Welcome to your CDP Climate Change Questionnaire 2020

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

Vodafone Group is one of the world's leading technology communications providers, connecting people and organisations of all sizes to the digital society. We have extensive experience in connectivity, convergence and the Internet of Things, as well as championing mobile financial services and digital transformation in emerging markets.
Vodafone Group has mobile operations in 22 countries, partners with mobile networks in 42 more, and fixed broadband operations in 17 markets. As of 31 March 2020, Vodafone Group had 362 million customers, including 115 million mobile customers, 25 million broadband customers and 22 million TV customers in Europe and 168 million mobile customers in Africa..
For more information, please visit: www.vodafone.com.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years
Reporting year	April 1, 2019	March 31, 2020	No

C0.3

(C0.3) Select the countries/areas for which you will be supplying data.

Albania
Czechia
Democratic Republic of the Congo
Egypt
Germany
Ghana
Greece
Hungary
Ireland
Italy
Lesotho
Malta

Mozambique
Portugal
Romania
South Africa
Spain
Turkey
United Kingdom of Great Britain and Northern Ireland
United Republic of Tanzania

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

EUR

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

Operational control

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Other C-Suite Officer	The Group External Affairs Director has ultimate and direct responsibility for climate change, sustainability strategy and performance. The Group External Affairs Director reports directly to the CEO and is a member of The Group Executive Committee. This top level executive committee has responsibility for reviewing climate change performance and receives formal periodic updates on climate change strategy and progress via the Group External Affairs Director. The Group External Affairs Director leads the "Planet Steerco" which discusses, analyses and presents existing and new targets to the Executive Committee for

	approval or discussion, for example setting 100% Renewable Electricity acceleration target or carbon reduction commitments progress and TCFD strategy.
Other C-Suite Officer	The Group Technology Officer has responsibility for energy use and overseeing performance of the network including overseeing energy efficiency improvements. The Group Technology Officer reports directly to the CEO and also a member of the Group Executive Committee.

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – some meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	The Board reviewed and approved Vodafone Group's 'Purpose Strategy', by which decisions and actions within the company should be made. This includes a goal to reduce our environmental impact by half and reduce greenhouse gas emissions by 50% by 2025. The board approves any new target and strategy. As a multi-disciplinary topic, the Board receives regular updates across various business units on progress towards this goal and other climate related topics. As such, the board has oversight of performance across these targets and if progress is satisfactory, requiring corrective action as necessary. The Board also has control over budgets, acquisitions, capital expenditure and allocation of resources including those related to purpose (including climate, energy efficiency and renewable energy). The Group External Affairs Director receives weekly updates from the Sustainable Business Team which include any climate-related issues of relevance to the company. Where of significant importance, this is then communicated to the Group Executive Committee. Furthermore progress against goals and targets are also reported annually through the publication of the

		Annual Report which is signed off at Board level.

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Other C-Suite Officer, please specify Group External Affairs Director	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Other, please specify Head of Sustainable Business Team	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Other C-Suite Officer, please specify Group Technology Officer	Managing climate-related risks and opportunities	As important matters arise
Other, please specify Group Director SDGs, Sustainability and Foundation	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

Group External Affairs Director
The Group External Affairs Director reports directly to the CEO and is a member of The Group Executive Committee. The Group Executive Committee sits at the highest level of the organisation.
This top level executive committee has responsibility for reviewing climate change performance and receives formal periodic updates on climate change strategy/Purpose strategy and progress via the Group External Affairs Director.

The Group External Affairs Director has responsibility for Sustainable Business issues, transformational goals and sustainability targets as the owner of the "Planet" agenda, one of three key areas of Vodafone's articulated Purpose. Responsibility includes energy and carbon action, assessments, targets and sustainability reporting and disclosures. They are best placed to monitor, measure and enact change throughout the organisation.

Furthermore the Group External Affairs director owns the working group for the Planet pillar as part of the Purpose strategy and receives regular updates on progress and input into potential new and existing initiatives. As well as hosting the Planet steerco which meets at least every 2 months.

Group Technology Officer
Group Technology Officer has responsibility for energy use, energy efficiency and equipment upgrades. They receive regular updates on progress across the wider energy efficiency investment programme. They are also a member of the Board and report on progress against energy reduction actions and targets.

Group Director, SDGs, Sustainable Business, Foundations
The Group Director, SDGs, Sustainable Business, Foundations has responsibility for the sustainability and SDG agenda, strategy and Sustainable Business Team. They report into the Group External Affairs Director on a broad range of topics across the "Purpose", which includes the "Planet" topics and climate issues. They support the Sustainable Business Team in developing and executing the sustainability strategy.

Head of Sustainable Business Team
The Head of the Sustainable Business Team manages the Environment Manager who has responsibility to collect, analyse and report on climate change; to create and monitor climate related programmes and actions and influence change throughout the organisation. The role also includes the responsibility for the carbon reduction goals to 2025, SBTi commitments and Planet pillar actions to "reduce our environmental impact by half from 2017 to 2025" which includes carbon emissions. The Head of the Sustainable Business Team regularly updates the Group External Affairs Director on developments and progress in this area.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	Executive share grant is linked to ESG measures, including climate change and carbon reduction performance across the company.

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive	Type of incentive	Activity inventivized	Comment

Board/Executive board	Monetary reward	Emissions reduction target Energy reduction project	A proportion of the Executive share grant is linked to ESG measures and performance. Including action on our Planet ambition to reduce carbon emissions by 50% from 2017 to 2025. An intermediate target has been set against the FY17 baseline to be achieved by 31st of March 2023 through an annual reduction as part of this target– in line with the glide path of achieving 50% by 2025. Furthermore, remuneration is driven by the achievement of wider performance targets. The financial metrics used within the bonus schemes are designed to drive our growth strategies whilst also focusing on improving operating efficiencies and include EBITDA. The cost of energy consumed by our operations is approximately 12% of our operating costs, and therefore any reduction in energy consumption and energy efficiency, and therefore cost, contributes to EBITDA. Executive officers have targets to minimise costs within their areas of the business - for our network operations and procurement functions, where energy management is part of their remit, energy consumption is a component of this. By overseeing and guiding the implementation of a program of energy reduction and efficiency projects, officers reduce our carbon footprint, which reduces costs and contributes to EBITDA.
Energy manager	Monetary reward	Energy reduction project Energy reduction target Efficiency target	Remuneration is driven by the achievement of performance targets. For our energy managers, their performance targets are to reduce energy consumption and drive down costs, in line with our energy and carbon reduction commitments.

			Meeting or exceeding targets determines an individual's performance rating for the year, which in turn determines the scale of any financial reward. A larger decrease in energy consumption through energy reduction or efficiency projects will generally lead to a better performance rating and therefore a greater financial reward. Implementing energy reduction and efficiency projects helps us to meet our group emissions target.
Environment/Sustainability manager	Monetary reward	Emissions reduction target Energy reduction target Supply chain engagement Company performance against a climate-related sustainability index	Remuneration (in the form of salary and bonus schemes) is driven by the achievement of performance targets. Our environment and sustainability managers have performance targets to drive carbon performance, minimising our internal footprint; drive progress towards our energy and carbon transformational goals and to leverage the transformational impacts of our products and services to enable carbon savings for our customers. Meeting or exceeding performance targets determines an individual's performance rating for the year, which in turn determines the scale of any pay rise or bonus payment. A better performance leads to an enhanced financial reward.
Process operation manager	Monetary reward	Emissions reduction target Energy reduction target Efficiency target Supply chain engagement	Remuneration is driven by the achievement of performance targets. For our technology managers, their performance targets are to improve performance of our network while also reducing energy consumption and drive down energy costs, in line with our new energy and carbon reduction commitments. Meeting or exceeding targets determines an individual's performance rating for the year, which in turn determines the scale of any financial reward. A larger decrease in energy consumption through energy

			reduction or efficiency projects will generally lead to a better performance rating and therefore a greater financial reward. Implementing energy reduction and efficiency projects in turn, helps us to meet our group emissions target.
Other, please specify Group Director, SDGs, Sustainable Business, Foundations	Monetary reward	Emissions reduction target Energy reduction target Company performance against a climate-related sustainability index Other (please specify) Sustainability Strategy	Remuneration (in the form of salary and bonus schemes) is driven by the achievement of performance targets. The Group Director, SDGs, Sustainable Business, Foundations has performance targets to drive sustainability improvement performance; drive progress towards our energy and carbon transformational goals and to leverage the transformational impacts of our products and services to enable carbon savings for our customers. Meeting or exceeding performance targets determines an individual's performance rating for the year, which in turn determines the scale of any pay rise or bonus payment. A better performance leads to an enhanced financial reward.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	0	5	Vodafone has undertaken a high level TCFD aligned climate change risk and opportunity analysis. As part of this process we used scenario

			based analysis aligned to the Bank of England's reference climate scenarios – being used to stress test UK financial system against climate change. The scenarios are modelled to a thirty-year timespan, out to 2050 to align to the Paris agreement and other net zero 2050 targets. For climate related analysis, the short term analysis period is from 2020 to 2025, which covers the immediate impacts already being experience and the expected impacts over the next five years. Shorter term risks and opportunities depend on the scenario and level of action taken. Under the "Early Smooth" transition there are greater transformational changes such as legislation and changing consumer behaviours, while under the "business as usual" scenario these short term impacts are less likely.
Medium-term	5	15	Vodafone has undertaken a high level TCFD aligned climate change risk and opportunity analysis. As part of this process we used scenario based analysis aligned to the Bank of England's reference climate scenarios – being used to stress test UK financial system against climate change. The scenarios are modelled to a thirty-year timespan, out to 2050 to align to the Paris agreement and other net zero 2050 targets. For climate related analysis, the medium term analysis period is from 2025 to 2035, which covers the medium term impacts expected to occur in the future. Medium term risks are dependent on the scenario chosen and how early action is taken with significant differences between the three scenarios on both risks and opportunities.
Long-term	15	30	Vodafone has undertaken a high level TCFD aligned climate change risk and opportunity analysis. As part of this process we used scenario based analysis aligned to the Bank of England's reference climate scenarios – being used to stress test UK financial system against climate change. The scenarios are modelled to a thirty-year timespan, out to 2050 to align to the Paris agreement and other net zero 2050 targets. For climate related analysis, the Long term analysis period is from 2035 to 2050, which covers the longer term impacts expected to be experienced under the different climate scenarios, with a range of temperature increases from <1.5c to >3c under different scenarios. Each scenario has very different risk and opportunities over both physical and transitional areas over this time horizon.

