



MINISTRY OF ENERGY AND MINERAL RESOURCES OF REPUBLIC OF INDONESIA
DIRECTORATE GENERAL OF NEW, RENEWABLE ENERGY AND ENERGY CONSERVATION
DIRECTORATE OF VARIOUS NEW AND RENEWABLE ENERGY



Renewable Energy Regulation and Investment Opportunity

Delivered at China RE Invest Indonesia 2024

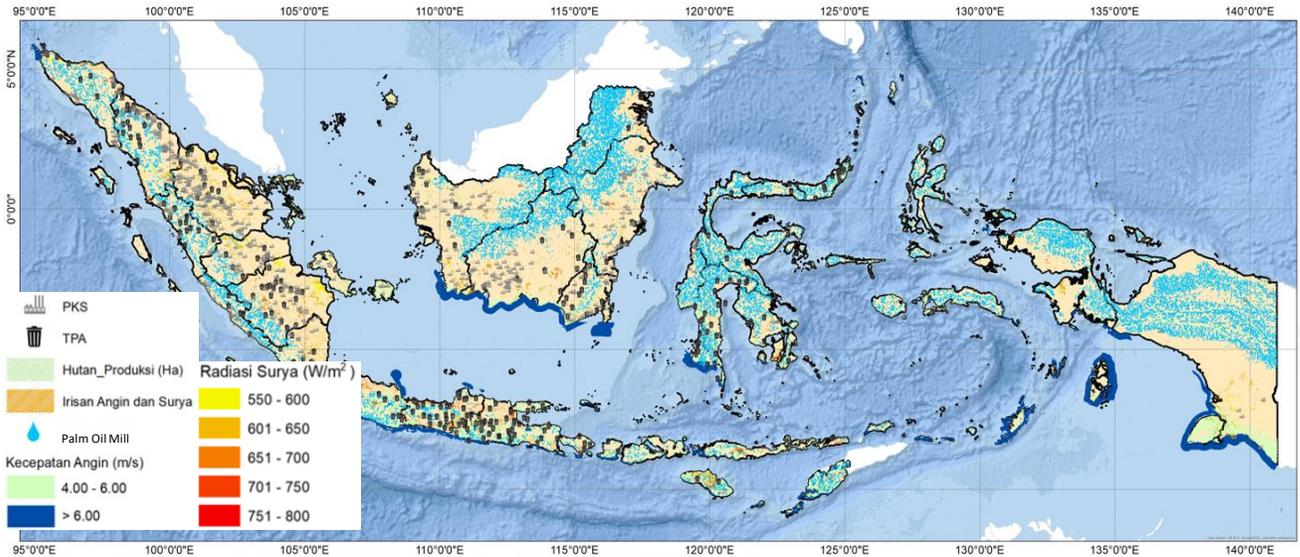
Directorate General of New, Renewable Energy and Energy Conservation

January 16, 2024

NRE POTENTIALS, TARGET, AND ACHIEVEMENT

National NRE Potential and Utilization

Indonesia's NRE resources are **abundant, diverse and spread** throughout the country. Currently, **only 0.3% of the total potential has been utilized.**



ENERGY	POTENTIAL (GW)	UTILIZATION (MW)	ADDED in 2023 (MW)
SOLAR	3,295	574	290.6
HYDRO	95	6,693	95
BIOENERGY	57	3,195	95.5
WIND	155	154	-
GEO THERMAL	24	2,418	57.5
OCEAN	63	0	-
COAL GASIFICATIO N		30	-

Note: (1) Q1 2023, total numbers are rounded up (2) Including "LTSHE" Nuclear pot.: Uranium 89,483 tons - Thorium 143,234 tons
Direktoral Jenderal EBTKE @2024

- **Hydro:** all over Indonesia's areas, particularly in North Kalimantan, NAD, North Sumatra and Papua.
- **Solar:** all over Indonesia's areas, particularly in East Nusa Tenggara, West Kalimantan and Riau which has higher radiation.
- **Wind (>6 m/s):** particularly located in East Nusa Tenggara, South Kalimantan, West Java, NAD & Papua.
- **Ocean:** all over Indonesia's areas, particularly in Maluku, East Nusa Tenggara, West Nusa Tenggara and Bali.
- **Geothermal:** in ring of fire areas, including Sumatra, Java, Bali, Nusa Tenggara, Sulawesi, & Maluku.

