



Directorate General of Electricity
Ministry of Energy and Mineral Resources
REPUBLIC of INDONESIA

INDONESIA'S COAL RETIREMENT ROADMAP

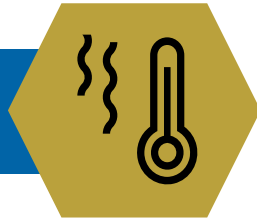
Dialogue on IPP Just Energy Transition Initiatives

Bali | November 15, 2022



**ENERGY
TRANSITIONS**

Global commitment to keep global temperature rise below 2°C and seek to limit it to 1.5°C



G20 Presidency: Recover Together, Recover Stronger

Energy Transition Towards Sustainable Recovery and Productivity: Strengthening Global Clean Energy Systems and a Fair Transition through:



Securing Energy Accessibility



Advancing Smart and Clean Energy Technologies



Advancing Energy Financing



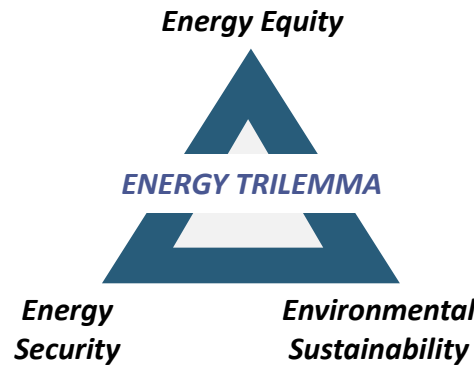
G20 countries endorsed the **Bali COMPACT** consisting of 9 voluntary principles for accelerating clean, sustainable, just, affordable, and inclusive energy transitions to ensure smooth and effective transitions in accordance with national circumstances and priorities.

New Ambitions of NDC

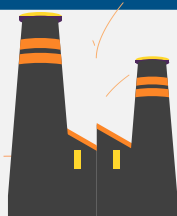
- Indonesia is committed to reduce GHG emission as stated in National Determined Commitment (NDC).
- Indonesia has submitted a new ambitious target of NDC to the United Nations Framework Convention on Climate Change (UNFCCC), which increases the reduction of CO2 from 29% to 31,89% while the target with international support was 41% increased to 43.20% at 2030, and achieve the Net Zero Emission by 2060.
- Indonesia supports serious actions to keep global temperature rise below 1,5 degrees Celsius and avoid future climate catastrophic.

Energy Transition for Energy Resilience

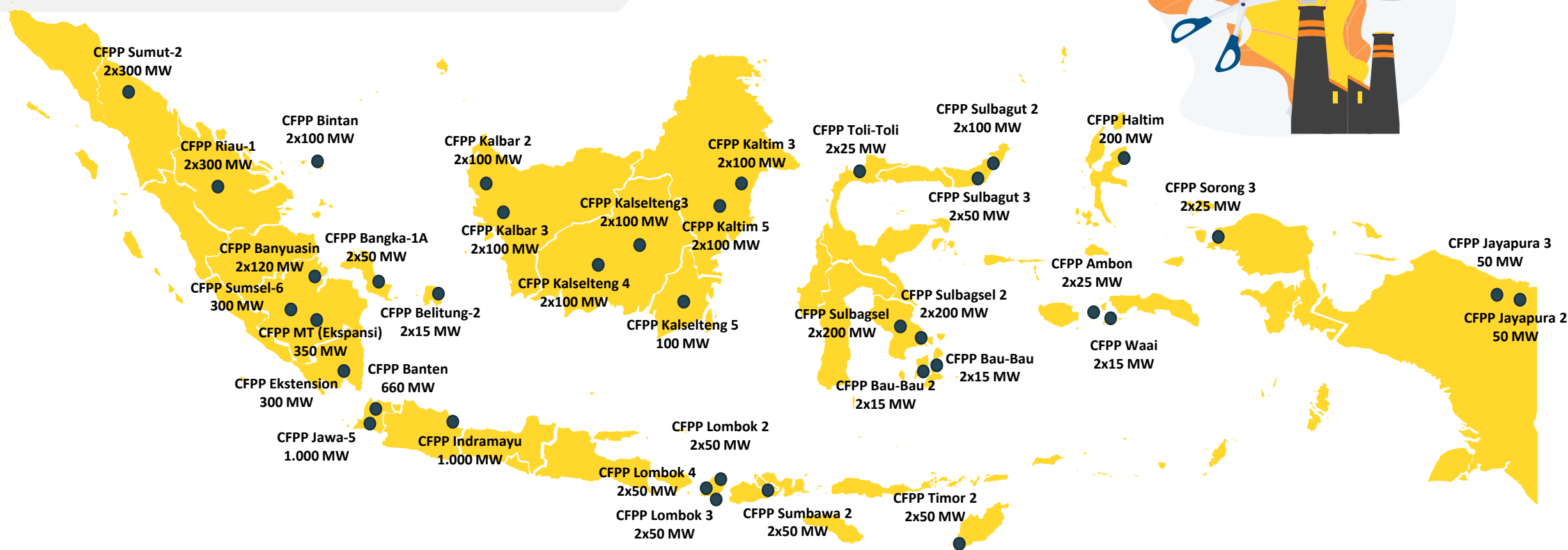
Energy transition to NRE is an effort to ensure the availability of energy that takes into account environmental protection and sustainability at affordable prices in the long term.