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

As part of out TCFD aligned climate risk and opportunity scenario analysis Vodafone assess substantive financial or strategic impact in relation to risks and opportunities across 5 areas and 4 levels from low to very high, as well as over 5 levels of likelihood. The 5 impact categories are: Brand (reputation), Customers, Financial, Operational and Legal & Regulatory.

For example:
The 4 levels of impact for Financial category risk are:
Very High: Loss of revenue or reduction in EBITDA in excess of 10% vs. plan
High: Loss of revenue or reduction in EBITDA by more than 5% but less than 10% vs. plan
Medium: Loss of revenue or reduction in EBITDA by more than 2.5% but less than 5% vs. plan
Low: Loss of revenue or reduction in EBITDA of up to 2.5% vs. plan

The 4 levels of impact for Financial category opportunities are:
Very High: Gain in revenue or increase in EBITDA in excess of 10% vs. plan
high: Gain revenue or increase in EBITDA by more than 5% but less than 10% vs. plan
Medium: Gain in revenue or increase in EBITDA by more than 2.5% but less than 5% vs. plan
Low: Gain in revenue or increase in EBITDA of up to 2.5% vs. plan

Substantive financial or strategic impact on the business is a combination of the likelihood of the risk or opportunity occurring and the level of impact it would have, as well as our risk appetite or level of mitigation costs associated with it.

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations
Upstream
Downstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

More than once a year

Time horizon(s) covered

Short-term

Medium-term
Long-term

Description of process

We recognise that climate change poses a number of physical risks (i.e. caused by the increased frequency and severity of extreme weather events) and transition-related risks (i.e. economic, technology or regulatory challenges related to moving to a greener economy) for our business. We are currently on a journey to align internal processes to the recommendations of the Taskforce on Climate-Related Financial Disclosures (TCFD)

The process to assess the materiality of climate-related risks and opportunities follows industry and sectoral relevant benchmark data and takes into consideration our principal risks.

We adopted three scenarios in line with the Bank of England's reference climate scenarios, as outlined in their consultation document released in December 2019 (The 2021 biennial exploratory scenario on the financial risks from climate change). We conduct the required assessments to quantify the business impacts of all material climate-related risks under each scenario and over different time horizons to better understand the financial value at risk across service revenue, EBITDA and Free cash flow.

The outputs of the scenario analysis are used to either adjust existing policies or developing new ones, especially looking at opportunities to improve our business resilience and continuity. It also informs the assessment of our long term viability and allow us to validate the priority areas of focus for climate action and within our environmental targets and actions.

Key risk and opportunity areas arising from the scenario base climate risk and opportunity assessment are as follow:
• (Transitional Risk) Growing external pressures and demands for action negatively impact revenues from those companies late to react and trigger an increase in taxation and energy prices with direct impact on our costs.
• (Transitional Risk) Global focus on energy efficiency increases the likelihood of new regulation impacting energy intensive assets, however it carries an opportunity with the application of new technologies, both a potential increase in costs but also opportunity to sell more energy efficiency solutions such as "smart" IoT metering.
• (Physical Risk) Increase in temperature and frequency of extreme weather events (e.g. heat waves, storms) leads to higher energy consumption for cooling and affects the quality of radio frequency and wireless transmission, in addition to damaging equipment and harming people’s wellbeing.

If of sufficient priority, climate change risks and opportunities are included in monthly reports to the Executive Committee. Otherwise an annual update is provided as part of the annual reporting process, risks are then reviewed and identified every 6 months.

Likewise every 6 months risks are checked and measured to align to tolerances, with quarterly checks of any management and assurance results, with any material changes to the risk profile being updated accordingly.

At Vodafone, we believe our approach to business resilience will mitigate the short to medium term physical impacts of climate change, and we will continue to monitor longer-term trends. Our priority, however, is to prepare ourselves to face the challenges and seize the opportunities posed by the move to a lower carbon economy and the policy changes required to achieve it. For instance, by growing our IoT connectivity platform and products to enable our customers to reduce their carbon footprint, meeting our renewable energy and carbon reduction targets and technical design and operational considerations.

The overall aim is to provide the Board with reasonable assurance of the sustainability of our business in meeting the challenges of an ever-changing global economy.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Summary Regulation is continually reviewed and assessed at a group and local market level and any potential risks relating to climate legislation is included in the risk assessment process. Of most material are those around mandatory reporting requirements, refrigerant gas regulations and costs associated with carbon emissions from electricity production. Risk Example Increasing electricity costs through the adoption of various carbon charges or renewable electricity support mechanisms would have negative impact on our financial performance. Risk Management This risks is managed through forecasting of potential regulation impacts on our costs and initiating mitigation action to reduce this through our operational performance, including energy efficiency investment, long term price modelling and energy procurement and renewable electricity targets.

Emerging regulation	Relevant, sometimes included	Summary Vodafone engages with national and multinational legislative bodies regarding potential regulation where relevant to our business, for example the EU commission. Risk Example A material risk is potential additional costs associated with carbon pricing for energy use which could increase costs of purchasing electricity or new regulations around IoT, spectrum use or 5G connectivity. This could affect our network and the carbon reduction enablement of our network offers. Risk management Regulation is continually reviewed and assessed at a group and local market level and any potential risks relating to climate legislation are included in the risk assessment. Strong engagement with legislative bodies identifies potential emerging legislative changes. Such changes are assessed as to their potential impact and, if deemed material, action is taken to understand and influence legislation or undertake mitigation plans. For example supporting the EU Green Deal proposals for a digital, resilient and green recovery.
Technology	Relevant, always included	Summary Vodafone continually looks to improve performance through new and emerging technologies, working with suppliers and customers to reduce the climate related issues of technology. Risk Example IoT or 5G connectivity are technologies with the potential to disrupt our business both positively and negatively regarding climate. For example, the additional technology could increase energy and cooling requirements on our base stations but also provide energy savings through smart connected solutions. Risk Management We work with our suppliers to improve the efficiency of our equipment to reduce energy use and cooling requirements through the development of innovative solutions. For example trialling several novel technologies on our network to measure and monitor potential savings and identifying any new opportunities. Overall technology changes are not deemed as significant climate risks to the business, they may have some risks through higher energy or cooling requirements from newer or expanded technologies (such as 5G) but also may offer opportunities for increased efficiency (improved

		cooling from free cooling or improvements in air conditioning). There are also opportunities to enable efficiency improvements and carbon savings throughout society through new technologies and connected devices enabling customer carbon savings.
Legal	Relevant, sometimes included	Summary Although legal risks are regularly assessed, there is not deemed to be a significant potential for litigation claims regarding climate change across Vodafone Group. Example risk We are a significant user of electricity and associated carbon emissions which could mean a small potential for litigation if it is deemed that insufficient action has been taken to reduce this impact. Risk Management Legal risks and implications are continually reviewed as part of the risk management process which considers our potential litigation risks and addresses any issues if relevant. However, as an industry we are deemed as part of the solution rather than the problem with regards to climate change. Our connectivity solutions can help our customers and wider society to achieve energy and resource efficiency improvements through the use of IoT and connected solutions, such as smart monitoring of buildings to reduce energy use. Furthermore we are actively reducing our carbon emissions and climate impacts.
Market	Relevant, always included	Summary Vodafone is a purchaser of communications and ICT technology, while our main commodity use is energy (electricity). Risk Example The technology we use is not deemed to be at risk from climate change while technological advances are continually improving energy efficiency, however risks of increase electricity prices due to carbon taxation do exist. Risk management Carbon pricing and additional costs for energy purchasing are included in assessments of long term risks and opportunities, these are a key driver of energy efficiency projects and energy/carbon transformational goals. Energy costs, including potential carbon costs, are forecast up to 2025 with the associated risks included.

		Through action to improve energy efficiency, purchase renewable electricity and future purchase energy these risks can be managed.
Reputation	Relevant, always included	Summary Reputation is a significant factor in our consideration of risk. Risk Example There is some potential reputational risk from climate change: the ICT sector is expected to be an increasing user of electricity and associated emissions which could have a negative reputational impact. Risk Management We have set targets to reduce our carbon emissions and purchase renewable electricity sources. Vodafone, and other telecommunication companies, are also seen as the provider and enabler of solutions to reduce climate change with associated reputation benefits through connected devices and IoT. We see our ability to reduce our own impact and help our customers as a positive impact on our reputation if managed well through actively addressing our impact and offering solutions for our customers to reduce their own.
Acute physical	Relevant, always included	Summary There is potential for increased risk from climate related changes in the frequency/intensity of acute physical incidents Risk Example Localised flooding or significant storm events are considered within risk assessments at a local level and appropriately mitigated against through physical design features of sites or redundancy of systems. Risk Management Maintaining an active and sufficient network and services is vital to our operations and as such is prioritised when designing our systems and infrastructure. We operate a highly dispersed network with inherent resilience against localised events. Vodafone also has extensive resilience planning in place for various scenarios once a risk has been deemed material.
Chronic physical	Relevant, always included	Summary The potential for long term increases in temperature (and other climate effects) are considered with regards to the impact on our technology, especially cooling requirements.

