

INDONESIA ENERGY TRANSITION



NOOR SYAIFUDIN

CENTER FOR CLIMATE FINANCE AND MULTILATERAL POLICY

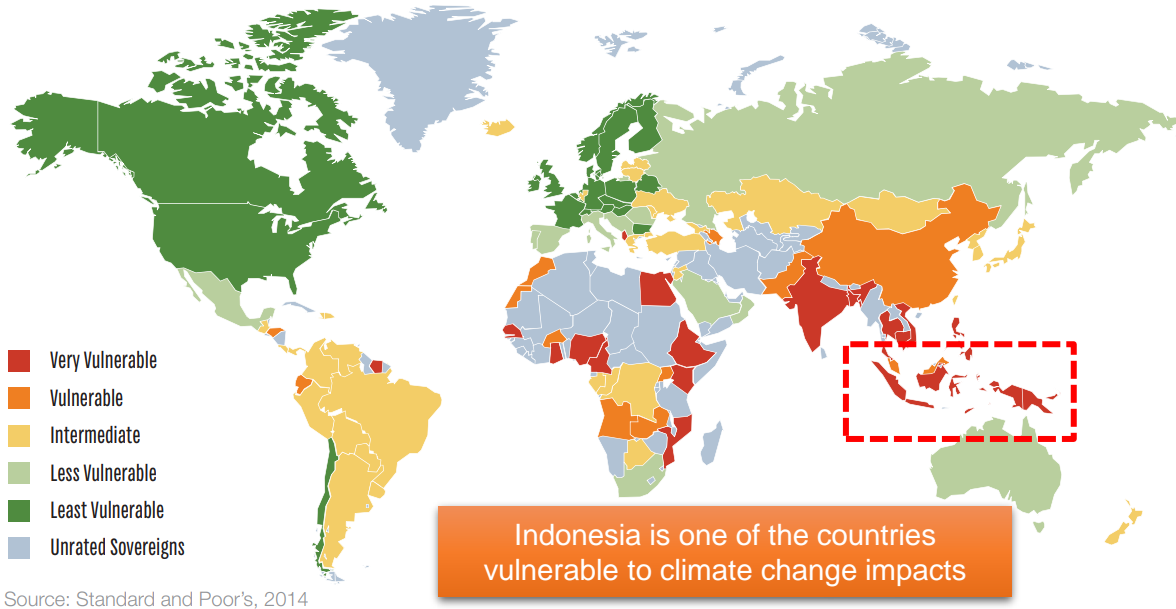
FISCAL POLICY AGENCY

MINISTRY OF FINANCE OF INDONESIA

July 11th, 2023

Ministry of Finance Republic of Indonesia

INDONESIA IS VULNERABLE TO THE IMPACTS OF CLIMATE CHANGE



Indonesia is an archipelagic country with **>17,000 islands** and is vulnerable to climate change risks such as rising sea levels.

From 2010-2018, national GHG emissions experienced a growing trend of around **4.3%** per year.

Sumber Data: KLHK (2020), data diolah

From 1981-2018, Indonesia experienced increasing temperature of **0.03 °C per year**.

Source: BMKG (2020)

Indonesia experiences a sea-level rise of **0.8-1.2 cm/year**, while approximately 65% of the population lives in coastal areas.

Source: Bappenas (2021)

RISKS OF CLIMATE CHANGE



WATER SCARCITY

Increasing levels of floods and severe drought will exacerbate the scarcity of clean water.



HEALTH QUALITY DECREASE

Floods can cause the spread of vector-borne diseases and death from drowning. An increase in temperature can cause death from heatstroke.



LAND ECOSYSTEM DAMAGE

It is scientifically predicted that severe forest fires will occur. This can lead to loss of ecosystems, biodiversity, and changes in Biomass.



FOOD SCARCITY

Changes in the production of biomes and ecosystems can lead to food scarcity for all living things.



MARINE ECOSYSTEM DAMAGE

Rising sea surface temperatures cause the extinction of coral reefs, seaweed, mangroves, some biodiversity and marine ecosystems.

Climate Change may increase the risk of hydrometeorological disasters, which currently reach

80%

of the total disasters that occurred in Indonesia.

