

**Economic and Social Commission for Asia and the Pacific**

Committee on Energy

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Follow-up on the Ministerial Declaration on Regional Cooperation for Energy Transition towards Sustainable and Resilient Societies in Asia and the Pacific of the Second Asian and Pacific Energy Forum: status of national road maps for the implementation of Sustainable Development Goal 7**National road maps for the implementation of Sustainable Development Goal 7****Note by the secretariat***Summary*

In response to a recommendation made by the Committee on Energy at its second session, the secretariat of the Economic and Social Commission for Asia and the Pacific has continued to develop and deploy the national expert Sustainable Development Goal tool for energy planning (NEXSTEP). The tool enables the creation of national road maps on Sustainable Development Goal 7 intended to support policymakers in developing integrated policies and strategies to achieve the Goal 7 targets and the emissions reduction targets set by member States in their nationally determined contributions.

The present document contains a summary of the work of the secretariat with regard to the development and deployment of the tool and its application to support the creation of national Goal 7 road maps since the second session of the Committee.

The Committee may wish to review the progress made, provide the secretariat with guidance on how the work of the subprogramme can be further improved and encourage interested member States to request support from the secretariat to develop their national road maps.

I. Introduction

1. The Second Asian and Pacific Energy Forum adopted the Ministerial Declaration on Regional Cooperation for Energy Transition towards Sustainable and Resilient Societies in Asia and the Pacific, which the Economic and Social Commission for Asia and the Pacific (ESCAP) endorsed in resolution 74/9. In the Declaration, the Forum requested the Executive Secretary of ESCAP to support member States in developing national road maps for the achievement of Sustainable Development Goal 7. The Forum also recommended that a tool be developed to enable policymakers to make informed policy decisions to support

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the achievement of the Goal 7 targets and the emissions reduction targets set by member States in their nationally determined contributions.

2. In response, the secretariat developed the national expert Sustainable Development Goal tool for energy planning (NEXSTEP) using a peer-reviewed methodology and engaged with policymakers to pilot the tool's implementation commencing in 2019. The tool was designed with the following aims:

(a) To support policymakers in estimating the national energy demand in the period leading up to 2030 by taking into consideration a range of issues including Goal 7 targets, national development objectives and interlinkages between Goal 7 and other Sustainable Development Goals;

(b) To estimate the costs and capital investment required to achieve the targets;

(c) To develop scenario-based 2030 projections for both energy and greenhouse gas emissions and examine the synergies between sustainable energy and emissions reduction;

(d) To help to identify appropriate policy measures to enable the achievement of the Goal 7 targets but also to respond to the emissions reduction targets set by member States in their nationally determined contributions in accordance with the Paris Agreement.

3. The initial results of the tool's development and implementation were presented in document ESCAP/CE/2019/2, which was submitted to the Committee on Energy at its second session. The document contained details of the technical, economic and policy analyses that were completed using the tool to produce road maps with targeted policy recommendations to enable the achievement of the Goal 7 and emissions reduction targets. The Committee recommended that the secretariat continue to support member States, particularly least developed countries, landlocked least developed countries, and Pacific island countries and territories in developing their national road maps using the tool.

II. Background

A. The national expert Sustainable Development Goal tool for energy planning and underlying methodology

4. The methodology for the national expert Sustainable Development Goal tool for energy planning (NEXSTEP) combines technical, economic and policy analysis to design a package of policies that will enable the achievement of the Goal 7 and emissions reduction targets. The key steps comprise the following (see ESCAP/CE/2019/2):

(a) Energy and emissions modelling are used to estimate the optimal share of energy sources under a range of scenarios, and to identify the technological interventions needed to achieve those shares;

(b) Economic analysis is used to identify and assess the economically feasible options/interventions;

(c) Multiple-criteria decision analysis is used to evaluate policy options and identify those that are feasible for implementation in the national context.

5. Emissions modelling is carried out using the Low Emissions Analysis Platform, a widely used tool for energy sector modelling and for creating energy and emissions scenarios. Many Governments, including the Governments of a

number of member States, have used the Platform to develop scenarios as a basis for their current nationally determined contributions. A range of interventions are assessed to identify energy efficiency opportunities. They are assessed on the basis of their cost, impact on emissions reduction and contribution to energy productivity.

