Inception Workshop

Development of SDG 7 Road Map for Armenia

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Economic and Social Commission for Asia and the Pacific

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NEXSTEP
National Expert SDG Tool for Energy Planning

Outline

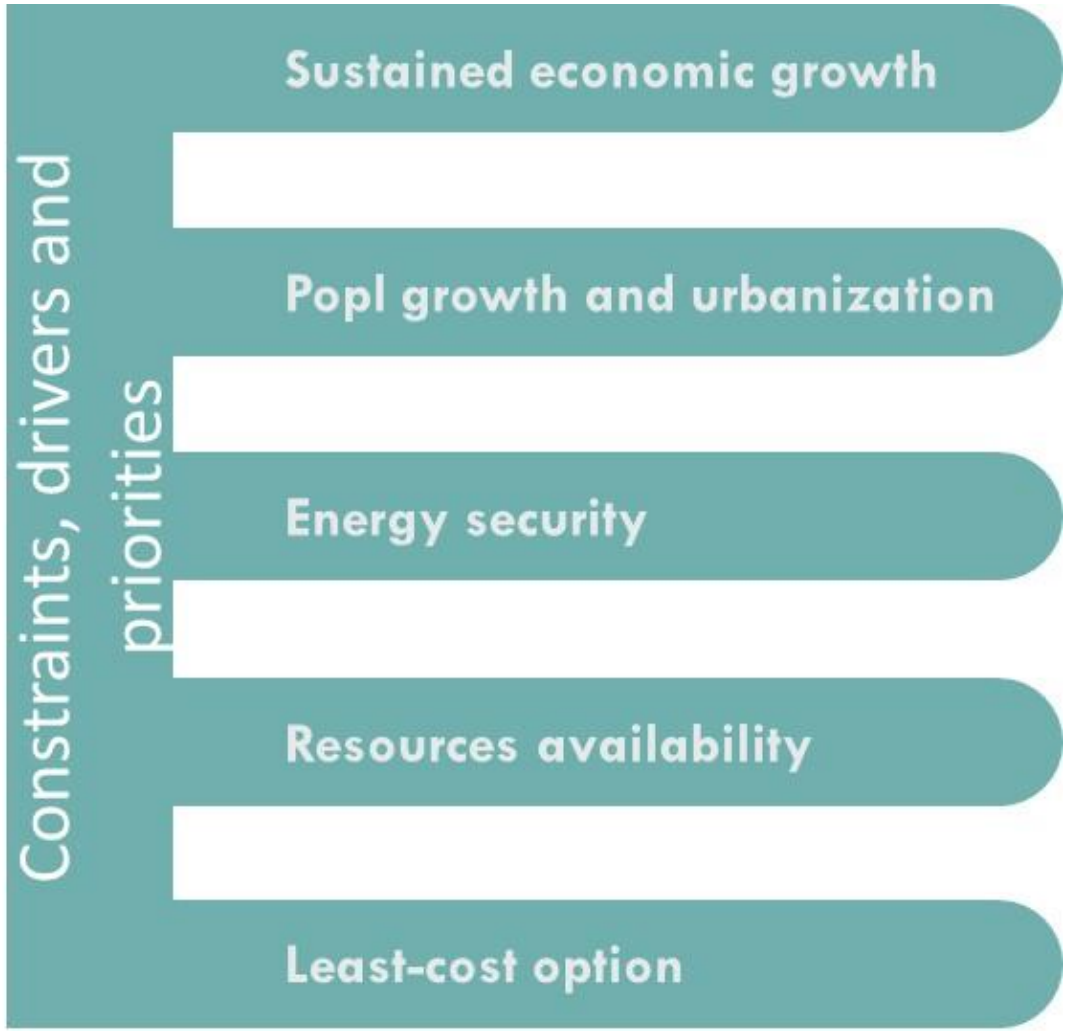
- How to plan for Sustainable Development Goal 7?
- Background of SDG 7 roadmap development
- What is an SDG 7 roadmap and how it helps?
- NEXSTEP methodology
- Anticipated results
- Developing SDG 7 roadmap using NEXSTEP
- Contents of a roadmap