		Risk Example There is a potential for increasing cooling demand, with associated energy costs, however improving technological efficiency gains are also expected driven by cost saving efficiencies of reducing cooling demands. These additional potential cooling costs are considered in energy modelling exercises. Risk Management Chronic physical changes are deemed to occur over longer time frames than that of the upgrade/replacement cycle of our equipment and technology, which has an expected life span of several years before becoming obsolete and being replaced/upgraded. Therefore many long term changes are addressed through an ongoing basis, during the replacement and upgrade cycle of our equipment and facilities. The acceptable operational conditions will be assessed for the lifetime of the equipment, including any expected increases in temperature (or other climate changes expected).

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation

Carbon pricing mechanisms

Primary potential financial impact

Increased direct costs

Company-specific description

Increase in taxation & price of purchased products/energy - increased costs on energy procurement at Vodafone sites through taxation of energy or carbon costs.

Vodafone is a significant consumer of energy which is used to power our networks to provide connectivity for our customers. In 2019/20, Vodafone's network and buildings consumed 5,541 GWh of energy. Marginal increases in energy costs through carbon taxes and regulation can have an impact on our operating costs.
Any changes to fuel costs or subsidies – either for fossil fuels or renewable generation would impact on our operating costs. Changes in taxation or regulations linked to energy consumption and the potential removal of subsidies for renewable energy also present a risk.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

400,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Energy consumption accounted for approximately 12% of Vodafone's operating expenditure in 2019/20. We undertook financial modelling which shows that carbon taxation and subsidy removal could add nearly €400M to our annual energy bill in from 2018 over the next 10 years.

Cost of response to risk

375,000,000

Description of response and explanation of cost calculation

We have an extensive programme of energy minimisation measures taking place across our networks, which include network modernisation, changes in cooling and air conditioning and changes to fuel mix to become less reliant on fossil fuels. The cost of on going energy efficiency improvements to reduce energy demand and purchasing renewable electricity varies across our network but includes annual costs in the region of 75 million euros per year for 5 years, estimated to total 375 million euros by 2025

target years. Of the 75 million the majority of the costs are on technological improvements improving efficiencies of our network (70 million) and a smaller proportion for renewable electricity (5 million).

Actions taken to reduce risk includes:
1. Dynamic thermal management to reduce energy consumption from cooling in our technology centres, resulting in an average 9% reduction in energy consumption in those sites.
2. A energy procurement strategy to reduce our reliance on fossil fuels, for example using hybrid solar battery generators in place of pure diesel generators.
3. A new energy innovation Goal to address the environmental impact from our electricity consumption, of reducing our carbon emissions by 50% by 20205. The development of this goal identified potential additional energy efficiency savings we can undertake to further reduce our primary energy demand through investment in energy efficiency improvements.
4. A goal to purchase 100% renewable electricity by 2025 to help manage the risk of any potential additional carbon prices.
5. Additional capital spend on further energy efficiency measures including replacing older equipment with more efficient alternatives (such a SRAN technology) and implementation of energy saving software features.

Capital costs can vary greatly depending on the initiative within the programme and may lead to reduced long term costs as well as upfront costs. Additional operating costs associated with renewable electricity are market dependent, with some markets offering potential energy saving through lower cost long term electricity contracts and PPAs.

Comment

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Chronic physical

Rising mean temperatures

Primary potential financial impact

Increased indirect (operating) costs

Company-specific description

Increased energy costs associated with climate related increases in temperature and other environmental aspects with impacts on operational performance of our technology

and buildings.

Global warming, and resulting changes in weather patterns have the potential to disrupt Vodafone's operations. Many of our operational sites such as base stations and data centres require cooling to maintain an acceptable operating temperature. As temperatures increase, greater use of cooling is needed or modifications need to be made to the equipment to cope with higher temperatures or use more efficient cooling systems.

Time horizon

Long-term

Likelihood

More likely than not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

700,000

Potential financial impact figure – maximum (currency)

117,000,000

Explanation of financial impact figure

The financial implications of cooling will vary from site to site, depending on temperature rises and technology deployed. Increased cooling will lead to increased energy demand with associated costs. As cooling is a a significant proportion of our energy costs (700 million) financial impacts are calculated by calculating costs of increased energy demand of between 1% to 17% .

Cost of response to risk

500,000

Description of response and explanation of cost calculation

The location of our major assets are planned taking into account potential changes in the weather, such as from flooding or major variations in temperature. Vodafone is developing and implementing methods for improving cooling efficiencies at base stations and other network facilities. Cooling has a significant cost through energy use and Vodafone are looking to reduce energy use through cooling by focusing on improved technology, management and innovative solutions.

Our network is inherently distributed and continually upgraded to account for new and improving technologies, this cycle of improvements allows for ongoing assessment of the local conditions and setting equipment specifications appropriately to meet any rising temperatures or other climate conditions.

The management costs associated with this issue are estimated to be €100-500k per annum. This does not include capital costs which vary greatly for each initiative in the programme. Additional energy and cooling reduction technologies/practices will help improve the efficiency of cooling and reduce additional costs, therefore costs could be avoided through savings leading to net cost savings.

Comment

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Downstream

Risk type & Primary climate-related risk driver

Reputation

Increased stakeholder concern or negative stakeholder feedback

Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Company-specific description

Reputation damage from customer/stakeholder perception of lack of action on climate change.

Customer awareness of climate change, and sustainable development more broadly, is increasing. Our customers expect that we operate our business responsibly. In practical terms, this means reducing the environmental impact of the products and services we provide. If we fail to keep pace with the changes in customer expectation, with regard to reducing the environmental impact of our products, we may lose market share. Many of Vodafone's corporate customer base expect high standards of environmental performance, and we are frequently asked for information. Further more our shareholders expect us to operate in a responsible manner including taking action to reduce our environmental impact.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

2,000,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

We have previously estimated that approximately €2bn worth of sales activity is dependent on meeting customer requirements on climate change. Without appropriate management, there is a risk that some of this value would be lost. This cost is based upon a proportion of our customers which state environmental performance is a significant factor in their decisions.

Cost of response to risk

38,000,000

Description of response and explanation of cost calculation

We ensure customers who want information on our climate change credentials can access information easily. We provide open and transparent information on our website. In 2017 we set new public energy and carbon goals of purchasing 100% renewable electricity and a 40% carbon reduction by 2025, as well as joining RE100. This has been increased to a 50% carbon reduction last year to align with a 1.5c science based target and increasing awareness of the importance of reducing our carbon emissions.

We are investing in more efficient equipment, deploying energy-saving software features and introducing innovative on-site energy generation at our base stations and in our technology centres.
Energy efficiency initiatives in technology centres include:
- integrating energy efficiency requirements within our supplier selection processes;
- implementing free air-cooling solutions and adiabatic solutions;
- increasing the temperature set point in our data centre server rooms and switching centres; and
- implementing innovations such as dynamic thermal management systems and eco-mode features on power conversion systems.

The costs for managing reputation risks are embedded throughout the company and the decisions we make across all of our operations. It is expected that moving to 100% renewable electricity will cost the company potentially 38 million Euros from 2017 to

2025, however there are also potential savings through great efficiency and long term strategic energy purchasing (PPAs) or greater use of on site renewable energy sources.

Comment

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

New and expanded business opportunities through climate and energy efficiency focused business solutions.

Vodafone's Internet of Things (IoT) services make a significant contribution to the reduction of emissions arising from its customers' own operations. We have machine-to-machine services bringing network intelligence and optimising energy use to a wide variety of machines, devices and processes. Vodafone is a leading mobile provider in IoT – with more than 100 million connections. Our research in 2016 found that 76% of businesses surveyed say that IoT will be 'critical' to their success and nearly 50% are already using IoT to support large-scale business transformation. We have seen consistent year on year growth of IoT solutions including those related with energy and carbon efficiency savings. We estimate that over 30% of our IoT products help our customers to reduce their carbon emissions.

Key examples of Vodafone IoT applications which increased during 2019/20 include: smart metering, using our connectivity to collect and analyse data on energy use in real time; smart cities, bringing networked intelligence to the civil infrastructure relied upon by the world's growing urban populations through applications such as road traffic management and advanced street lighting; smart logistics, embedding IoT technologies within delivery vehicles to optimise route management, vehicle maintenance and driver behaviour – applications which can reduce fuel consumption by up to 30%.

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

5,000,000

Potential financial impact figure – maximum (currency)

200,000,000

Explanation of financial impact figure

Industry analysed figures show mobile IoT network revenues are forecasted to have grown at a CAGR of 23.3 percent from € 8.0 billion in 2015 to approximately € 22.8 billion in 2020. Vodafone is a leading mobile provider in IoT.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

These opportunities are managed by Vodafone Business who are developing and delivering a range of products and services from energy data management to fleet management solutions and selling these services to Vodafone's enterprise clients. Vodafone has previously linked its IoT business strategy to an emissions reduction target and continues to measure, monitor and report our performance. We estimate that the total emissions avoided as a consequence of our IoT technologies and services was 6.9 million tonnes CO2e in 2019/20 or 4 tonnes of CO2e for each tonne emitted through our own operations.

Vodafone services enable companies and individuals to adapt to the associated changing costs. We have many case studies and examples of how we are responding to this opportunity – for example, we provide one of the UK's largest providers of

telematics solution with connectivity. There are strong commercial incentives to reduce fuel costs – and, as a consequence, reduce overall emissions. Telematics use our IoT connections to transmit data from vehicles to fleet managers in order to identify opportunities for efficiencies and improvements. One customer – achieved fuel savings of 4.8% in its UK fleet in just one year.

