



MINISTRY OF ENERGY AND MINERAL RESOURCES
SECRETARY GENERAL OF NATIONAL ENERGY COUNCIL



NATIONAL ENERGY POLICY IN INDONESIA AND IT'S ALIGNMENT TO SUSTAINABLE DEVELOPMENT GOALS 7 (SDG7) AND PARIS AGREEMENT (NDC)

*Workshop of National Expert SDG Tool
for Energy Planning (NEXSTEP) – UNESCAP*

Bangkok, March 19th 2019



PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21-CMP11



SUSTAINABLE
DEVELOPMENT GOALS



www.den.go.id



@dewanenergi



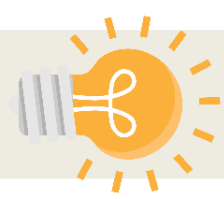
dewanenerginasional



dewanenergi



dewan energi



OUTLINE



- A. Policy & Regulations in Indonesia
- B. Alignment of Indonesia National Energy Planning (RUEN) which support SDG7 and Paris Agreement (NDC)
- C. Challenges in achieving SDG7 and NDC targets by 2030
- D. Exercise of *National Expert SDG Tool For Energy Planning (NEXSTEP)* in Indonesia
- E. Conclusion and Way Forward



OVERVIEW OF NATIONAL ENERGY CONDITION & TARGET



NEP* TARGET	2017	2025	2050
Energy Role	National Capital Development		
NRE on Energy Mix	6.24%	23%	31%
Energy Supply	224 MTOE	> 400 MTOE	> 1.000 MTOE
Power Plant	61 GW	> 115 GW	> 430 GW
Energy Elasticity	1.08	< 1	< 1
Electricity Consumption /Capita	1,012 kWh	2,500 kWh	7,000 kWh
Electrification Ratio	95.38%	~100%	~100%

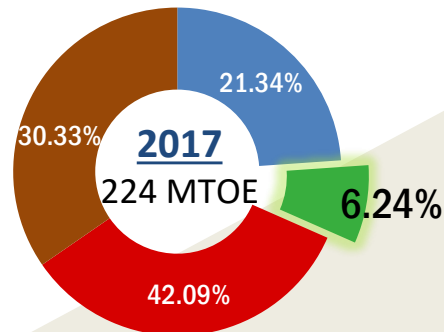
Note

MTOE: Million Ton Oil Equivalent

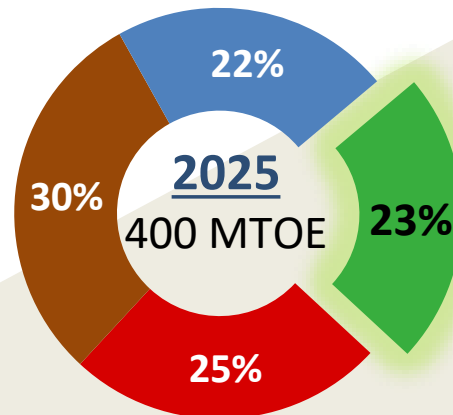
NRE: New-Renewable Energy

*) NEP: National Energy Policy

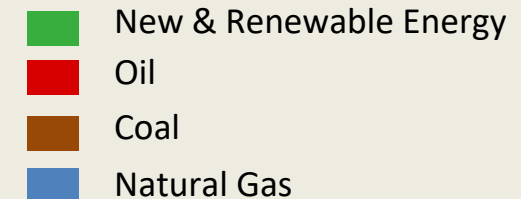
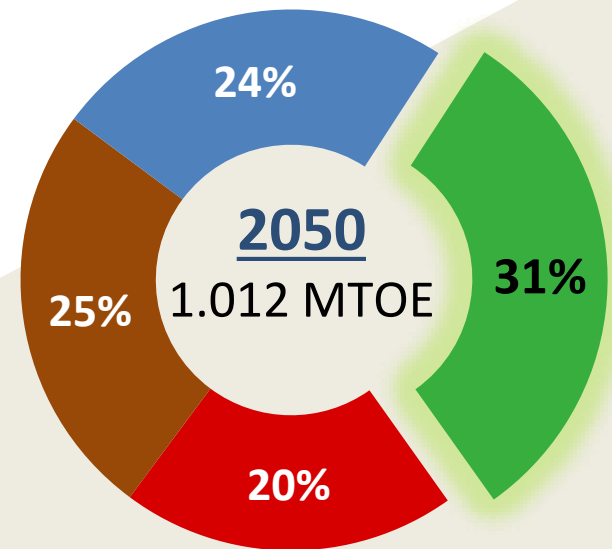
**CURRENT CONDITION
OF TPES* (2017)**