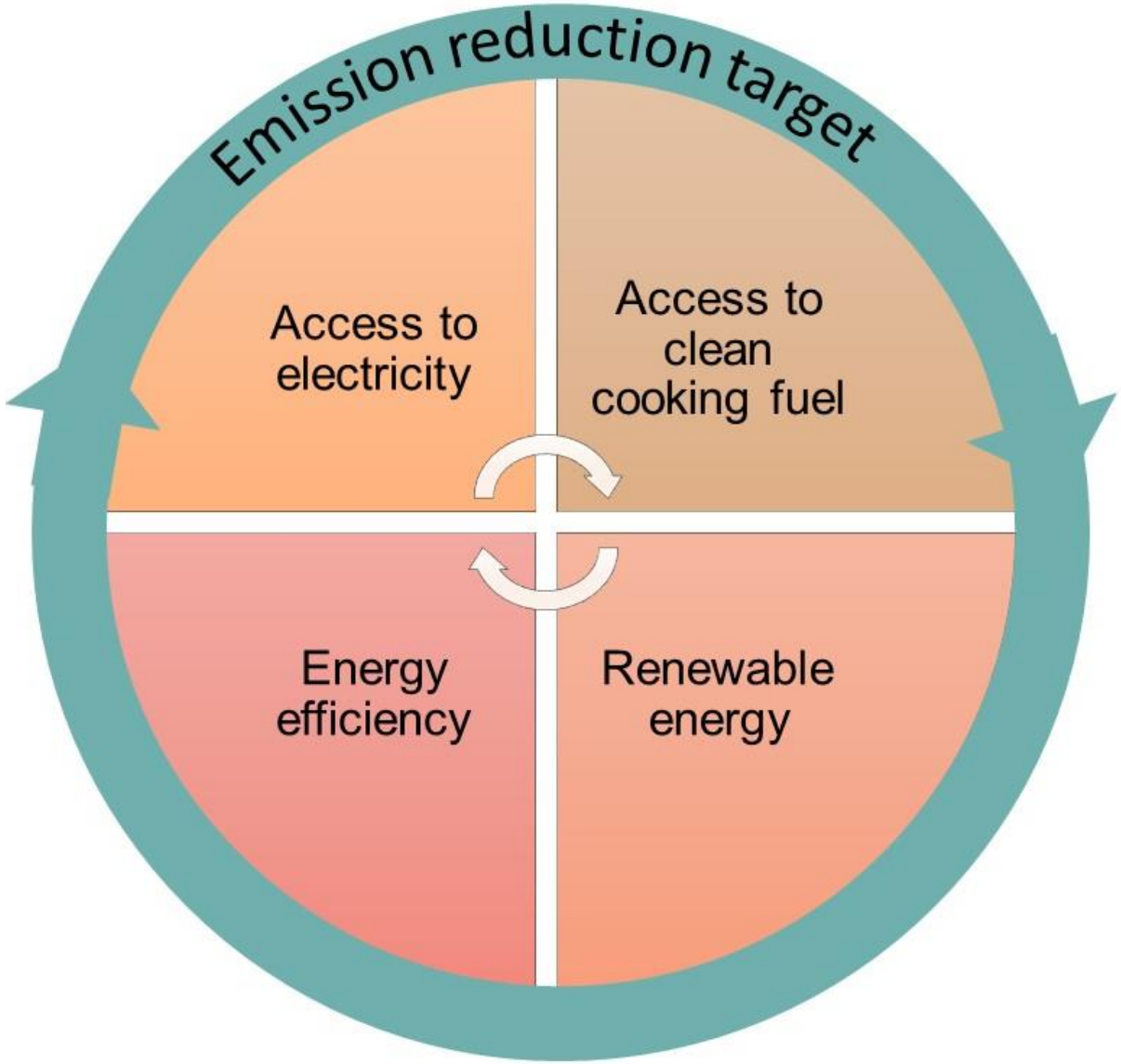
Global framework for SDG 7

GOAL	TARGETS	INDICATORS
	7.1 ensure **universal** access to affordable, reliable and modern energy services	Proportion of population with access to **electricity**
		Proportion of population with primary reliance on **clean fuels** and technology
	7.2 increase **substantially** the share of renewable energy in the global energy mix	Renewable energy share in the total **final energy consumption**
	7.3 **double** the global rate of improvement in energy efficiency	Energy **intensity** measured in terms of **primary energy and GDP**

SDG definition of clean cooking fuel: https://unstats.un.org/sdgs/metadata/files/Metadata-07-01-02.pdf
SDG definition of renewable energy: https://unstats.un.org/sdgs/metadata/files/Metadata-07-02-01.pdf
SDG definition of energy intensity: https://unstats.un.org/sdgs/metadata/files/Metadata-07-03-01.pdf

An integrated approach to 2030 energy transition





National Expert SDG Tool for Energy Planning (NEXSTEP)

NEXSTEP
National Expert SDG Tool for Energy Planning

An integrated tool to assist policymakers make informed policy decisions that would help achieve sustainable energy transition.

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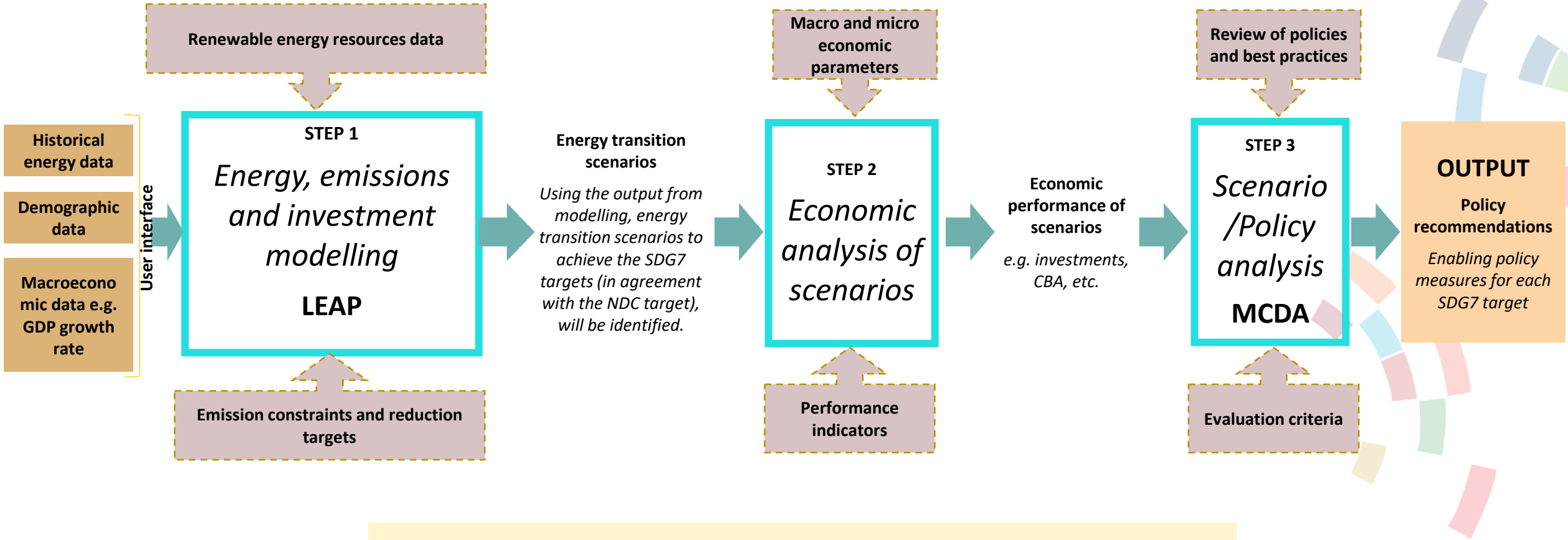
NEXSTEP methodology



The unique feature of this methodology is the backcasting approach for energy and emissions modelling which is important for the case of SDG7 planning.

