



KEMENTERIAN ENERGI DAN SUMBER DAYA MINERAL
REPUBLIK INDONESIA



ENERGY TRANSITIONS TOWARDS RENEWABLE ENERGY IN INDONESIA

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at Energy Transition Dialogue 2022: ASEAN Outlook for Zero Carbon Energy”

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INDONESIA'S COMMITMENT AND NRE POTENTIAL

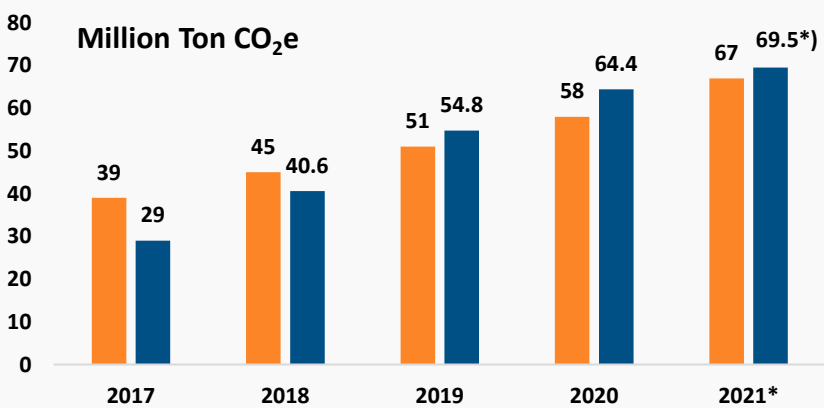
The Law on Energy and Law and Electricity mandate that the NRE supply and utilization should be increased

TARGET & NDC REALIZATION

NDC TARGET2030

No	Sector	GHG Emission 2010 (Million Ton CO ₂ e)	GHG Emission by 2030			Reduction	
			BaU	CM1	CM2	CM1	CM2
1.	Energy	453,2	1.669	1.355	1.223	314	446
2.	Waste	88	296	285	256	11	40
3.	IPPU	36	70	66,85	66	3	3,25
4.	Agriculture	111	120	110	116	9	4
5.	Forestry	647	714	217	22	497	692
TOTAL		1.334	2,869	2.034	1.683	834	1.185

MITIGATION REALIZATION



Abbreviation: CM: Counter Measure; CM1: self effort; CM2: international assistance; IPPU: industrial processes and production use

THE PRESIDENT'S DIRECTIVES



UNFCCC - COP21, DECEMBER 2015

Reducing GHG emission for 29% or 41% (by international assistance) by 2030 based on NDC



LEADERS SUMMIT ON CLIMATE, APRIL 2021

Opening up **energy transition** investment through the **development of biofuel, lithium battery industry, and electric vehicle.**



PIDATO KENEGARAAN 16 AGUSTUS 2021

Transforming towards **NRE**, as well **well accelerating green technology-based economy**, will be a crucial change in our economy.



COP 26, 2 NOVEMBER 2021

Indonesia would be able to **contribute faster for the World's Net-Zero Emission**

NRE POTENTIAL

ENERGY	POTENTIAL (GW)	UTILIZATION(*) (MW)
SOLAR	3.295	203,7
HYDRO	95	6.601,9
BIOENERGY	57	1920,4
WIND	155	154,3
GEOTHERMAL	24	2276,9
OCEAN	60	0
TOTAL	3.686	11.157

- 01 Probable renewable energy potential is being calculated. While, the current utilization has been only 0,3% of the total potential.
- 02 The existing new energy potential hasn't also been maximally developed.

Notes:
(*) Based on data December 2021
Nuclear Potential: Uranium 89.483 ton - Thorium 143.234 ton

ENERGY TRANSITIONS ROADMAP TOWARDS NET ZERO EMISSION

- 1) The timeline for strategic achievement towards net zero emission on energy sector
- 2) The roadmap is a joint commitment between the Government and stakeholders to achieve NZE by 2060



2025: Emission reduction
198 Million ton CO₂

Supply:

- Rooftop Solar PV implementation 3,6 GW.
- NRE PP Development in capacity of 10,6 GW.
- Gas PP gasification 1,7 GW.
- Take out CFPP 8,8 GW in RUPTL.
- Diesel PP conversion to NRE PP.
- Steam Gas PP 0,8 GW as the substitution of CFPP.

Demand:

- The reduction of imported LPG with induction cooker for 8,2 million households.
- Electric vehicle: 400 thousand of four wheelers and 1,7 million of two wheelers.
- City gas for 5,2 million houses.
- Fuel gas (BBG) cars for 100 thousand.
- The implementation of Energy Management and MEPS.

2030: Emission reduction
314 Million ton CO₂

Supply:

NRE PP development for 10,3 GW to substitute the CFPP.