TARGET (2025)



TARGET (2050)



POLICY & REGULATIONS OF SDG & NDC IN ENERGY SECTOR



SDG7



PARIS2015
ON CLIMATE CHANGE CONFERENCE
COP21•CMP11

NDC



RUEN

PRESIDEN
REPUBLIK INDONESIA

Policy /
Regulations

President Regulation No. 59
year 2017 on
Implementation of the
Achievement of SDGs

Law No. 16 year 2016 on
Ratification on Paris
Agreement to the UNFCC

President Regulation No. 22
year 2017 on National Energy
Planning (RUEN)

Reference

Sustainable Development
Goals (SDG)

Nationally Determined
Contribution (NDC)

National Energy Policy (NEP)

National
Coordinator

Ministry of National
Development Planning

Ministry of Environment and
Forestry

National Energy Council

Content

A guide to achieve **universal
access to energy**, increased
energy efficiency and expanded
use of **renewable energy**

A guide to achieve Nationally
Determined Contribution (NDC)
Targets of National **Emission
Reduction** per sector

A guide to provide the direction of
national Energy Management to
achieve Energy Independence and
national Energy Security to support
the **national sustainable
development**

Time Frame

Up to 2019

Up to 2030

Up to 2050



TARGET

7.1 Ensure Universal Access to Affordable, Reliable and Modern Energy Services

SDG INDICATORS

7.1.1 Proportion of population with **access to electricity**

7.1.2 Proportion of population with **primary reliance on clean fuels and technology**

SDG7 NATIONAL INDICATORS (President Regulation No. 59 year 2017)

1.1 Enhancing **Electrification Ratio**
Up to **96.6%** in 2019

1.2 Enhancing **Electricity Consumption per Capita** Up to **1,200 kWh** in 2019

1.3 Finishing Up to **1.1 Million of Household Connections (SR)** for **City Gas Pipeline** in 2019

RUEN TARGETS & PROGRAMS (President Regulation No. 22 year 2017)

Increased Electrification Ratio **to near 100%** by 2020.

Increased electricity consumption per capita around **2,500 kWh per capita** by 2025.

Construction of biogas infrastructure

Prepare a roadmap to achieve the biogas production at **47.4 mmscfd*** in 2025 for household sector.

Acceleration of the substitution of oil fuel with gas in the household sectors

Build a city gas network for **4.7 million** household connections in 2025.

Hold a biogas digester with a target of **1.7 million** households in 2025.

**mmscfd: Million standard cubic feet per day*



TARGET

7.2 Increase Substantially the Share of Renewable Energy in the Global Energy Mix

SDG INDICATORS

7.2 Renewable energy share in the total final energy consumption

SDG7 NATIONAL INDICATORS (President Regulation No. 59 year 2017)

Share of Renewable Energy (RE) goes up to 10-16% in 2019

RUEN TARGETS & PROGRAMS (President Regulation No. 22 year 2017)

Achievement of primary energy mix targets from NRE* sources of at least 23% in 2025 and at least 31% in 2050

TARGET

7.3 Double The Global Rate Of Improvement In Energy Efficiency

7.3 Energy intensity measured in terms of primary energy and GDP

Primary Energy Intensity (with annual reduction of 1%) reduced down to 463.2 BOE in 2019

Achievement of a decrease in final energy intensity of 1 (one) percent per year in 2025

Achieving energy elasticity less than 1 (one) in 2025 which is aligned with the target of economic growth.