Methodology – Component 1

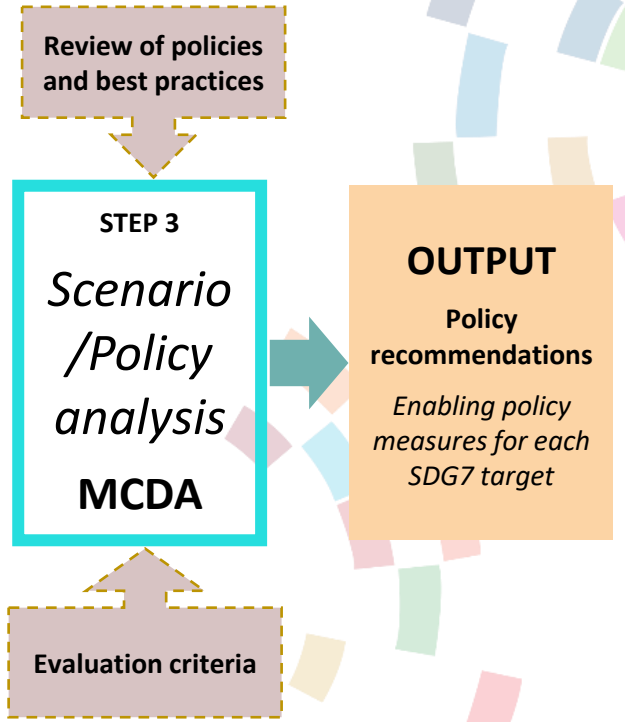
- Modelling of energy and emissions is undertaken using Low Emissions Analysis Platform (LEAP)
- Helps to develop a number of scenarios
  - Using various demographic and macro-economic data and information
- The Least Cost Optimization method is used to calculate the optimal expansion and dispatch of the electric power system

Methodology - Component 2

- Economic analysis involves
  - Estimating the cost of electricity supply plus local generation (if any)
  - Identify the cheapest option of electricity generation, E.g.
    - Fuel switching
    - Contracting – through PPA, RE Auction, etc.
  - Helps make a decision on future power supply options
  - Assess the potential for increasing share or RE in power

Methodology – Component 3

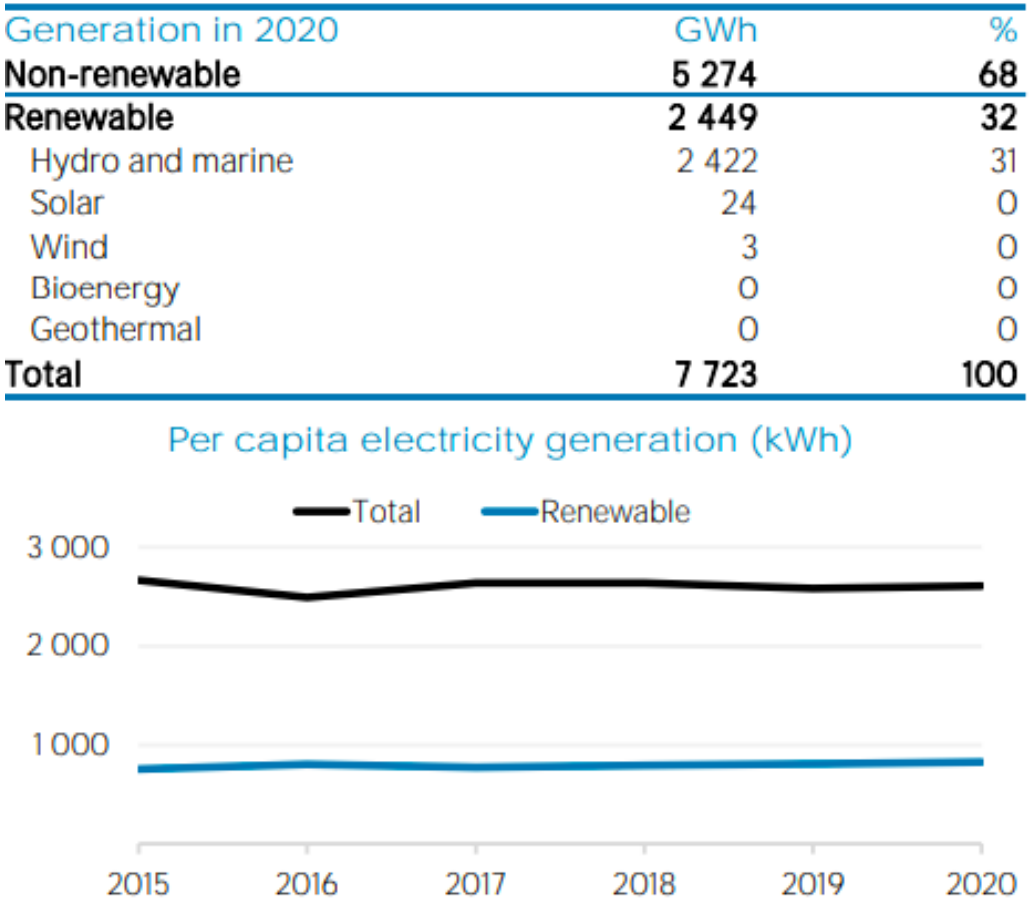
- Multi-Criteria Decision Analysis (MCDA) is a popular tool in the public and private sector to help in making a policy decision
- It enables compare and contrast various policies and scenarios using a set of defined indicators
- Ideally this is done in a stakeholder consultation workshop
  - Assessing criteria should represent a wide range of stakeholders
  - Helps to avoid any bias
  - Weights are chosen in consensus

