

SDG7 Energy Compact of Ministry of Energy, Water Resources and Irrigation, Government of Nepal A next Decade Action Agenda to advance SDG7 on sustainable energy for all, in line with the goals of the Paris Agreement on Climate Change

SECTION 1: AMBITION			
1.1. Ambitions to achieve SDG	7 by 2030 ¹ .	. [Please select all that apply, and make sure to state the baseline of each targe	1
	-	their NDCs, energy policies, national five-year plans etc. targets for companies	
☐ 7.1. By 2030, ensure universal access to affordable, reliable and		orgets as per the Sustainable Development Goals Status and Roadmap: 2016- 030	
modern energy	Targets	Description	
services.	7.1.1	Proportion of population with access to electricity	
	1	Per capita energy (final) consumption (in gigajoules)	
	7.1.2	Proportion of population with primary reliance on clean fuels and technology	
	1	Households using solid fuel as primary source of energy for cooking (%)	
	2	People using liquid petroleum gas (LPG) for cooking and heating (%)	
	3	Electricity consumption (kWh per capita)	
		argets as per the Second Nationally Determined Contribution (NDC), Government of epal (2020)	
	• By	2030, ensure 15% of the total energy demand is supplied from clean energy sources 2030, ensure 25% of households use electric stoves as their primary mode of oking.	
	• Ho	ouseholds/Families with electricity access from 88% in 2018/19 to 100% in 2023/24 ectricity consumption per capita from 245 kWh I 2018/19 to 700 kWh in 2023/24	
	Context fo	or the ambition(s):	
		ee-fourths (74.7 percent) of households in the country use solid fuels as the primary	
	source of	energy for cooking, while one-fifth (18 percent) use LPG for cooking. While nearly	
	three-four	ths (74 percent) of the households have access to electricity, actual supply of	

electricity is grossly inadequate. As per the Second NDC, the three combined targets on energy, transport and residential cooking can reduce emissions from approximately 1,999 Gg CO2 eq. in

¹ The ambition to achieve SDG 7 by 2030 is as per the *Sustainable Development Goals Status and Roadmap: 2016-2030 available at* http://www.npc.qov.np/images/category/SDG Status and Roadmap (2016-2030).pdf, Second Nationally Determined Contribution (NDC), Government of Nepal available at https://climate.mohp.qov.np/attachments/article/167/Second%20Nationally%20Determined%20Contribution%20(NDC)%20-%202020.pdf and the Fifteenth Plan (Fiscal Year 2019/20 to 2023/24) available at https://npc.gov.np/images/category/15th plan English Version.pdf

BAU in 2025 to approximately 1,774 Gg CO2 eq. This is around 11% reduction in emissions from the cooking sector. For 2030, these three targets can reduce emissions from approximately 2,064 Gg CO2 eq. from BAU to 1,599 Gg CO2 eq., which is around 23% reduction in emissions. While Traditional Cookstove are predominantly used for cooking in the rural areas, Liquefied Petroleum Gas (LPG) is the most commonly used cooking technology in the urban areas. Due to smoke-free operation, flexibility in use and traditional kitchen practices dependent on this technology, there is a growing trend of LPG consumption. Even though LPG is a cleaner fuel compared to fuel wood and cattle dung, as it does not produce smoke and contributes to indoor air quality, it is derived from fossil fuel, hence contributes to global GHG emissions. Moreover, LPG has to be imported and in 2018-19 alone, Nepal imported 429,609 MT of LPG, which is a 270% increased since 2008/09. This over dependence on LPG import has put Nepal in a perilous situation, as it has not only widened the trade deficit, but has also made Nepal very susceptible to supply risk as experienced during the 2015 fuel crisis, when the supply of fossil fuels to Nepal was severely disrupted as well as price increase making it unaffordable even to medium income households. Nepal must curtail its dependency on LPG in rder to strengthen its economy and for its sovereignty. In the current context, the world continues to face crisis, one after another. From the devastating pandemic to the current Russia/Ukraine crisis, fuel prices are escalating and supply disrupted, causing a domino effect that would affect economies all across the world, including Nepal. Particularly the price of the petroleum products and LPG have become exorbitant and harming Nepal's economy, already weakened by the pandemic, decrease of tourists, diminishing remittances, and a widening trade imbalance. The domino effect of escalated fuels prices have resulted in soaring prices of consumables and other commodities which has made life difficult for many Nepalese. Electricity is one big option that Nepal could rely on for its transition to clean cooking solution. Though Nepal has enormous potential for hydro electricity generation, until a couple of years back, Nepal was reeling under an acute power shortage that resulted in up to 16 hours of scheduled load shedding. As such, the environment was not conducive to promote electric cooking, despite the benefit it offers. Given the current circumstances where in Nepal is generating surplus electricity particularly during the wet season, Nepal would be on track to fulfill the ambitions with investment to diversify current hydropower plants which are primarily run-of river and some peaking run-ofriver. The year around self sustainable electricity will be feasible in Nepal when more storage system hydropower plants start generating electricity. There is also the need to strengthen the transmission and distribution network of grid electricity which increase the reliability and affordability of electricity even to low income households. ☐ **7.2.** By 2030, increase substantially the share 1. Targets as per the Sustainable Development Goals Status and Roadmap: 2016of renewable energy in the global energy mix. Description **Targets** 7.2.1 Renewable energy share in the total final energy consumption Installed capacity of hydropower (MW) 2. Targets as per the Second Nationally Determined Contribution (NDC), Government of