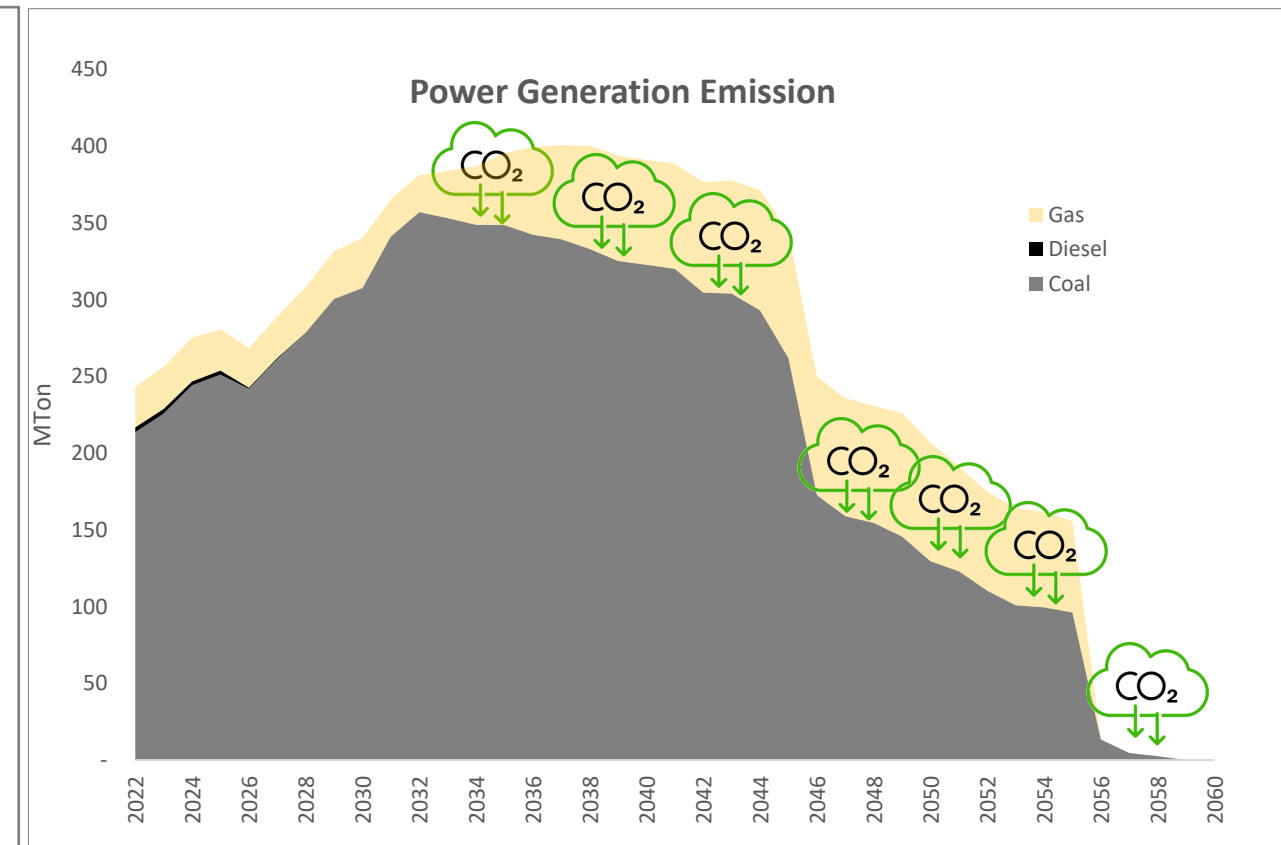
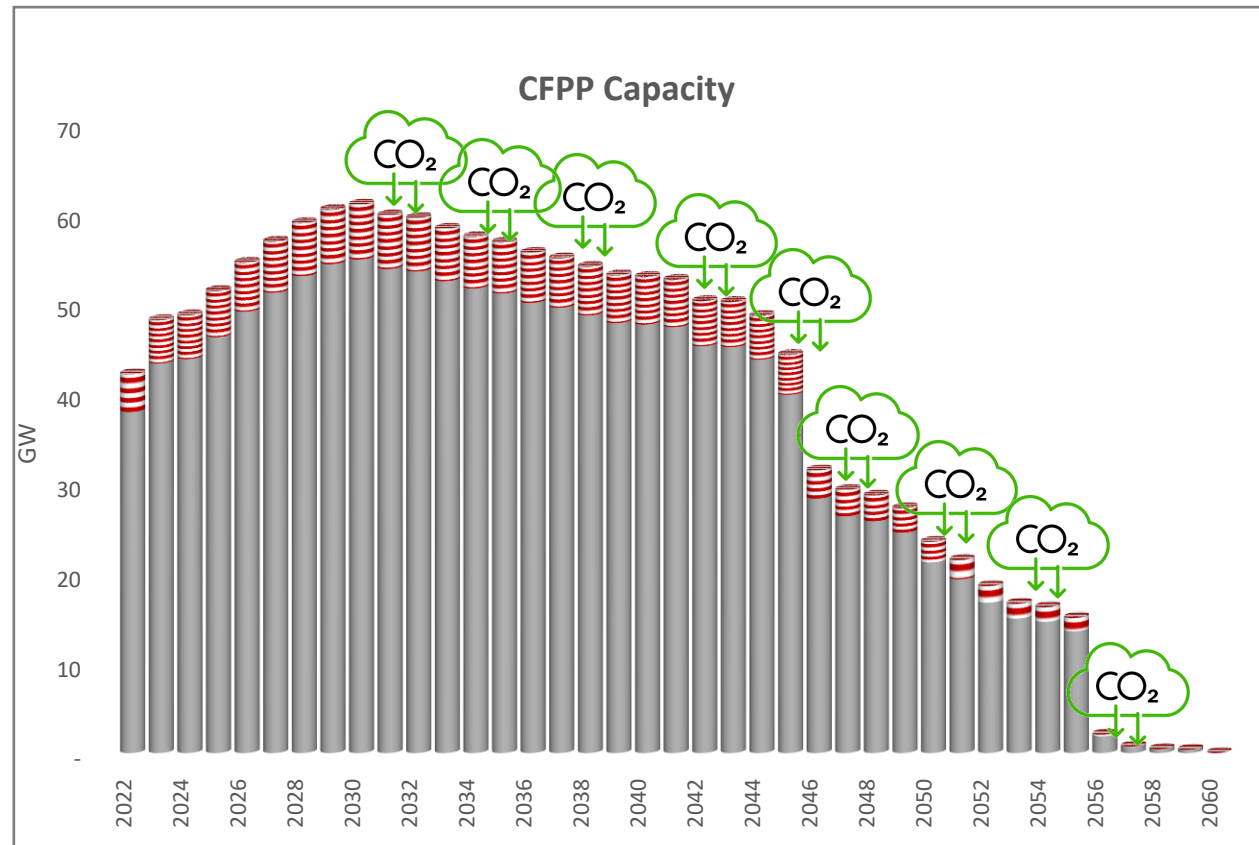
ACTION: 8.770 MW COAL PROJECTS HAVE BEEN CANCELED IN 2021