Vodafone is already offering the opportunities, so no additional cost beyond that of ongoing business costs associated with increasing our customer base and improving our service offering are expected.

Comment

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of lower-emission sources of energy

Primary potential financial impact

Reduced indirect (operating) costs

Company-specific description

A shift towards low carbon renewable electricity can offer an opportunity for reduced operational costs. More specifically long term Power Purchase Agreements (PPA) from a renewable electricity generator can offer fixed electricity costs over long term (10+ years). This will hedge against any expected increases in electricity costs from carbon taxation or transition costs. Additionally in a number of our markets the current PPA strike price is lower than that available on the traditional national grid.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

0

Potential financial impact figure – maximum (currency)

100,000,000

Explanation of financial impact figure

Cost benefits vary by market and are dependent on the development of the PPA market per operating country and the difference in cost between PPA and other electricity contracts over the lifetime of the PPA. Vodafone has undertaken market specific analysis of current and likely future costs of purchasing electricity from a variety of sources and a number of renewable energy providers. These indicate that in some markets there is potential for lower costs from PPAs than traditional contracts over the life of the contract. However these are estimations based upon market projections, therefore the reported financial impacts covers a large range across the company. Last year Vodafone spent approximately 700 million euros on energy (principally electricity), as many PPA contracts last 5-15 years, a saving across all of our energy spend of 1.5% a year for 10 years would be approximately over 100 million euros.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

Each market has undergone an energy modelling exercise to predict the expected electricity market price up to and beyond 2025. Combined with a current market estimation of available PPA deals following a global RFI there is a phased approach to sign PPA deals where advantageous depending on market conditions.

No additional cost, part of business practice, potential additional staff resources but included within business as usual costs.

Comment

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient production and distribution processes

Primary potential financial impact

Reduced indirect (operating) costs

Company-specific description

Energy efficiency improvement programme as part of larger energy and carbon reduction goal. Involves additional investment and efforts to improve energy efficiency of our network through a series of actions including: upgrading equipment, introducing energy saving features, improved thermal management and removal of legacy equipment.

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

10,000,000

Potential financial impact figure – maximum (currency)

100,000,000

Explanation of financial impact figure

Ongoing investment will lead to a reduction of energy use across the network. It is estimated that the annual avoided costs will be in the order of 50,000,000 Euros per year with a payback period between 1-3 years.

There is also an estimated additional cost of 78,000,000 Euros above already agreed upgrade costs over three years. Total costs depend on available budgets and payback of individual actions across different markets.

Cost to realize opportunity

78,000,000

Strategy to realize opportunity and explanation of cost calculation

The energy efficiency improvement programme has been agreed as part of a larger energy and carbon reduction commitment to reduce carbon emission by 50% by 20205.

The roll out of best practice across all operating markets, using known actions and savings across the network is on-going. For example, removing legacy equipment from within base stations to remove energy use of redundant equipment. This roll out is estimated to cost 78,000,000 euros across the business.

Comment

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization's strategy and/or financial planning?

Yes, and we have developed a low-carbon transition plan

C3.1a

(C3.1a) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, qualitative and quantitative

C3.1b

(C3.1b) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios and models applied	Details
RCP 2.6	Scenarios used, inputs, assumptions, and analytical methods: Science Based Approach to Target Setting in line with the 1.5 Degrees Scenario. Time Horizons: Short term – 2017 – 2025 Longer term – 2010 -2050 Areas of organisation considered: Entire Group Results of scenario analysis: In 2017, Vodafone set new carbon and renewable energy targets covering all of our scope 1 and 2 emissions across the whole Group. These targets used a science-based approach, based on an absolute reduction of GHG emissions. Starting with our 2010 GHG emissions, we tracked a 40-year reduction trajectory to 2050, taken from the European

	66% emission mitigation scenario (2010-50 Representative Concentration Pathway 2.6)11. Our GHG emissions increased between 2010 and 2017, so our target is set with the aim of acting sooner rather than later, to bring our emissions in line with the 66% reduction trajectory within eight years: by 2025, rather than meeting it at 2050. This is appropriate as there was no telco industry specific reduction pathway and, although we had a global coverage, we have a significant presence in Europe which has a higher decarbonisation requirement than our operations in Africa and the rest of the world. This results in a steeper 40% reduction from a 2017 baseline, by 2025, to bring us onto the 66% trajectory. Since this target was set, the IPCC released its latest assessment which recommended that a 1.5°C above pre-industrial levels would have significantly lower impacts than 2°C. We recalculated our trajectory under a 1.5°C scenario using the same method and in 2019 increased our reduction commitment to 50% by 2025 from the same 2017 baseline. How have the results informed business strategy: This commitment was incorporated into a wider business strategy, (Purpose business strategy which is embedded throughout all business decisions), which included a commitment to reduce our environmental impact by 50% by 2025. This strategy and target is deemed ambitious as it requires significant action over a short time frame with regards to what is achievable over our geographic footprint. For example, renewable electricity availability is currently poor in many of our developing markets so the time frames and reduction is assessed with consideration to this and to the growing demand for data over our networks. Case study: Furthermore, the Purpose strategy has informed specific functions' actions to reduction their environmental impact (of which carbon is a principal impact) as well as business offerings. Such examples include offering more and new low carbon solutions to our business customers, low impact and higher efficiency products for our mobile and broadband customers and working with our supply chain to reduce our associated carbon emissions.

Other, please specify Bank of England 2021 biennial exploratory scenario on the financial risks from climate change	Scenarios used, inputs, assumptions, and analytical methods: Vodafone has undertaken a high level TCFD aligned climate change risk and opportunity analysis. As part of this process we used scenario based analysis aligned to the Bank of England's reference climate scenarios – being used to stress test UK financial system against climate change. Time horizons: The scenarios are modelled to a thirty-year timespan, out to 2050 to align to the Paris agreement and other net zero 2050 targets. Areas of organisation considered: Entire Group. Results of scenario analysis: We adopted three scenarios in line with the Bank of England's reference climate scenarios, as outlined in their consultation document released in December 2019 (The 2021 biennial exploratory scenario on the financial risks from climate change). We conduct the required assessments to quantify the business impacts of all material climate-related risks under each scenario and over different time horizons to better understand the financial value at risk across service revenue, EBITDA and Free cash flow. How have the results informed business strategy: The outputs of the scenario analysis are used to either adjust existing policies or developing new ones, especially looking at opportunities to improve our business resilience and continuity. It also informs the assessment of our long term viability and allow us to validate the priority areas of focus for climate action and within our environmental targets and actions. Case Study: For example the reputation risks from not taking urgent action have informed our decision to commit to setting a 1.5C Science Based Target and sign up to the UN Business Ambition to 1.5C pledge.

C3.1d

(C3.1d) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities	Description of influence

	influenced your strategy in this area?	
Products and services	Yes	Description Vodafone have a number of products which enable our customers to reduce their carbon emissions through improved efficiency of operations. Principally through the use of IoT and connected "smart" solutions. Action As climate risks and action to reduce carbon emissions and impacts increase we have identified new and increasing business opportunities to offer expanded or new products and services to our clients to support their management of climate issues. These opportunities were identified previously and continually monitored to identify trends and new opportunities. We are providing these services and products now and expect continual growth in these areas over the next 10 years. The growth of carbon reduction products are services are a key focus of our Business function and customer functions which is driven by the overall Purpose and Planet focused strategy. Example For example monitoring and measuring of energy use and optimisation via IoT smart meters which can provide data across a large number of sites and aggregate the data to identify outliers which may indicate sub optimal performance. We are currently offering this product and service and expect it to expand over the coming years. While also investigating new and expanded opportunities in this and other climate related areas.
Supply chain and/or value chain	Yes	Description We have identified a number of risks from climate change within our own operations and that of our supply chain as part of our scenario based risk and opportunity assessment. Action We recognise the risk from a changing climate across multiple physical and transition factors and the mitigation required. This also includes our scope 3 emissions of which

		approximately a third of our emissions are from purchased goods and services. These risks could become material risks over the short, medium and long term, for example cross boarder carbon adjustment taxes on imported goods from high carbon manufacturing regions could directly add procurement costs over the next two years, while an increase in acute physical risks such as storm events could increase supply chain disruption over a longer term, Therefore we have taken multiple actions across our purchasing and supplier engagement strategy to encourage and support our suppliers to measure, monitor, report and take action to reduce their carbon emissions over the next five years. We also have immediate assessments of our suppliers action on climate and environmental performance which influences our procurement decisions currently. Example For example as part of our RFQ process suppliers are asked to complete questions on their carbon and climate processes and management, those who perform better have a higher weighted score and are preferentially chosen over other organisations which are not taking action (and therefore are at higher risk from climate change).
Investment in R&D	Yes	Description As part of Vodafone's move to reduce our own environmental impact and carbon emissions, and avoid reputation risks, Vodafone is currently investing in energy efficiency, renewable electricity and zero carbon energy solutions. Action This investment is currently on going and is spread across all our sites and activities, focusing on projects with the most feasible payback periods. The magnitude of impact on Vodafone is low, the additional costs and resources invested are carefully considered to have low payback periods which saves the company money over the medium and long term. Example For example investment and research includes: novel cooling technologies, on site renewable generation and low emission alternatives. Further to this there is additional

		investment in energy efficiency across our organisation to reduce the risk of increasing prices and any potential carbon taxation. These actions are taking place currently and are expected to continue over the short and medium term.
Operations	Yes	Description Some minor impacts from climate change risks such as increase cooling requirements or weather events are expected. While greater opportunities from tackling climate change in our operations and supporting our customers to achieve their carbon ambitions. Action Some new investment and design considerations to cope with increasing temperatures are considered. While improved efficiency and low carbon solutions help to reduce our carbon and climate impact as part of the Purpose and Planet strategy. Action is being taken now and will continue into the short and medium term. Example A key part of the Purpose and Planet strategy includes reducing the impact we have on the environment across all functions and focusing on how to reduce this while growing as a business. This strategy is agreed and being implemented. This offers opportunities to further increase the ambition and action to reduce our impact and to expand into new business areas and improve our competitive advantages.