Security 12020 • by 2030, copand clean energy generated of the security generated from min and notice property of the clean energy generated will be generated from min and notice property of the clean energy generated will be generated from min and notice property of the property of			
of which 5-20 % of the clean energy generated will be generated from mini and microhydropower, solar, wind an bio-energy, of this, 5000 MV is an unconditional target. The remainder is dependent upon the provision of funding by the international community. 3. Targets as per the Fifteenth Plan Fisical Year 2019/20 - 2023) • Flextriking removation (installed capacity) from 1,250 MW in 2018/19 to 5,820 MW in 2012/22. • Portion of 8E in total energy consumption from 7 % to 12% (solar, wind, bioenergy) • Micro hydro installed in MW from 31 to 17 • Solar energy installed in MW from 33 to 160 Context for the ambition(s): Negal reliabs heavily on hydropower for its electricity generation, which is a clean and renevable energy source with no CO2 emissions where the demands are covered primarily by run of-friver (ROR) and peaking run of-friver (ROR) hydropower plants. Currently it is installed capacity of around of 173 MW of exciticity of unkine 59.7% is from hydroeiccricity, Negal categorizes mini and micro hydropower (vie. hydropower plants. Currently its his smalled capacity of around of 173 MW of exciticity of unkine 59.7% is from hydroeiccricity. Negal categorizes mini and micro hydropower (vie. hydropower of less than 180 kg assistant) and solar and micro hydropower (vie. hydropower of less than 180 kg assistant) and solar energy. Are per the second fruce, current energy of the internal internal properties of the properties of 173 and surfaces other in the pipeline. 7.3. by 2080, double the global rate of immunosity hydropower project currented to the grid in 2021 and surfaces other in the pipeline. 7.3. by 2080, double the global rate of immunosity hydropower project currented to the grid in 2021 and surfaces of the properties. 7.3. by 2080, double the foliation of the properties of the propert		<u>Nepal (2020)</u>	
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As per the Second NDC, the current share of electric vehicles is approximately 1%; currently, around 5% of households use electric induction stoves, either as their primary or secondary mode of cooking and; the current rail network has no reference available. Access to clean energy cooking solutions is a massive problem for Nepal as the rural population depends highly on traditional emissive energy sources, such as firewood, animal waste and crop residues for cooking purposes. Recent report published by the World Bank in 2019, showed that still 73.5 % of the households depend on firewood for cooking. Furthermore, majority of them are using highly in-efficient traditional cookstoves (TCS), which not only consume more fuel, thus putting more pressure on the forests, but also cause indoor air pollution. Burning of solid fuels using TCS (efficiency of 10%), cause health problems and emit a massive amount of black carbon and GHGs (such as carbon dioxide, methane). In terms of achieving the targets by 2030, it is to be noted that the cost of achieving Nepal's NDC conditional mitigation targets is estimated to be USD 25 billion. The cost of achieving unconditional targets outlined in the NDC is estimated to be USD 3.4 billion. The targets set up as per the NDC will need interventions from different directions in order to fulfill them. The new sales of electric vehicles will be achieved through policy breakthroughs mainly lowering the taxes, access to charging stations across the country and lowering the electricity tariff for charging electric vehicles and by large, through the market itself. With prices soaring of the petroleum products, the demand for electric vehicles have seen a phenomenal growth. The development of electric rail network would require extensive external support to achieve the target by 2030. In terms of the Improved Cookstoves which are more efficient than the existing/traditional cookstoves in terms of energy. For instance, replacing traditional cookstoves that uses open fire with improved metallic cookstoves (ICS) and existing lower tiered ICS replaced by a higher tiered ICS in terms of energy efficiency. The targeted ICS i.e. 500,000 households or reaching at least (6.6 million hhs) of the households would be achieved through the Alternative Energy Promotion Centre (AEPC) and the Green Climate Fund supported project on the clean cooking solutions which also supports household bio gas plants. Similarly, the targets for the large scale biogas plant would require interventions from development partners to collaborate with AEPC and the private sector for sustainability of the projects and incentivizing projects that contributes to the adaptation and mitigation of climate change. To achieve the conditional targets, Nepal anticipates financial, technological and capacitybuilding support from global funds, bilateral/multilateral agencies and development partners. As these targets are well aligned with the country's existing policies and plans, they will have high ownership and will be implemented on time at the national and sub-national levels given that the financial requirements are fulfilled. ☐ **7.a.** By 2030, enhance international Description Targets cooperation to 7.a.1 International financial flows to developing countries in support of clean facilitate access to energy research and development and; renewable energy production clean energy research including hybrid systems and technology, including renewable energy, energy Context for the ambition(s): efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.