6. The national expert Sustainable Development Goal tool for energy planning (NEXSTEP) can be used to develop a diverse set of scenarios, each projecting the impact of a unique package of policy options. The resulting insights are used to provide a set of policy recommendations and an understanding of the associated costs, benefits and sensitivities. The main scenarios, namely the business-as-usual, current policy, and Sustainable Development Goal scenarios, are outlined below.

7. **Business-as-usual scenario.** This scenario is projected on the basis of historical demand trends, gross domestic product and population growth. Emissions limits and renewable energy targets are not taken into account. For each sector, the final energy demand is met by the current fuel mix of its energy supply, and the trend is extrapolated to 2030. This scenario indicates what will result if no enabling policies are implemented or if the intended outcomes of existing policies are not achieved.

8. **Current policy scenario.** In this scenario, which is a modified version of the business-as-usual scenario, all policies, plans and targets presently in place are taken into account, including the unconditional nationally determined contributions and any other national policy targets for energy.

9. **Sustainable Development Goal scenario.** This scenario reflects the pathway to achieving the Goal 7 targets, including universal access, substantially increasing the share of renewable energy and doubling the rate of improvement in energy efficiency. Under the scenario, least-cost optimization is used to quantify the cost of providing electricity access to the proportion of the population currently without access; a range of clean cooking technologies are assessed (for example, electric cookstoves, liquefied petroleum gas cookstoves and improved cookstoves); energy efficiency is modelled in alignment with the target on doubling the rate of improvement; and the optimum share of renewable energy is estimated with the emissions reduction target set in the nationally determined contributions used as a constraint.

10. **Ambitious Sustainable Development Goal scenario.** This scenario is similar to the Sustainable Development Goal scenario in that it reflects what is needed to achieve the Goal 7 targets, but with the added aim of increasing the socioeconomic and environmental benefits that would accrue to the country if the Government were to raise its ambition beyond just achieving the Goal 7 targets. These benefits could include, for example, the added cost-effectiveness of improving energy efficiency beyond the Goal 7 targets, or the further reduction of greenhouse gas emissions beyond the national determined contribution targets by decarbonizing the power sector.

11. Users interface with the tool through an online portal (<https://nexstepenergy.org>), which allows users to define additional scenarios, set optimization criteria and review the results of modelling.

B. Coronavirus disease

12. The devastating coronavirus disease (COVID-19) pandemic poses a new set of challenges and opportunities with regard to the achievement of Goal 7. Data on the impacts of the pandemic, such as reduced energy demand and gains

in energy efficiency, and on the relevant policy responses, such as announced stimulus measures directed towards energy, have been incorporated into the tool's analysis. In the context of the socioeconomic responses launched by Governments to restart their economies and build back better, there is an opportunity to pursue targeted policies and investment to drive energy efficiency and renewable energy development, lower the costs of energy, create jobs and provide access to modern energy to pull people out of poverty. However, sustainable development objectives will now be in competition for more limited financial resources as political and economic attention is drawn towards more immediate crises. Understanding how to synergize sustainable development efforts and the socioeconomic recovery from the pandemic is critical.

13. The national Goal 7 road maps provide an opportunity to highlight the potential economic and social contribution that investments in the energy transition could make to the COVID-19 recovery, and to focus those investments on the areas of greatest need, taking into account additional objectives including job creation, economic stimulus and rural development. The road map generated with the help of the tool takes the form of a report, one chapter of which is dedicated to an evaluation of potential energy policy measures to assist the COVID-19 economic recovery. Insights gleaned from the road map will help policymakers to better understand the effect of energy policy interventions on the broader economy and will support member States that are using the tool to build back better in the response to COVID-19.

C. Results presentation

14. The road map contains an outline of key parameters, results of the analysis and recommendations. For each scenario, results are presented in a series of charts or tables showing the following: energy and emissions savings broken down by sector and technology (compared with the business-as-usual baseline); renewable energy contribution broken down by energy source; marginal abatement cost curves for emissions mitigation actions; and investment needs and gaps that will remain after the defined fiscal interventions are carried out. The structure of the road map is presented in the annex.

III. Progress update

A. National-level road map development

15. At the time of writing, a total of 10 member States have requested the secretariat to implement the tool to produce national Goal 7 road maps, namely Bangladesh, Fiji, Georgia, Indonesia, the Lao People's Democratic Republic, Myanmar, Nepal, Tajikistan, Tonga and Viet Nam.