8.770 MW
CANCELED



In order to begins the energy transition, a total of 8,770 MW CFPP (37 locations) has been canceled from PLN's plans. The cancellation of this CFPP plan reduces CO2 emissions by 65 million tons/year as the Indonesian government's commitment to support the Paris Agreement. Currently, the Government of Indonesia is being sued by a business entity whose CFPP project is included in the list of canceled CFPPs. Even Government lost an appeal to the Supreme Court (Mahkamah Agung).



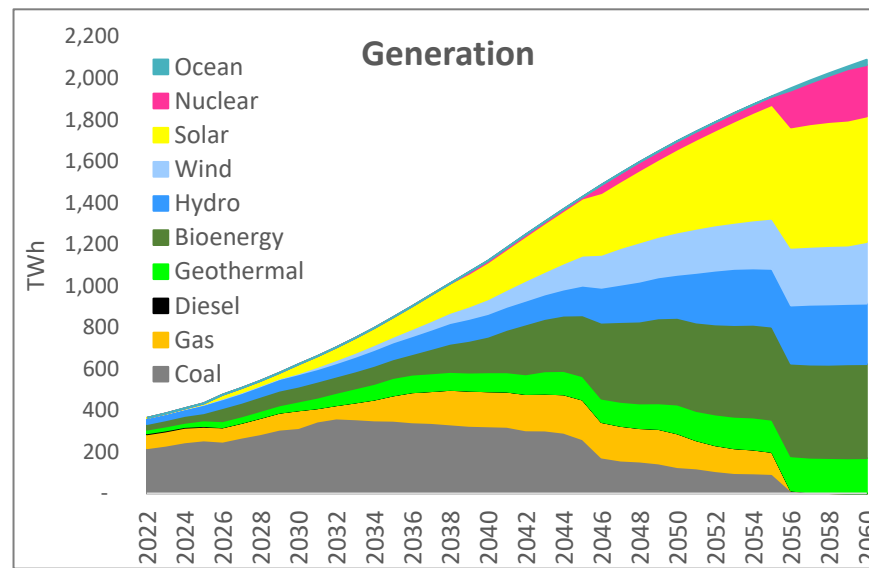
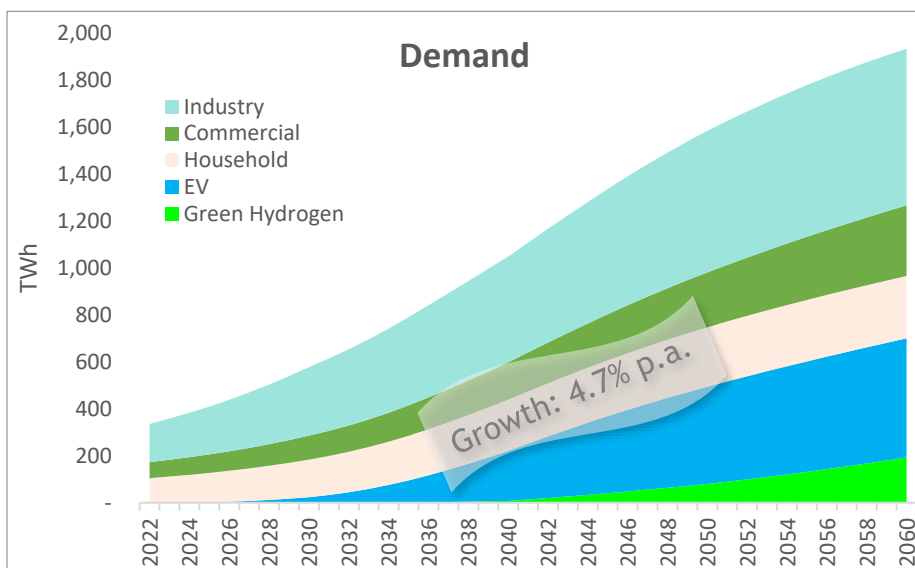
Challenges to away from coal:

- Pipeline CFPP projects couldn't cancel due to legal aspects
- Nickel & Cobalt play the very important role in energy transition (battery)
- Nickel & Cobalt smelter are growing rapidly, the industries need a huge amount of power to run the smelter
- Smelter needs a stable & high reliability power supply
- Nickel & Cobalt resource usually far away from renewable resource such as hydro or geothermal
- Hydro & Geothermal takes time to develop, it need intermediate power supply