	☐ 7.b. By 2030, expand	Target(s):			
	infrastructure and				
	upgrade technology for	Targets	Description		
	supplying modern and	7.b.1	Investment in energy efficiency as a proportion of GDP and the amount of		
	sustainable energy		foreign direct investment in financial transfer for infrastructure and		
	services for all in		technology to sustainable development services		
	developing countries,		teermology to sustainable development services		
	in particular least				
	developed countries,				
	small island developing	Context to	r the ambition(s):		
	States, and land-locked				
	developing countries,				
	in accordance with				
	their respective				
	programs of support.				
1.2. O	ther ambitions in support of	f SDG7 by 20	30 and net-zero emissions by 2050. [Please describe below e.g., coal phase out or re	eforming fossil fuel subsidies etc.]	
	Target(s):				
	Time frame:				
		-1.			
	Context for the ambition(s	s):			
L					

SECTION 2: ACTIONS TO ACHIEVE THE AMBITION

2.1. Please add at least one key action for each of the elaborated ambition(s) from section 1. [Please add rows as needed].

Description of action (please specify for which ambition from Section 1)	Start and end date From 2021 to 2030
For ambition 7.1.1 and 7.2.1	
Increase the reliable supply of clean energy, ensuring access to all and increase the quantity (kWh), quality, reliability, and affordability of electricity access from renewable sources	
Description of action (please specify for which ambition from Section 1)	Start and end date
	From 2021 to 2030
For ambitions 7.1.1 and 7.3.1	
Promote public electric mobility through policy incentives, including subsidy policies and other financial mechanisms and strengthen	
transmission and distribution links to support up-scaling of e-cooking, e-heating, e-transport and charging stations.	
Description of action (please specify for which ambition from Section 1)	Start and end date
	From 2021 to 2030
For ambitions 7.1.1 and 7.2.1	
Strengthened policy framework and institution/s with the promulgation of the relevant acts and regulations creating just and inclusive	
energy transition and enabling environment to provide power to small and mid-size enterprises (SMEs) using distributed renewable energy generation sources and capacitating supply chain and local production	
generation sources and capacitating supply chain and local production	
Description of action (please specify for which ambition from Section 1)	Start and end date
	From 2021 to 2030
For ambitions 7.3.1	
Double the average improvement rate of energy efficiency in Nepal from 0.84% per year, which existed during the period of 2000-2015 to	
1.68% per year in 2030 AD (National Energy Efficiency Strategy 2018)	