*) New and Renewable Energy

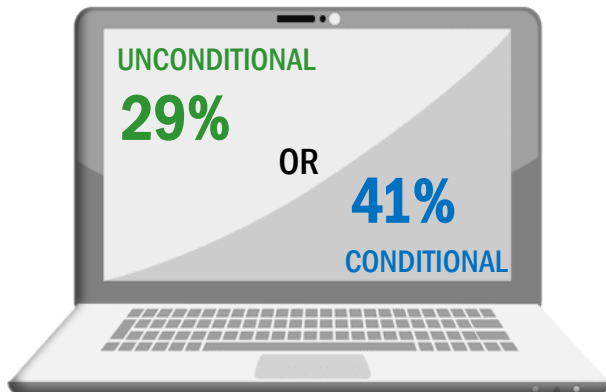


TARGET

Limiting global warming to 1.5 to 2 degrees C above pre-industrial levels by efforts of each country participants to reduce national emissions and adapt to the impacts of climate change

NDC INDICATORS

Reduce National Green House Gas Emission in year 2030 to around **29%** (unconditional mitigation scenario) or to around **41%** (conditional mitigation scenario)



NATIONAL INDICATORS (NDC DOCUMENT)

Share of NDC Targets in Indonesia per sector based on unconditional mitigation scenario are:

1. Forestry (17.2%)
2. **Energy (11%) = 314 MtCO₂e**
3. Agriculture (0.32%)
4. Industry (0.10%)
5. Waste (0.38%)

Reduce **Green House Gas Emission in Energy Sector** in year 2030 around **314 MtCO₂e** (unconditional mitigation scenario) or **398 MtCO₂e** (conditional mitigation scenario)

RUEN TARGETS & PROGRAMS

The reduction target of National GHG emissions from energy sector in 2025 is 34.8% (476 MtCO₂e) and in 2050 is 58.3% (2,726 MtCO₂e)

01

Achieving Double Improvement in Energy Efficiency

Current national target is set the improvement of Energy Intensity up to 1% per year. The target should be “**double**” in SDG7, it’s huge challenge to drastically shifts technology in all sectors.

