ASIA INFRASTRUCTURE FORUM

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PLN Indonesia Power

Renewable Energy Project Development in Indonesia PLN Indonesia Power

Asia Infrastructure Forum 2024

JUNE 2024

ISO 37001 ANTI-BRIBERY MANAGEMENT

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www.plnindonesiapower.co.id

A Brief Overview of PLN

For **78** years, PLN has contributed to providing access to electricity throughout Indonesia in accordance with the mandate of the fifth Principle of Pancasila

Electricity for a better life

89+ Million
Customers

~275 Million
People Electrified

488 Trillion
Revenue[2]

72+ GW
Capacity of Power Plant[1]

71 thousand kms
Transmission

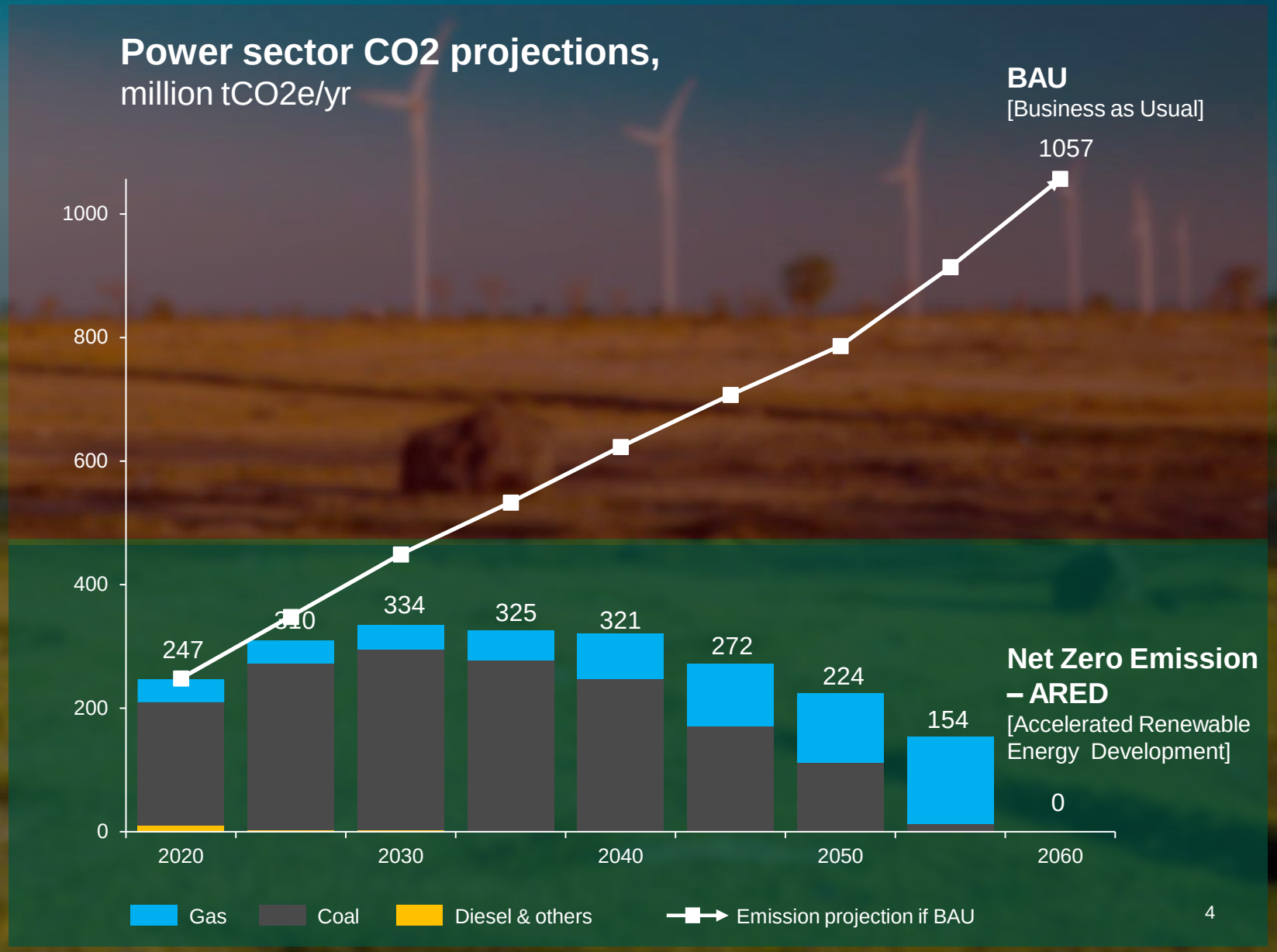
166 thousand MVA
2.367 unit
Capacity of Substation