Demand:

- The reduction of imported LPG with induction cooker for 18,2 million households.
- Electric vehicle: 2 million of four wheelers and 13 million of two wheelers.
- City gas for 10 million houses.
- Fuel gas (BBG) cars for 300 thousand.
- DME utilization to substitute LPG for 20,4 million household.
- The implementation of Energy Management and MEPS.

2035: Emission reduction
475 Million ton CO₂

Supply:

- No more additional fossil PP.
- No more Diesel PP.
- Retirement of CFPP 6 GW*).
- NRE PP Development: PLTS 99 GW, Hydro 3,1 GW, Bioenergy 3,1 GW and PLTP 5,6 GW.
- Hydrogen utilization 328 MW.
- Battery utilization 7 GW.

Demand:

- Induction cooker for 28,2 million households.
- Electric vehicle: 5,7 million of four wheelers and 46,3 million of two wheelers.
- City gas for 15,3 million houses.
- Fuel gas (BBG) cars for 800 thousand.

2040: Emission reduction
796 Million ton CO₂

Supply:

- Retirement of CFPP 3 GW*).
- NRE PP Development : PLTS 68,5 GW, PLTB 9,4 GW, Hydro 3,7 GW, Bioenergy 7,8 GW, and PLTP 1 GW
- Hydrogen utilization 332 MW
- Battery utilization 46 GW

Demand:

- Induction cooker for 38,2 million households.
- Electric vehicle: 12,3 million of four wheelers and 105 million of two wheelers.
- City gas for 20,3 million houses.
- Fuel gas (BBG) cars for 2 million.

2050: Emission reduction
956 Million ton CO₂

Supply:

- Retirement of CFPP 31 GW*).
- NRE PP Development : PLTS 180,2 GW, PLTB 17,5 GW, Hydro 13,7 GW, Bioenergy 23 GW, PLTP 3 GW, PLTAL 1,3 GW and Nuclear 5 GW
- Hydrogen utilization 9 GW
- Battery utilization 151 GW

Demand:

- Induction cooker for 48,2 million households.
- Electric vehicle: 38,2 million of four wheelers 205 million of two wheelers.
- City gas for 23,4 million houses.
- Fuel gas (BBG) cars for 2,8

2060: Emission reduction
1.526 Million ton CO₂

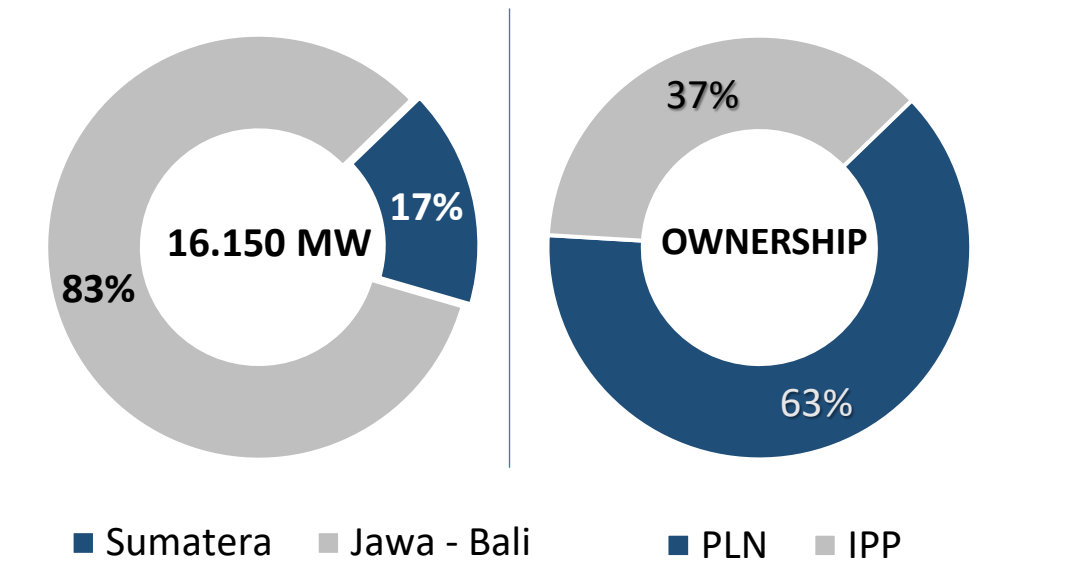
Supply:

- Retirement of CFPP 8 GW*).
- Retirement of Steam Gas PP 8 GW
- NRE PP Development : 8,2 GW, PLTB 11,6 GW, Hydro 37,9 GW, Bioenergy 2,1 GW, PLTP 3 GW, PLTAL 12,1 GW and Nuclear 30 GW

Demand:

- Hydrogen utilization 52 GW
- Battery utilization 140 GW
- Induction cooker for 58 million households.
- Electric vehicle: 69,6 million of four wheelers and 229 million of two wheelers.
- City gas for 23,9 million houses.