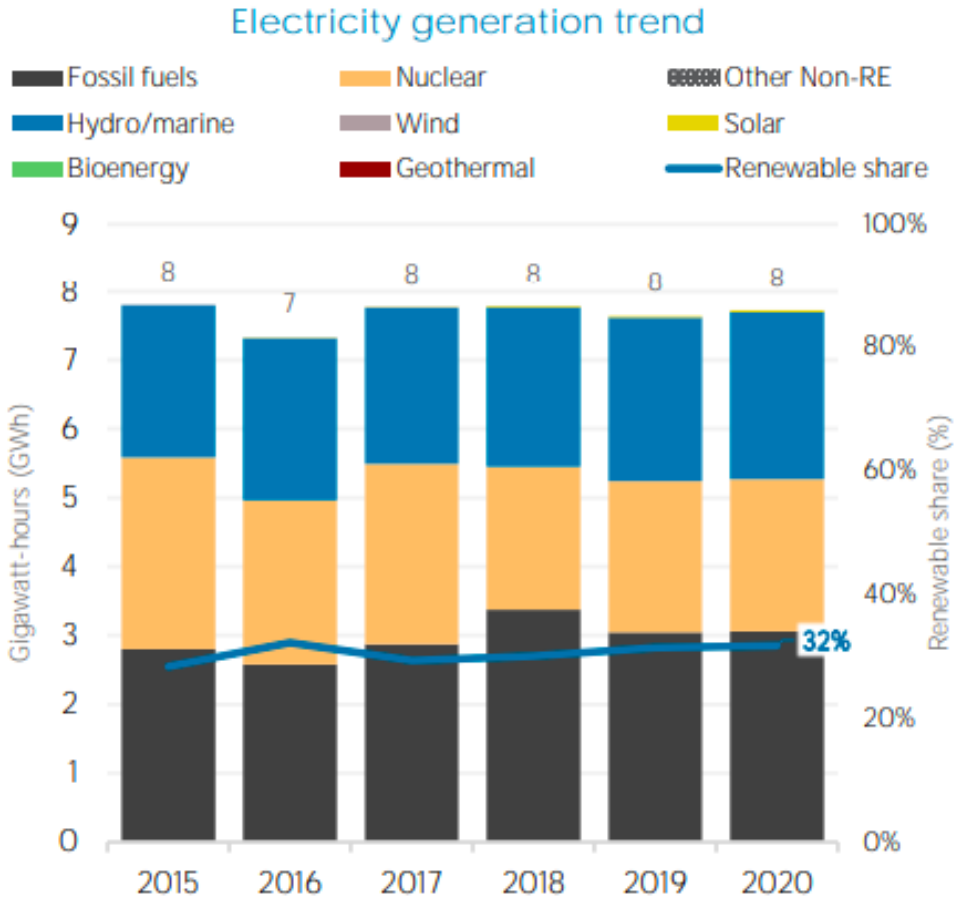


Armenia SDG 7 status. Electricity generation.

ELECTRICITY GENERATION

Generation in 2020	GWh	%
Non-renewable	**5 274**	**68**
Renewable	**2 449**	**32**
Hydro and marine	2 422	31
Solar	24	0
Wind	3	0
Bioenergy	0	0
Geothermal	0	0
Total	**7 723**	**100**