Description of action (please specify for which ambition from Section 1) Start and end date From FY 2075/76 (2018/19 A.D.) to FY 2080/81 (2023/24 A.D.) For ambitions 7.3.1 Increase access to finance and uptake of sustainable and innovative mechanism to install RE technologies with support from the Government, multi-lateral and bi-lateral agencies and preparation of funding proposals for accessing fund from international climate and • Solar home systems from 911,000 to 1,186,000 • Solar mini grid from 12 to 1500 • Solar drinking water and irrigation pump installation(numbers) from 1364 to 1864 Wind energy (%) from 0.76 to 10.76 Electric Cook-stoves (numbers in '000) from 86 to 586 Community and Institutional as well as Urban and Commercial Biogas (numbers) from 247 to 747 Improved Metallic Cookstoves (number in '000) from 86 to 586

SECTION 3: OUTCOMES

3.1. Please add at least one measurable and time-based outcome for <u>each</u> of the actions from section 2. [Please add rows as needed].

Outcome	Date
Installed capacity of hydropower (MW) – 15,000 MW	2030
Percentage households with clean cooking solution -60%	2030
Double the Average improvement rate of energy efficiency	2030
Certified emission reduction via additional renewable energy projects under the clean development mechanism	2030
Strengthened policy framework and institution/s for enhancement of renewable energy and energy efficiency	2030
Increased access to international climate/environment finance	2030

SECTION 4: REQUIRED RESOURCES AND SUPPORT

- 4.1. Please specify required finance and investments for **each** of the actions in section 2.
 - As the targets and activities have been designed based on the national plans and commitments, the Second NDC states the cost of achieving Nepal's NDC conditional mitigation targets is estimated to be USD 25 billion. The cost of achieving unconditional targets outlined in the NDC is estimated to be USD 3.4 billion. This estimate only covers activity-based targets and does not include the cost of policies, measures and actions. To achieve the conditional targets, Nepal anticipates financial, technological and capacity-building support from global funds such as the Green Climate Fund, Global Environment Facility, Adaptation Fund, and Least Developed Countries Fund, NAMA Facility and bilateral/multilateral agencies and development partners. These funds will be utilized to bolster limited national resources and technical capacities for scaling up climate action. Of the 15000 MW by 2030 targeted installed capacity from hydropower, only 5,000 MW is an unconditional target and the remainder is dependent upon the provision of funding by the international community.
- 4.2. [For countries only] In case support is required for the actions in section 2, please select from below and describe the required support and specify for which action.

[Examples of support for Member States could include: Access to low-cost affordable debt through strategic de-risking instruments, capacity building in data collection; development of integrated energy plans and energy transition pathways; technical assistance, etc.]

Access to grant and concessional debt

* Technical Support Capacity development in preparation plans and policies, development of robust funding proposals to access international funds	
☐ Other/Please specify	
☐ Other/Please specify Description	

SECTION 5: IMPACT

5.1. Countries planned for implementation including the number of people potentially impacted.

Nepal is a landlocked country that lies in the southern face of the Himalayan mountain range. The country is located between 260 22' and 300 27' North latitude and 800 04' and 880 12' East longitude and covers an area of 147,181 square kilometres. Physiographic regions within the country include High Himal, High Mountain, Middle Mountain, Siwalik, and the Tarai. Within these regions, elevations range from 59 meters to 8,848 meters. Nepal is a Least Developed Country (LDC) whose economy mostly depends on agriculture and remittances. Nepal's per capita GDP was USD 1,085 in the fiscal year 2019/2020 with a growth rate of 7.5% from the last fiscal year. However, the impact of COVID19 is already bringing these numbers down.