Power generation emission:

- Total Emission from power generation sector in 2022 around 243 Million ton CO₂
- Towards 2040, there will be power plant emission peak for 401 million ton CO₂-e
- Emission will sharply decrease by 2046 in line with the retirement of Coal PP and Gas Combined Cycle PP
- Emission will significantly falling down after 2056, following the completion of fossil plant contract
- Emission on power plant will be zero before 2060

POWER SECTOR PATHWAY TOWARD ZERO EMISSION BEFORE 2060



Scenario: To achieve NZE in the energy sector where emissions for the generating sector must be 0 by 2060, the scenario chosen is the *Zero Emission (ZE) scenario*.

Coal/Gas: Additional Coal PP is only for projects that are already under contract and construction. IPP's Coal PP retired after the PPA ended. Combined Cycle PP retired after the age of 30 (remaining < 1 GW, PLTU: 2057, PLTGU: 2056).

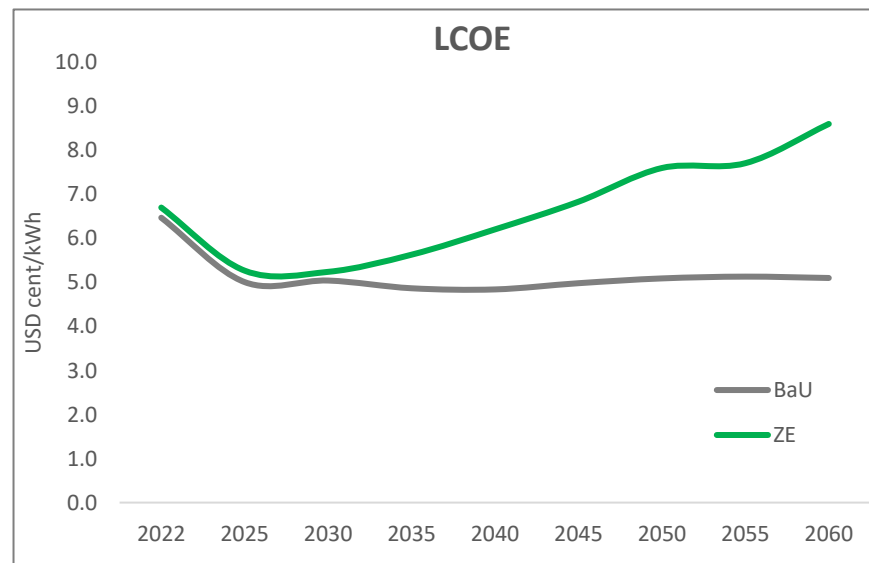
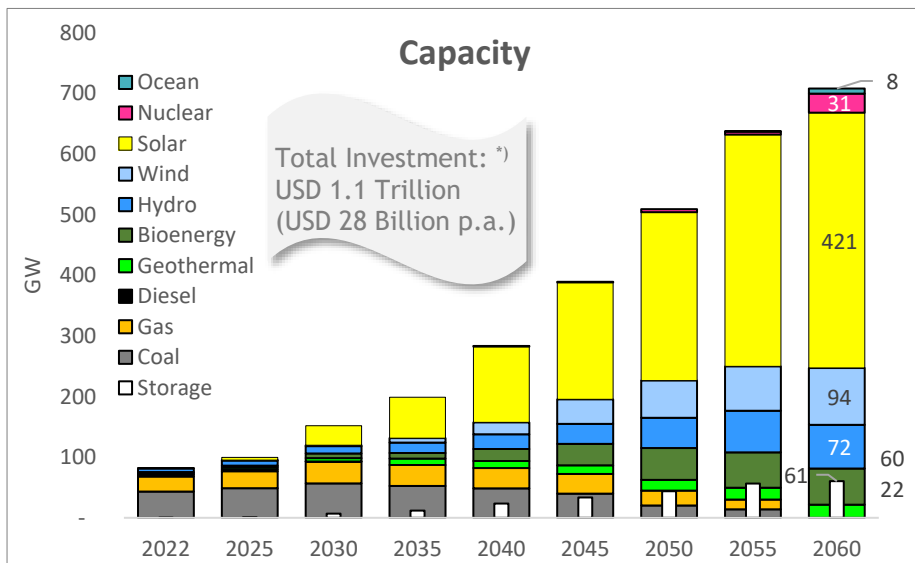
RE: Additional generation after 2030 only from NRE. Starting in 2030 the development of Variable Renewable Energy (VRE) in the form of PLTS is increasingly massive, followed by PLTB both on shore and off shore starting in 2037.