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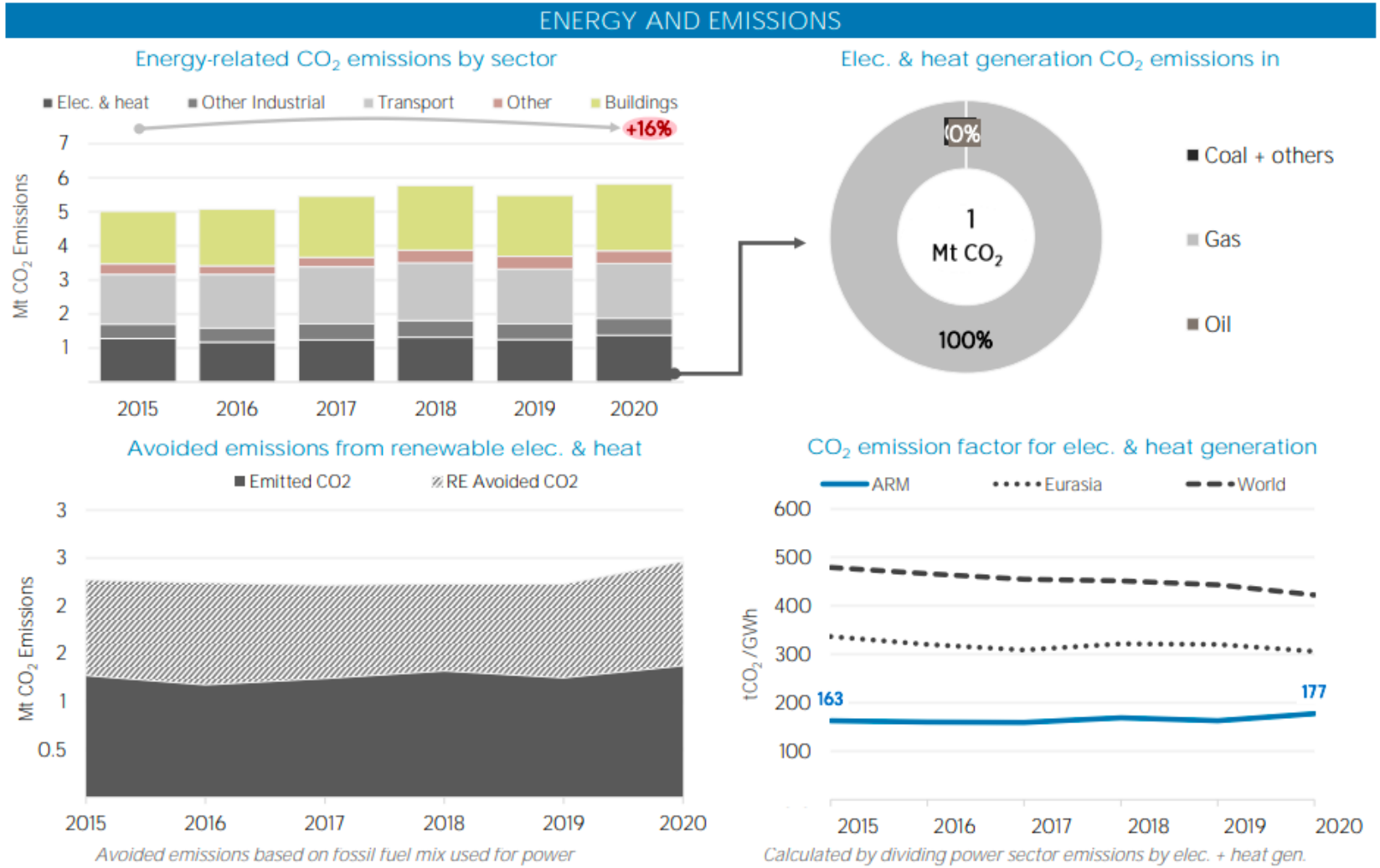
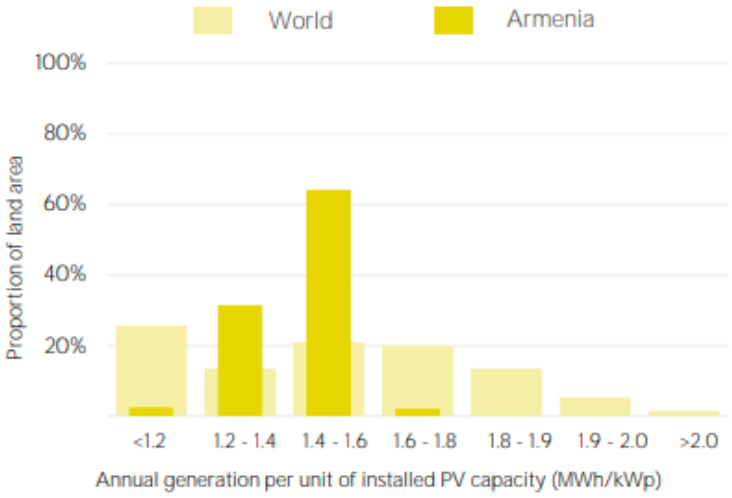
Armenia SDG 7 status. Energy and emissions.



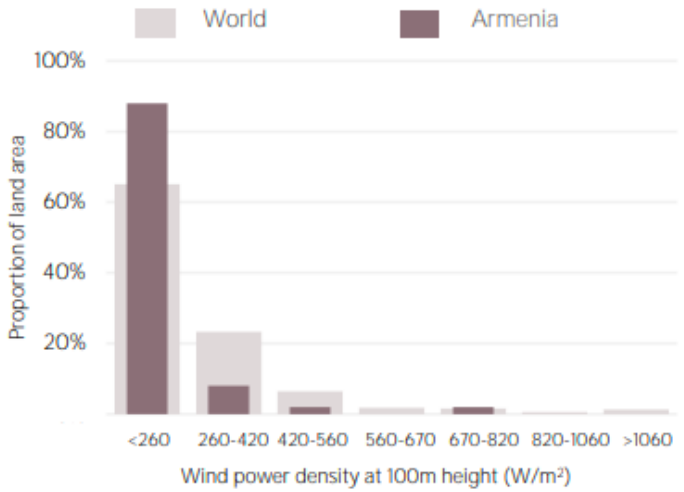
Armenia SDG 7 status. Renewable Energy potential.

RENEWABLE RESOURCE POTENTIAL

Distribution of solar potential



Distribution of wind potential



Biomass potential: net primary production

● = Global average of 3-4 tC/ha/yr

Indicators of renewable resource potential

Solar PV: Solar resource potential has been divided into seven classes, each representing a range of annual PV output per unit of capacity (kWh/kWp/yr). The bar chart shows the proportion of a country's land area in each of these classes and the global distribution of land area across the classes (for comparison).

Onshore wind: Potential wind power density (W/m²) is shown in the seven classes used by NREL, measured at a height of 100m. The bar chart shows the distribution of the country's land area in each of these classes compared to the global distribution of wind resources. Areas in the third class or above are considered to be a good wind resource.

Biomass: Net primary production (NPP) is the amount of carbon fixed by plants and accumulated as biomass each year. It is a basic measure of biomass productivity. The chart shows the average NPP in the country (tC/ha/yr), compared to the global average NPP of 3-4 tonnes of carbon

Expected output

- Energy demand and supply scenarios – BAU, CPS, SDG and ambitious scenarios.
- Technology identification and prioritisation for each scenario,
- Policy options to achieve the targets of SDG7 and NDC,
- Investment estimation and cost-benefit analysis for each scenario;
- Marginal abatement cost curve (MACC),
- Levelised cost of Electricity (LCOE)

NEXSTEP online portal

- Data from LEAP are extracted and uploaded on to the portal
- Can be accessed from anywhere
- Data and graphs can be downloaded
- Policy recommendations can be viewed
- Customised reports can be generated

