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TKKA
Direktorat Transmisi, Ketenagalistrikan,
Kedirgantaraan dan Antariksa

BerAKHLAK
Berorientasi Pelayanan Akuntabel Kompeten
Harmonis Loyal Adaptif Kolaboratif

**#bangga
melayani
bangsa**

Indonesia Long and Medium Term Planning Towards Inclusive and Sustainable Net Zero Emissions

The 2025 Asia Clean Energy Forum

Yusuf Suryanto

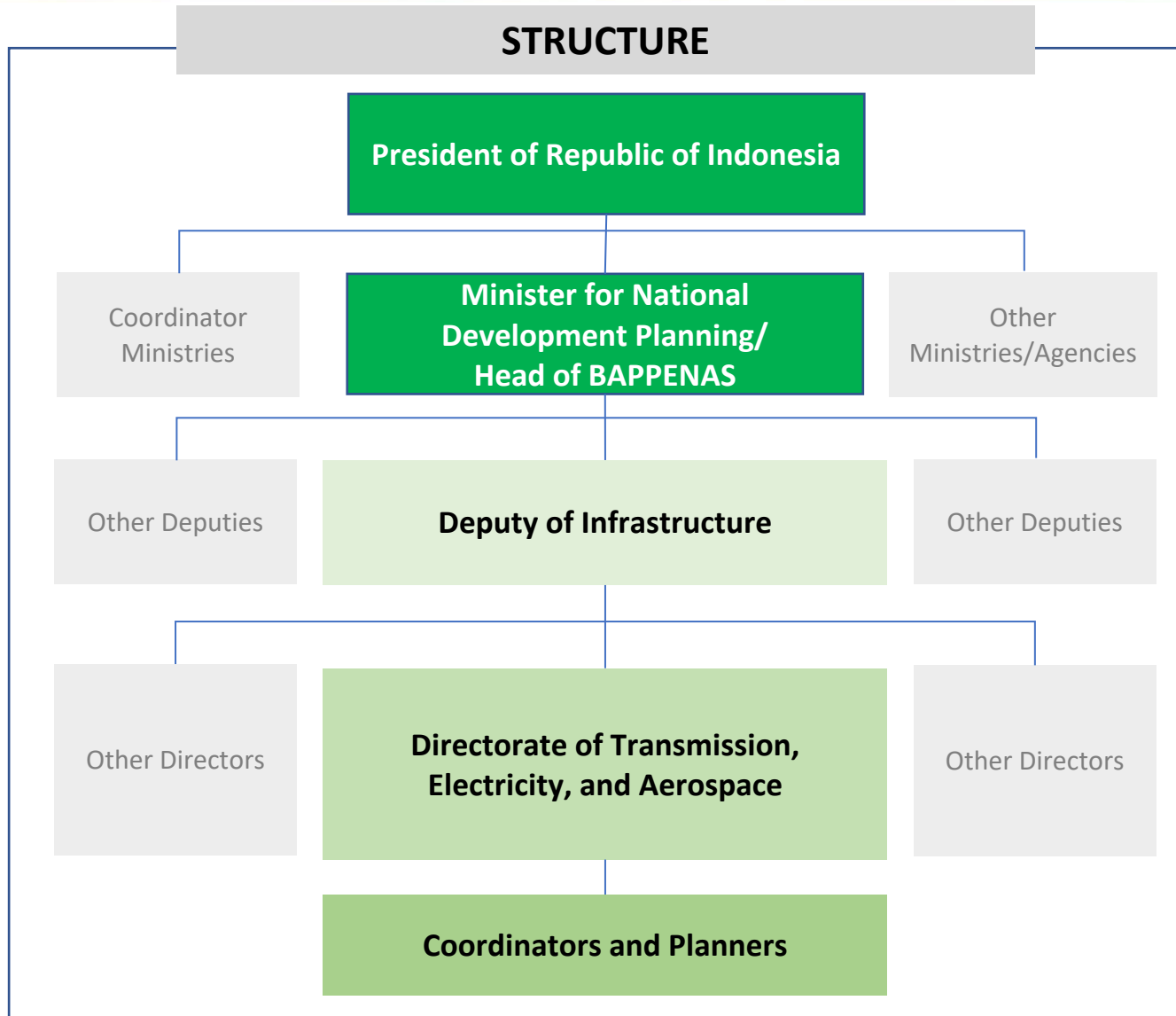
Director for Transmission, Electricity and Space (TES)
Deputy of Infrastruktur

Ministry of National Development Planning/National Development Agency (Bappenas)