16. Final national road maps will be formally submitted to the Government of Indonesia in December 2020 and the Government of Georgia in January 2021. The national road map of Bangladesh is expected to be drafted later in 2021. The remaining seven draft national road maps are planned for submission to the relevant Governments before the end of 2021. Initial feedback from policymakers reviewing the draft road maps has been favourable.

17. The tool is now fully functional and available for implementation in other countries. It is subject to an ongoing process of development and improvement in response to user and stakeholder feedback. Some potential future improvements are detailed in section IV.

B. Subnational-level application

18. In 2019, the population of Asia and the Pacific became majority urban for the first time. In light of the more than 2.3 billion people that were living in the region's cities in 2019 and an estimated additional 1.2 billion expected by 2050, there is an increasing need for sustainable energy solutions to be deployed in cities in each of the three dimensions of sustainable development, in particular with regard to Goal 7.

19. City authorities face financial, capacity and technical constraints as they strive to achieve the Goals, including Goal 7, at the local level. For example, cities across the Asia-Pacific region rely on national government funding for urban development and infrastructure projects.

20. Therefore, there is a crucial need to support the localization of the Goals and targets in Asia and the Pacific to ensure that their importance is well understood, accepted and taken into account in the design of policies and projects at all levels of governance and that plans and efforts are well communicated and coordinated among the levels.

21. The secretariat and the United Nations Environment Programme (UNEP) are implementing a collaborative project to accelerate progress on Goal 7 localization by more actively engaging city and subnational governments, with a focus on South-East Asia, supporting them in developing local sustainable energy policies and projects, and establishing more effective dialogue among national, subnational and local levels of governance, expert communities, donors and the private sector.

22. The main objective of the localization project is to increase, through its three main components, the capacity of city governments in South-East Asia to accelerate actions to achieve Goal 7. The three components of the project are localization snapshots, in-depth analyses for local road map development, and capacity-building activities.

1. Localization snapshots

23. The secretariat engaged with authorities from 19 cities in five South-East Asian countries to assess their current situation on Goal 7, advise on applicable urban sustainable energy solutions and provide guidance on devising enabling policy, creating institutional environments and potentially accessing finance for project implementation. For this purpose, the secretariat developed an analytical framework, based on seven qualitative Goal 7 localization indicators, and an underlying questionnaire to collect data from various cities and provinces in South-East Asia. On the basis of the answers received for each city or province, the analytical framework is used to calculate a score for each of the seven Goal 7 localization indicators and several subindicators and to provide a list of recommendations for further actions and improvements.

24. This work requires the engagement of various stakeholders, both to collect the data but also to develop the recommendations, which allows them to be tailored to the local context and facilitates dialogue among various city and subnational authorities, national Governments and potential financiers. The results of the data analysis are summarized and presented in a concise policy-oriented fact sheet, entitled "Sustainable Development Goal 7 localization snapshot", which is shared with the authorities of each city. All 19 Goal 7 localization snapshots are expected to be finalized by the end of 2020. In 2021, based on the lessons learned and the data collected from these 19 cities, the secretariat will publish a synthesis report on Goal 7 localization in South-East

Asia, in collaboration with UNEP and United Cities and Local Governments Asia-Pacific. By March 2021, the secretariat will develop an interactive online tool to perform data analysis and generate Goal 7 localization snapshots for any city in a fully automated manner.

2. In-depth analyses for local road map development

25. The secretariat is working with local and subnational governments on carrying out in-depth analyses of technological and policy opportunities to apply the national expert Sustainable Development Goal tool for energy planning (NEXSTEP), develop scenarios and prepare road maps to contribute to the achievement of Goal 7. Currently, there are three in-depth analyses under way at the subnational and city level, in Jakarta; Iskandar, Malaysia; and Cauayan, Philippines. The secretariat established close collaboration with the local governments, recruited focal points and co-organized the inception workshops they facilitated, and is in the process of collecting data. All three road maps are expected to be finalized by March 2021.

3. Capacity-building activities

26. An important part of the road map development and Goal 7 localization efforts is the capacity-building process, in which local governmental officials and other stakeholders can deepen their knowledge on Goal 7 solutions. Owing to the current travel restrictions arising from the COVID-19 pandemic, in-person capacity-development activities are not possible. Therefore, the secretariat is developing an e-learning programme to offer important information on the Goal 7 localization process and a selection of case studies on integrated urban sustainable energy solutions and to provide users with ongoing support throughout the road map development process. The e-learning platform is expected to be launched in the second quarter of 2021.

