by multiplying the number of phantom shares by Deutsche Telekom AG's share price discounted to the reporting date. For members of the Board of Management of Deutsche Telekom AG, the fair value is calculated on the grant date taking into account a discount for a maximum payout volume of 200 %. This maximum payout volume does generally not apply for other executives. In the 2021 financial year, a total of 4.93 million (2020: 3.91 million) phantom shares were granted at a weighted average fair value of EUR 14.92 (2020: EUR 14.76). A plan must be remeasured at every reporting date until the end of the service period and expensed pro rata temporis. The cost of the LTI plans amounted to EUR 85 million for all tranches in the reporting year (2020: EUR 77 million). In 2021, the provision was utilized in the amount of EUR 50 million (2020: EUR 47 million). Following a reclassification of EUR 1 million (2020: EUR 2 million) to liabilities directly associated with non-current assets and disposal groups held for sale, the provision amounted to EUR 186 million as of December 31, 2021 (December 31, 2020: EUR 152 million).

Detailed information on the remuneration of the Board of Management and the Supervisory Board is published in the separate [remuneration report](#).

Shares2You share ownership program

Since the 2021 financial year, employees in Germany have been given the option to invest an amount of between EUR 50 and EUR 1,000 in shares in Deutsche Telekom AG. Each eligible employee receives one additional free share in Deutsche Telekom AG for every two shares acquired by way of this personal investment (Shares2You). Once the investment amount has been paid in, ownership of the shares, which carry dividend and voting rights, is transferred to the employee. However, a lock-up period of another four years applies, for example, with regard to sale. The program is not subject to any minimum service period or performance conditions.

The cost for the free shares must be recognized against the capital reserves at the inception of the plan. In 2021, plan participants were granted a total of 1.0 million free shares at a fair value of EUR 16.72. A corresponding expense of EUR 17.0 million was recognized as of December 31, 2021. A total of 3.1 million shares at a value of EUR 51.1 million were reclassified from treasury shares to the capital reserve as of December 31, 2021, from personal investment and for the free shares.

Stock-based compensation at T-Mobile US

Under T-Mobile US' Omnibus Incentive Plan, the company may grant stock options, stock appreciation rights, restricted stock, restricted stock units (RSUs), and performance awards to employees, consultants, advisors and non-employee directors. As of December 31, 2021, there were around 20 million T-Mobile US shares of common stock (December 31, 2020: 25 million shares) available for future grants under the incentive plan.

T-Mobile US grants RSUs to eligible employees and certain non-employee directors, and performance-based restricted stock units (PRSUs) to eligible key executives of the company. RSUs entitle the grantee to receive shares of T-Mobile US' common stock at the end of a vesting period of up to three years. PRSUs entitle the holder to receive shares of T-Mobile US common stock at the end of a vesting period of up to three years if a specific performance goal is achieved. The number of shares ultimately received is dependent on the actual performance of T-Mobile US measured against a defined performance target.

The RSU and PRSU plans resulted in the following share-related development:

Time-based restricted stock units and restricted stock awards (RSUs)

	Number of shares	Weighted average grant-date fair value USD
Non-vested as of January 1, 2021	10,101,222	84.61
Granted	4,884,185	121.40
Vested	(5,273,134)	79.67
Forfeited	(818,985)	104.40
Non-vested as of December 31, 2021	8,893,288	105.96

Performance-based restricted stock units (PRSUs)

	Number of shares	Weighted average grant-date fair value USD
Non-vested as of January 1, 2021	3,173,101	86.58
Granted	433,116	125.34
Adjustments ^a	576,866	64.44
Vested	(2,236,918)	69.14
Forfeited	(56,608)	99.51
Non-vested as of December 31, 2021	1,889,557	108.97

^a Relates to PRSUs granted before 2021, for which the vesting period had expired and which resulted in the issue of additional shares. These PRSUs are also included under PRSUs vested in 2021.

The program is measured at fair value on the grant date and recognized as expense, net of expected forfeitures, following a graded vesting schedule over the related service period. The fair value of stock awards for the RSUs is based on the closing price of T-Mobile US' common stock on the date of grant. The fair value of stock awards for the PRSUs was determined using the Monte Carlo model. Stock-based compensation expense was EUR 540 million as of December 31, 2021 (December 31, 2020: EUR 628 million).

The outstanding stock options mainly relate to the stock option plans of MetroPCS and Sprint, both of which were set up prior to the business combinations with T-Mobile US. No new awards may be granted under these plans.

The plans resulted in the following development of the T-Mobile US stock options:

	Number of shares	Weighted average exercise price USD	Weighted average remaining contractual term (years)
Stock options outstanding at January 1, 2021	918,695	51.77	4.0
Exercised	(218,495)	48.02	
Forfeited/canceled	(4,356)	40.74	
Stock options outstanding at December 31, 2021	695,844	53.01	3.3
Stock options exercisable at December 31, 2021	695,844	53.01	3.3

The exercise of stock options generated cash inflows of EUR 9 million (USD 10 million) in the 2021 financial year (2020: EUR 42 million (USD 48 million)).

45 Declaration of Conformity with the German Corporate Governance Code in accordance with § 161 AktG

In accordance with § 161 AktG, the Board of Management and the Supervisory Board of Deutsche Telekom AG have submitted the mandatory declaration of conformity and made it available to shareholders on Deutsche Telekom AG's website. The full text of the Declaration of Conformity is available on the Deutsche Telekom website.

[Declaration of Conformity](#)

46 Events after the reporting period

Extension of agreement between T-Mobile US and Crown Castle. In January 2022, T-Mobile US and Crown Castle International agreed a modification to existing contracts, mainly concerning the lease of Crown Castle International's cell sites. This agreement modifies the monthly lease payments for existing cell sites, provides for an extension of the non-cancelable lease term until December 31, 2033 (with additional extension options), and is to give T-Mobile US greater flexibility for building out the network as well as integrating and merging the existing mobile networks. The modification of the agreement is expected to result, in 2022, in an increase of the carrying amounts of the right-of-use assets and the lease liabilities before deferred taxes of USD 7.3 billion (EUR 6.4 billion) in each case and in an increase in other financial liabilities before deferred taxes of USD 0.9 billion (EUR 0.8 billion) for components of the agreement that due to their financing nature do not fall within the scope of IFRS 16. This represents a preliminary estimate of the impact and may be revised as upon finalization of the accounting.