66 thousand MVA
559 thousand unit
Capacity of Distribution Substations

1. Including IPP
2. 2023 unaudited consolidated financial statements of PLN

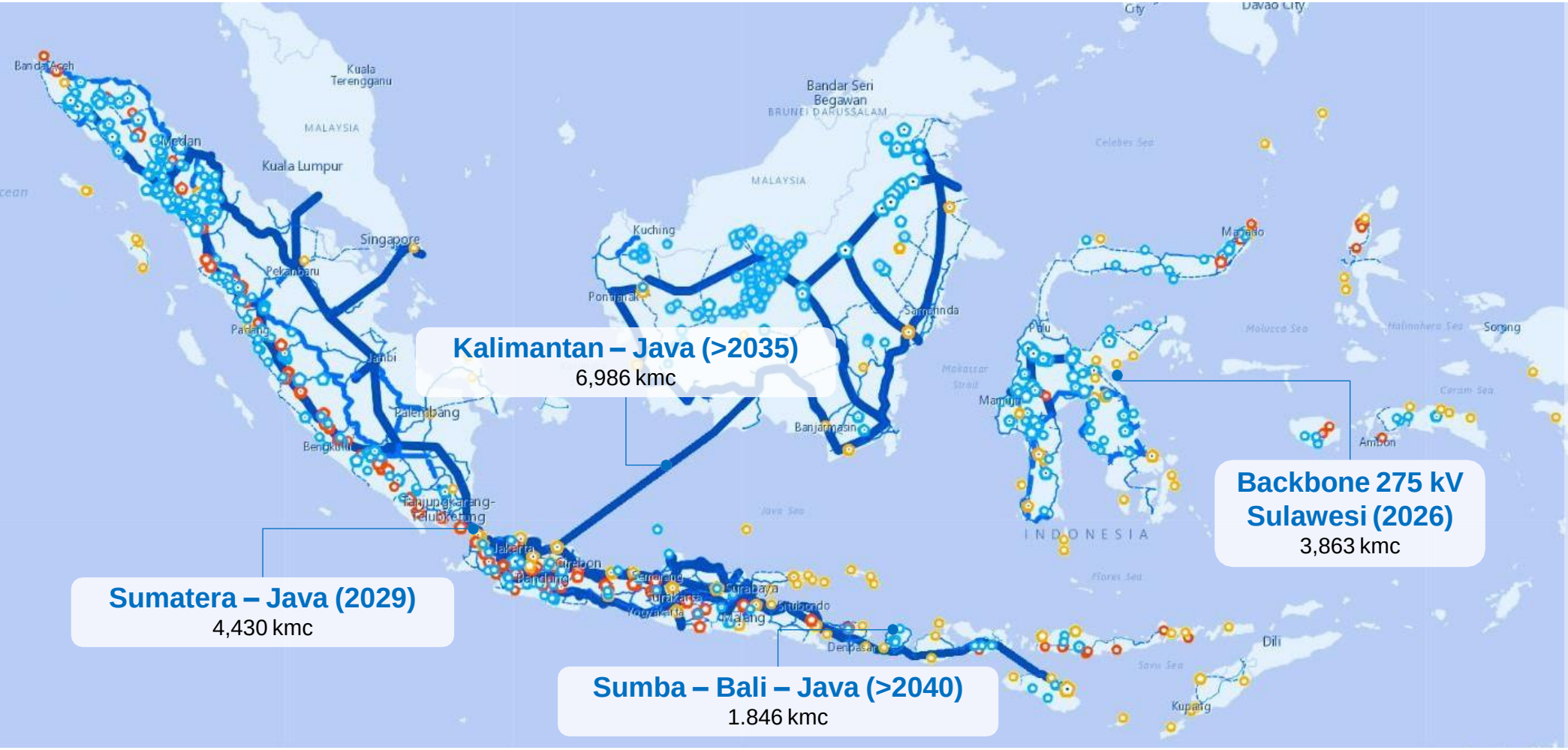
PLN is fully committed to reducing greenhouse gas emissions

At **COP26**, PLN declared a roadmap towards Net Zero Emissions by 2060



Accelerated Renewable Energy Development (ARED)

The **Green Super Grid** will adress the mismatch between **supply-demand** and connect renewable energy sources to demand centers.