Manila, 5th June 2025



STRUCTURE



Position and Duty

1. Directly under the president.
2. Assisting the President in conducting national development planning.

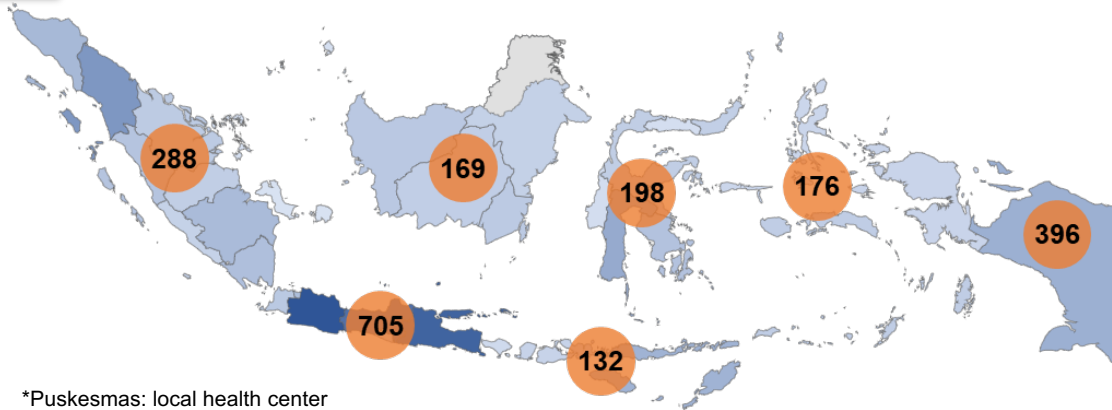
Main Tasks/Assignments

1. **Planning** (macro economic goals, infrastructure plans, global agreements, etc)
2. **Budget Allocation** (strategic projects, public investment model, etc)
3. **Managing the Implementation** (achievement of national development goals, implementation of strategic projects, etc)

“New” Tasks/Assignments

1. Formulation and determination of **national strategic project policies**
2. Financing and **Investment**
3. **Risk management**

1. Powering health services



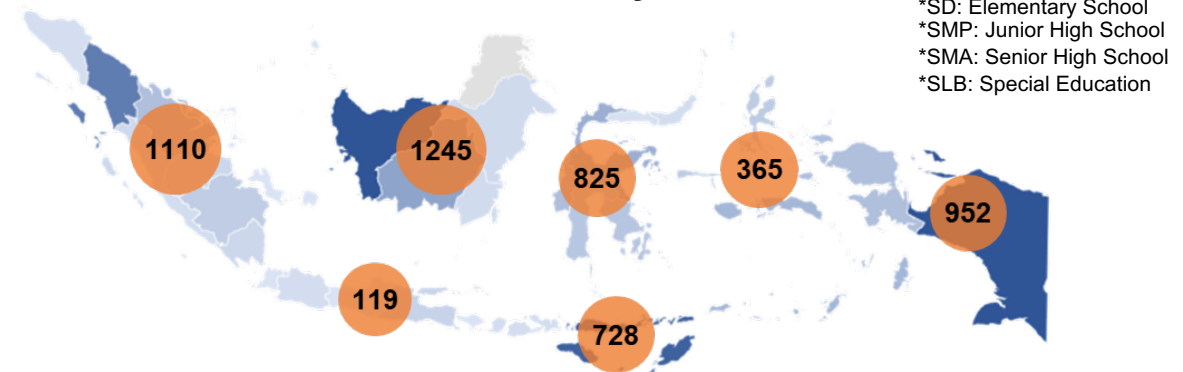
*Puskesmas: local health center

- Out of **10.335 Puskesmas** in Indonesia :
 - **2.064 Puskesmas** do not have 24-hour electricity access by PLN.
 - **687 Puskesmas** are not connected to PLN grid.
- Minimum standard requirements for Puskemas: 10,000 VA connected load

Island	Electricity service less than 24 hours	Not Served by PLN
Sumatera	288	103
Jawa Bali	705	25
Kalimantan	169	62
Nusa Tenggara	132	78
Maluku	176	61
Sulawesi	198	64
Papua	396	294
Total	2064	687