FCC spectrum auction in the United States. In January 2022, in the United States, the Federal Communications Commission (FCC) announced the results of the 3,450 MHz auction for mobile licenses. T-Mobile US was awarded 199 mobile licenses in mid-band spectrum between 3,450 and 3,550 MHz for a purchase price of USD 2.9 billion (EUR 2.6 billion). T-Mobile US deposited cash collateral of USD 0.1 billion (EUR 0.1 billion) with the FCC in September 2021 for participation in the auction. T-Mobile US paid the remaining purchase price of USD 2.8 billion (EUR 2.5 billion) to the FCC in the first quarter of 2022.

47 Auditor's fees and services in accordance with § 314 HGB

PricewaterhouseCoopers Gesellschaft mit beschränkter Haftung, Wirtschaftsprüfungsgesellschaft (PwC) Frankfurt/Main, member of the German Chamber of Public Accountants in Berlin, has audited the consolidated financial statements of Deutsche Telekom AG since the Company's listing in 1996. Following a change within PwC in 2015, Thomas Tandetzki has been the responsible auditor at PwC.

The following table provides a breakdown of the auditor's professional fees recognized as expenses in the 2021 financial year:

millions of €	2021
Auditing services	14
Other assurance services	1
Tax advisory services	0
Other non-audit services	0
	15

Professional fees for auditing services include in particular fees for the statutory auditing of annual and consolidated financial statements and the subsidiaries included in the consolidated financial statements, fees for the review of the interim financial statements, and fees for other auditing services.

The fees recognized under other assurance services relate primarily to the auditing of information systems and processes, as well as the issuing of comfort letters.

Bonn, February 15, 2022

Deutsche Telekom AG
The Board of Management

Timotheus Höttges

Adel Al-Saleh

Thorsten Langheim

Birgit Bohle

Dominique Leroy

Srini Gopalan

Claudia Nemat

Dr. Christian P. Illek

Responsibility statement

To the best of our knowledge, and in accordance with the applicable reporting principles, the consolidated financial statements give a true and fair view of the assets, liabilities, financial position, and profit or loss of the Group, and the Group management report, which is combined with the management report of Deutsche Telekom AG, includes a fair review of the development and performance of the business and the position of the Group, together with a description of the principal opportunities and risks associated with the expected development of the Group.

Bonn, February 15, 2022

Deutsche Telekom AG
The Board of Management

Timotheus Höttges

Adel Al-Saleh

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INDEPENDENT AUDITOR'S REPORT

To Deutsche Telekom Aktiengesellschaft, Bonn

REPORT ON THE AUDIT OF THE CONSOLIDATED FINANCIAL STATEMENTS AND OF THE GROUP MANAGEMENT REPORT

Audit Opinions

We have audited the consolidated financial statements of Deutsche Telekom Aktiengesellschaft, Bonn, and its subsidiaries (the Group), which comprise the consolidated statement of financial position as at 31 December 2021, and the consolidated statement of comprehensive income, consolidated income statement, consolidated statement of changes in equity and consolidated cash flow statement for the financial year from 1 January to 31 December 2021, and notes to the consolidated financial statements, including a summary of significant accounting policies. In addition, we have audited the group management report of Deutsche Telekom Aktiengesellschaft, which is combined with the Company's management report, for the financial year from 1 January to 31 December 2021. In accordance with the German legal requirements, we have not audited the content of the non-financial statement pursuant to § [Article] 289b Abs. [paragraph] 1 HGB [Handelsgesetzbuch: German Commercial Code] and § 315b Abs. 1 HGB.

In our opinion, on the basis of the knowledge obtained in the audit,

- the accompanying consolidated financial statements comply, in all material respects, with the IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to § 315e Abs. 1 HGB and, in compliance with these requirements, give a true and fair view of the assets, liabilities, and financial position of the Group as at 31 December 2021, and of its financial performance for the financial year from 1 January to 31 December 2021, and
- the accompanying group management report as a whole provides an appropriate view of the Group's position. In all material respects, this group management report is consistent with the consolidated financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development. Our audit opinion on the group management report does not cover the content of the non-financial statement referred to above.

Pursuant to § 322 Abs. 3 Satz [sentence] 1 HGB, we declare that our audit has not led to any reservations relating to the legal compliance of the consolidated financial statements and of the group management report.

Basis for the Audit Opinions

We conducted our audit of the consolidated financial statements and of the group management report in accordance with § 317 HGB and the EU Audit Regulation (No. 537/2014, referred to subsequently as "EU Audit Regulation") in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer [Institute of Public Auditors in Germany] (IDW). We performed the audit of the consolidated financial statements in supplementary compliance with the International Standards on Auditing (ISAs). Our responsibilities under those requirements, principles and standards are further described in the "Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report" section of our auditor's report. We are independent of the group entities in accordance with the requirements of European law and German commercial and professional law, and we have fulfilled our other German professional responsibilities in accordance with these requirements. In addition, in accordance with Article 10 (2) point (f) of the EU Audit Regulation, we declare that we have not provided non-audit services prohibited under Article 5 (1) of the EU Audit Regulation. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions on the consolidated financial statements and on the group management report.

Key Audit Matters in the Audit of the Consolidated Financial Statements

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements for the financial year from 1 January to 31 December 2021. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our audit opinion thereon; we do not provide a separate audit opinion on these matters.