C3.1e

(C3.1e) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs Capital expenditures Capital allocation	Description of impact: Revenues There are Potential new opportunities from IoT connected devices to help customers drive their resource reduction goals. Vodafone is actively seeking an increase in IoT customers as part of continuing business activities. This could be a potential driver of growth across the company in the short and medium term.

	Access to capital	Magnitude of impact: Revenues There is a potential for loss of customers from reputational damage if Vodafone is not seen to be addressing the issues of climate change. One of the key drivers of 2025 energy and carbon transformational goals is in maintaining good reputation on addressing issues of climate change. Action in this area can maintain and enhance customer satisfaction with our service and not only avoid loss of customers, but also potentially gain customers.. The overall magnitude of impact following the setting of 2025 targets is deemed low for negative impacts on our business, with a small short term impact if insufficient action is taken over the next two years. While the magnitude of positive revenue growth from positive reputation and new revenue streams is greater over the medium and longer term, leading to positive overall impacts. Description of influence: Operating Costs Current and future increased energy costs from greater cooling requirements due to higher ambient temperatures and higher costs of sourcing renewable electricity, including costs of building onsite generation and switching from diesel generators to hybrid systems, all of which have potential to increase operating costs across the organisation, these are in the order of 1-2% of total annual energy spend. How risks and opportunities have influence financial planning: Operating Costs Additional energy saving initiatives and action to reduce energy demand from cooling and improve energy efficiency have begun to be implemented to address the potential risks. These should help reduce energy costs over the longer term but have short term cost increases. Energy costs are one of the most significant costs across the company therefore any increased costs are undesirable. Over the short term this impact will have a medium additional cost on our purchasing of equipment and renewable energy, longer term the total impact will be lower due to potential savings and lower costs. Description of influence: Capital Allocation Greater capital expense on improving energy efficiency to reduce energy use, more onsite renewable energy generation and alternative energy sources. More investment in equipment with greater resilience to increasing temperatures. How risks and opportunities have influence financial planning: Capital Allocation Additional costs are often assessed against a short payback period

		(commonly 3 years), this shows the potential for long term savings through taking action now to address potential risks and increases in costs associated with climate change. Furthermore there are also potentially new investment opportunities into new technologies and business practices to take advantage of opportunities to connect more IoT devices and help customers reduce their resource use and/or improve efficiency. This is expected to lead to an increase in number and volume of customer IoT connections and corresponding business growth over the medium to long term, following a short term cost the longer term impact will be positive, business case dependent. New capital expenditure on on-site renewable energy generation. Increases self-generation capacity and lowers carbon emissions, increased capital input but removes equivalent fuel costs over lifetime of the project. Description of influence: Access to capital There is an ongoing opportunity for capital raising against energy efficiency, carbon reduction and IoT enabled customer reduction programmes through processes such as green bonds or other environmentally focused capital mechanisms. How risks and opportunities have influence financial planning: Access to capital Vodafone has set out a green bond framework and in 2019 issues a 750 million Euro Green Bond against the frame work, reported on in 2020 including spend and associated environmental savings. In the future there could be further use of these mechanisms to access capital at potentially lower rates. These could be in the order of hundreds of millions, in line with our investment programme of energy efficiency and upgrade measures, meaning the potential positive impact can be relatively significant compared to none "green" finance over a short to longer term.

C3.1f

(C3.1f) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Absolute target

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number

Abs 1

Year target was set

2018

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based)

Base year

2017

Covered emissions in base year (metric tons CO2e)

2,033,439

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2025

Targeted reduction from base year (%)

50

Covered emissions in target year (metric tons CO2e) [auto-calculated]

1,016,719.5

Covered emissions in reporting year (metric tons CO2e)

1,842,715

% of target achieved [auto-calculated]

18.7587628643

Target status in reporting year

Underway

Is this a science-based target?

Yes, we consider this a science-based target, but this target has not been approved as science-based by the Science-Based Targets initiative

Please explain (including target coverage)

We set new targets, published in 2018, using FY 16-17 as a baseline with a target reduction of 40% by FY 24-25. In order to align with a 1.5C science based target approach his was updated to a 50% carbon reduction in 2019, against the same FY 16-17 baseline and to be achieved by FY 24-25. Vodafone has also publicly committed to setting a Science Based Target aligned to 1.5C with the SBTi and the UN Business Ambition 1.5C pledge, this will cover all of our Scope 1, 2 and 3 emissions aligning reductions to the ITC industry pathway to keep warming below 1.5C.

Target reference number

Abs 2

Year target was set

2019

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based) +3 (upstream & downstream)

Base year

2020

Covered emissions in base year (metric tons CO2e)

13,767,374

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2050

Targeted reduction from base year (%)

100

Covered emissions in target year (metric tons CO2e) [auto-calculated]

0

Covered emissions in reporting year (metric tons CO2e)

13,767,374

% of target achieved [auto-calculated]

0

Target status in reporting year

New

Is this a science-based target?

Yes, we consider this a science-based target, but this target has not been approved as science-based by the Science-Based Targets initiative

Please explain (including target coverage)

In September 2019 Vodafone publicly committed to reach Net Zero Emissions by 2050, this corresponds to a 100% reduction in our Scope 1, 2 and 3 emissions from a 2020 baseline year by 2050, an absolute reduction of 100% of our emissions of 13,767,374 tonnes CO2e.

The target requires a minimum of 3.3% annual reduction from 2020 for 30 years to reach zero by 2050 at the latest. This target is aligned with limiting global temperature rise to 1.5°C above pre-industrial levels and reaching net-zero emissions by no later than 2050.

In addition new intermediate targets are currently being set which will cover the medium term beyond our 2025 targets but before this long term 2050 target (discussed above), it is intended to have the intermediate target approved by the Science Based Targets initiative but this has not been achieved within this reporting period. These intermediate targets will align with an annual reduction of 3.3% as per this target.

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

Target(s) to increase low-carbon energy consumption or production
Other climate-related target(s)

C4.2a

(C4.2a) Provide details of your target(s) to increase low-carbon energy consumption or production.

Target reference number

Low 1

Year target was set
2017

Target coverage
Company-wide

Target type: absolute or intensity
Absolute

Target type: energy carrier
Electricity

Target type: activity
Consumption

Target type: energy source
Renewable energy source(s) only

Metric (target numerator if reporting an intensity target)
Percentage

Target denominator (intensity targets only)

Base year
2017

Figure or percentage in base year
12

Target year
2025

Figure or percentage in target year
100

Figure or percentage in reporting year
26

% of target achieved [auto-calculated]
15.9090909091

Target status in reporting year
Underway

Is this target part of an emissions target?
It is expected that by moving to 100% renewable electricity we will greatly reduce our total carbon emissions, thus supporting our carbon target.

Is this target part of an overarching initiative?

RE100

Please explain (including target coverage)

Target is to source 100% of our purchased electricity from renewable sources by 2025 across our global footprint, using a combination of energy efficiency, on site self generation, PPAs, green electricity tariffs and unbundled certificates depending on availability in the market. The principals of additionality are followed as best as possible.

C4.2b

(C4.2b) Provide details of any other climate-related targets, including methane reduction targets.

Target reference number

Oth 1

Year target was set

2020

Target coverage

Company-wide

Target type: absolute or intensity

Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Other, please specify

Other, please specify

Carbon enablement target.

Target denominator (intensity targets only)

Base year

2020

Figure or percentage in base year

0

Target year

2030

Figure or percentage in target year

350,000,000

Figure or percentage in reporting year

6,934,270

% of target achieved [auto-calculated]

1.98122

Target status in reporting year

Underway

Is this target part of an emissions target?

This is a complementary target which focuses on our ability to support our customers to reduce their emissions.

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain (including target coverage)

From a base year of 2020 Vodafone will support customers to reduce their emissions by 350,000,00 tonnes CO2e over the 10 years to 2030. This is a cumulative value achieved through our IoT enablement services, such as smart metering solutions, connected telematics in vehicles and a number of other (mostly IoT) focused carbon enablement service.

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	20	0
To be implemented*	25	107,964
Implementation commenced*	40	271,835
Implemented*	45	193,867
Not to be implemented	0	0

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Energy efficiency in production processes

Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)

68,806

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

3,500,000

Investment required (unit currency – as specified in C0.4)

22,200,000

Payback period

4-10 years

Estimated lifetime of the initiative

11-15 years

Comment

Enabling energy saving features across mobile network basestation sites.

Initiative category & Initiative type

Energy efficiency in production processes

Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)

106,153

Scope(s)

Scope 1

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

5,630,000

Investment required (unit currency – as specified in C0.4)

289,650,000

Payback period

4-10 years

Estimated lifetime of the initiative

6-10 years

Comment

Hardware upgrades across 14,000 sites to install new SRAN equipment which has much greater efficiency improvement, there less use of grid electricity and lower diesel use during back up or off grid sites.