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NEXSTEP – capacity building

NEXSTEP
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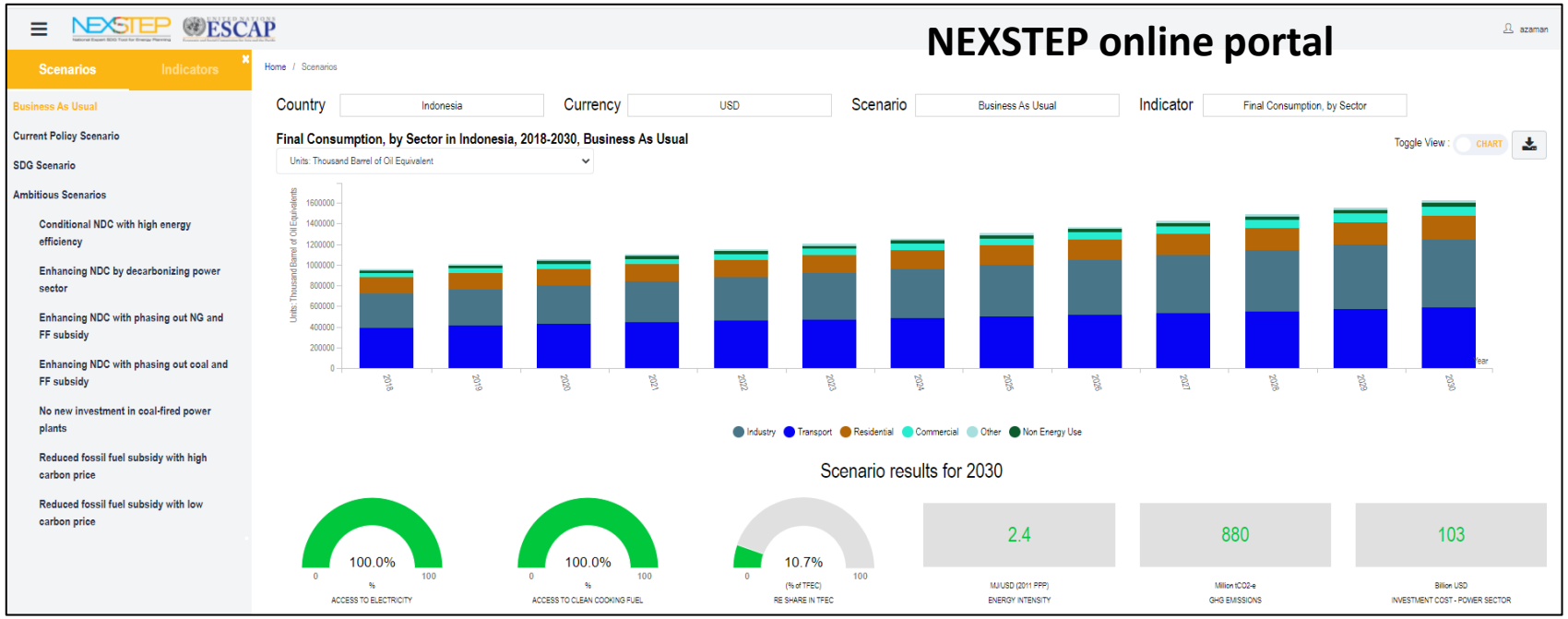
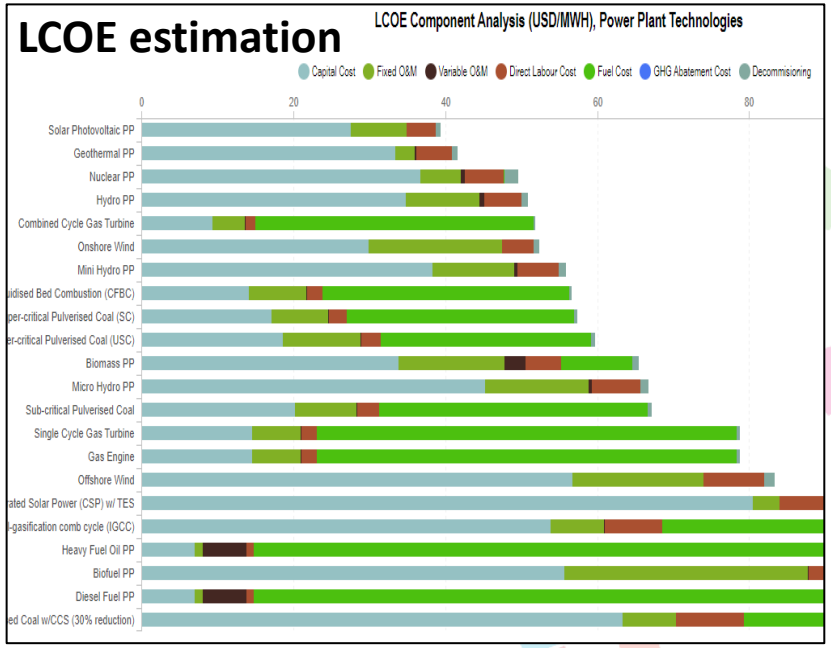
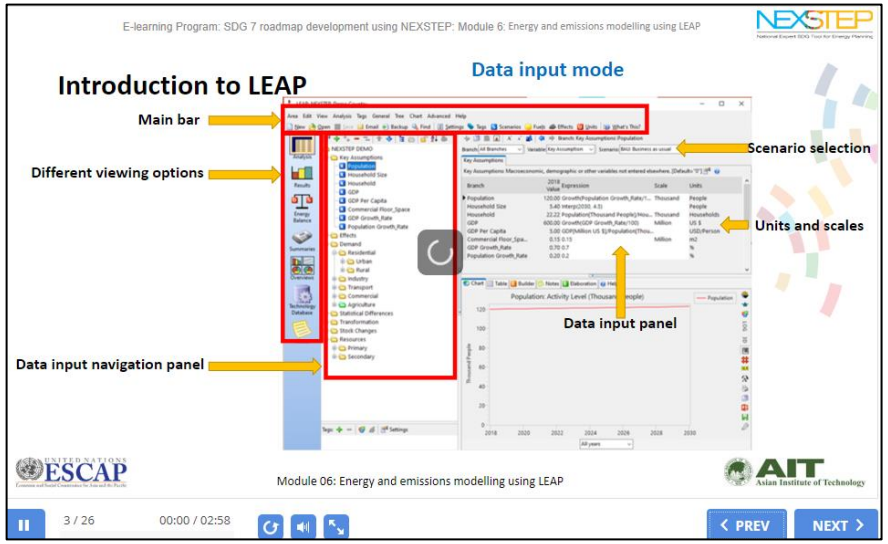
NEXSTEP online portal