IV. Lessons learned and future plans

A. Outcomes of road map development

27. The recommendations included in the national Goal 7 road maps that have been produced to date offer several insights. For example, it is clear that achieving the Goal 7 targets will require Governments to increase their ambitions with regard to the use of renewable energy. In some cases, further investment will be required to deliver universal access to electricity and clean cooking. The road maps can help to quantify any remaining investment gaps and offer technical solutions to deliver universal access to clean cooking technologies. Significant energy efficiency opportunities are available at low or in many cases negative cost, for example the adoption of mandatory energy performance standards for lighting and appliances. There are substantial prospects for accelerating the uptake of electric vehicles and the potential co-benefits of power grid flexibility that can accompany electric transport. In many cases, investment gaps can be filled largely through fiscal measures such as the withdrawal and redirection of fossil fuel subsidies, carbon pricing or the issuance of green bonds.

28. At the subnational level, the draft Goal 7 road maps for cities include recommendations to align national and subnational commitments and plans; to work towards enabling policy frameworks, particularly for the building and transport sectors; to establish appropriate data collection systems for the energy sector and management systems with performance targets for energy end users; and to provide additional financial incentives, particularly where national support is not currently available.

B. Plan for deployment: ongoing activities and call for requests

29. The secretariat continues to work with the 10 member States that have already requested its support on the implementation of the tool and is engaging with other member States to determine their needs. The secretariat plans to support more member States in the development of road maps in 2021. Longer-term plans include working with the Economic Commission for Europe to support road map development for countries in Central Asia, and potentially making the tool available to other regional commissions to apply the tool globally.

30. The secretariat will also continue to work with authorities in cities and other subnational jurisdictions to support the application of the tool, and to provide guidance to local governments from across the Asia-Pacific region on their contributions towards the achievement of Goal 7.

31. Member States are encouraged to request support from the secretariat on the development of national road maps. Requests may be addressed to the Director of the Energy Division of ESCAP.

C. Plan for future enhancements to the tool

32. Planning for the energy transition in the context of the 2030 Agenda for Sustainable Development, the Paris Agreement and the COVID-19 pandemic will require an integrated system-planning approach that reflects the links between the Goal 7 targets and the emissions reduction targets as well as an understanding of the social and economic opportunities involved. Identifying and prioritizing appropriate technologies and strengthening the capacity of policymakers to create an enabling policy environment will be key to achieving Goal 7.

33. The tool has been specifically designed to enhance the capacity of policymakers to make informed decisions that will help to achieve the targets and commitments. Its use will provide a coordinated approach to aligning Goal 7 road maps with existing national energy plans while enabling the delivery of commitments under the Paris Agreement and supporting Governments in building back better in the recovery from COVID-19.

1. Clean cooking policy toolkit

34. In 2020, the secretariat published a meta study on clean cooking research which showed that many clean cooking programmes are ineffective in the long term, as households tend to return to traditional biomass cooking for a range of reasons. Programme designers are in many cases ill-equipped to develop and deliver effective clean cooking projects, and many national policymakers may be unaware of the full range of benefits that access to clean cooking has on socioeconomic well-being. As a result, they are not motivated to prioritize the development of policy on clean cooking, which constitutes a missed opportunity. The lack of clean cooking access has considerable implications for health and economic development.

35. Effective technology solutions for clean cooking are currently available, including improved cookstoves, liquefied petroleum gas and, potentially, some electric cooking technologies. However, deployment costs vary greatly according to the context. For example, costs are highly dependent on the availability of local distribution infrastructure. These considerations are not well understood by policymakers and programme designers.

36. The secretariat is investigating options to partner with leading international organizations working on clean cooking to translate research findings and best practices into a policy toolkit on access to clean cooking to examine the most important elements of context and culture that influence cooking decisions in order to make evidence-based recommendations about the types of fuels, technologies, and programmes that are likely to be successful. The toolkit could be implemented as an add-on component of the national expert Sustainable Development Goal tool for energy planning (NEXSTEP), and the clean cooking recommendations developed using the toolkit could then be incorporated into the national road maps.