In our view, the matters of most significance in our audit were as follows:

- 1 | Recoverability of goodwill
- 2 | Appropriateness of revenue recognition

Our presentation of these key audit matters has been structured in each case as follows:

1 | Matter and issue

2 | Audit approach and findings

3 | Reference to further information

Hereinafter we present the key audit matters:

1 | Recoverability of goodwill

1 | Goodwill in an amount of EUR 20.5 billion (7.3 % of consolidated total assets) is reported under the line item "Intangible assets" of the consolidated statement of financial position in the consolidated financial statements of Deutsche Telekom Aktiengesellschaft. The Company tests goodwill for impairment (impairment test) once a year or if there are indications that goodwill may be impaired. The carrying amount of the relevant cash-generating unit or group of cash-generating units (hereinafter "unit" or "units"), in each case including allocated goodwill, is compared with the corresponding recoverable amount in the context of the impairment test. These measurements are generally based on the present value of future cash flows of the unit to which the respective goodwill is allocated. The recoverability of the unit "USA" is determined on the basis of the listed share price of T-Mobile US, Inc. The other measurements are based on budget projections for the individual units, which in turn are based on the financial budgets approved by the executive directors. The discount rate used is the weighted average cost of capital for the relevant unit. The impairment tests conducted on goodwill determined that no impairments were necessary in financial year 2021.

The result of these measurements depends particularly on the executive directors' assumptions of future cash inflows and the discount rate used. The measurements are therefore subject to uncertainty. Against this background and due to the complex nature of the measurement, this matter was of particular significance in the context of our audit.

2 | We assessed whether the future cash inflows underlying the measurements and the discount rates used on the whole provide a proper basis for the impairment tests of the individual units. As part of our assessment, we relied, among other things, on a comparison with general and sector-specific market expectations as well as the executive directors' detailed explanations regarding key value drivers and their recognition in the budget projections. In this context, we also assessed whether the expenses for Group functions were properly included in the impairment tests of the respective cash-generating units. With the knowledge that even relatively small changes in the discount rate applied can in some cases have material effects on values, we also focused our testing on the parameters used to determine the discount rate applied, and evaluated the measurement model. We also conducted our own sensitivity analyses for the units with a low carrying amount to present value ratio in order to estimate any potential impairment risk related to any potential changes in key assumptions of the measurement. In our view, the measurement inputs and assumptions used by the executive directors were properly derived for conducting impairment tests.

3 | The Company's disclosures pertaining to impairment tests are contained in the notes on the accounting policies found in the "Accounting policies" section of the "Summary of accounting policies" chapter and in section "6 – Intangible assets" of the notes to the consolidated financial statements.

2 | Appropriateness of revenue recognition

1 | In the consolidated financial statements of Deutsche Telekom Aktiengesellschaft, revenue of EUR 108.8 billion is recognized in the consolidated income statement. This significant item in terms of its amount is subject to particular risk due to the complexity of the processes and controls necessary for accurate recognition and deferral, the impact of ever-changing business, price and tariff models (including tariff structures, customer discounts, incentives), and the existence of multiple-element arrangements.

In addition, the accounting standard applicable to revenue recognition, International Financial Reporting Standard 15 – Revenue from contracts with customers (IFRS 15), requires for certain areas estimates and judgments – such as determining the transaction price and allocating it to the performance obligations identified in multiple-element arrangements based on the relative stand-alone selling prices – that had to be assessed for appropriateness in the context of our audit.

Against this background, the accounting treatment of revenue was of particular significance in the context of our audit.

2 | In the knowledge that the complexity and the need to make estimates and assumptions give rise to an increased risk of accounting misstatements, as part of our audit we initially assessed the processes and controls put in place by the Group, including the IT systems used for the purposes of revenue recognition. In particular, we assessed the IT system environment for invoicing and measurement, other relevant systems supporting the accounting treatment of revenue, and the invoicing and measurement systems up to entries in the general ledger.

Furthermore, we inspected contracts with customers, assessed the determination of the transaction price and its allocation to the performance obligations identified in multiple-element arrangements based on the relative stand-alone selling prices, and evaluated whether these obligations were satisfied over time or at a point in time. In this context, we also assessed the appropriateness of the procedure used to allocate revenue to the correct period, and the estimates and judgments made by the executive directors with respect to revenue recognition and deferral. Furthermore, we assessed the accounting consequences of new business and price models and, on a sample basis, examined customer invoices and the related contracts, as well as payments received. We applied consistent audit procedures for the audit of the operating subsidiaries to ensure that we responded appropriately throughout the Group to the audit risk inherent in the audit field.

We were able to satisfy ourselves that the systems, processes and controls in place are appropriate and that the estimates and assumptions made by the executive directors are sufficiently documented and substantiated to ensure that revenue is properly accounted for.

3 | The Company's disclosures relating to revenue in the consolidated financial statements of Deutsche Telekom Aktiengesellschaft are contained in the notes on the accounting policies found in the "Accounting policies" and "Judgments and estimates" sections of the "Summary of accounting policies" chapter and in section "20 – Net revenue" in the "Notes to the consolidated income statement" chapter of the notes to the consolidated financial statements.

Other Information

The executive directors are responsible for the other information. The other information comprises the non-financial statement pursuant to § 289b Abs. 1 HGB and § 315b Abs. 1 HGB as an unaudited part of the group management report.

The other information comprises further

- the statement on corporate governance pursuant to § 289f HGB and § 315d HGB
- all remaining parts of the annual report – excluding cross-references to external information – with the exception of the audited consolidated financial statements, the audited group management report and our auditor's report

Our audit opinions on the consolidated financial statements and on the group management report do not cover the other information, and consequently we do not express an audit opinion or any other form of assurance conclusion thereon.

In connection with our audit, our responsibility is to read the other information mentioned above and, in so doing, to consider whether the other information

- is materially inconsistent with the consolidated financial statements, with the group management report disclosures audited in terms of content or with our knowledge obtained in the audit, or
- otherwise appears to be materially misstated.