02

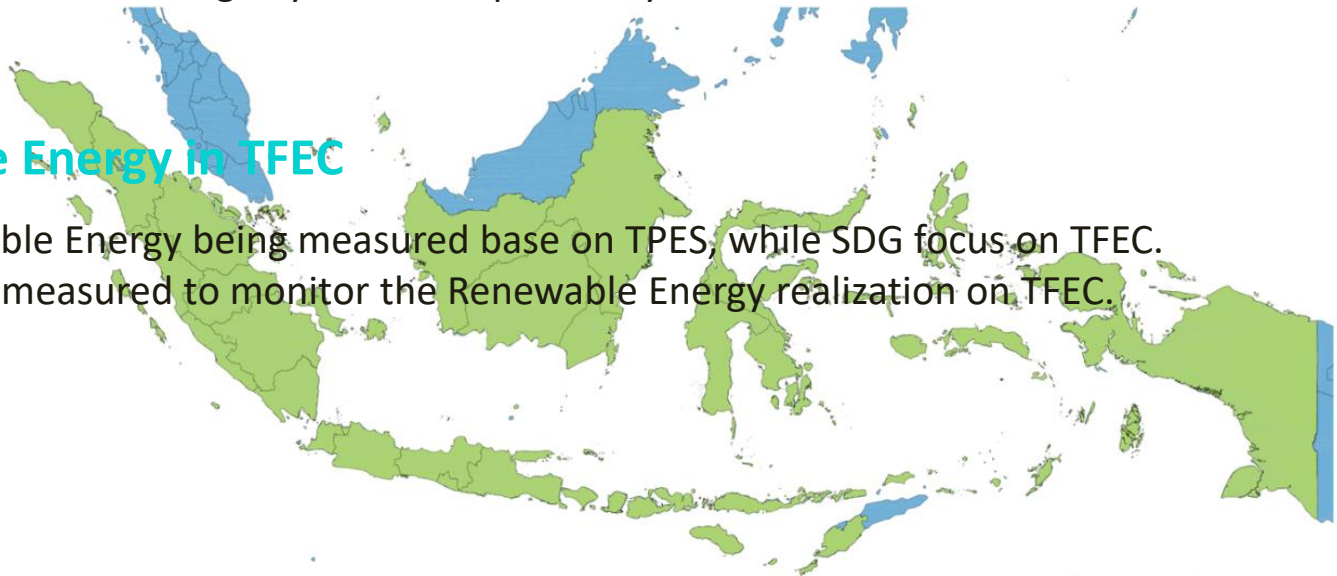
Clean Stove Technology

The challenge is to prepare major shifting (especially in remote area) to reduce traditional biomass consumption without creating any further dependency toward fossil fuel.

03

Share of Renewable Energy in TFEC

In RUEN share of Renewable Energy being measured base on TPES, while SDG focus on TFEC. It need further identified measured to monitor the Renewable Energy realization on TFEC.



Exercise of *National Expert SDG Tool For Energy Planning (NEXSTEP)* in Indonesia

A **working version of NEXSTEP** was trialed in cooperation with energy modelers and experts from the National Energy Council (DEN), MEMR and Agency of Technology Assessment and Application (BPPT)

The tool's approach is **different to traditional energy modelling** where forecasting exercise is performed. **NEXSTEP uses back-casting approach** → SDG7 targets (except target 7.2) is defined, NEXSTEP used to identify sector and adjusted the RE share in TFEC to achieve the desired emission reduction.

Suggested Improvements to suit Indonesian context:

1. The total primary energy supply **should not consider biomass** as it is the case in the national energy plan.
2. Access to **clean cooking fuel**
 - **Natural gas** should be considered to supply cooking fuel for the remaining households (especially household around gas resources), rather than LPG (majority imported).
 - **Java Island has surplus electricity.** Use of electricity for cooking needs to be assessed from both emissions and economic viewpoints .
3. **Renewable energy**
 - The **reduction of oil** in TFEC should be largely compensated by increasing biofuel as oil is mostly used in **transportation sector**.
4. **Energy Efficiency (EE)**
 - With target of **reducing primary energy intensity by 1%** per year until 2025 in RUEN, so it's better if the tool can suggest on additional EE measures to achieve SDG7.3 target.

RESULT OF TRIAL NEXSTEP IN INDONESIA

SDG 7.1.1 - Electricity

- a. Electrification ratio (**98.4%** in 2018) will meet the national (RUEN) target in 2020 (better than 2030 SDG target)
- b. Need additional electricity production of **23.3 TWh by 2020**
- c. Total cost of generation needed about **US\$2.3 billion**

SDG 7.1.2 - Access to clean cooking fuel

- a. Assumed share of clean cooking fuel is around **60.6%** in 2016
- b. RUEN target: **4,7 million** households in **2025** – **7,7 million** households in **2050**
- c. Estimated access level under BAU is **77% by 2030**
 - National target of zero kerosene by 2020
 - Target of **10 million households** to be connected by natural gas pipeline in 2030
- d. To achieve universal access of clean cooking for household by 2030
 - **169.4 Mtoe of natural gas** is required (assuming natural gas supply through pipeline)
 - Other options e.g. a split between electricity (30%) and natural gas (70%) can be analyzed as Java Island has **surplus electricity** generation
- e. Biomass was reduced **to 20% for commercial use only** (80% of total biomass has been assumed to be used for traditional use for cooking)

These results are for illustration only – they have been found during testing of the methodology and are likely to vary once further analysis is performed with the final version of NEXSTEP.