Initiative category & Initiative type

Low-carbon energy generation
Solar PV

Estimated annual CO2e savings (metric tonnes CO2e)

5,745

Scope(s)

Scope 1
Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

120,000

Investment required (unit currency – as specified in C0.4)

2,400,000

Payback period

4-10 years

Estimated lifetime of the initiative

16-20 years

Comment

Upgrade of back up generators from diesel to solar PV battery hybrid power cubes, reducing demand for grid electricity and diesel consumption and associated emissions.

Initiative category & Initiative type

Energy efficiency in buildings
Heating, Ventilation and Air Conditioning (HVAC)

Estimated annual CO2e savings (metric tonnes CO2e)

13,163

Scope(s)

Scope 1
Scope 2 (market-based)

Voluntary/Mandatory

Annual monetary savings (unit currency – as specified in C0.4)

226,000

Investment required (unit currency – as specified in C0.4)

12,000,000

Payback period

4-10 years

Estimated lifetime of the initiative

11-15 years

Comment

A number of efficiency improvements in cooling, heating and HVAC systems, reducing total need for cooling with associated reduction in scope 1 emissions from refrigerant gases and reduction in scope 2 emissions from lower electricity use.

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	Vodafone complies with all regulatory requirements in the markets it operates in. Including those related to energy and carbon emissions, such as EU Energy directive.
Employee engagement	Employees across the business are encouraged to plan and budget for emission reduction activities, and to identify emission saving projects to be put forward for approval. An awareness raising e-learning tool has also been released to increase employee engagement. Furthermore, engagement campaigns grouped under a #RedLovesGreen campaign with active engagement and discussion programmes and nominated "Energy Champions" and "Energy Gurus" to be local champions has been launched.
Financial optimization calculations	We have developed business cases for a number of energy-saving initiatives, looking at whole-life costing and incorporating cost of carbon in future energy cost predictions.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Group of products

Description of product/Group of products

"Internet of Things" Technologies enabling the avoidance of emissions by customers through energy saving, monitoring, data gathering, associated efficiency savings. Of these IoT connections we estimate that 31% enable low carbon efficiency savings.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Evaluating the carbon-reducing impacts of ICT

% revenue from low carbon product(s) in the reporting year

1

Comment

We have had the customer carbon avoidance data independently calculated and verified by a third party and state that for every tonne of carbon we emit ourselves our connectivity enables 3.8 tonnes of carbon to be avoided by our customers.

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

April 1, 2016

Base year end

March 31, 2017

Base year emissions (metric tons CO2e)

300,248

Comment

Adjusted baseline from previous submissions to account for new acquisitions.

Scope 2 (location-based)

Base year start

April 1, 2016

Base year end

March 31, 2017

Base year emissions (metric tons CO2e)

2,344,511

Comment

Adjusted baseline from previous submissions

Scope 2 (market-based)

Base year start

April 1, 2016

Base year end

March 31, 2017

Base year emissions (metric tons CO2e)

2,033,439

Comment

Adjusted baseline from previous submissions

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

279,143

Comment

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based

1,664,535

Scope 2, market-based (if applicable)

1,563,571

Comment

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

No

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO2e

3,710,272

Emissions calculation methodology

Calculated using an Environmentally Extended Economic Input Output (EEIO) approach – this uses macro-economic modelling to determine the GDP value of different sectors of the economy, and to associate that with the GHG emissions incurred by those sectors. At its simplest, the total GHG emissions of the sector are divided by the total GDP value generated by the sector to produce an emissions factor of x kg CO2e/€ value. By multiplying these emissions factors by the amount we spend on goods and services in each sector, we can obtain a rough estimate of our emissions for purchased goods and services.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO2e

0

Emissions calculation methodology

Calculated using an Environmentally Extended Economic Input Output (EEIO) approach – this uses macro-economic modelling to determine the GDP value of different sectors of the economy, and to associate that with the GHG emissions incurred by those sectors. At its simplest, the total GHG emissions of the sector are divided by the total GDP value generated by the sector to produce an emissions factor of x kg CO2e/€ value. By multiplying these emissions factors by the amount we spend on goods and services in each sector, we can obtain a rough estimate of our emissions for purchased goods and services.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

Emissions are included in purchased goods and services, above, as EEIO was conducted across all suppliers.

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Relevant, calculated

Metric tonnes CO2e

691,975

Emissions calculation methodology

Upstream fuel and energy emissions are calculated by applying emissions factors produced by BEIS to Vodafone fuel and energy consumption data.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

Emissions reductions included as part of energy management programmes.

Upstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Please explain

Transportation and distribution of products between tier 1 suppliers and our operations has been determined as not materially significant to Vodafone's Scope 3 emissions and has not been calculated this year. In 2016-17 Vodafone assessed all scope 3 emissions and used the results of this to determine which scope 3 emissions were relevant and material. Upstream transportation and distribution was deemed to be 1.4% of total scope 3 emissions with little opportunity for influence and of low risk. Each year a qualitative assessment of any significant changes to the scale or influenceability is undertaken to assess if this assessment is still true, therefore this category was not calculated this year.

Waste generated in operations

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

722

Emissions calculation methodology

Calculated by applying emissions factors from BEIS to data for waste generated by Vodafone ready for treatment and disposal

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

Not materially significant to Vodafone's Scope 3 emissions. We are not a waste-intensive business, and any waste which is produced is in immaterial quantities of office waste. Network equipment is reused wherever possible, or failing that recycled, but the emissions from this process are not material. In 2016-17 Vodafone assessed all scope 3 emissions and used the results of this to determine which scope 3 emissions were relevant and material. Waste generated in operations was deemed to be 0% of total scope 3 emissions with little opportunity for influence and of low risk. Therefore this category was calculated, but deemed not relevant

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

50,558

Emissions calculation methodology

Calculated by applying emissions factors from BEIS to distances travelled for business by different modes (air, rail, taxi and personal car).

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

Transportation of employees for business-related activities. Measures in place to minimise emissions from business travel.

Employee commuting

Evaluation status

Not relevant, explanation provided

Please explain

Not materially significant to Vodafone's Scope 3 emissions. In 2016-17 Vodafone assessed all scope 3 emissions and used the results of this to determine which scope 3 emissions were relevant and material. Employee commuting was deemed to be 0.2% of total scope 3 emissions. Each year a qualitative assessment of any significant changes to the scale or influenceability is undertaken to assess if this assessment is still true,

therefore this category was not calculated this year. However, Vodafone does encourage sustainable travel options for staff commuting, these are undertaken at a local market level with incentives such as: public transport season ticket loans, bike to work schemes, office showers and changing facilities, green travel week promotions, allowing remote and home working.

Upstream leased assets

Evaluation status

Relevant, calculated

Metric tonnes CO2e

50,438

Emissions calculation methodology

Emissions have been estimated either by dividing the cost of electricity and diesel for these sites by unit price/kwh, or by extrapolating based on number of leased sites and an average emission value per site obtained from Vodafone owned sites.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

Operation of assets leased by Vodafone, including third-party network sites. This includes sites leased from Ghana and Tanzania

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Please explain

Transport and distribution of sold products are assessed as not materially significant to Vodafone's Scope 3 emissions. In 2016-17 Vodafone assessed all scope 3 emissions and used the results of this to determine which scope 3 emissions were relevant and material. Downstream Transportation and Distribution was deemed to be 0.7% of total scope 3 emissions with little opportunity for influence and of low risk. Each year a qualitative assessment of any significant changes to the scale or influenceability is undertaken to assess if this assessment is still true, therefore this category was not calculated this year.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Please explain

Not relevant to Vodafone – we do not produce products for further processing. Therefore no scope 3 emissions associated with this activity.

Use of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

2,096,048

Emissions calculation methodology

Calculated by multiplying the number of products sold by the energy usage for that product and electricity emissions factors on a country basis. The total is the sum of all values.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

Emissions from the use of goods and services sold by Vodafone, principally from the energy used by network equipment – such as routers – and the energy required to charge mobile devices.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Please explain

Not materially significant to Vodafone's Scope 3 emissions. In 2016-17 Vodafone assessed all scope 3 emissions and used the results of this to determine which scope 3 emissions were relevant and material. End of life treatment of sold products was deemed to be 0% of total scope 3 emissions. Each year a qualitative assessment of any significant changes to the scale or influenceability is undertaken to assess if this assessment is still true, therefore this category was not calculated this year.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

Not relevant to Vodafone - we do not have equipment or assets that we own and lease to third parties.

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

Operation of franchises, including branded Partner Markets and franchise retail stores. Obtained data from majority of partner markets. Not materially significant to Vodafone's Scope 3 emissions. In 2016-17 Vodafone assessed all scope 3 emissions and used the results of this to determine which scope 3 emissions were relevant and material. Franchises were deemed to be 1.1% of total scope 3 emissions. Each year a qualitative assessment of any significant changes to the scale or influenceability is undertaken to assess if this assessment is still true, therefore this category was not calculated this year. However, Vodafone does have minimum standards that franchises have to follow which include elements relating to energy use, efficiency and climate change.

Investments

Evaluation status

Relevant, calculated

Metric tonnes CO2e

5,324,647

Emissions calculation methodology

For joint ventures in Australia, India, Kenya and the Netherlands, Scope 1 and 2 emissions are based on actuals and Scope 3 emissions are extrapolated from Vodafone’s emissions. A percentage of Scope 1 and 2 emissions is reported based on our equity share.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

Operation of investments not included in Scope 1 or 2 – our joint ventures in Australia, India, Kenya and the Netherlands. Our tower company joint ventures in India (Indus), and the UK (CTIL) and Greece (Victus) are included in Scope 3 – leased assets and Scope 1 and 2 emissions respectively.

Other (upstream)

Evaluation status

Not relevant, explanation provided

Please explain

No other relevant or material upstream GHG emissions

Other (downstream)

Evaluation status

Not relevant, explanation provided

Please explain

No other relevant or material upstream GHG emissions.