If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of the Executive Directors and the Supervisory Board for the Consolidated Financial Statements and the Group Management Report

The executive directors are responsible for the preparation of the consolidated financial statements that comply, in all material respects, with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to § 315e Abs. 1 HGB and that the consolidated financial statements, in compliance with these requirements, give a true and fair view of the assets, liabilities, financial position, and financial performance of the Group. In addition, the executive directors are responsible for such internal control as they have determined necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the executive directors are responsible for assessing the Group's ability to continue as a going concern. They also have the responsibility for disclosing, as applicable, matters related to going concern. In addition, they are responsible for financial reporting based on the going concern basis of accounting unless there is an intention to liquidate the Group or to cease operations, or there is no realistic alternative but to do so.

Furthermore, the executive directors are responsible for the preparation of the group management report that, as a whole, provides an appropriate view of the Group's position and is, in all material respects, consistent with the consolidated financial statements, complies with German legal requirements, and appropriately presents the opportunities and risks of future development. In addition, the executive directors are responsible for such arrangements and measures (systems) as they have considered necessary to enable the preparation of a group management report that is in accordance with the applicable German legal requirements, and to be able to provide sufficient appropriate evidence for the assertions in the group management report.

The supervisory board is responsible for overseeing the Group's financial reporting process for the preparation of the consolidated financial statements and of the group management report.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and whether the group management report as a whole provides an appropriate view of the Group's position and, in all material respects, is consistent with the consolidated financial statements and the knowledge obtained in the audit, complies with the German legal requirements and appropriately presents the opportunities and risks of future development, as well as to issue an auditor's report that includes our audit opinions on the consolidated financial statements and on the group management report.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with § 317 HGB and the EU Audit Regulation and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer (IDW) and supplementary compliance with the ISAs will always detect a material misstatement. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements and this group management report.

We exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements and of the group management report, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our audit opinions. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal controls.
- Obtain an understanding of internal control relevant to the audit of the consolidated financial statements and of arrangements and measures (systems) relevant to the audit of the group management report in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an audit opinion on the effectiveness of these systems.
- Evaluate the appropriateness of accounting policies used by the executive directors and the reasonableness of estimates made by the executive directors and related disclosures.
- Conclude on the appropriateness of the executive directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in the auditor's report to the related disclosures in the consolidated financial statements and in the group management report or, if such disclosures are inadequate, to modify our respective audit opinions. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to be able to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements present the underlying transactions and events in a manner that the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and financial performance of the Group in compliance with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to § 315e Abs. 1 HGB.

- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express audit opinions on the consolidated financial statements and on the group management report. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinions.
- Evaluate the consistency of the group management report with the consolidated financial statements, its conformity with German law, and the view of the Group's position it provides.
- Perform audit procedures on the prospective information presented by the executive directors in the group management report. On the basis of sufficient appropriate audit evidence we evaluate, in particular, the significant assumptions used by the executive directors as a basis for the prospective information, and evaluate the proper derivation of the prospective information from these assumptions. We do not express a separate audit opinion on the prospective information and on the assumptions used as a basis. There is a substantial unavoidable risk that future events will differ materially from the prospective information.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with the relevant independence requirements, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, the related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter.

OTHER LEGAL AND REGULATORY REQUIREMENTS

Report on the Assurance on the Electronic Rendering of the Consolidated Financial Statements and the Group Management Report Prepared for Publication Purposes in Accordance with § 317 Abs. 3a HGB

Assurance Opinion

We have performed assurance work in accordance with § 317 Abs. 3a HGB to obtain reasonable assurance as to whether the rendering of the consolidated financial statements and the group management report (hereinafter the "ESEF documents") contained in the electronic file `deutschetelekomag_ka_lb_20211231.zip` and prepared for publication purposes complies in all material respects with the requirements of § 328 Abs. 1 HGB for the electronic reporting format ("ESEF format"). In accordance with German legal requirements, this assurance work extends only to the conversion of the information contained in the consolidated financial statements and the group management report into the ESEF format and therefore relates neither to the information contained within these renderings nor to any other information contained in the electronic file identified above.

In our opinion, the rendering of the consolidated financial statements and the group management report contained in the electronic file identified above and prepared for publication purposes complies in all material respects with the requirements of § 328 Abs. 1 HGB for the electronic reporting format. Beyond this assurance opinion and our audit opinion on the accompanying consolidated financial statements and the accompanying group management report for the financial year from 1 January to 31 December 2021 contained in the "Report on the Audit of the Consolidated Financial Statements and on the Group Management Report" above, we do not express any assurance opinion on the information contained within these renderings or on the other information contained in the electronic file identified above.

Basis for the Assurance Opinion

We conducted our assurance work on the rendering of the consolidated financial statements and the group management report contained in the electronic file identified above in accordance with § 317 Abs. 3a HGB and the IDW Assurance Standard: Assurance Work on the Electronic Rendering, of Financial Statements and Management Reports, Prepared for Publication Purposes in Accordance with § 317 Abs. 3a HGB (IDW AsS 410 (10.2021)) and the International Standard on Assurance Engagements 3000 (Revised). Our responsibility in accordance therewith is further described in the "Group Auditor's Responsibilities for the Assurance Work on the ESEF Documents" section. Our audit firm applies the IDW Standard on Quality Management 1: Requirements for Quality Management in the Audit Firm (IDW QS 1).

Responsibilities of the Executive Directors and the Supervisory Board for the ESEF Documents

The executive directors of the Company are responsible for the preparation of the ESEF documents including the electronic renderings of the consolidated financial statements and the group management report in accordance with § 328 Abs. 1 Satz 4 Nr. [number] 1 HGB and for the tagging of the consolidated financial statements in accordance with § 328 Abs. 1 Satz 4 Nr. 2 HGB.

In addition, the executive directors of the Company are responsible for such internal control as they have considered necessary to enable the preparation of ESEF documents that are free from material non-compliance with the requirements of § 328 Abs. 1 HGB for the electronic reporting format, whether due to fraud or error.