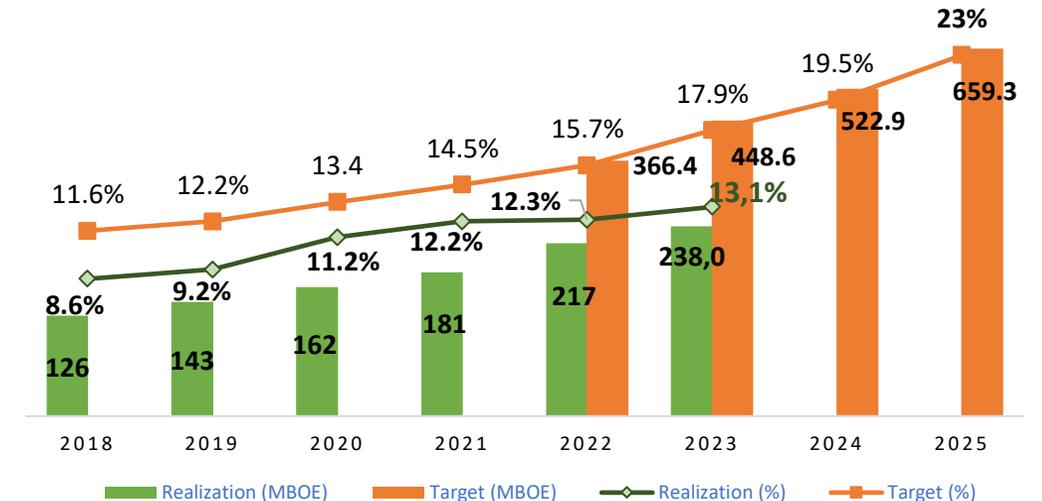
NRE PP Development Plan: Green RUPTL 2021-2030

- NRE additional capacity is targeted to reach 20.9 GW (51.6% of the power plant in RUPTL 2021-2030).
- NRE development has been carried out in accordance with the systems' electricity balance.
- Another program, namely dedieselization, is also included on the plan.

2030 Additional Cap. Target	
	Solar: 4,680 MW
	Hydro: 10,390 MW
	Bioenergy: 590 MW
	Wind: 597 MW
	Geothermal: 3,355 MW
NRE Base and Peaker: 1,310 MW	

Potential for floating PV is also identified in existing lakes and dams, amounting to **26.65 GW for 271 locations**

NRE in The National Energy Mix



GENERAL REGULATION FOR FOREIGN INVESTMENT IN ELECTRICITY SECTOR

Minimum investment requirements for Foreign Direct Investment (FDI) include total investment **higher than ten billion rupiah** (with the minimum paid-up capital of IDR 10 billion), excluding land and buildings per line of business and per project location.

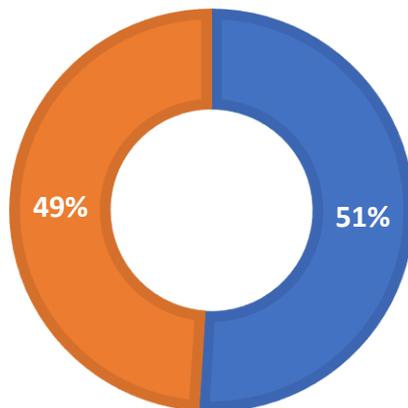
(Government Regulation No. 5/2021)



FDI \geq Rp 10 Bill

SHARES

■ Subsidiary of PLN ■ Foreign Bussines Entities



- Implementation of Electricity Infrastructure Development can be done through cooperation in providing electricity between subsidiaries of PT PLN (Persero) and foreign business entities.
- Subsidiary of PT PLN (Persero) is a subsidiary of PT PLN (Persero) whose shares are owned by PT PLN (Persero) at least **51%**.
- Cooperation with foreign business entities is prioritised with foreign business entities whose shares are owned by the country concerned (foreign state-owned enterprises).