5.2. Alignment with the 2030 Agenda for Sustainable Development – Please describe how <u>each</u> of the actions from section 2 impact advancing the SDGs by 2030. [up to 500 words, please upload supporting strategy documents as needed]

SDG7 targets include achieving, by 2030, (i) universal access to affordable, reliable and modern energy services, (ii) increasing substantially the share of renewable energy in the global energy mix and (iii) doubling the global rate of improvement in energy efficiency. Ensuring access to affordable, reliable, and modern energy for all is a daunting task. However, given the immense hydro power potential, and with the private sector becoming more competent in power generation, grid connectivity expanding and alternative modern energy sources being capitalized, the country can meet the targets. Thus the proposed specific targets for SDG 7 include accessibility of 99 percent households to electricity; reduction to 30 percent - from nearly 75 percent now - the households who resort to firewood for cooking; limiting the use of LPG to less than 40 percent of the households; generation of 15,000 MW of installed capacity; and per capita electricity consumption increased to 1500 kWh. Furthermore the actions contribute to several Sustainable Development Goals (SDGs), such as poverty reduction (SDG 1), lessening exposure to indoor air pollution (SDG 3), reducing drudgery for women in collecting wood fuel (SDG 5), improving access to affordable and clean energy (SDG 7) and reducing GHG emissions and strengthening the resilience of vulnerable communities to climate change (SDG 13) and also help in reducing pressure on the forest, thus, conserving the forest resources (SDG 15).

5.3. Alignment with Paris Agreement and net-zero by 2050 - Please describe how <u>each</u> of the actions from section 2 align with the Paris Agreement and national NDCs (if applicable) and support the net-zero emissions by 2050. [up to 500 words, please upload supporting strategy documents as needed]

Nepal is among the most vulnerable countries to climate change. It is at high-risk due to the country's fragile topography, the climate-sensitive livelihoods of the people and their limited adaptive capacity. Nepal is committed to acting on climate change in line with the Paris Agreement, despite the country's negligible emissions. It is because efforts to limit global average temperature rise to 1.5°C would result in significantly lower risks for Nepal when compared to 2°C or higher. These risks are in addition to the existing impacts and vulnerabilities of climate change in the country. Nepal envisions achieving socioeconomic prosperity by building a climate-resilient society. To this end, the country has developed its policy and institutional framework. In accordance with Article 4, paragraph 19 of the Paris Agreement, Nepal is formulating a long-term low greenhouse gas emission development strategy by 2021. The strategy aims to achieve net-zero greenhouse gas emission by 2050. The action set out in reduce the household combustion as Household combustion is estimated to produce 25% of global emissions of black carbon, which is the second largest contributor to climate change after carbon dioxide (CO2). World Health Organization (WHO) estimates 8,700 deaths a year from indoor air pollution in Nepal.