The supervisory board is responsible for overseeing the process for preparing the ESEF documents as part of the financial reporting process.

Group Auditor's Responsibilities for the Assurance Work on the ESEF Documents

Our objective is to obtain reasonable assurance about whether the ESEF documents are free from material non-compliance with the requirements of § 328 Abs. 1 HGB, whether due to fraud or error. We exercise professional judgment and maintain professional skepticism throughout the assurance work. We also:

- Identify and assess the risks of material non-compliance with the requirements of § 328 Abs. 1 HGB, whether due to fraud or error, design and perform assurance procedures responsive to those risks, and obtain assurance evidence that is sufficient and appropriate to provide a basis for our assurance opinion.
- Obtain an understanding of internal control relevant to the assurance work on the ESEF documents in order to design assurance procedures that are appropriate in the circumstances, but not for the purpose of expressing an assurance opinion on the effectiveness of these controls.
- Evaluate the technical validity of the ESEF documents, i.e., whether the electronic file containing the ESEF documents meets the requirements of the Delegated Regulation (EU) 2019/815 in the version in force at the date of the consolidated financial statements on the technical specification for this electronic file.
- Evaluate whether the ESEF documents provide an XHTML rendering with content equivalent to the audited consolidated financial statements and to the audited group management report.
- Evaluate whether the tagging of the ESEF documents with Inline XBRL technology (iXBRL) in accordance with the requirements of Articles 4 and 6 of the Delegated Regulation (EU) 2019/815, in the version in force at the date of the consolidated financial statements, enables an appropriate and complete machine-readable XBRL copy of the XHTML rendering.

Further Information pursuant to Article 10 of the EU Audit Regulation

We were elected as group auditor by the annual general meeting on 1 April 2021. We were engaged by the supervisory board on 12 July 2021. We have been the group auditor of the Deutsche Telekom Aktiengesellschaft, Bonn, without interruption since the Company first has met the requirements as a Public Interest Entity in accordance with § 316a HGB in the financial year 1996.

We declare that the audit opinions expressed in this auditor's report are consistent with the additional report to the audit committee pursuant to Article 11 of the EU Audit Regulation (long-form audit report).

REFERENCE TO AN OTHER MATTER – USE OF THE AUDITOR'S REPORT

Our auditor's report must always be read together with the audited consolidated financial statements and the audited group management report as well as the assured ESEF documents. The consolidated financial statements and the group management report converted to the ESEF format – including the versions to be published in the Federal Gazette – are merely electronic renderings of the audited consolidated financial statements and the audited group management report and do not take their place. In particular, the "Report on the Assurance on the Electronic Rendering of the Consolidated Financial Statements and the Group Management Report Prepared for Publication Purposes in Accordance with § 317 Abs. 3a HGB" and our assurance opinion contained therein are to be used solely together with the assured ESEF documents made available in electronic form.

GERMAN PUBLIC AUDITOR RESPONSIBLE FOR THE ENGAGEMENT

The German Public Auditor responsible for the engagement is Thomas Tandetzki.

Frankfurt am Main, February 15, 2022

PricewaterhouseCoopers GmbH
Wirtschaftsprüfungsgesellschaft

sgd. Thomas Tandetzki
Wirtschaftsprüfer
(German Public Auditor)

sgd. Dr. Sven Willms
Wirtschaftsprüfer
(German Public Auditor)

Additional information

Reconciliation for the change in disclosure of key figures for the prior-year in the 2021 financial year

millions of €

	Total revenue	Profit (loss) from operations (EBIT)	EBITDA AL (adjusted for special factors)	Depreciation and amortization	Impairment losses	Segment assets	Segment liabilities
2020/December 31, 2020							
Presentation as of December 31, 2020 – as reported							
Germany	23,779	4,085	9,231	(4,435)	(5)	45,015	32,680
United States	61,208	9,187	20,997	(15,574)	(91)	176,765	117,681
Europe	11,335	1,278	3,910	(2,648)	(227)	27,034	9,172
Systems Solutions	4,178	(650)	235	(360)	(430)	4,190	3,798
Group Development	2,883	562	1,101	(780)	0	9,212	11,220
Group Headquarters & Group Services	2,556	(1,655)	(429)	(1,259)	(45)	48,047	63,188
Total	105,939	12,807	35,045	(25,057)	(798)	310,263	237,739
Reconciliation	(4,941)	(3)	(28)	26	0	(45,346)	(45,372)
Group	100,999	12,804	35,017	(25,031)	(798)	264,917	192,367
2020/December 31, 2020							
+/- reassignment of the IoT business as of January 1, 2021							
Germany	11	(115)	(43)	(18)	(53)	99	45
United States	0	0	0	0	0	0	0
Europe	0	0	0	0	0	0	0
Systems Solutions	(19)	116	44	17	53	(96)	(44)
Group Development	0	0	0	0	0	0	0
Group Headquarters & Group Services	0	0	0	0	0	0	0
Total	(8)	1	0	0	0	3	1
Reconciliation	9	(1)	0	0	0	(3)	(1)
Group	0	0	0	0	0	0	0
2020/December 31, 2020							
= presentation after change in disclosure as of December 31, 2021							
Germany	23,790	3,970	9,188	(4,453)	(58)	45,114	32,725
United States	61,208	9,187	20,997	(15,574)	(91)	176,765	117,681
Europe	11,335	1,278	3,910	(2,648)	(227)	27,034	9,172
Systems Solutions	4,159	(534)	279	(343)	(377)	4,094	3,754
Group Development	2,883	562	1,101	(780)	0	9,212	11,220
Group Headquarters & Group Services	2,556	(1,655)	(429)	(1,259)	(45)	48,047	63,188
Total	105,931	12,808	35,045	(25,057)	(798)	310,266	237,740
Reconciliation	(4,932)	(4)	(28)	26	0	(45,349)	(45,373)
Group	100,999	12,804	35,017	(25,031)	(798)	264,917	192,367