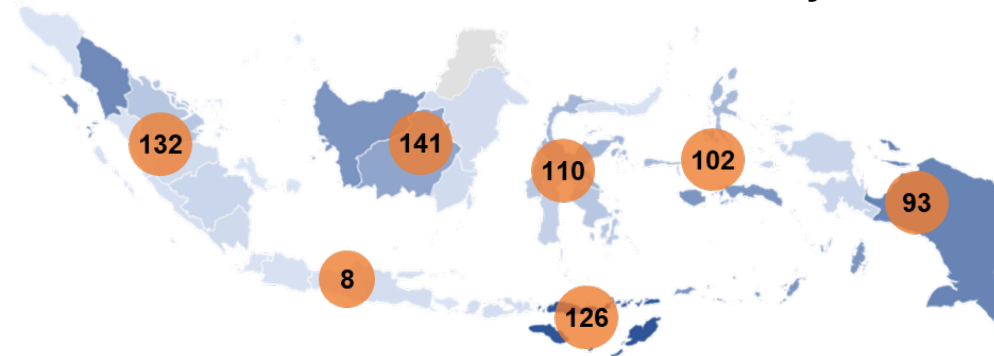
2. Powering Education

Number of SD without electricity access



*SD: Elementary School
*SMP: Junior High School
*SMA: Senior High School
*SLB: Special Education

Number of SLB, SMP, SMA without electricity access



- Education facilities without electricity access: (a) SD: 5.344 units; (b) SLB, SMP, dan SMA: 712 units.
- Minimum standard requirements: (a) SD: 900 VA; (b) SLB, SMP, and SMA: 1.300 VA.



Desa Wairatan (Village)

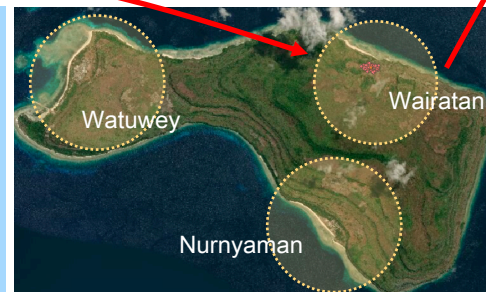
- Prov. Maluku
- Kab. Maluku Barat Daya
- Kec. Dawelor Dawera
- Area: 3,73 km²
- Accessibility: 130 km from Saumlaki

Data Podes 2018

- Population: 72 HH
- Electricity access: 100%
- Power supplier: Non-PLN

ISLAND TECHNOLOGY (ARCHIPELAGONOMIC)

ISOLATED GRID/ SMART MICRO GRID/
DISTRIBUTED ENERGY RESOURCES
(DER)?



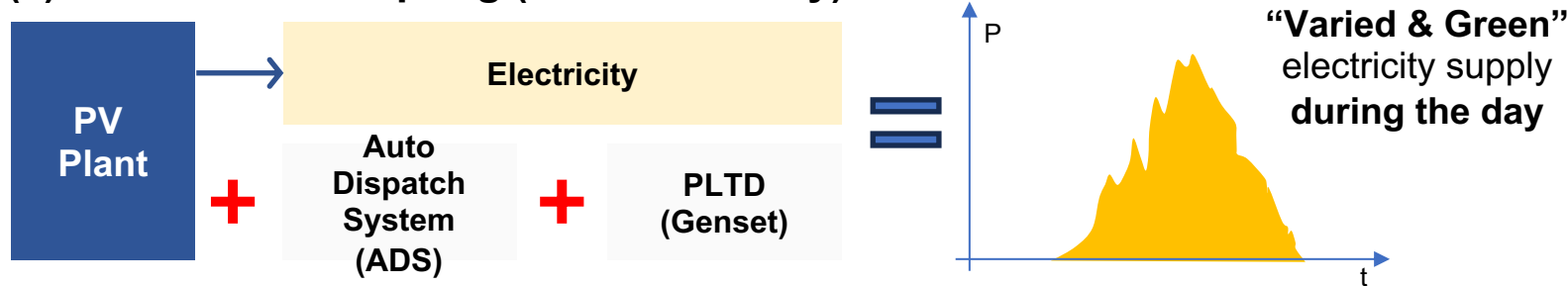
Issues and Challenges: Electricity Provision ...(3/4)