(Presidential Regulation No 14 /2017)

POLICY AND REGULATION UPDATES TO SUPPORT INDONESIA'S ENERGY TRANSITION

EXISTING

Presidential Regulation No. 112/2022

Presidential Regulation for the acceleration of Renewable Energy Development for electricity supply

MEMR Reg. No. 16/2022

Procedures for Implementing Carbon Economic Value in the Power Generation Subsector

Coordinating Minister for Economic Affairs Regulation No. 21/2022

List Of National Strategic Projects

Presidential Reg. No. 98/2021

Presidential Regulation concerning Implementation of Carbon Economic Values for Achieving Nationally Determined Contribution Targets and Control of Greenhouse Gas Emissions in National Development

MEMR Reg. No. 26/2021

Minister of EMR Regulation on Solar PV Rooftop

UNDER DISCUSSION

Law on New Energy and Renewable Energy

Updated of National Energy Policy and General Electricity Plan

Presidential Regulation concerning Nuclear Energy Program Implementation Organization (NEPIO)

Minister of EMR Regulation and other Supporting Regulations for Presidential Regulation No. 112/2022

Revision of MEMR Reg. No. 26/2021

Minister of EMR Regulation on Solar PV Rooftop

Provides framework for RE based electricity provision:

- ✓ Renewable Energy Development is carried out based on the RUPTL, which takes into account the target of the renewable energy mix, supply-demand balance, and the economic value of power plants.
- ✓ Price and procurement mechanism for RE PP
- ✓ Utilization of domestic product

PRICE:

Ceiling Price (HPT) for 2-stage staging without escalation with location factors applies to stage 1, for each type of renewables:

Type	Stage 1 (cUSD/kWh)	Stage 2 (cUSD/kWh)
Geothermal	7.65 – 9.76 x F	6.5 – 8.30
Large Hydro	6.74 – 11.23 x n x F	4.21 – 7.02
Excess Power Hydro	5.80 x 0.7	
Solar	6.95 – 11.47 x n x F	4.17 – 6.88
Wind	9.54 – 11.22 x n x F	5.73 – 6.73
Biogas	7.44 – 10.18 x n x F	4.46 – 6.11 x n
Biomass	9.29 – 11.55 x n x F	7.43 – 9.24 x n

n: Technical factor (0.7 – 1.0) F: Location factor (1 – 1.5)

B to B (requires MEMR approval): Peaker Hydro; Biofuel PP; Ocean PP

- Transactions in rupiah with the JISDOR exchange rate
- The deal price requires MEMR approval

PROCUREMENT MECHANISM:

- **Direct Appointment for:**
 - Hydro (Ministry of Public Work's dam, by assignment)
 - Geothermal (by assignment)
 - Expansion of Geothermal; Large Hydro, Solar, Wind, Biomass, Biogas;
 - Excess Power Geothermal; Large Hydro, Solar, Wind, Biomass, Biogas
- **Direct Selection:**
Hydro, Solar, Wind, Biomass, Biogas, Biofuel, Ocean
- **Duration:** 180 business days
- **BOOT** through *B to B*.
- **Contract period:**
 - 30 years: Hydro, Geothermal, Wind
 - 25 years: Biomass
 - 20 years: Biogas
 - Max. 30 years: Solar

Presidential Decree 112/2022 also mandates the Government c.q. The MEMR to prepare a roadmap to accelerate the retirement of the CFPP's operational life and limit the development of new CFPPs, except for those CFPPs that have been listed in the RUPTL and which are integrated with industry.