Source: NDC, 2016

Indonesia's potential economic losses can reach **0,66% to 3,45% of GDP** in 2030

Source: Roadmap NDC Adaptasi, 2020

INDONESIA GOVERNMENT COMMITMENTS ON CLIMATE HAVE BEEN IMPROVED IN ENHANCED NATIONALLY DETERMINED CONTRIBUTION (NDC)

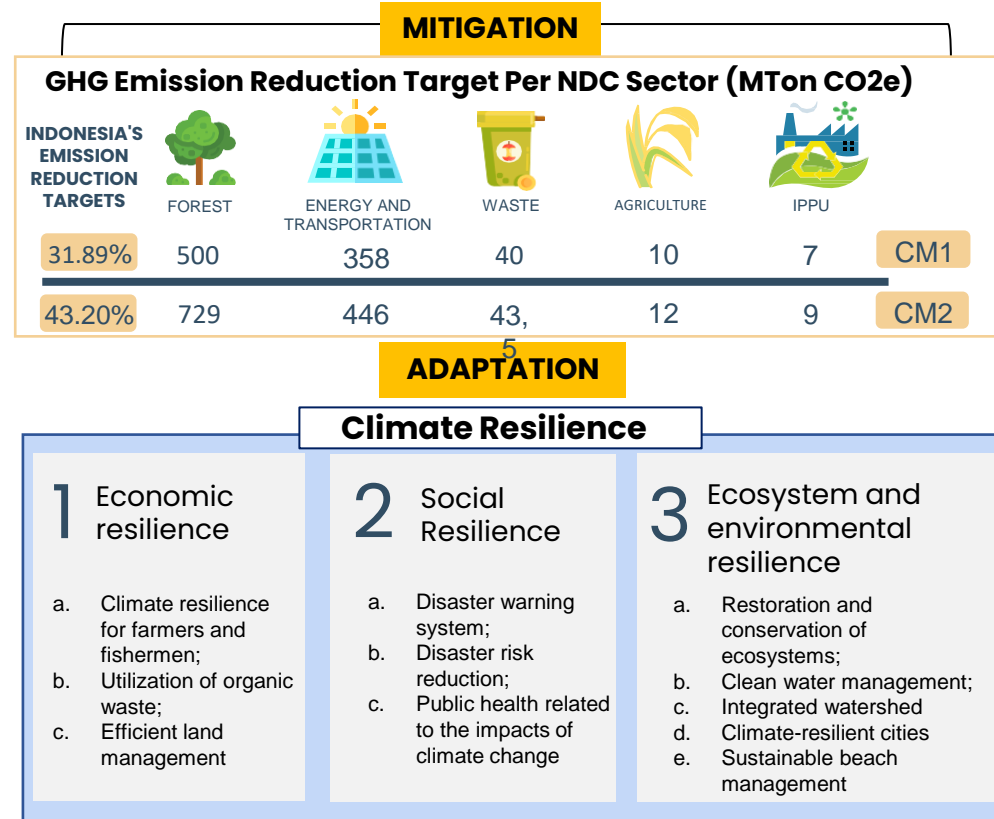
Nationally Determined Contribution (NDC) 2030

It is a national commitment to contribute to the handling of global climate change in order to achieve the goals of the Paris Agreement to the United Nations Framework Convention on Climate Change.

31.89% national effort
43.20% with international support

First NDC (2016)
 Updated NDC (2021)
 Enhanced NDC (2022)
 Second NDC (2024) - expected

INDONESIA'S CLIMATE CHANGE AGENDA



Long-Term Strategy for Low Carbon and Climate Resilience (LTS-LCCR) 2050

A mandate from:

- Paris Agreement Article. 4.19
- Become a guideline for the achievement of NDC in the future

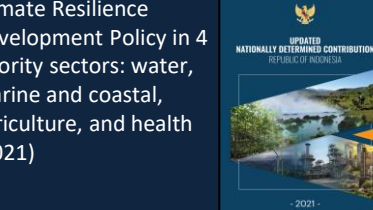
Scenario LCCP (low carbon compatible with Paris Agreement) :

- Net-Sink in the forestry and land use sector by 2030;
- Net Zero Emission in 2060 or sooner

Towards Net Zero Emission 2060 or sooner

*CM1= Counter Measure 1 (target fulfillment conditions 31,89%)
 *CM2= Counter Measure 2 (target fulfillment conditions up to 43,20%)