PLN has designed 5 scenarios. Of the five scenarios, Accelerated Renewable Energy with coal phase down is a scenario of adding 75% EBT and 25% gas by 2031-2040, which will ensure emissions reduction while maintaining system reliability and PLN's financial sustainability.

The total additional renewable energy capacity in the **Accelerated Renewable Energy Development (ARED)** scenario

61 GW

Hydro	Geothermal	Bioenergy	Solar	Wind	New energy
19,6 GW	7,1 GW	3,7 GW	16,5 GW	11,3 GW	2,4 GW

Renewable Energy Project

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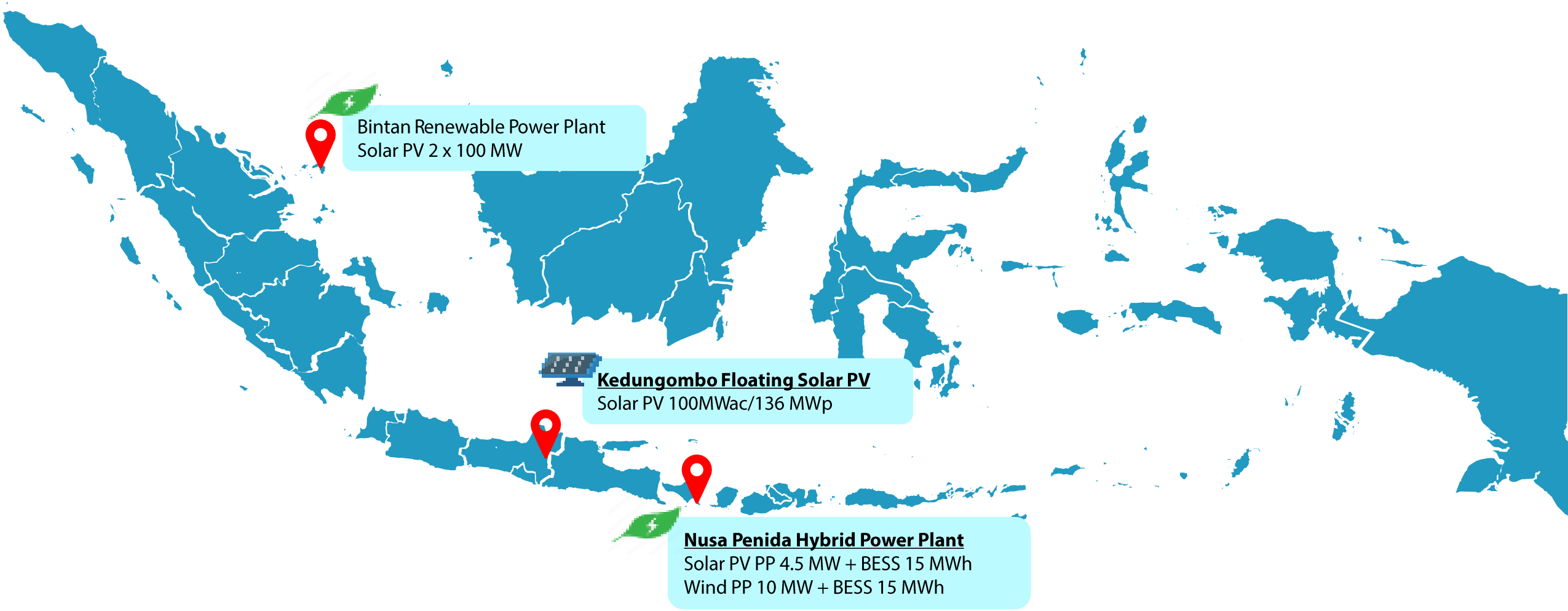
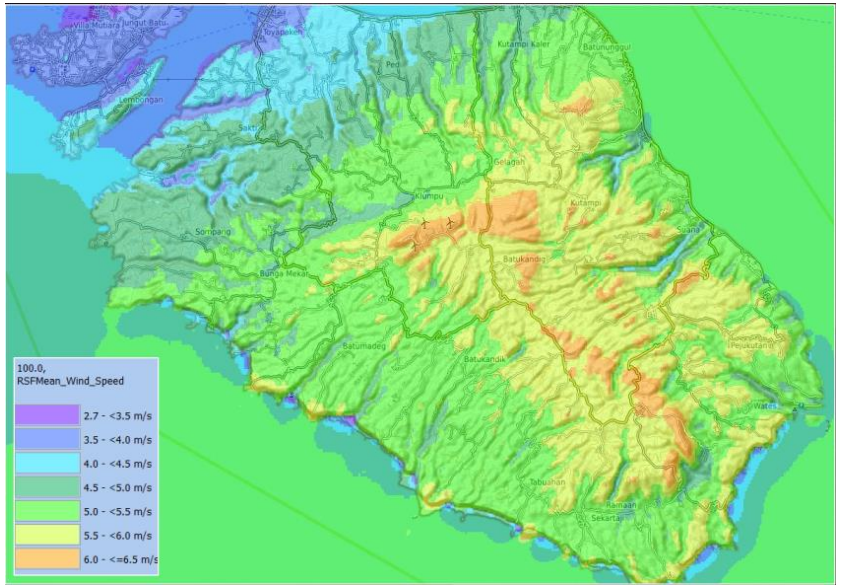