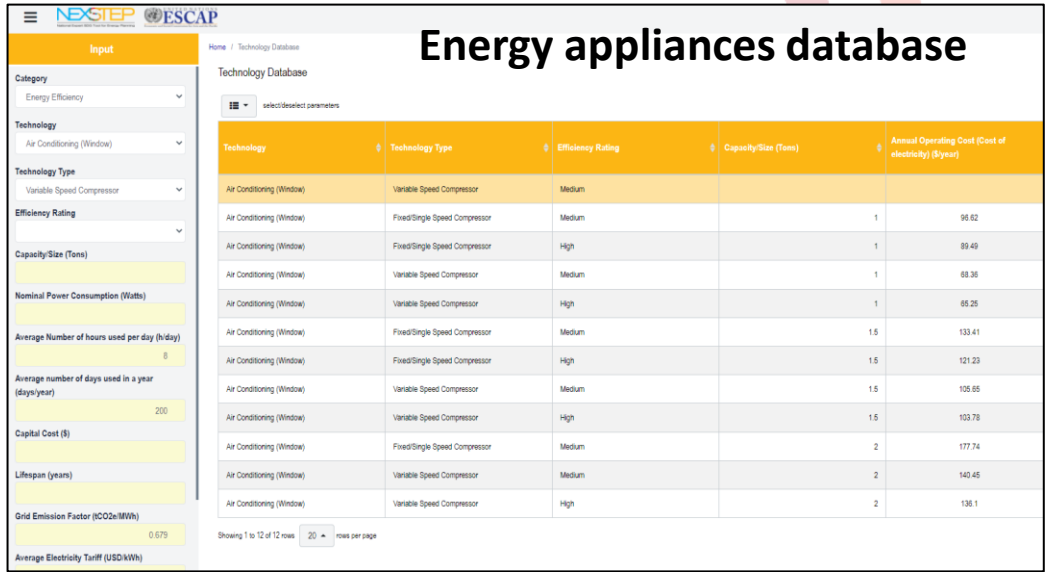
LCOE estimation



Online training module



Energy appliances database



SDG 7 roadmap development process using NEXSTEP

Country engagement

- Receive request from country
- Recruit national consultant
- *First mission* – stakeholder identification

Data collection

- Share data template
- Data collected by consultant and stakeholders

Modelling

- Energy & emissions modelling
- Cost-benefit analysis
- Scenario analysis and ranking
- Policy analysis and recommendations

Capacity building

- ESCAP undertakes *second mission*
- Hands-on training on using NEXSTEP
- Country team develops the draft roadmap
- Stakeholder consultation on the draft roadmap

Roadmap

- Refinement, adjustment (if any)
- Country team finalizes the roadmap

National acceptance

- Country team and consultant prepare a summary
- Summary submitted to government
- Roadmap is officially published and launche

Structure of the roadmap

NEXSTEP
National Expert SDG Tool for Energy Planning

Executive summary

- Summary for policymakers
- Key results and findings
- Important policy directions

Introduction

- Background
- Targets and indicators for the country
- Emission reduction target

NEXSTEP methodology

- Key steps
- Scenario definitions
- Economic analysis

Overview of the energy sector

- Current situation
- Energy profile of the country
- Existing policies & targets
- Energy resources
- Energy balance
- Energy demand outlook

SDG 7 targets by 2030

- Energy demand
- Achieving key goals and targets
- Power generation
- Policy actions

Raising ambition

- Enhancing EE
- Fossil fuel phase out
- Price on carbon
- Green financing
- MACC

COVID-19 recovery

- Importance of sust. energy
- Reducing financial risks
- Savings from the energy sector
- Restructuring fiscal measures

Revisiting existing policies

- Comparing CPs and NEXSTEP analysis
- Identifying gaps
- Recommendations to bridge the gap

Roadmaps developed

SDG 7 roadmap – national level

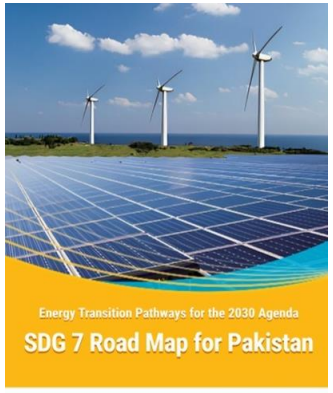
- Bhutan
- Fiji
- Georgia
- Indonesia
- Lao PDR
- Nepal
- Tonga
- Viet Nam
- Kyrgyzstan

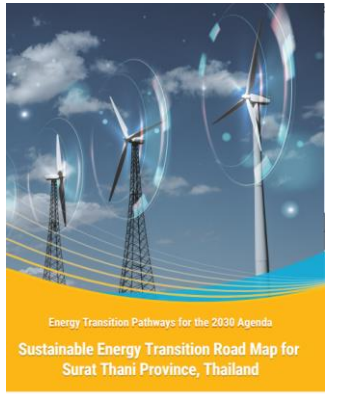
Sustainable energy transition roadmap – sub-national level