2. Subnational tool development

37. The Goal 7 localization work and local Goal 7 road map development in 2020 was focused on countries and cities in South-East Asia. The analytical framework underlying the snapshot assessments may be applied to any city in the region or even in other regions, for example in collaboration with UNEP, the regional commissions and other partners. The development of the online tool to generate Goal 7 localization snapshots will help to streamline the engagement of the local governments and relevant stakeholders with regard to Goal 7 and provide high-level recommendations tailored to the local context in order to identify areas for further actions and improvements. The development of local Goal 7 road maps will help to identify cost-effective policy and technological options. On that basis, investment-ready projects can be developed with the help of partners, for example in collaboration with the UNEP-led urban systems integration programme, and matched to financiers and potential donors to ensure Goal 7 achievement.

3. E-learning

38. The deployment of the national expert Sustainable Development Goal tool for energy planning (NEXSTEP) is currently limited to member States that actively seek support from the secretariat to develop a road map. There is scope for the tool to be further developed and made available to policymakers in all countries for the creation of road maps and development of insights to align Goal 7 achievement with policy responses to COVID-19. The secretariat has begun developing an e-learning curriculum to guide prospective users on the tool's required data inputs, its processes and the interpretation of the results it generates.

39. Another part of the e-learning programme will be focused on Goal 7 localization. It will be available to subnational or local governmental officials who want to deepen their knowledge on a number of important topics including the following: the 2030 Agenda and Goal 7 localization; enabling policy environment and institutions for Goal 7 localization; energy data monitoring; Goal 7 and stakeholder engagement; budgeting and financing; awareness and capacity-building; strategies for Goal 7 localization for cities and local governments; and links between Goal 7 and the other Goals.

4. Private sector engagement

40. Recognizing the significant role of the private sector in the energy transition, the secretariat plans to support policymakers in identifying mechanisms that attract private industry to assist in the financing and implementation of the priorities identified in the road maps. Analytical studies will be conducted in participating countries to identify nationally relevant mechanisms, and national workshops can serve to review the studies and facilitate government-business dialogue to further engagement. The secretariat

is also planning a programme of work to further engage the private sector through seed accelerators, investment pitches or other formats as deemed appropriate according to the recommendations contained in the analytical studies.

5. Coronavirus disease

41. Future versions of the tool will enable the road map development process to better account for the socioeconomic impacts of COVID-19 and integrate lessons learned from a project being led by the United Nations Conference on Trade and Development, entitled “Response and recovery: mobilising financial resources for development in the time of COVID-19”.¹ The refined tool will integrate additional objectives such as job creation; economic stimulus and rural development; improving insights into the effect of energy policy interventions on the broader economy; and supporting users of the tool to build back better in the response to COVID-19. It will also include training and e-learning components that will enable policymakers in all countries to create road maps and develop insights that align Goal 7 achievement with COVID-19 policy responses.

V. Issues for consideration by the Committee

42. The Committee may wish to review the progress made, provide the secretariat with guidance on how the work of the subprogramme can be further improved, and encourage interested member States to request support from the secretariat to develop their national road maps.

¹ Additional information on the project is available at <https://unctad.org/project/response-and-recovery-mobilising-financial-resources-development-time-covid-19>.

Annex

Structure of the national road maps on Sustainable Development Goal 7 generated by the national expert Sustainable Development Goal tool for energy planning

The national expert Sustainable Development Goal tool for energy planning (NEXSTEP) is used to generate national road maps on Sustainable Development Goal 7, which take the form of a report. The structure of the report is outlined below:

- Executive summary
 - Chapter 1: Introduction – background on the tool, Goal 7 targets and indicators and nationally determined contributions
 - Chapter 2: NEXSTEP methodology – key methodological steps and scenario definitions
 - Chapter 3: National energy sector – overview and energy demand outlook under business-as-usual and current policy scenarios
 - Chapter 4: Sustainable Development Goal scenario – scenario description and policy actions required to achieve the Goal 7 and nationally determined contribution targets
 - Chapter 5: Energy transition pathways with increased ambitions – enhanced scenarios and possible cost-effective measures in raising national ambitions beyond the Goal 7 targets
 - Chapter 6: Rebuilding better in the recovery from the coronavirus disease (COVID-19) – key areas for strengthening policy measures to recover from COVID-19 while maintaining momentum on the 2030 Agenda for Sustainable Development and the Paris Agreement
 - Chapter 7: Revisiting existing policies – evaluation of current national policies and revisions required to achieve the Goal 7 and nationally determined contribution targets
 - Conclusion
 - References
 - Annexes
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