NUSA PENIDA HYBRID PROJECT

Solar PV PP 4.5 MW + BESS 15 MWh

Wind PP 10 MW + BESS 15 MWh

Wind and Solar Energy Resource in Nusa Penida Island



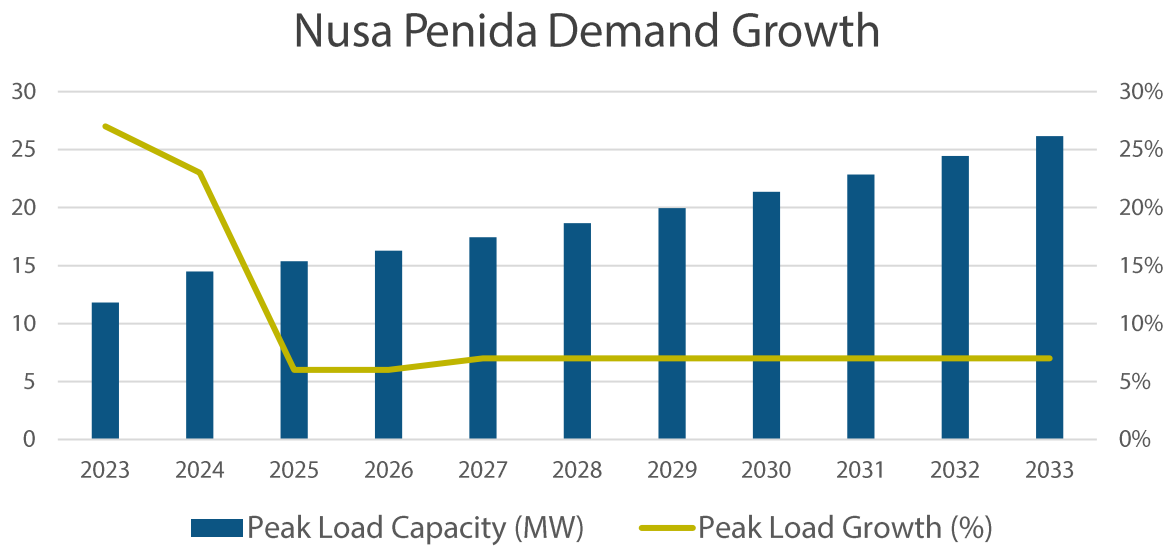
Wind Resource Map from UL

- The wind resource map is generated from mesoscale modeling with a resolution of 50 meters. The data format used is the Wind Resource Grid.
- The map on the right shows the average wind resource at the proposed wind location at a height of 100 meters. Areas with annual wind speeds higher than 6 m/s are marked in orange.

Solar Resource Map from Global Solar Atlas / SolarGIS

- The Solar resource map is generated from GWA or SolarGIS (Bankable Solar Data Resource
- The map on the right shows the average Irradiation / GHI 2000 kWh/m2

Load Growth and Demand Potential in Nusa Penida Island



Nusa Penida is a stunning island located southeast of Bali, Indonesia. It's part of the Nusa Islands, which also include Nusa Lembongan and Nusa Ceningan. Known for its rugged coastline, dramatic cliffs, and crystal-clear waters, Nusa Penida has become increasingly popular among travelers seeking a more untouched and adventurous destination. So, there are a lot of lodge, Hotel, and Villa as electricity demand.