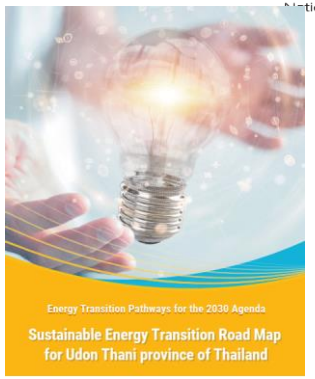
- City of Jakarta, Indonesia
- Iskandar, Malaysia
- City of Cauayan, Philippines
- Provinces of Thailand - Surat Thani, Udon Thani and Chiang Rai

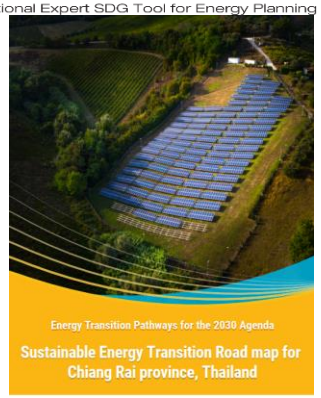
Ongoing

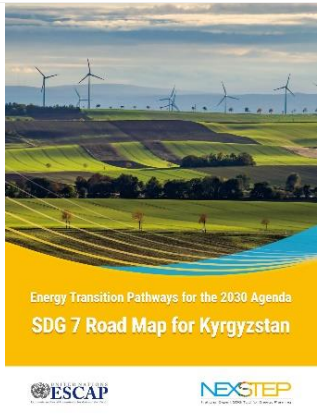
- Armenia
- Kazakhstan
- Uzbekistan
- Kiribati
- Micronesia
- Mongolia
- Cities of the Philippines – Borongan, Ormoc and Quezon

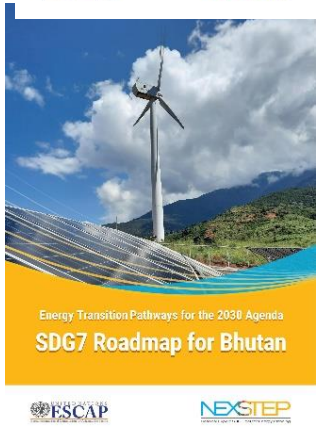


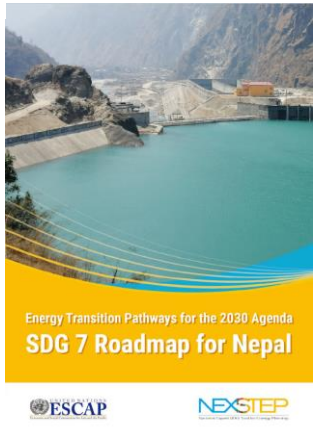


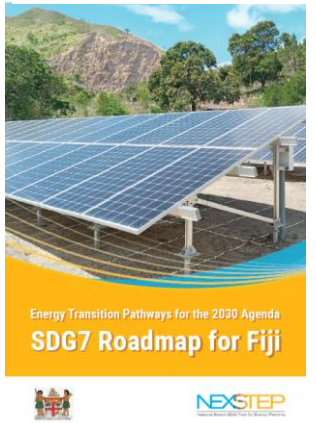


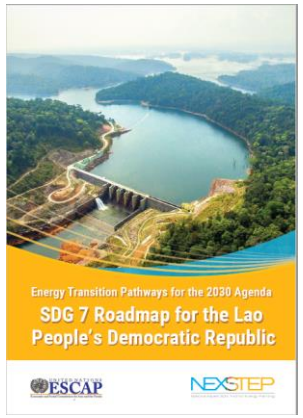


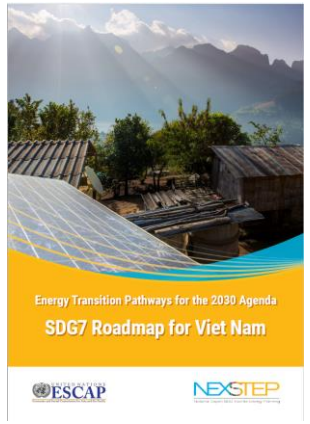


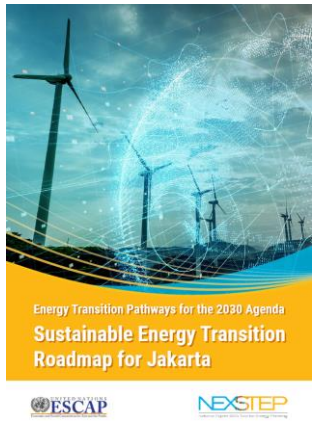


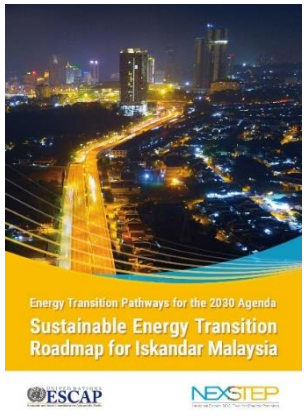


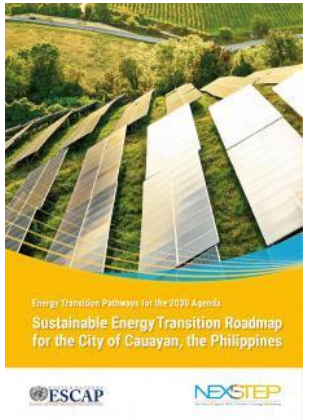


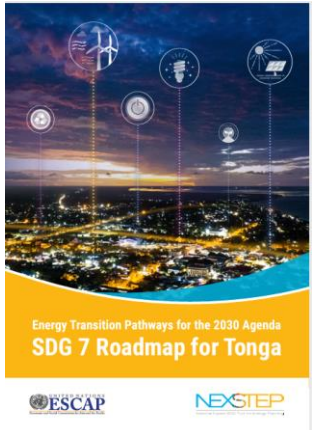












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