Other Current National Policies and Frameworks Related to Climate Change

 <p>National Action Plan on Sustainable Development Goals (RAN SDGs) 2017; SDGs Goal 13 Climate Action</p>	 <p>National Medium-term Development Planning (RPJMN 2020-2024) in National Priority 6 "Develop environment, improve disaster and climate resilience"</p>	 <p>Climate Resilience Development Policy in 4 priority sectors: water, marine and coastal, agriculture, and health (2021)</p>	 <p>Updated NDC 2021 Increase commitment in reducing emission and prepare the means of implementation</p>	 <p>Long-term Strategy Low Carbon and Climate Resilience (LTS-LCCR 2021): • Net sink FOLU sector in 2030 • Net zero emission in 2060 or sooner</p>	 <p>Enhanced NDC 2022 Increase sectoral commitment in reducing emission</p>
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Financial resources are required to fully address climate change, including the achieve the NDC target.

Estimates of the costs of mitigation

Reference	Scope	Cost estimation
Third Biennial Update Report, KLHK (2021)	The cost of mitigating climate change to achieve NDC	Accumulated mitigation cost needs from 2018-2030 around IDR4,002 trillion (USD 281 billion)
Roadmap NDC Mitigation Indonesia, KLHK (2020)	Cost of climate change mitigation to achieve NDC (using mitigation action cost approach)	Accumulated mitigation cost in 2020-2030 reaches IDR3,779 trillion (IDR343.6 trillion per year)

Funding Needs for Climate Change Mitigation, by Sector

Sektor	Third BUR		NDC Mitigation Roadmap	
	(Rp trillion)	(billion USD)	(Rp trillion)	(billion USD)
Forestry	309.01	21.68	93.28	6.55
Energy and Transportation	3,500.00	245.61	3,500.00	245.61
IPPU	0.93	0.07	0.92	0.06
Waste	185.27	13.00	181.40	12.73
Agriculture	7.23	0.50	4.04	0.28
Total	4,002.44	281.00	3,779.63	265.24

Sources: Third Biennial Update Report (2018) & Roadmap NDC Mitigasi (2020)

The validity of the numbers continues to be updated and the model is regularly calibrated



CLIMATE FINANCE STRATEGY

Funding support to achieve the targets of the climate agenda can come from the public, private and international sectors towards *“a just and affordable transition”*



SOURCE OF FINANCING

DOMESTIC

State Budget

- Govt. Spending
- Fiscal Transfer
- Carbon Tax/Levy
- Green Finance (Green Sukuk, SDGs Bond)

NON-State Budget

- SOEs
- Carbon Trade
- Regional Budget (APBD)
- Financial Sector (Banks and Non-Banks)
- Capital Market
- BLU/ Public Service Agency
- Philanthropy

INTERNATIONAL

BILATERAL

- B to B
- G to G

MULTILATERAL

- Green Climate Fund
- Global Environment Facility
- Adaptation Fund
- MDBs/IFIs

BPDLH, SDG INDONESIA ONE, ICCTF

FUTURE CHALLENGES



Limited fiscal space

Strengthening the fiscal reform agenda and fiscal consolidation will be the key to fiscal sustainability onward.



Optimal mobilization of non-state budget climate change funding sources.



Ensure that the economic recovery and transition to a green economy is **Just and Affordable**.