Year	Peak Load	Peak Load Growth
2023	11.8	27%
2024	14.5	23%
2025	15.4	6%
2026	16.3	6%
2027	17.4	7%
2028	18.7	7%
2029	20.0	7%
2030	21.4	7%
2031	22.9	7%
2032	24.5	7%
2033	26.2	7%

Surge in load growth in Nusa Penida following the COVID-19 pandemic in 2023 and 2024. The average load growth in Nusa Penida is predicted to be around **6% and 7%** in the following years.

New Electricity Demand

New Villa

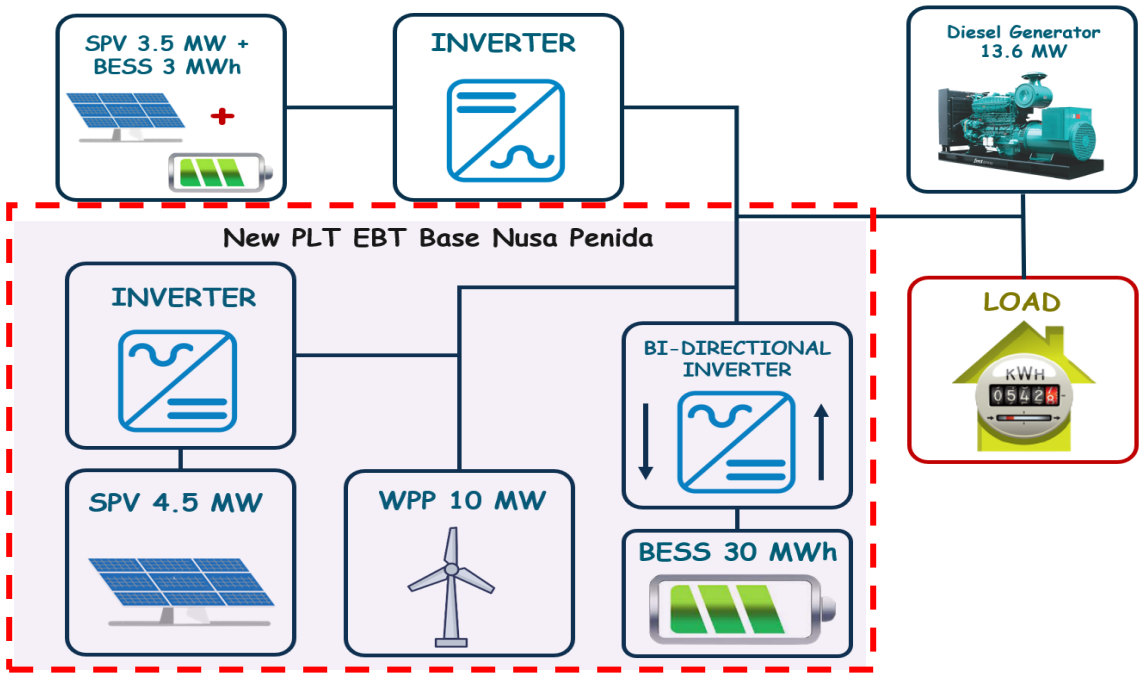
There is a villa under construction in Pejukutan Village, Nusa Penida.