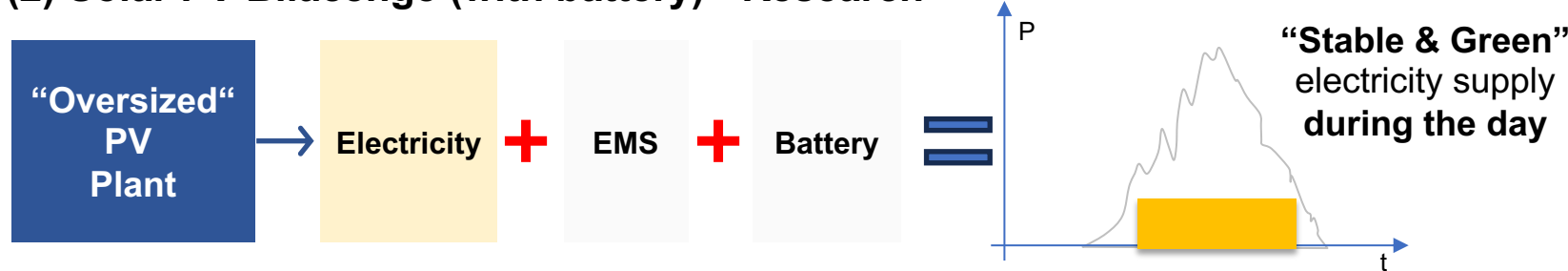
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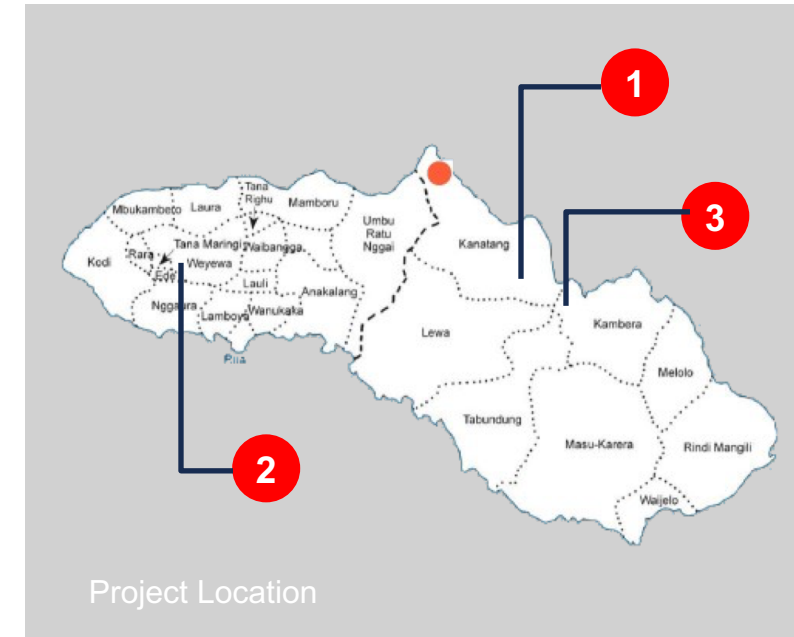
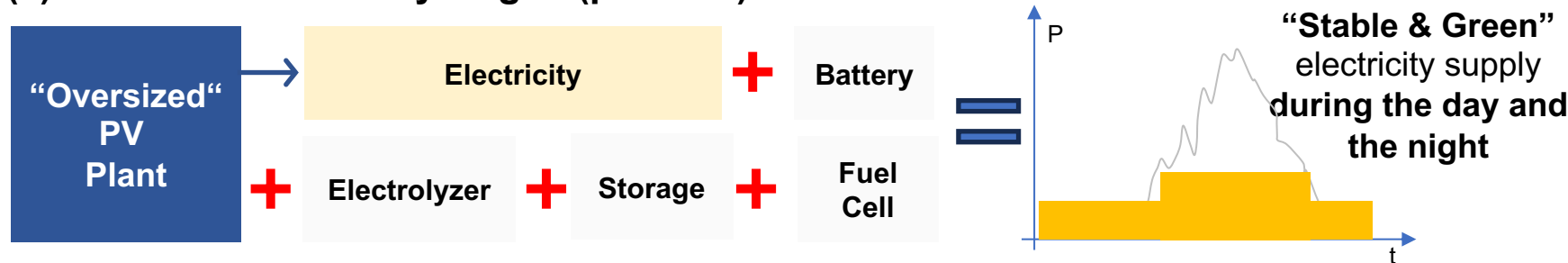
(1) Solar PV Hambapring (without battery) - IPP



(2) Solar PV Bilacenge (with battery) - Research



(3) Solar PV + Green Hydrogen (planned) - IPP



ISLAND TECHNOLOGY (ARCHIPELAGONOMIC)

Technology options which fit in with specific sites (regions)

Issues and Challenges: Electricity Provision ...(4/4)



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* Contribution (%) and Growth (%) - 2021

SUMATERA

Economy Electricity

■ 21,70 ■ 16,83

▲ 3,18 ▲ 7,43

Pop: 22% (58,6 juta)

1239 GW

(4,48)

KALIMANTAN

Economy Electricity

■ 8,25 ■ 4,60

▲ 3,18 ▲ 5,25

Pop: 6% (16,6 juta)

517 GW

(2,14)