Local content implementation (TKDN) is carried out in accordance with prevailing laws and regulations



OPPORTUNITIES FOR INVESTMENTS IN NRE

HYDRO



HYDRO PP

Additional Capacity until 2030: **10.4 GW**

Investment Required: **25.63 Billion USD**

Investment opportunity through:

Development of Large Scale, Mini, Micro Hydro, including existing Dam and reservoir owned by PUPR with the potential around 619 MW, and *Pump storage*

SOLAR PV



LARGE SCALE SOLAR PP

Additional Capacity until 2030: **4.68 GW**

Investment Required: **3.2 Billion USD**

SOLAR PV ROOFTOP

Additional Capacity until 2025: **3.61 GW**

Investment Required: **3 Billion USD**

Implementation opportunities:

- Solar PV Rooftop on **Buildings**
- Solar PV Rooftop in **Industries**

FLOATING SOLAR PV

Potential at 109 existing dam : **13,898.72 MW** (20% of the dam surface area)

BIOENERGY



BIOENERGY PP

Additional Capacity until 2030: **590 MW**

Investment Required: **2.2 Billion USD**

Investment opportunity through:

Development of Biomass, Biogas, and WtoE PP

B30 MANDATORY

Blending of biodiesel and diesel on 30% v/v. Currently conducting trial **B40, bioethanol, and bioavtur.**

COFIRING

Blending biomass and coal in existing CFPP Utilization potential: 8.06 mio ton biomass, which can be supplied from waste, wood chips, and other biomass types

GEOHERMAL



GEOHERMAL PP

Additional Capacity until 2030: **3.35 GW**

Investment Required: **17.35 Billion USD**

Investment opportunity through:

- Offering Working Area and Preliminary Survey and Exploratory Assignment (PSEA) Area of Geothermal. Geothermal Areas Offering Plan 2022 – 2024 :
 1. 5 Working Areas with the total capacity of 316 MWe;
 2. 3 Preliminary and Exploration Survey Assignment Area, with total capacity of 101 MWe
- Implementation of geothermal industry and supporting services

WIND POWER



ONSHORE WIND PP

Additional Capacity until 2030: **597 MW**

Investment Required: **1.03 Billion USD**

Investment opportunity through:

Development of Wind PP through auction by PT PLN (Persero)

OFFSHORE WIND:

Offshore Wind Power Plant is still in the research and development stage. The Bandung Institute of Technology (ITB) has conducted pre-feasibility study regarding **offshore wind** potential in **Papua**, resulted in potential capacity **7,527 MW**

GREEN HYDROGEN / AMMONIA



GREEN HYDROGEN PLANNING

1. Green Hydrogen will support the massive development of Solar PV in 2031 – 2060 with around **52 GW**, as planned in the Net Zero Emission Roadmap (NZE) 2060.
2. The investment required: **25.2 Billion USD**