RO Plant

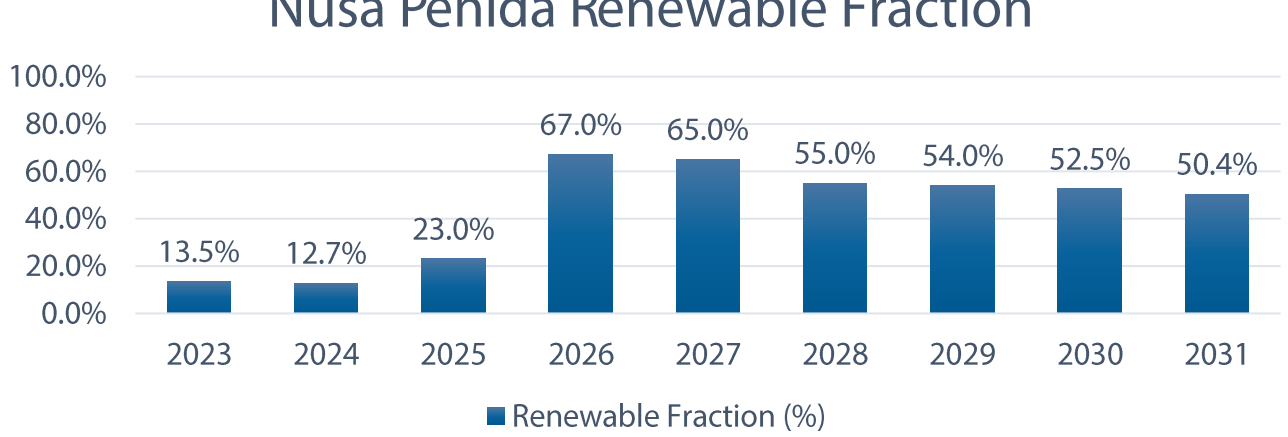
There is a new demand for a reverse osmosis plant to meet the need for clean water in Nusa Penida.

Existing and Expansion Power Plants Nusa Penida Island

Power Plants Configuration



Type	Capacity (MW)	COD
Diesel Generator	CDB 9.8 MW + Rent 3.8 MW	Eksisting
Solar PV Existng	SPV 3.5 MW + BESS 3 MWh	2022
New SPV + BESS	SPV 4.5 MW + BESS 15 MWh	2025
New WPP + BESS	WPP 10 MW + BESS 15 MWh	2026



- With the addition of renewable energy power plants consisting of SPV 4.5 MW + BESS 15 MWh and WPP 10 MW + BESS 15 MWh in 2025 and 2026, the renewable fraction will increase to 67% and gradually decrease to 50% by 2031,
- For the SPV + BESS project, it has already reached the permitting and land acquisition stage by PLN IP. Meanwhile, the wind power plant (PLTB) project is still in the study phase (wind campaign started on November 2023).

KEDUNGOMBO FLOATING SOLAR PV PROJECT

Solar PV 100 MWac/136 MWp

Kedungombo Floating Solar PV Project

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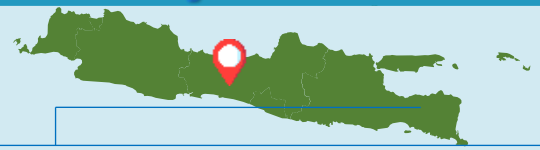
Project Profile



Kedungombo Dam, Central Java Province

- Capacity : 100 MWac / 136 MWp
- COD Target : 2025
- Interconnection point : GI Kedungombo 3,3 km
- RUPTL List: Central Java Spread Quota
- Business Scheme:

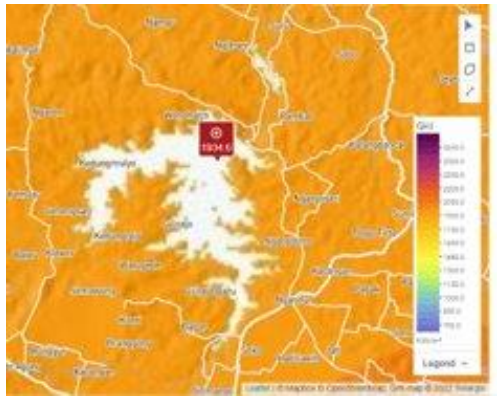
IPP with 51% Share PLN IP

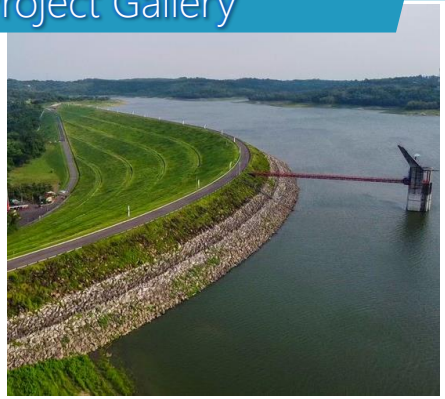
Progress

Completed progress:

- ✓ MoU with the Reservoir Operator (PJT 1)
- ✓ Feasibility Study
- ✓ Pre-Selection Partner "Hijaunesia 2023"
- ✓ Lender Commitment
- ✓ Permit ongoing