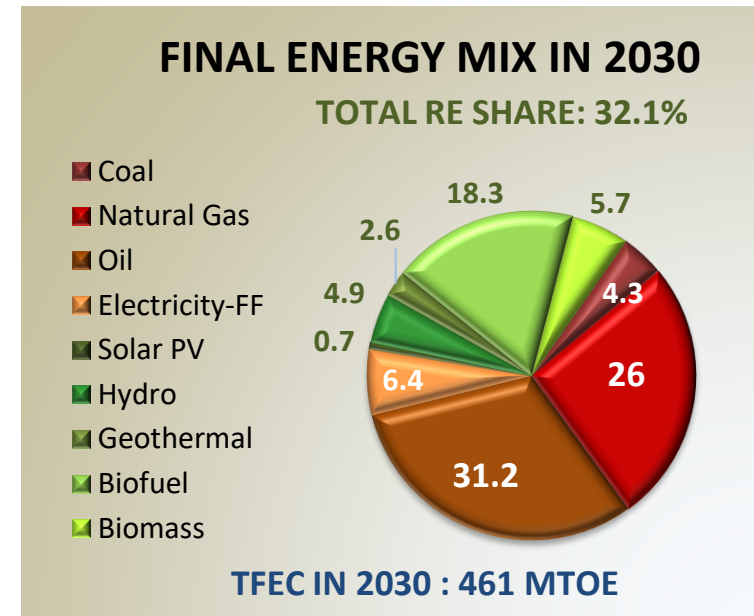
RESULT OF TRIAL NEXSTEP IN INDONESIA

SDG 7.3 – Energy Efficiency (EE)

- a. Primary Energy intensity is decreasing steadily. Assumed reducing EI down to **half (50%) of the rate** between 2010-2017 → Set TFEC reduction (differences) up to **138.26 Mtoe** in 2030.
- b. Energy Efficiency measures to achieve this level of reduction rate need to be further identified.

NDC and SDG 7.2 – Emission Reduction and RE Share

- a. 2030 TFEC was fixed (from previous step) at **461 Mtoe**
- b. Projected emission for 2030 was revised with Indonesia's NDC target for the energy sector (**314 MtCO₂e**)
- c. Total emission of Energy Sector by 2030 is predicted by NEXSTEP to reach **1.173 MtCO₂e**.
- d. By optimizing TFEC, reduction is achieved to lower emission from prior 1.173 MtCO₂e to **859 MtCO₂e**.
- e. Total RE Share of TFEC in 2030 which is predicted by Current Policy Scenario with SDG7 Optimization is around **32.1 %**.



These results are for illustration only – they have been found during testing of the methodology and are likely to vary once further analysis is performed with the final version of NEXSTEP.

1. Target and programs in **National Energy Planning (RUEN)** has been in line **substantially** with both **SDG7** and **NDC targets**, and has been harmonized with certain national context.
2. NEXSTEP will be a useful tool for **communication and decision making** by **national stakeholders** in Energy Sector, especially **to comply with various targets** from both national and international Policies and Regulations.
3. Incorporating a **suitable level of national context** is compulsory along the usage of NEXSTEP, as it is expected to be utilized as **a tool for**, not only international body, but also **national stakeholders** of country participants as well.



*Thank
You*



MINISTRY OF ENERGY AND MINERAL RESOURCES

Jl. Medan Merdeka Selatan No. 18, Jakarta Pusat - 10110

SECRETARY GENERAL OF NATIONAL ENERGY COUNCIL

Jl. Gatot Subroto Kav. 49, Jakarta Selatan – 12950



www.den.go.id



@dewanenergi



dewanenerginasional



dewanenergi



dewan energi