THE OPPORTUNITIES OF FLOATING SOLAR PV DEVELOPMENT IN INDONESIA



Indonesia Solar PV

Potentials: **3,294 GW**

Utilization: **344 MW**



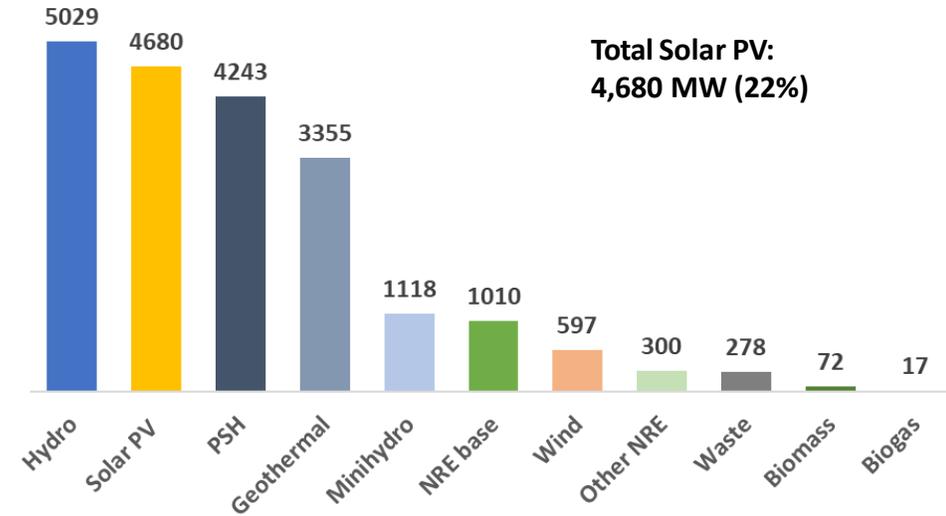
Floating Solar PV Potential in dams

259 Locations, 14,701.71 MW

Priority potential in 109 dams, with a total capacity of **13,898.72 MW** (20% of the dam surface area)