Reconciliation for the organic development in the 2021 financial year of key figures for the prior-year

For the organic presentation of figures, prior-period comparatives are adjusted for the effects of changes in the composition of the Group, exchange rate effects, and other effects. This improves the informative value of the prior-year comparatives by taking account of changes to the company's structure or exchange rates.

millions of €

	2021	2020	Change	Change %	Reconciliation to organic figures		Organic change		
					Reconciliation 2020	Of which: exchange rate effects	Organic 2020	Change	Change %
Net revenue	108,794	100,999	7,795	7.7	3,134	(2,261)	104,133	4,662	4.5
Germany	24,164	23,790	374	1.6	(218)	(2)	23,572	592	2.5
United States	68,359	61,208	7,151	11.7	3,416	(2,213)	64,624	3,735	5.8
Europe	11,384	11,335	49	0.4	(213)	(39)	11,122	262	2.4
Systems Solutions	4,019	4,159	(140)	(3.4)	(96)	(10)	4,063	(44)	(1.1)
Group Development	3,165	2,883	282	9.8	142	0	3,025	140	4.6
Group Headquarters & Group Services	2,515	2,556	(41)	(1.6)	1	0	2,557	(42)	(1.6)
EBITDA AL	33,893	33,178	715	2.2	1,675	(655)	34,853	(959)	(2.8)
Germany	8,932	8,435	497	5.9	(7)	0	8,428	504	6.0
United States	20,060	20,628	(568)	(2.8)	1,726	(653)	22,354	(2,294)	(10.3)
Europe	4,018	3,722	296	8.0	(106)	(6)	3,616	402	11.1
Systems Solutions	73	70	3	4.3	(6)	4	64	10	16.1
Group Development	1,479	1,058	421	39.8	51	0	1,109	371	33.4
Group Headquarters & Group Services	(622)	(707)	85	12.0	20	4	(687)	65	(9.4)
EBITDA AL (adjusted for special factors)	37,330	35,017	2,313	6.6	1,615	(851)	36,632	699	1.9
Germany	9,520	9,188	332	3.6	(7)	0	9,181	339	3.7
United States	22,697	20,997	1,700	8.1	1,671	(849)	22,668	30	0.1
Europe	4,007	3,910	97	2.5	(108)	(5)	3,802	205	5.4
Systems Solutions	286	279	7	2.5	(8)	4	271	16	6.1
Group Development	1,307	1,101	206	18.7	50	0	1,151	155	13.5
Group Headquarters & Group Services	(440)	(429)	(11)	(2.6)	20	4	(409)	(31)	7.5

Glossary

4G. Refers to the fourth-generation mobile communications standard that supports higher transmission rates (see LTE).

5G. New communications standard (launched from 2020), which offers data rates in the gigabit range, mainly over the 3.6 GHz and 2.1 GHz bands, converges fixed-network and mobile communications, and supports the Internet of Things.

6G. The next-generation mobile communications standard, likely to use terahertz spectrum (0.11 THz to 0.17 THz) to offer increased capacities and lower latency. 6G is expected to launch commercially in 2030 and is being developed as a response to the increasingly distributed Radio Access Network (RAN).

AL – After Leases. Since the start of the [2019 financial year](#), we have taken the effects of the first-time application of IFRS 16 “Leases” into account when determining our financial performance indicators. “EBITDA after leases” (EBITDA AL) is calculated by adjusting EBITDA for depreciation of the right-of-use assets and for interest expenses on recognized lease liabilities. When determining “free cash flow after leases” (free cash flow AL), free cash flow is adjusted for the repayment of lease liabilities.

All IP – All Internet Protocol. An all-IP network makes services such as VoIP (Voice over IP), IPTV (Internet Protocol Television), data transfer, etc. available to all users anywhere at all times. The data is transmitted in switched packets using the Internet Protocol (IP).

API – Application Programming Interface. A program component which is made available by a software system for other programs to connect with it.

Bitstream access. Wholesale service used by alternative telephone companies to provide broadband lines.

Bot. A bot (short for robot) is a computer program that processes repetitive tasks in a largely autonomous manner without the need for interaction with a human user.

Carrier. A telecommunications network operator.

CDP. An initiative by institutional investors that aims to promote dialog between investors and companies on climate change issues. The project counts the world’s largest companies among its members. The companies disclose data on their greenhouse gas emissions and climate protection strategies. The CDP collects and publishes the data on an annual basis.

Cloud computing. Refers to the dynamic provision of infrastructure, software, or platform services online. Apart from a high level of automation and virtualization, the services provided have to be multi-tenant-capable and include standardized hardware and software. Customers source these services on demand and pay based on actual usage. The communication infrastructure may be the internet (public cloud), a corporate network (private cloud), or a mix of the two (hybrid cloud). Dynamic Services is a T-Systems product for the flexible procurement of ICT resources and services.

Contingent model. Contract concluded over a long period of time with defined advance payment and minimum purchase requirement. In return, the resellers pay a reduced monthly charge for VDSL. This allows them to put together interesting offers for their own consumers without having to invest in fiber-optic lines of their own. This improves the utilization of Telekom Deutschland GmbH’s existing VDSL network. The current “contingent model” is being developed further to reflect the network build-out in terms of availability and bandwidth.

Cybersecurity. Protection against internet crime.

Desktop services. Global desktop services involve a variety of support services, including the outsourcing of entire IT networks. In this context, Deutsche Telekom offers a full portfolio of corporate IT services, from server infrastructure and PC workstations through to application management and call center services that provide user support.

Edge computing. Computing at the edge of the mobile communications network – not in remote data centers, but close to the customer, in the edge cloud. Edge computing opens up new applications: Anything that requires the rapid processing of large amounts of data, low latency, and particularly strong security, such as augmented reality games.

ERP – Enterprise Resource Planning. Refers to systems that help deploy an organization’s resources such as capital, equipment, and human resources as efficiently as possible in order to optimize business processes.