SECTION 6: MONITORING AND REPORTING
6.1. Please describe how you intend to track the progress of the proposed outcomes in section 3. Please also describe if you intend to use other existing reporting frameworks to track progress on the proposed outcomes.
The outcomes will be measured through various sources. The sources of data will include the Census, Management Information System and survey at national and sub-national level. The information shall be tracked through the reports of National Planning Commission, Ministry of Energy, Water Resources and Irrigation (MoEWRI), Ministry of Forest and Environment, CBS. Alternative Energy Promotion Centre under MoEWRI is also in the process of developing an Integrated Results Framework to measure the results of interventions in the renewable energy sector.
SECTION 7: GUIDING PRINCIPLES CHECKLIST
Please use the checklist below to validate that the proposed Energy Compact is aligned with the guiding principles.
I. Stepping up ambition and accelerating action - Increase contribution of and accelerate the implementation of the SDG7 targets in support of the 2030 Agenda for Sustainable Development for Paris Agreement
I. 1. Does the Energy Compact strengthen and/or add a target, commitment, policy, action related to SDG7 and its linkages to the other SDGs that results in a higher cumulative impact compared to existing frameworks?
*Yes □No
I.2. Does the Energy Compact increase the geographical and/or sectoral coverage of SDG7 related efforts? *Yes □No
I.3. Does the Energy Compact consider inclusion of key priority issues towards achieving SDG7 by 2030 and the net-zero emission goal of the Paris Agreement by 2050 - as defied by latest global analysis and data including the outcome of the Technical Working Groups? *Yes No
II. Alignment with the 2030 agenda on Sustainable Development Goals — Ensure coherence and alignment with SDG implementation plans and strategies by 2030 as well as national development plans and priorities.
II.1. Has the Energy Compact considered enabling actions of SDG7 to reach the other sustainable development goals by 2030? *Yes \square No
II.2. Does the Energy Compact align with national, sectoral, and/or sub-national sustainable development strategies/plans, including SDG implementation plans/roadmaps? *Yes 🗆 No
II.3. Has the Energy Compact considered a timeframe in line with the Decade of Action? *Yes □No
III. Alignment with Paris Agreement and net-zero by 2050 - Ensure coherence and alignment with the Nationally Determined Contributions, long term net zero emission strategies.
III.1. Has the Energy Compact considered a timeframe in line with the net-zero goal of the Paris Agreement by 2050? st Yes \square No
III.2. Has the Energy Compact considered energy-related targets and information in the updated/enhanced NDCs? *Yes □No
III.3. Has the Energy Compact considered alignment with reaching the net-zero emissions goal set by many countries by 2050? *Yes 🗆 No
IV. Leaving no one behind, strengthening inclusion, inter-linkages, and synergies - Enabling the achievement of SDGs and just transition by reflecting inter-linkages with other SDGs.
IV.1. Does the Energy Compact include socio-economic impacts of measures being considered? *Yes □No
IV.2. Does the Energy Compact identify steps towards an inclusive, just energy transition? *Yes □No
IV.3. Does the Energy Compact consider measures that address the needs of the most vulnerable groups (e.g. those impacted the most by energy transitions, lack of energy access)? *Yes 🗆 No
V. Feasibility and Robustness - Commitments and measures are technically sound, feasible, and verifiable based a set of objectives with specific performance indicators, baselines, targets and data sources as needed.
V.1. Is the information included in the Energy Compact based on updated quality data and sectoral assessments, with clear and transparent methodologies related to the proposed measures? *Yes 🗆 No
V.2. Has the Energy Compact considered inclusion of a set of SMART (specific, measurable, achievable, resource-based and time based) objectives? *Yes 🗆 No
V.3. Has the Energy Compact considered issues related to means of implementation to ensure feasibility of measures proposed (e.g. cost and financing strategy, technical assistant needs and partnerships, policy and regulatory gaps, data and technology)? *Yes \Boxed No

SECTION 8: ENERGY COMPACT GENERAL INFORM	MATION	
8.1. Title/name of the Energy Compact		
SDG7 Energy Compact of Ministry of Energy, Water Resou	rces and Irrigation, Government of Nepal: A next Decade Action Agenda t on Climate Change	to advance SDG7 on sustainable energy for all, in line with the goals of the Paris Agreement
3.2. Lead entity name (for joint Energy Compacts please list all	parties and include, in parenthesis, its entity type, using entity type from	m below)
Ministry of Energy, Water Resources and Irrigation, Alter	native Energy Promotion Centre	
3.3. Lead entity type		
* Government	☐ Local/Regional Government	☐ Multilateral body /Intergovernmental Organization
☐ Non-Governmental Organization (NGO)	☐ Civil Society organization/Youth	☐ Academic Institution /Scientific Community
☐ Private Sector	☐ Philanthropic Organization	☐ Other relevant actor
8.4. Contact Information		
Dr. Madhusudhan Adhikari Executive Director madhusudhan.adhikari@aepc.gov.np Alternate Contact person Mr. Nawa Raj Dhakal Deputy Executive Director nawa.dhakal@aepc.gov.np		
8.5. Please select the geographical coverage of the Energy Com	pact	
☐ Africa *Asia and Pacific ☐ Europe ☐ Latin America and Cari	bbean □North America □West Asia □Global	
3.6. Please select the Energy Compact thematic focus area(s)		
* Energy Access * Energy Transition * Enabling SDGs through	inclusive just Energy Transitions Innovation, Technology and Data	* Finance and Investment.
SECTION 9: ADDITIONAL INFORMATION (IF REQU	IIRED)	

Please provide additional website link(s) on your Energy Compact, which may contain relevant key documents, photos, short video clips etc.