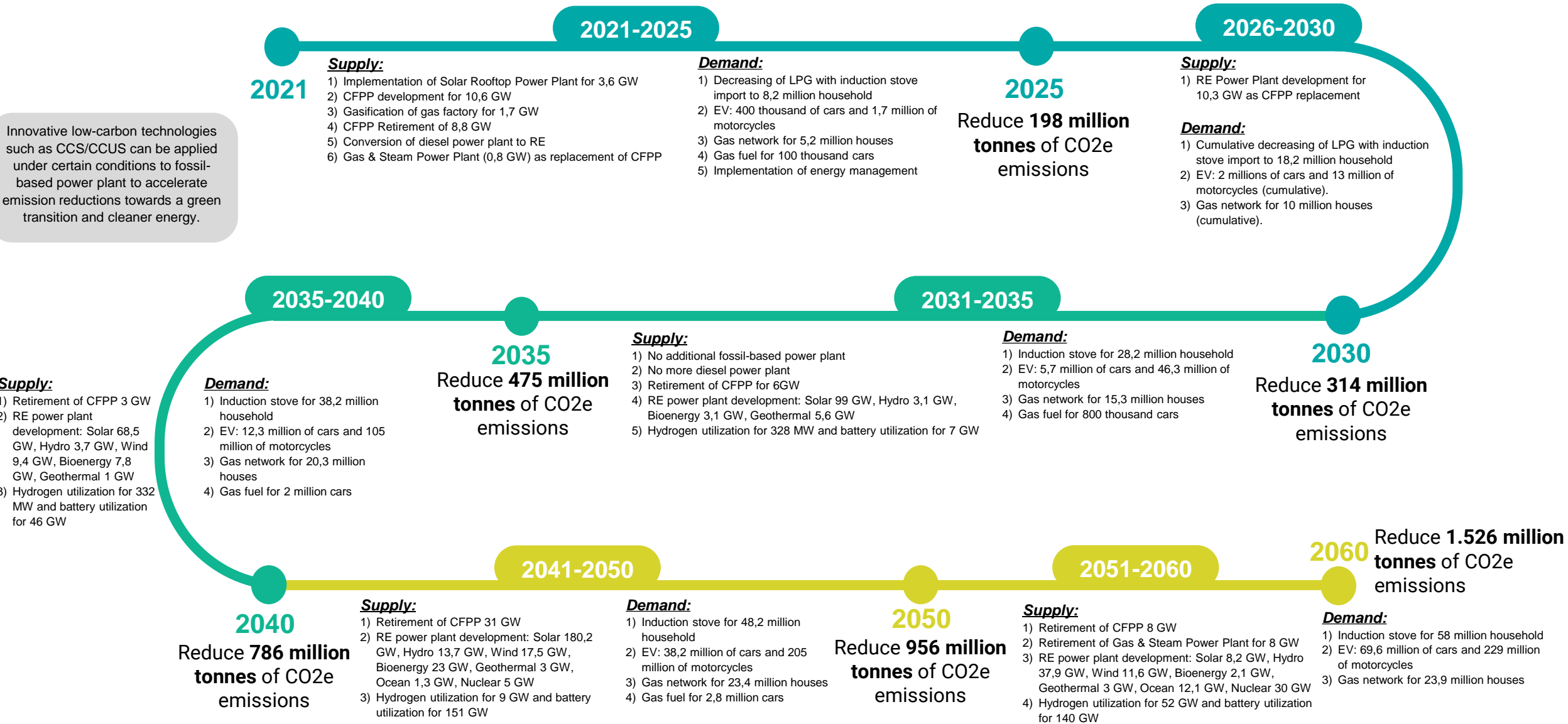
Strengthen the **viability** of green projects so that they can be financed by the financial sector and receive international support.



The current market mechanism has not been able to reflect the price difference between the Green and non-Green sectors. Currently, it is still limited to Green Financing, it is necessary to strengthen **Greening the Finance** in order to support the sustainable development agenda.

ENERGY AND TRANSPORTATION ROADMAP TOWARDS NET ZERO EMISSION

Innovative low-carbon technologies such as CCS/CCUS can be applied under certain conditions to fossil-based power plant to accelerate emission reductions towards a green transition and cleaner energy.



2021-2025

- 2021**
- Supply:**
- 1) Implementation of Solar Rooftop Power Plant for 3,6 GW
 - 2) CFPP development for 10,6 GW
 - 3) Gasification of gas factory for 1,7 GW
 - 4) CFPP Retirement of 8,8 GW
 - 5) Conversion of diesel power plant to RE
 - 6) Gas & Steam Power Plant (0,8 GW) as replacement of CFPP

- Demand:**
- 1) Decreasing of LPG with induction stove import to 8,2 million household
 - 2) EV: 400 thousand of cars and 1,7 million of motorcycles
 - 3) Gas network for 5,2 million houses
 - 4) Gas fuel for 100 thousand cars
 - 5) Implementation of energy management

2026-2030

- 2025**
- Reduce 198 million tonnes of CO2e emissions**
- Supply:**
- 1) RE Power Plant development for 10,3 GW as CFPP replacement
- Demand:**
- 1) Cumulative decreasing of LPG with induction stove import to 18,2 million household
 - 2) EV: 2 millions of cars and 13 million of motorcycles (cumulative).
 - 3) Gas network for 10 million houses (cumulative).