Geothermal: The development is gradually maximized to 22 GW, through the development of the Advance Geothermal System and the development of other unconventional geothermal systems.

Hydro: will be optimized and transferred to the load centers in other islands. The other utilization is to create system balance in the increasing share of VRE.

Nuclear: will be commercial in 2039 to increase power system reliability. The capacity will be increased up to 31 GW in 2060.

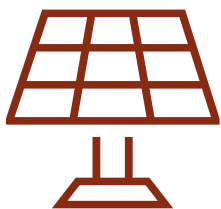
STORAGE: Pump storage starting in 2025, Battery Energy Storage System (BESS) will start to be massively developed in 2034. While Hydrogen produced from RE (Green Hydrogen) based electricity starting in 2031 where its use is intended for the non-generating sector.



*) Including transmission

CONDITIONALLITY ON CFPP EARLY RETIREMENT

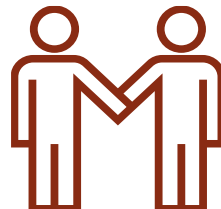
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Only after grid
substitution is built

CFPP can only be retired earlier once grid **reliability** is ensured, with substitution from renewable replacement and/or transmission system installation

2



Assurance of just transition

There should not be any negative **social** impact from coal plant early retirement

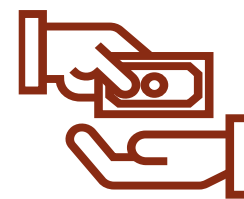
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Affordable

LCOE similar or better than the non-renewable alternatives

4



Confirmed international financial
support

Overall cost of early retirement, just transition, and replacement must be covered with **financial support** from the international community

Thank you

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PRESIDENTIAL REGULATION 112/2022

THE ACCELERATION OF RENEWABLE ENERGY DEVELOPMENT FOR ELECTRICITY SUPPLY

1

GOALS

- Increase investment in RE implementation
- Accelerate achievement of RE targets in national energy mix
- Reduce current account deficit in the energy sector
- Reduce greenhouse gas emissions

2

TYPE OF RE

- Hydro PP
- Geothermal PP
- Solar PP
- Wind PP
- Biomass PP
- Biogas PP
- Ocean PP
- Biofuel PP

3

DEVELOPMENT OF RE

Renewable Energy development is carried out based on the RUPTL, which consider:

- Target of renewable energy mix
- Supply-demand balance
- Economic value of power plants

4

PROCUREMENT

- Implementation of procurement through direct selection (auction)

5

PRICES

- Mechanism of the highest benchmark price (HPT) and agreement
- Price mechanism does not use Feed-in Tariff (FIT).

6

LOCAL CONTENT (PRICES)

Local content (TKDN) is implemented under the provisions of the legislation

ENERGY TRANSITION OF THE POWER SECTOR

Presidential Decree 112/2022 on the Acceleration of RE Development for Electricity Supply



COP27
SHARM EL-SHEIKH
EGYPT 2022

Preparation of the CFPP Retirement Roadmap

The Minister of Energy and Mineral Resources outlines a roadmap to accelerate the retirement of the CFPP operational period, which at least contains:

- Reduction of CFPP's greenhouse gas emissions
- Strategy to accelerate the retirement of the CFPP operational period
- Synergy among various other policies

GHG Emission Reduction > 35% in 10 years

CFPP Development Restriction

The construction of new CFPP is restricted, except for:

1. CFPP in RUPTL before Presidential Decree
2. CFPP that meets the following criteria:
 - Integrated with Smelter Industry
 - Committed to reducing GHG > 35% in 10 years since the CFPP started operation through technology development, carbon offset, and/or increasing RE mix
 - Maximum operation until 2050

2050

- Technology Development
- Carbon offset
- NRE Mix Increase