CFPP PHASING OUT POTENTIAL USING ETM SCHEME

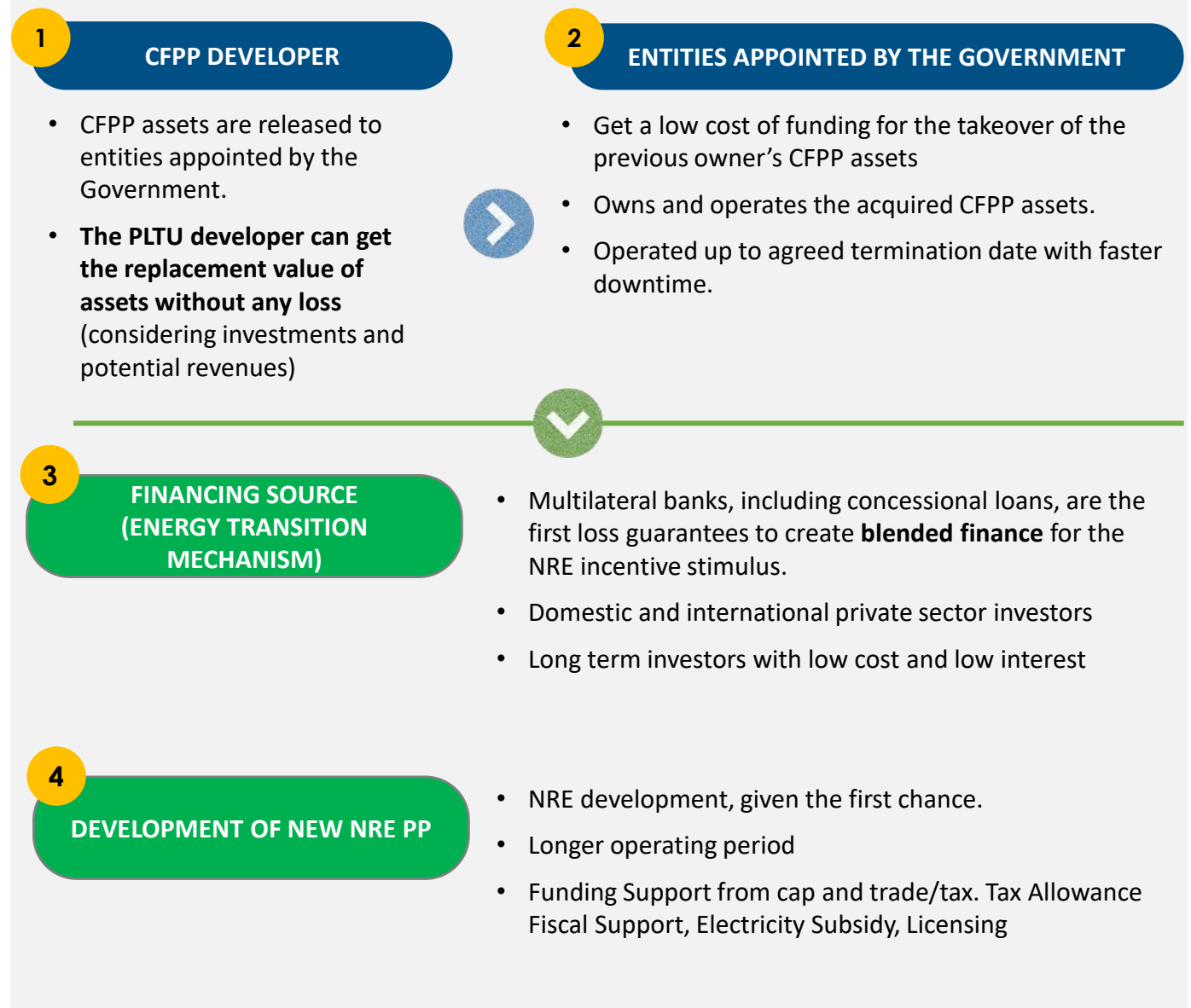


Indicative CFPP characteristics

Plant-level indicator	
Size:	Large Avg unit: 305 MW Avg plant: 850 MW
Age:	Mature Avg: 13 years old
Utilisation:	Medium utilisation Avg: 68%
Emissions:	Very high Avg: 1.00 tCO2eq/MWh

1. MoF and ADB identified CFPP capacity for 16,2GW including PLN and non-PLN business areas;
2. CFPP phasing out contributes to emission reduction on power plant sector to be replaced by NRE PP;
3. Energy Transition Mechanism (ETM) is expected to assist financing for NRE PP development.

ENERGY TRANSITION MECHANISM (ETM) PROCESS



Thank you

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