2035-2040

- Supply:**
- 1) Retirement of CFPP 3 GW
 - 2) RE power plant development: Solar 68,5 GW, Hydro 3,7 GW, Wind 9,4 GW, Bioenergy 7,8 GW, Geothermal 1 GW
 - 3) Hydrogen utilization for 332 MW and battery utilization for 46 GW

- Demand:**
- 1) Induction stove for 38,2 million household
 - 2) EV: 12,3 million of cars and 105 million of motorcycles
 - 3) Gas network for 20,3 million houses
 - 4) Gas fuel for 2 million cars

2035

Reduce 475 million tonnes of CO2e emissions

- Supply:**
- 1) No additional fossil-based power plant
 - 2) No more diesel power plant
 - 3) Retirement of CFPP for 6GW
 - 4) RE power plant development: Solar 99 GW, Hydro 3,1 GW, Bioenergy 3,1 GW, Geothermal 5,6 GW
 - 5) Hydrogen utilization for 328 MW and battery utilization for 7 GW

2031-2035

- Demand:**
- 1) Induction stove for 28,2 million household
 - 2) EV: 5,7 million of cars and 46,3 million of motorcycles
 - 3) Gas network for 15,3 million houses
 - 4) Gas fuel for 800 thousand cars

2030

Reduce 314 million tonnes of CO2e emissions

2041-2050

2040

Reduce 786 million tonnes of CO2e emissions

- Supply:**
- 1) Retirement of CFPP 31 GW
 - 2) RE power plant development: Solar 180,2 GW, Hydro 13,7 GW, Wind 17,5 GW, Bioenergy 23 GW, Geothermal 3 GW, Ocean 1,3 GW, Nuclear 5 GW
 - 3) Hydrogen utilization for 9 GW and battery utilization for 151 GW

- Demand:**
- 1) Induction stove for 48,2 million household
 - 2) EV: 38,2 million of cars and 205 million of motorcycles
 - 3) Gas network for 23,4 million houses
 - 4) Gas fuel for 2,8 million cars

2051-2060

2050

Reduce 956 million tonnes of CO2e emissions

- Supply:**
- 1) Retirement of CFPP 8 GW
 - 2) Retirement of Gas & Steam Power Plant for 8 GW
 - 3) RE power plant development: Solar 8,2 GW, Hydro 37,9 GW, Wind 11,6 GW, Bioenergy 2,1 GW, Geothermal 3 GW, Ocean 12,1 GW, Nuclear 30 GW
 - 4) Hydrogen utilization for 52 GW and battery utilization for 140 GW

2060

Reduce 1.526 million tonnes of CO2e emissions

- Demand:**
- 1) Induction stove for 58 million household
 - 2) EV: 69,6 million of cars and 229 million of motorcycles
 - 3) Gas network for 23,9 million houses

Source: MoEMR

THE ETM MECHANISM TO ADDRESS THE ENERGY TRANSITION CHALLENGES



Photo: Grand Launching ETM Country Platform, Bali (2022)

ETM Main Objectives:



To optimize energy mix progress based on National Energy Policy



Accelerate early retirement of Coal-Fired Power Plant (CFPP)