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

230

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

1,842,715

Metric denominator

Other, please specify

Petabyte of Data

Metric denominator: Unit total

8,010

Scope 2 figure used

Market-based

% change from previous year

39

Direction of change

Decreased

Reason for change

This was achieved due to continued mobile data traffic growth, while maintaining a flat energy consumption through efficiency measures and a shift towards purchasing renewable electricity. For example, dynamic thermal management within our data centres reducing the total cooling requirement with associated reduction in energy use and carbon emissions per unit of data transferred over our mobile network.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	218,806	IPCC Fourth Assessment Report (AR4 - 100 year) [1]
CH4	61	IPCC Fourth Assessment Report (AR4 - 100 year) [2]
N2O	2,629	IPCC Fourth Assessment Report (AR4 - 100 year) [3]
HFCs	57,646	IPCC Fourth Assessment Report (AR4 - 100 year) [4]

[1] As per UK reporting requirements AR4 is used for annual report.

[2] As per UK reporting requirements AR4 is used for annual report.

[3] As per UK reporting requirements AR4 is used for annual report.

[4] As per UK reporting requirements AR4 is used for annual report.

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
Albania	2,599
Czechia	1,351
Egypt	94,188
Germany	20,445

Ghana	10,105
Greece	12,817
Hungary	1,257
Ireland	993
Italy	3,995
Malta	159
Portugal	1,902
Romania	2,339
South Africa	16,055
Spain	8,151
Turkey	14,003
United Kingdom of Great Britain and Northern Ireland	9,806
Lesotho	1,136
United Republic of Tanzania	5,997
Mozambique	7,739
Democratic Republic of the Congo	28,096

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By business division

C7.3a

(C7.3a) Break down your total gross global Scope 1 emissions by business division.

Business division	Scope 1 emissions (metric ton CO2e)
Network	142,948
Office	11,607
Retail	6,596
Transport (Fleet)	60,346
Refrigerants and Fire Suppressants	57,646

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based	Scope 2, market-based	Purchased and consumed electricity, heat,	Purchased and consumed low-carbon electricity, heat, steam or

	(metric tons CO2e)	(metric tons CO2e)	steam or cooling (MWh)	cooling accounted for in Scope 2 market-based approach (MWh)
Albania	10,163	10,163	25,696	0
Czechia	15,312	18,627	88,523	57,845
Egypt	127,757	127,757	289,175	0
Germany	334,928	191,999	1,003,748	174,000
Ghana	4,499	4,499	18,128	0
Greece	61,187	88,030	154,101	33,559
Hungary	11,797	16,919	61,850	16,000
Ireland	8,071	7,706	115,517	91,806
Italy	5,762	16,532	643,205	624,121
Malta	5,087	5,575	13,224	0
Portugal	42,588	37,757	145,550	0
Romania	36,872	33,312	148,696	30,250
South Africa	472,999	546,820	525,788	0
Spain	120,744	108,294	733,877	257,946
Turkey	244,179	244,179	515,036	0
United Kingdom of Great Britain and Northern Ireland	140,751	83,708	700,389	83,332
Lesotho	7,049	7,049	12,411	0
United Republic of Tanzania	5,111	4,537	16,928	0
Mozambique	3,251	3,251	47,113	0
Democratic Republic of the Congo	5,807	5,807	17,470	0
Other, please specify Vodafone Group Services	621	1,051	12,794	8

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By business division

C7.6a

(C7.6a) Break down your total gross global Scope 2 emissions by business division.

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Network	1,581,384	1,478,659
Office	75,619	78,769
Retail	7,531	6,144
Transport	0	0

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Decreased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	161,804	Decreased	8.03	Renewable electricity use as a share of total grid electricity increased by 10.35% compared to last year (from 15.55% to 25.90%). 161,804 tonnes CO2e is a 10.35% proportion of total Scope 2 emissions this year. 161,804 (tonnes reduction) / 2,014,586 (previous year Sc 1 + 2 emissions) * 100 = 8.03% decrease
Other emissions reduction activities	162,211	Decreased	8.05	Energy saving measures resulted in a carbon reductions through reduced energy use. This is calculated from the total carbon reduction compared to last year (note re-baselined to remove divestment), then removing the savings attributed to increased renewable electricity, as above. 162,211 (tonnes reduction) / 2,014,586

				(previous year Sc 1 + 2 emissions) * 100 = 8.05% decrease
Divestment	3,345	Decreased	0.17	Divestment of our operations in New Zealand. 3,345 tonnes of carbon reported last year removed from our total emissions for this year (0.17%). Note divestments are removed from historic data each year. 3,345 (tonnes reduction) / 2,014,586 (previous year Sc 1 + 2 emissions) * 100 = 0.17% decrease
Acquisitions	18,549	Increased	0.92	Acquisition of new assets within our existing market of Greece, new assets are responsible for an 18.4% increase scope 1 and 2 carbon within Greek market. 18,549 tonnes of carbon are equivalent to 1% of all Group emissions. Note previous year's were rebaselined to include this additional proportion of emissions. 18,549 (tonnes reduction) / 2,014,586 (previous year Sc 1 + 2 emissions) * 100 = 0.92% increase
Mergers				No Mergers
Change in output				Although data use grew massively (with greater energy requirements) this was offset through greater energy efficiency savings. It is not possible to dis-aggregate these affects.
Change in methodology				No significant change in methodology
Change in boundary				No change in boundary
Change in physical operating conditions				No change in physical operation conditions
Unidentified				None known
Other				None known.

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Market-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 10% but less than or equal to 15%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	Yes
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh

Consumption of fuel (excluding feedstock)	LHV (lower heating value)	0	492,181	492,181
Consumption of purchased or acquired electricity		1,368,867	3,916,211	5,285,078
Consumption of purchased or acquired heat		0	4,142	4,142
Consumption of self-generated non-fuel renewable energy		5,886		5,886
Total energy consumption		1,374,753	4,412,533	5,787,286

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	No
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Other, please specify

Diesel (stationary)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

175,179

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

Emission factor

2.68697

Unit

kg CO2e per liter

Emissions factor source

Source: UK Government GHG Conversion Factors for Company Reporting (2019) (BEIS)

Comment

Fuels (excluding feedstocks)

Other, please specify

Petrol (stationary)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

2,227

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

Emission factor

2.31495

Unit

kg CO2e per liter

Emissions factor source

Source: UK Government GHG Conversion Factors for Company Reporting (2019) (BEIS)

Comment

Fuels (excluding feedstocks)

Other, please specify

Diesel (mobile)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

225,687

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

Emission factor

2.59411

Unit

kg CO2e per liter

Emissions factor source

Comment

Source: UK Government GHG Conversion Factors for Company Reporting (2019) (BEIS)

Fuels (excluding feedstocks)

Other, please specify

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

24,987

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

Emission factor
2.20904

Unit
kg CO2e per liter

Emissions factor source
Source: UK Government GHG Conversion Factors for Company Reporting (2019) (BEIS)

Comment

Fuels (excluding feedstocks)
Natural Gas

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
64,101

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

Emission factor
0.18443

Unit
kg CO2e per KWh

Emissions factor source
Source: UK Government GHG Conversion Factors for Company Reporting (2019) (BEIS)

Comment

C8.2d

(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is

				consumed by the organization (MWh)
Electricity	5,886	5,886	5,886	5,886
Heat				
Steam				
Cooling				

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero emission factor in the market-based Scope 2 figure reported in C6.3.

Sourcing method

Power purchase agreement (PPA) with a grid-connected generator with energy attribute certificates

Low-carbon technology type

Wind

Country/region of consumption of low-carbon electricity, heat, steam or cooling

United Kingdom of Great Britain and Northern Ireland

MWh consumed accounted for at a zero emission factor

83,332

Comment

Single PPA agreement with a named local wind farm in the UK power delivered through the grid with the accompanying REGOs

Sourcing method

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

Low-carbon technology type

Low-carbon energy mix

Country/region of consumption of low-carbon electricity, heat, steam or cooling

Europe

MWh consumed accounted for at a zero emission factor

1,285,536

Comment

Multiple supplier arrangements across Europe from a number of generation sources. Each green tariff agreement is sourced with certificates and preference is given to: in country generation sources, newer generation (<5 years) and preference give to wind and solar generation as per our renewable sourcing hierarchy. However, we cannot determine exactly what mix of generation sources are provided as certificates are not available until the end of the year.

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

55842 Vodafone-ESG2020_AW5_V2.pdf

Page/ section reference

Page 9-11 of the publicly available ESG Addendum report is the limited assurance verification statement dated for year ending 31st March 2020.
Page 11 lists out the subject matter and values which received assurance, including scope 1 emissions.

Relevant standard

ISAE 3410

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach

Scope 2 location-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Type of verification or assurance

Limited assurance

Attach the statement

55842 Vodafone-ESG2020_AW5_V2.pdf

Page/ section reference

Page 9-11 of the publicly available ESG Addendum report is the limited assurance verification statement dated for year ending 31st March 2020.
Page 11 lists out the subject matter and values which received assurance, including scope 2 location -based emissions.

Relevant standard

ISAE 3410

Proportion of reported emissions verified (%)

100

Scope 2 approach
Scope 2 market-based

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Type of verification or assurance
Limited assurance

Attach the statement

55842 Vodafone-ESG2020_AW5_V2.pdf

Page/ section reference
Page 9-11 of the publicly available ESG Addendum report is the limited assurance verification statement dated for year ending 31st March 2020.
Page 11 lists out the subject matter and values which received assurance, including scope 2 market-based emissions.