Fairphone. Fairphone is the first smartphone manufacturer to receive the Fairtrade certificate for the gold used in its devices. Fairphone sources rare minerals from conflict-free mining areas and continually monitors the working conditions along its supply chain. The Fairphone is also designed for longevity and easy repair, making it a particularly low-waste device.

Fiber-optic lines. Sum of all FTTx access lines (e.g., FTTC/VDSL, vectoring, and FTTH).

Fixed-network lines. Lines in operation excluding internal use and public telecommunications, including IP-based lines. The totals reported in the combined management report were calculated on the basis of precise figures and rounded to millions or thousands. Percentages were calculated on the basis of the figures shown.

FMC – Fixed-Mobile Convergence. The merging of fixed-network and mobile rate plans for customers that have both fixed-network and mobile contracts with Deutsche Telekom.

FTTB – Fiber To The Building or Fiber To The Basement. In telecommunications, FTTB means that the fiber-optic cable is terminated in the user’s house (basement).

FTTC – Fiber To The Curb. In the FTTC architecture the fiber-optic cable is not terminated inside users’ homes (see FTTH) but in a cable distribution box (gray street cabinet). Existing copper technology is used for the last section of the connection to the user.

FTTH – Fiber To The Home. In telecommunications FTTH means that the fiber-optic cable is terminated right in the user's home or apartment.

FOTP – Fiber To The Premises. FOTP is a connection concept in which the property or company premises are connected with the local exchange using optical fiber. FOTP even reaches the customer's local loop. FOTP is used either as a blanket term for both FTTH and FTTB, or where the fiber-optic network includes both homes and small businesses.

FTTx. This includes the different options for fiber-optic rollout: FTTB, FTTC, and FTTH.

GHG Protocol. The Greenhouse Gas (GHG) Protocol divides emissions of greenhouse gases into the categories of Scope 1, Scope 2, and Scope 3, depending on their source.

- **Scope 1** includes all emissions directly generated in the Company, e.g., as a result of the consumption of fuel or fuel oil.
- **Scope 2** covers all indirect emissions associated with the generation of energy purchased by the Company from external sources, e.g., electricity and district heating.
- **Scope 3** applies to all other emissions generated along the corporate value chain. This comprises both indirect emissions in the company itself (e.g., business trips, commuting), and emissions from upstream value chain stages (e.g., procurement, logistics) and downstream stages (e.g., during customer use of products and services, during disposal).

Global e-Sustainability Initiative (GeSI). GeSI is a joint initiative established by the world's leading ICT organizations with the objective of improving sustainability in the ICT sector. Deutsche Telekom is a member of GeSI, as are many other leading enterprises.

Hybrid line. Combines the strengths of the DSL/VDSL fixed network and the LTE mobile network. While using the internet at home the hybrid router transports the permanent data load with first priority via the DSL/VDSL line. During peak load the router automatically connects to the high-speed mobile network for down- and uploading.

Hybrid router. Routers that are able to combine the customer's fixed and mobile bandwidths.

Hyper-personalization. Hyper-personalization is the use of real-time data and artificial intelligence to offer products, services, and content targeted to the specific needs of the customer, who uses a wide array of smartphones, laptops, tablets, and other devices to transmit data.

IC – Interconnection (see MTR).

ICT – Information and Communication Technology.

IoT – Internet of Things. The IoT enables the intelligent networking of things like sensors, devices, machines, vehicles, etc., with the aim of automating applications and decision-making processes. Deutsche Telekom's IoT portfolio ranges from SIM cards and flexible data rate plans to IoT platforms in the cloud and complete solutions from a single source.

IP – Internet Protocol. Non-proprietary transport protocol in Layer 3 of the OSI reference model for inter-network communications.

IPTV – Internet Protocol Television. Refers to the digital transfer of television programs and films over a digital data network using the Internet Protocol (IP).

Latency. Latency, or response time, describes the time period between the occurrence of an event and the appearance of a visible reaction to it. In telecommunications, latency limits are governed by the laws of physics – as a function of the length of the pathway that the data need to travel through the networks. One example of this is mobile virtual-reality experiences. Anyone experiencing a virtual world while wearing VR goggles will need to receive something back from a remote server: namely an image that corresponds to the virtual explorer's expectations. The rule of thumb is quite simple: The shorter the delay, the more realistic the user's experience of the virtual worlds is likely to feel. The same goes for online gaming.

LTE – Long-Term Evolution. 4G mobile communications technology that uses, for example, wireless spectrum on the 800 MHz band freed up by the digitalization of television. Powerful TV frequencies enable large areas to be covered with far fewer radio masts. LTE supports speeds of over 100 Mbit/s downstream and 50 Mbit/s upstream.

M2M – Machine to Machine. Communication between machines. The information is automatically sent to the recipient. For example, in an emergency, alarm systems automatically send a signal to security or the police.

MIMO – Multiple-Input Multiple-Output. MIMO is a multiple-antenna technology that is used, for example, with LTE and 5G. It makes it possible to increase both the data rate and the quality of the service.

Mobile customers. In the combined management report, one mobile communications card corresponds to one customer. The totals were calculated on the basis of precise figures and rounded to millions or thousands. Percentages were calculated on the basis of the figures shown (see also SIM card).

MTR – Mobile Termination Rate. Termination refers to the transportation of a call, for example, from the competitor's network to the Deutsche Telekom network. When a call is transported to the mobile communications network, this is referred to as mobile termination. If the call is transported to the fixed network, this is called fixed-network termination, or simply interconnection (IC). Termination rates are the fee a telephone company must pay for network interconnection when a call is terminated in a third-party network.

MVNO – Mobile Virtual Network Operator. Company that offers mobile minutes at relatively low prices without subsidized handsets. A mobile virtual network operator does not have its own wireless network, but uses the infrastructure of another mobile operator to provide its services.

Optical fiber. Channel for optical data transmission.

OTT player – Over-The-Top player. Provider of IP-based, platform-independent services, such as social media or Netflix.