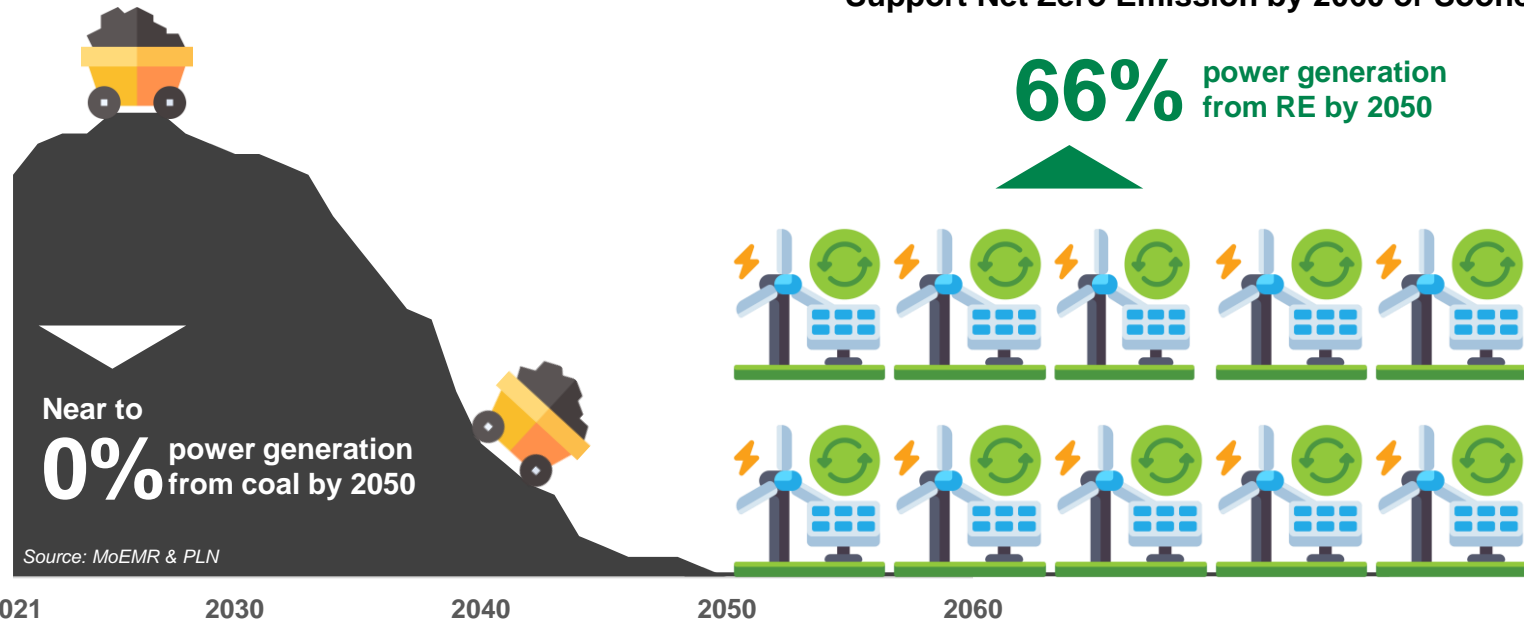


Enhance emission reduction in electricity subsector to achieve NDC and NZE targets



Boost renewable energy power generation investment

ETM Aligned with Electricity Power Generation Roadmap to Support Net Zero Emission by 2060 or Sooner



Source: MoEMR & PLN

INDONESIA
Energy
Transition
Mechanism

THE TRANSITION TO A GREEN ECONOMY IS A CRUCIAL ASPECT OF THE ECONOMIC TRANSFORMATION

- Indonesia is dedicated to reach **Net-Zero Emissions by 2060** or sooner.
- Given that Indonesia continues to rely on fossil fuels, a gradual energy transition is essential.
- To facilitate this transition, the government is developing three **roadmaps - Energy Transition, Carbon Market, and Carbon Tax.**

ENERGY TRANSITION MECHANISM (ETM)



GOALS

- ❑ Decrease the proportion of fossil fuels in the energy mix.
- ❑ Increase the use of alternative, renewable energy sources.

Corporations that continue in utilizing non-sustainable energy sources

- Upgrading technology to clean technology
- Use of Carbon Capture Storage (CCS)
- Coal-fired Power Plant Early Retirement
- Carbon trading Clean energy R&D investment

New Corporation

- Utilization of clean energy
- Carbon trading
- Clean energy R&D investment

Progress

- **The establishment of the Indonesian ETM Country Platform** was officially announced during the G20 Summit on 14 November 2022
- **The Joint Statement under the Just Energy Transition Partnership (JETP)** led by the US and Japan, announced financing up to USD 20 billion to support our ETM program.
- **Receiving funding commitment from Climate Investment Fund (CIF)** amounting to USD 500 million to be leveraged up to USD 4 billion for a number of ETM projects.
- **Developing ETM project pipelines.** The Government of Indonesia (GOI), with the ADB are selecting coal fired power plants (CFPPs) that will be retired earlier. It can come from both PLN and IPP projects. The Government is targeting 1 GW to be retired by 2030. ADB has signed an MoU with PT PLN Cirebon Electric Power.
- **ETM is already adopted into the ASEAN Taxonomy Version 2 and published in end of March 2023.**

The Policies (Compensation & Incentives)

Clean Energy Acquisition

Incentives for clean energy R&D and investment (hydrogen, solar, hydro, etc.)

Renewable Energy Development

- Low-emission power plant promotion.
- Switch to new energy sources.
- Tariffs tied to generator's economic value.

Energy Source Conversion

Incentives for transitioning to clean energy from dirty sources.

Carbon Trade

Mechanism for carbon trading and certification as tradable securities.