Project Gallery





Project Highlight

- Financial highlight
  - Investment period : 25yrs.
  - % of ownership : PLN IP 51% : Equity Partner 49%
  - Debt-to-Equity : 70% : 30%
  - Ceiling Tariff Perpres EBT 112/22 : 5.8 cUSD/kWh
- Technical highlight:
  - Site irradiance : 1951 kWh/m^2
  - Energy : 218 GWh
  - CF: 24,9%
  - DC/AC opt. : 1.36
  - Boundary Area PV : 228 Ha (4.96% of the reservoir surface area)

Ongoing progress

2023	2024		2025
FS	Partner selection	permit+land	construction
Pre-Selection	PPA process	EPC Sign	Commisioning
PLN Assigment	Establishment of SPC	Financial close	COD

BINTAN RENEWABLE ENERGY BASE PROJECT

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2 x 100 MW

New RE Power Plant in Bintan 2 x 100 MW

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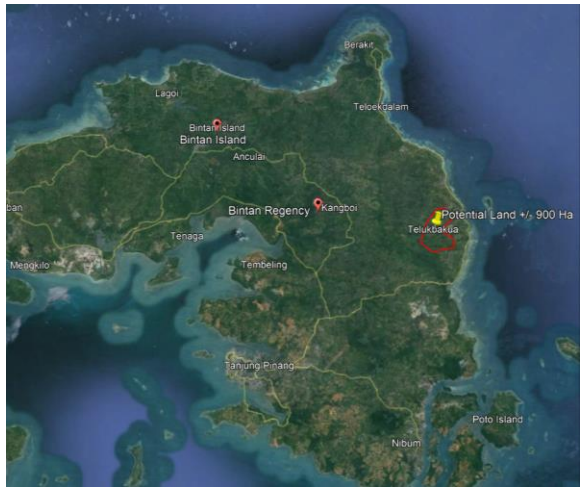
Project Profile

Bintan Regency, Kepulauan Riau Province

- Capacity : 2 x 100 MWac
- COD : 2029 (Bintan 1) dan 2030 (Bintan 2)
- Interconnection Poin : New GI 150 kV, < 10 km
- RUPTL 2021 - 2030 : PLT EBT Base Bintan 2 x 100 MW

Alt. Location



SolarGIS Resource Data

Gn. Kijang District
Bintan Regency
Kepulauan Riau Province

Solar Iradiation(GHI) Potential 1700 kWh/m2

Interconnection: Radial Special Economic Zone or New Sub Station

Progress Project

Progress Complete :

- Desktop Study

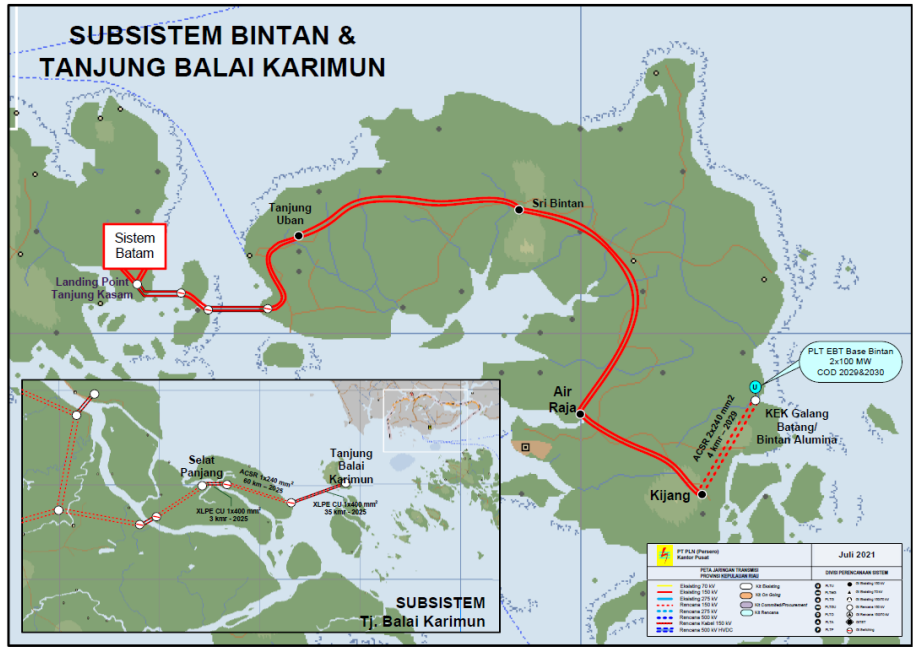
On Going Progress :