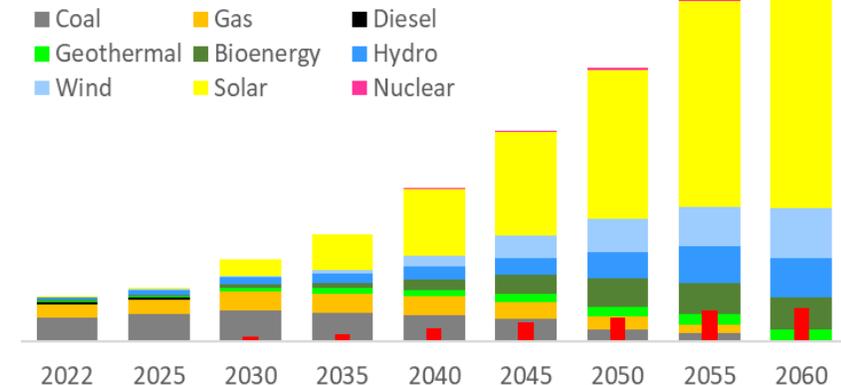


RE Development Plan in RUPTL PLN 2021-2030

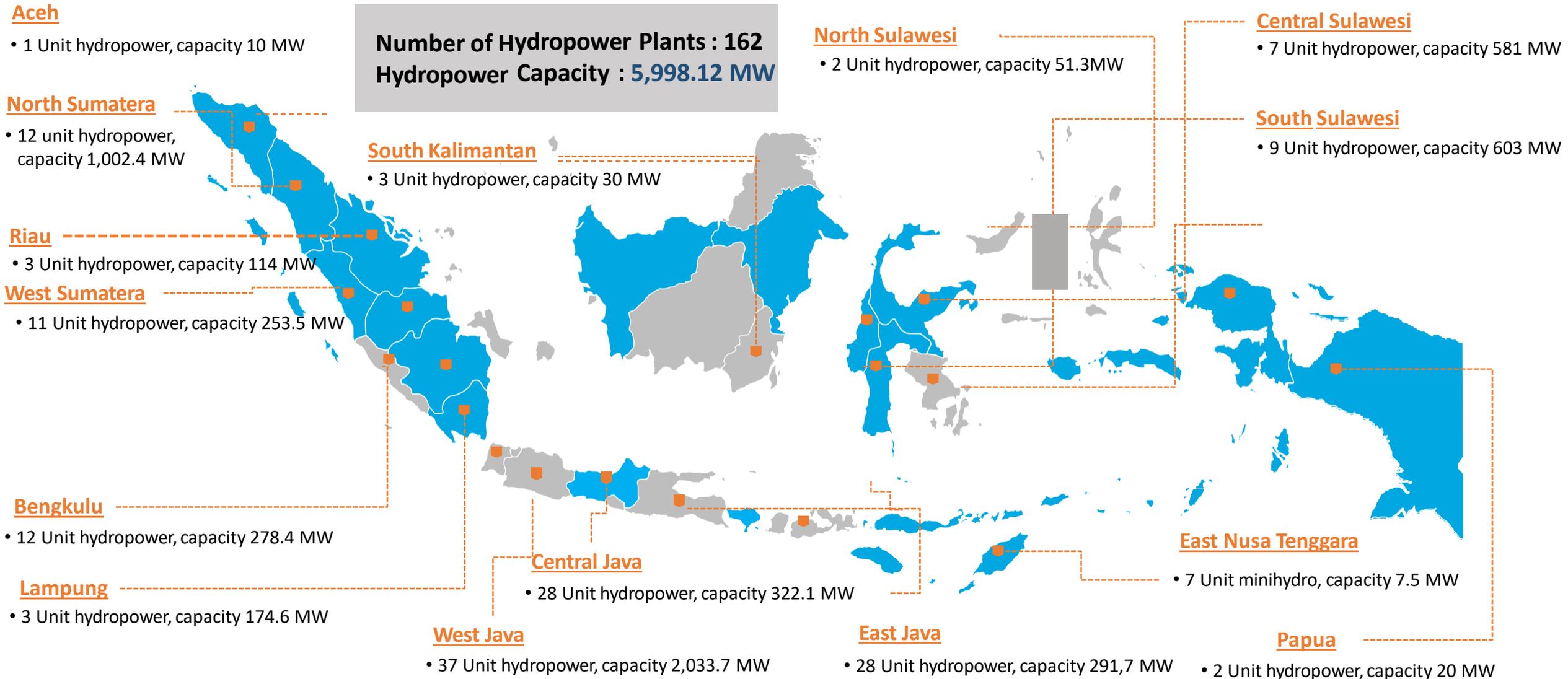


NZE Power Plant Development Roadmap

NRE PP Installed Capacity in 2060: 708 GW
Solar 421 GW (59%)



HYBRID FLOATING SOLAR PV POTENTIAL IN EXISTING HYDRO POWER PLANTS



CHALLENGES AND MEASURES TO ACCELERATE RE DEVELOPMENT

Some **Challenges** in RE Development:

- **Intermittent** nature of VRE generation
- Still **expensive** for VRE infrastructure support products (some raw materials are still imported)
- **The low interest of banks to invest in the RE sector** is due to the high risk
- Currently, **domestic sources of financing still offer loans with high interest rates and short tenors**
- The **limited ability** of the electricity grid system to absorb electricity from VRE power

The government needs to formulate a strategy to address these issues.

All stakeholders are expected to participate and collaborate together in the development of EBT

Government's Measures

- 1 Complete the regulatory framework to support investment and funding in the VRE sector
- 2 Providing quality data and information that is easily accessible to the public
- 3 Knowledge sharing and public discussion to mitigate social issues
- 4 **Personnel competency development**
- 5 Realizing industrial/factory development raw materials with the collaboration of BUMN and business entities
- 6 Collaborate with related Ministries/Institutions to provide incentives and funding support for VRE projects.
- 7 Encouraging the application of technological innovations, for example smart grids to overcome the technical problems of VRE power

Role of Stakeholder



Academia

Creating **innovations** in the NREEC sector that can be directly utilized by the community, providing and increasing **quality human resources** and **encouraging technology transfer**



SOE & Private

Carrying out **business activities** for power generation and green fuel, **supporting services**, creating **job opportunities**, contributing to state **revenues** and **economic activities**.



NGO

Providing **advocacy /assistance** for the community, conducting **positive campaigns** and **active participation** in NREEC development.

Thank You

www.esdm.go.id



Kementerian Energi dan
Sumber Daya Mineral



@KementerianESDM



@kesdm



KementerianESDM



Address

Jl. Pegangsaan Timur No.1,
Cikini, Menteng Jakarta