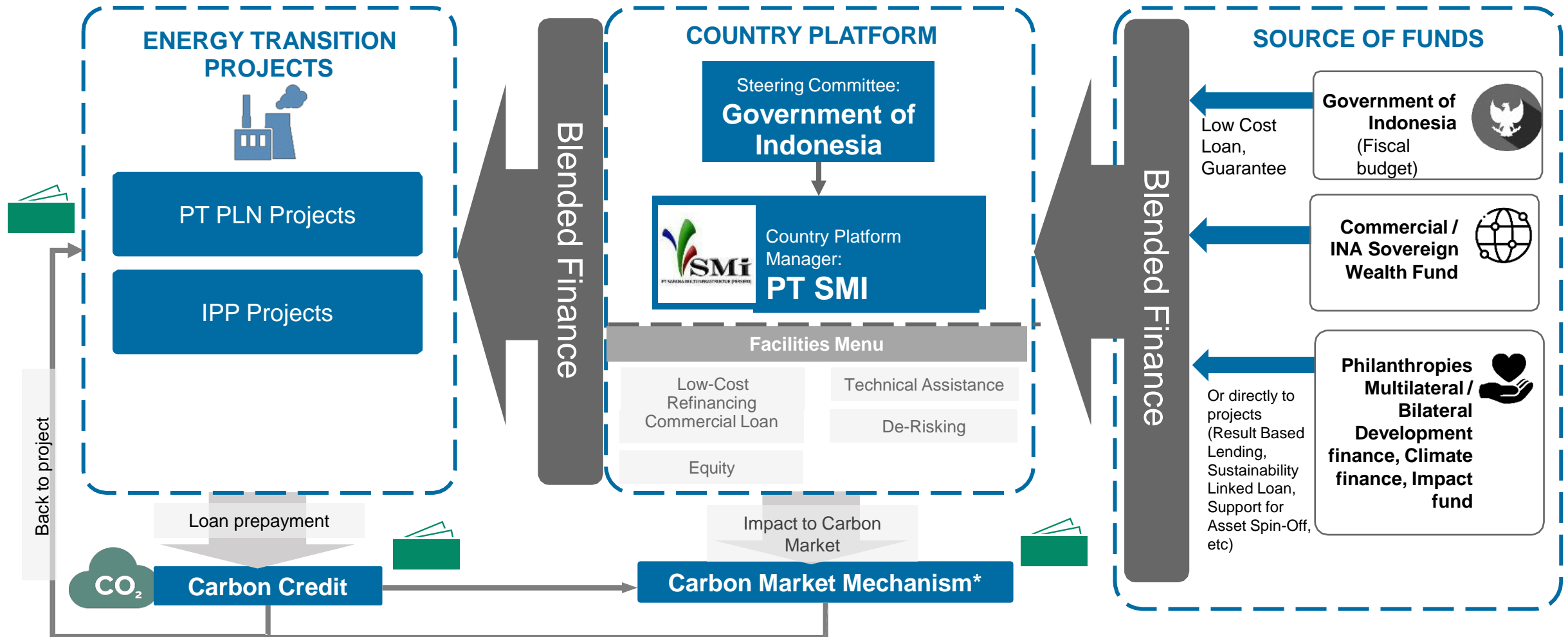
Carbon Tax

Disincentives for dirty energy use, carbon tax funds for clean energy growth.



BLENDED FINANCE STRUCTURE ON INDONESIA ENERGY TRANSITION MECHANISM

Blended finance will be implemented both in funding and financing support by Country Platform Manager



ETM STRATEGIC ENVIRONMENTAL AND SOCIAL ASSESSMENT (SESA)

Achieving our climate goals will require a whole-economy transition. To minimize disruption to economies and livelihoods and maintain societal support for the net-zero transition, mitigation of the environment and social impact of the transition is quite critical. **These are draft of scoping Indonesia ETM SESA.**



- Contamination at CFPPs and Coal Mines
- GHGs and Climate Change
- Land Use Changes
- Waste Management
- Biodiversity, Ecosystem Services and Protected Areas
- Health and Safety



- Livelihood Displacement, Economic and Income Generation
- In, Out Migration and Inter-Regional Migration
- Wages, Training, Retraining, Upskilling
- Health And Well-being - Access To Services
- Vulnerable Groups
- Infrastructure And Access



- Gaps in Policy and Legislation
- CFPP and Coal Mine Retirement and Decommissioning
- Capacity Strengthening



THANK YOU