Relevant standard
ISAE 3410

Proportion of reported emissions verified (%)
100

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope 3 category
Scope 3: Business travel

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Type of verification or assurance

Limited assurance

Attach the statement

55842 Vodafone-ESG2020_AW5_V2.pdf

Page/section reference

Page 9-11 of the publicly available ESG Addendum report is the limited assurance verification statement dated for year ending 31st March 2020.
Page 11 lists out the subject matter and values which received assurance, including scope 3 based emissions.

Relevant standard

ISAE 3410

Proportion of reported emissions verified (%)

100

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C4. Targets and performance	Renewable energy products	International Standard on Assurance Engagements 3410 - 'Assurance Engagements on Greenhouse Gas Statements' (ISAE 3410	As part of our limited assurance the percentage of electricity from renewable sources is one of the underlying subject matter values which are verified. See page 9-11 in attached ESG Addendum Report 1
C5. Emissions performance	Year on year change in emissions (Scope 1 and 2)	International Standard on Assurance Engagements 3410 - 'Assurance	As part of our limited assurance the change in scope 1 and 2 emissions is one of the underlying subject matter values which are verified. See page 9-

		Engagements on Greenhouse Gas Statements' (ISAE 3410	11 in attached ESG Addendum Report 1
C6. Emissions data	Year on year change in emissions (Scope 1)	International Standard on Assurance Engagements 3410 - 'Assurance Engagements on Greenhouse Gas Statements' (ISAE 3410	As part of our limited assurance the change in scope 1 is one of the underlying subject matter values which are verified. See page 9-11 in attached ESG Addendum Report 1
C6. Emissions data	Year on year change in emissions (Scope 2)	International Standard on Assurance Engagements 3410 - 'Assurance Engagements on Greenhouse Gas Statements' (ISAE 3410	As part of our limited assurance the change in scope 2 is one of the underlying subject matter values which are verified. See page 9-11 in attached ESG Addendum Report 1
C6. Emissions data	Year on year change in emissions (Scope 3)	International Standard on Assurance Engagements 3410 - 'Assurance Engagements on Greenhouse Gas Statements' (ISAE 3410	As part of our limited assurance the change in scope 3 is one of the underlying subject matter values which are verified. See page 9-11 in attached ESG Addendum Report 1
C9. Additional metrics	Other, please specify Ratio of IoT enabled savings to own Scope 1 and 2 emissions	International Standard on Assurance Engagements 3410 - 'Assurance Engagements on Greenhouse Gas Statements' (ISAE 3410	As part of our limited assurance the ratio of enabled carbon reduction emissions compared to scope 1 and 2 emissions is one of the underlying subject matter values which are verified. See page 9-11 in attached ESG Addendum Report 1
C5. Emissions performance	Renewable energy products	International Standard on Assurance Engagements 3410 -	As part of our limited assurance the percentage of electricity from renewable sources is one of the

		'Assurance Engagements on Greenhouse Gas Statements' (ISAE 3410	underlying subject matter values which are verified. See page 9-11 in attached ESG Addendum Report 1
C6. Emissions data	Year on year emissions intensity figure	International Standard on Assurance Engagements 3410 - 'Assurance Engagements on Greenhouse Gas Statements' (ISAE 3410	As part of our limited assurance the change in emissions per PB of mobile data emission intensity figure is one of the underlying subject matter values which are verified. See page 9-11 in attached ESG Addendum Report 1

1 55842 Vodafone-ESG2020_AW5_V2.pdf

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

No, and we do not anticipate being regulated in the next three years

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

No

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Objective for implementing an internal carbon price

Drive energy efficiency

Drive low-carbon investment

GHG Scope

Scope 2

Application

Vodafone has used an internal carbon price to determine how energy and carbon costs may change for our business. Vodafone uses an internal carbon price to forecast energy costs for each of our business divisions and markets to come up with a value overall.

Actual price(s) used (Currency /metric ton)

10

Variance of price(s) used

0-20, the cost of carbon offsetting or potential carbon pricing and carbon taxes are used to estimate costs and potential risks in the business.

Type of internal carbon price

Implicit price
Offsets

Impact & implication

Modelling of potential additional energy costs of fossil fuel based energy sources used to drive business case for move towards renewable energy sources.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers
Yes, other partners in the value chain

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Compliance & onboarding

Details of engagement

Included climate change in supplier selection / management mechanism
Code of conduct featuring climate change KPIs
Climate change is integrated into supplier evaluation processes

% of suppliers by number

95

% total procurement spend (direct and indirect)

95

% of supplier-related Scope 3 emissions as reported in C6.5

95

Rationale for the coverage of your engagement

All major suppliers undertake an on boarding process which asks questions about their environmental performance and carbon reductions, when flagged as non-compliant this needs to be justified before they can be on boarded as an approved supplier to Vodafone. Climate change and environmental performance is also a weighted category in all RFQ processes with higher scores give to better performance. Furthermore, we use of CDP supply chain data and other data gathered from suppliers to work with suppliers on carbon reduction from major sources within our supply chain. This year, 138 (or 89%) of those suppliers asked to respond did so.

Impact of engagement, including measures of success

Emphasises the importance of climate change to our suppliers and opens discussions with suppliers who do not meet minimum requirements about what we expect from them. Drives change through pressure to meet requirements.

This success is shown in the number and quality of CDP supply chain responses through our engagement: 69% reported that they had set a structured target for GHG emissions, while 99% and 97%% reported their scope 1 and scope 2 emissions respectively.

Success will be measured by the number of suppliers who are reporting to CDP and showing carbon reduction year on year, as well as the number who commit to their own carbon targets (aligned to 1.5C science based targets) and the proportion of total spend with suppliers with carbon reduction commitments and targets. For example over the next 3 years the number of suppliers who are reporting carbon reductions increase, as does the percentage of spend with suppliers who have set 1.5 aligned carbon reduction targets.

Comment

Type of engagement

Information collection (understanding supplier behavior)

Details of engagement

Collect climate change and carbon information at least annually from suppliers

% of suppliers by number

2

% total procurement spend (direct and indirect)

70

% of supplier-related Scope 3 emissions as reported in C6.5

77

Rationale for the coverage of your engagement

Engage our top 250 suppliers to report their carbon and energy data, renewable electricity use and any targets via the CDP supply chain programme. Suppliers are directly engaged on why it is important to respond and the value of responding and taking action to both them and ourselves. There are also a number of awards and recognition of those suppliers responding and taking significant action.

Impact of engagement, including measures of success

89% of requested suppliers responded to our information requests, much higher than industry average. Of these 99% report scope 1 emissions and 97% report scope 2 emissions; furthermore 69% have emission reduction targets, all higher than the industry average. Overall success is measured in the level of response and the number of suppliers taking action to reduce their carbon emissions.

Comment

C12.1d

(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.

On of the largest elements of our value chain and scope 3 emissions is that of our investments, Joint Ventures and partner markets. We do not have operational control of these organisations but through continual engagement we aim to influence and encourage carbon reduction and sustainable action. This engagement includes sharing best practice, regular (monthly) group calls, multi-day sustainable business workshops and specific engagement on topics when requested. For example, one of our Joint Ventures: Saraficom has committed to setting a science based target and we support their efforts through regular engagement, input into strategy and supporting functions. Similarly a number of our Joint Ventures sent sustainability representative to multiday sustainability workshop and bi-weekly sustainability discussions.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

Direct engagement with policy makers
Trade associations
Funding research organizations

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Other, please specify Green Deal	Support	Vodafone supports the proposed EU Green deal, we discuss the industry position and how we can support a "green, digital and resilient" economy with members of the EU Commission providing industry insight and information.	Multiple and various including purchasing of renewable electricity, energy efficiency, circular economy, carbon taxation, digitalisation, labeling and reporting requirements.

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

BITKOM

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

BITKOM is the trade body for ICT in Germany. It supports the growth of energy efficiency in the ICT sector and the adoption of renewable energy.

How have you influenced, or are you attempting to influence their position?

Vodafone's Dr. Hannes Ametsreiter and Dr. Christoph Clément sit on the BITKOM Board and communicate Vodafone Group's expectations regarding climate change.

Trade association

BDI

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

BDI is the trade body for German industry. BDI advocates for a number of environmental initiatives including resource efficiency, the circular economy and energy efficiency in buildings.

How have you influenced, or are you attempting to influence their position?

Vodafone's Dr. Hannes Ametsreiter sits on the BDI presidum and communicates Vodafone Group's expectations regarding climate change.

C12.3d

(C12.3d) Do you publicly disclose a list of all research organizations that you fund?

No

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

Vodafone's policy engagements are governed and coordinated by Group External Affairs. Any policy engagement regarding energy and climate change must follow our environmental policy requirements which set out our position on energy and climate change. External affairs professionals within Vodafone are provided with training to ensure they are aware of the requirements of the policy. Annually, as part of our environmental data collection process, we ask all markets to describe the engagements they have taken place in. In this way, we ensure that engagements are consistent with our overall climate change strategy.

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In mainstream reports

Status

Complete

Attach the document

Vodafone Annual Report 2020 (1).pdf

55842 Vodafone-ESG2020_AW5_V2.pdf

Page/Section reference

Main Annual Report 2020 (ARA) - Planet (including climate change and energy) information is integrated throughout the document.
Key sections include:
Our business at a glance - page 6
Our purpose - page 16
Our key performance indicators - page 26
Sustainable business - page 40
Risk management - page 62

In addition further sustainability data, information and KPIs can be found in the ESG addendum (published with ARA)
Sustainability strategy - page 3
ESG performance data and assurance -page 6

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

C15. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

TO BE ADDED -RE100 spreadsheet

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Vodafone Group CEO	Chief Executive Officer (CEO)