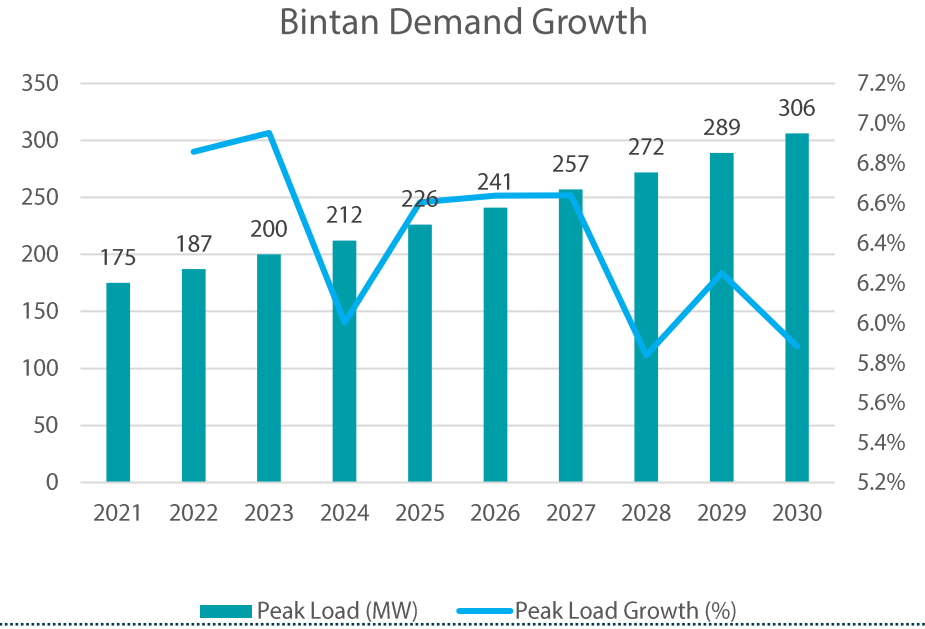
- Site Reconnaissance / Site Survey
- Pre Feasibility Study
- Permit

Project Timeline Plan

2024	2025	2026	2027	2028	2029
▶ Desk Study ▶ Pre FS ▶ FS	▶ Permit ▶ Assignment	▶ PPA ▶ Land Acquisition	▶ SPC Establish ▶ Tender EPC	▶ Construction	▶ COD

Load Growth and Demand Potential in Bintan

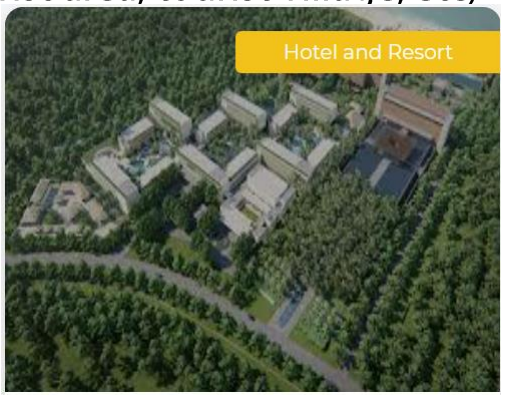




New Electricity Demand

Tourism Area

there will be development of tourist (Hotel, tourist area, tourist village, etc)



development of shrimp cultivation

development of shrimp cultivation Plan in several areas in Bintan

fisheries processing industry

development of the fish processing industry to increase the economic value of the fishing industry

Source : https://bip.bintankab.go.id/sektor_investasi

Hydronesia 2024 (Hydro Project Development)

"Co-Developer Selection for Project Development"

No	Project Name	COD Target	Progress	Notes
1	HEPP Simonggo	2029	Pre-FS preparation (due to a shift in location), Permitting Process	update the Pre-FS with the latest river conditions
2	HEPP Tanjung Sakti	2029	Pre-FS available, Renew KKPR permit	-
3	HEPP Tabang	2029	Preliminary Study Finalization	400 MW potential, RUPTL 90 MW
4	HEPP Jatiluhur	2030	Pra-FS preparation, Permitting Process	MoU with PJT 2
5	PLTA Poko	2026	FS done by PLN	Proposed 51% Scheme
6	PS Matenggeng	2028	FS done by PLN	Proposed 51% Scheme

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Thank You

"Moonshot journey to a global energy company"

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