Postpaid. Customers who pay for communication services after receiving them (usually on a monthly basis).

Prepaid. In contrast to postpaid contracts, prepaid communication services are services for which credit has been purchased in advance with no fixed-term contractual obligations.

PUE – Power Usage Effectiveness. PUE is the ratio of the entire electrical energy consumed in a data center or network node to the energy delivered to the computing equipment.

Retail. The sale of goods and services to end users, as opposed to resale or wholesale.

Roaming. Refers to the use of a communication device or just a subscriber identity in a visited network rather than one's home network. This requires the operators of both networks to have reached a roaming agreement and switched the necessary signaling and data connections between their networks. Roaming comes into play, for example, when cell phones and smartphones are used across national boundaries.

Router. A coupling element that connects two or more sub-networks. Routers can also extend the boundaries of a network, monitor data traffic, and block any faulty data packets.

Science Based Targets initiative. Initiative that helps companies to set climate goals that comply with emissions budgets determined based on scientific data. Companies can forward their goals to the initiative for review. The initiative was set up jointly by several organizations: CDP, United Nations Global Compact (UNGC), World Resources Institute (WRI), and the World Wide Fund for Nature (WWF).

SD-WAN – Software-Defined Wide Area Network. SD-WAN simplifies the management and operation of a WAN by decoupling the network hardware from its control mechanism. This concept is similar to the way in which software-defined networking implements virtualization technology in order to improve the management and operation of data centers. A key application of SD-WAN is to allow companies to build higher-performance WANs using lower-cost and commercially available internet access. This would enable companies to partially or wholly replace private WAN connection technologies.

SIM card – Subscriber Identification Module card. Chip card that is inserted into a cell phone to identify it in the mobile network. Deutsche Telekom counts its customers by the number of SIM cards activated and not churned. Customer totals also include the SIM cards with which machines can communicate automatically with one another (M2M cards). The churn rate is determined and reported based on the local markets of the respective countries.

Sovereign Cloud. Data sovereignty is the central goal of the European initiative GAIA-X. With a European concept, companies of all sizes should be able to take advantage of the flexibility and innovative power of the complete cloud stack, while at the same time having the security of always remaining the master of their data. The Sovereign Cloud from GAIA-X relies on an open software ecosystem for its technical implementation, which on the one hand enables digital solutions and on the other hand can be operated on a wide range of infrastructures.

Sustainable Development Goals (SDGs). Goals that form the core of the 2030 Agenda, which the member states of the United Nations adopted in 2015 to ensure sustainable global development. The aim is to enable economic development and prosperity – in line with social justice and taking account of the ecological limits of global growth. The Agenda applies equally to all nations of the world. The 17 SDGs define goals to reduce poverty and hunger, promote healthcare and education, enable equality, protect the environment and climate, and make consumption sustainable.

ULL – Unbundled Local Loop. Competitors whose own networks do not reach into customers' premises can rent unbundled local loop lines from Deutsche Telekom. Their networks end at the local exchanges. The ULL bridges the distance between the local exchange and the termination point on the customer's premises or in their home, so it is also known as the "last mile."

Unified Communications. Integration of synchronous communication media in a standardized application environment.

Vectoring. Vectoring is a noise-canceling technology that removes the electro-magnetic interference between lines, enabling higher bit rates. However, in order to cancel noise, the operator must have control over all lines. This means that other operators cannot install their own technology in the street cabinets.

VPN – Virtual Private Network. A computer network that uses a public network to transmit private data. The data is "tunneled" through the public network and is usually encrypted in the process. However, the term "private" does not necessarily imply encrypted transmission. The variant commonly used today is the IP VPN that connects users via IP tunnels.

Wholesale. Refers to the business of selling services to third parties who sell them to their own retail customers either directly or after further processing.

XR – Extended Reality. Covers the entire virtuality spectrum: augmented reality, virtual reality, mixed reality, and simulated reality, as well as potential future developments.

■ **AR – Augmented Reality.** The computer-generated enhancement of the real world with perceptual information. The information can address all the human senses. However, augmented reality often only encompasses the visual representation of information, i.e., the augmenting of images or videos with additional computer-generated information or virtual objects using overlaying/superimposition.

■ **VR – Virtual Reality.** A simulated experience of the real world and its physical characteristics in real time in a computer-generated, interactive virtual environment. Unlike AR, which focuses on enhancing the real world with visual representations of additional data, VR fully immerses the user in a virtual world.

Disclaimer

This Report (particularly the section “[Forecast](#)”) contains forward-looking statements that reflect the current views of Deutsche Telekom’s management with respect to future events. They are generally identified by the words “expect,” “anticipate,” “believe,” “intend,” “estimate,” “aim,” “goal,” “plan,” “will,” “seek,” “outlook,” or similar expressions and include generally any information that relates to expectations or targets for revenue, adjusted EBITDA AL, or other performance measures.

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For further information on alternative performance measures, please refer to the section “[Management of the Group](#)” in the combined management report and our [Investor Relations website](#).

The figures shown in this report were rounded in accordance with standard business rounding principles. As a result, the total indicated may not be equal to the precise sum of the individual figures.

Our Annual Report (PDF and online) includes references and links to websites with additional information not contained in the Annual Report. These references and links are purely of a supplementary nature and are only intended to simplify access to this information. Please note that this information is not part of the Annual Report.

Financial calendar

February 24, 2022	April 7, 2022	May 13, 2022
Press conference on the 2021 financial year and publication of the 2021 Annual Report	2022 shareholders' meeting	Publication of the Interim Group Report as of March 31, 2022
August 11, 2022	November 10, 2022	February 23, 2023
Publication of the Interim Group Report as of June 30, 2022	Publication of the Interim Group Report as of September 30, 2022	Press conference on the 2022 financial year and publication of the 2022 Annual Report

All dates are subject to change.

For more dates, an updated schedule, and information on webcasts, please visit our [Investor Relations website](#).

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Our Annual Report is available [online](#).

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