SULAWESI

Economy Electricity

■ 6,89 ■ 4,70

▲ 5,67 ▲ 8,22

Pop: 7% (19,9 juta)

249 GW

(2,10)

MALUKU & PAPUA

Economy Electricity

■ 2,49 ■ 1,18

▲ 10,09 ▲ 7,85

Pop: 3% (8,1 juta)

918 GW

Economy Electricity

■ 57,89 ■ 69,51

▲ 3,66 ▲ 5,53

Pop: 56% (151,6 juta)

716 GW

34,29

BALI & NUSA TENGGARA

Economy Electricity

■ 2,78 ■ 3,17

▲ 0,07 ▲ -0,87

Pop: 6% (14,9 juta)

■ Contribution

▲ Growth

□ Profit [Loss] PT PLN
2023 (Rp Trillion)

● Renewable
potential

Source: BPS, PLN Statistics, processed

Policy Frameworks: Electricity Development Plan 2025-2029



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Law 59/2024: National Long-Term Development Plan (RPJPN) 2025-2045

The United, Sovereign, Advanced, and
Sustainable Unitary State of the Republic of
Indonesia

Main Development Goals

- ❑ GNI Per Capita: **30.300 USD**
- ❑ Reduction in greenhouse gas emission intensity: **93,5%**

Direction of Development

Mission 2
Economic
Transformation

Mission 5
Social,
Cultural, and
Ecological
Resilience

Mission 7
Realizing Quality
and
Environmentally
Friendly Facilities
and Infrastructure

GAME CHANGER

The acceleration of a just energy transition
towards the sustainable use of new and renewable
energy is supported by an integrated electricity grid
and green transportation.

UU 16/2016: Ratification of the Paris Agreement

31,89%
43,2% REDUCTION OF GHG EMISSIONS FROM
BUSINESS AS USUAL IN 2030

Achievement of Sustainable Development Goals
(SDGs)

National Medium-Term Development Plan (RPJMN) 2025-2029

POLICY DIRECTION – Electricity Development Planning

Vision:
Together
Advanced
Indonesia Towards
Indonesia Emas
2045

**RELIABLE AND EQUITABLE
ELECTRICITY INFRASTRUCTURE
(PN 3)**



- ❑ Electricity
Consumption per
Capita: **1.720 kWh**

**ACCESSIBILITY AND AFFORDABILITY OF
ENERGY AS WELL AS THE UTILIZATION OF
CLEAN ENERGY (PN 2)**



- ❑ Final Energy Consumption per
Capita: **0.830 TOE**
- ❑ The Share of Renewable Energy in
the Primary Energy Mix: **23%**

**INTEGRATION OF INCLUSIVE AND
ADAPTIVE SOCIAL ASSISTANCE
AND SOCIAL SECURITY (PN 6)**



- ❑ Target families receiving
social assistance and
social security: **85%**

KEY STRATEGIES

Generation

- Decarbonizing power system and promoting energy storage system
- Fuel shifting

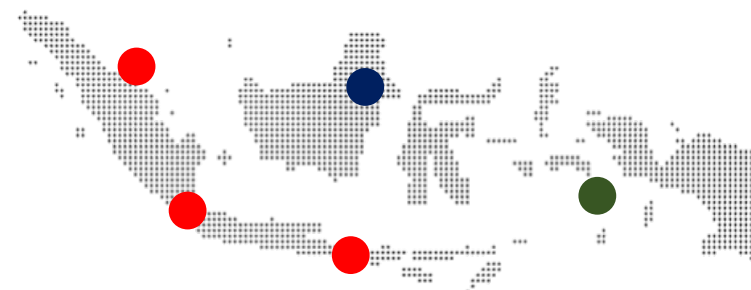
Network

- Developing interconnection backbone
- Strengthening distribution system, isolated grid, and rural electrification
- Digitalization of power sector

Utilization

- Developing EVs infrastructures
- Electrification

REGIONAL DEVELOPMENT (HIGHLIGHT)



● Inter-island
transmission

● Renewable
power plants

● Expansion
of reach



FINANCING

- Private participation
- State Owned Enterprises
- State budget (national and regional)



GOVERNANCE

- Regulatory Framework
- Institutional Framework



CONTROLLING

- Risk management

Improving quality and reducing costs of rural electricity supplies



Complete village electrification

Estimated 126 villages (0.15%) located in Maluku, Papua, and Nusa Tenggara



Continue transfer of villages to PLN supply

50% of non-PLN villages taken-over by PLN during RPJMN25 period



De-dieselisation implemented

Estimated 5,200 gensets (1,873 MW) in 2,130 sites to be replaced / supplemented by solar + BESS



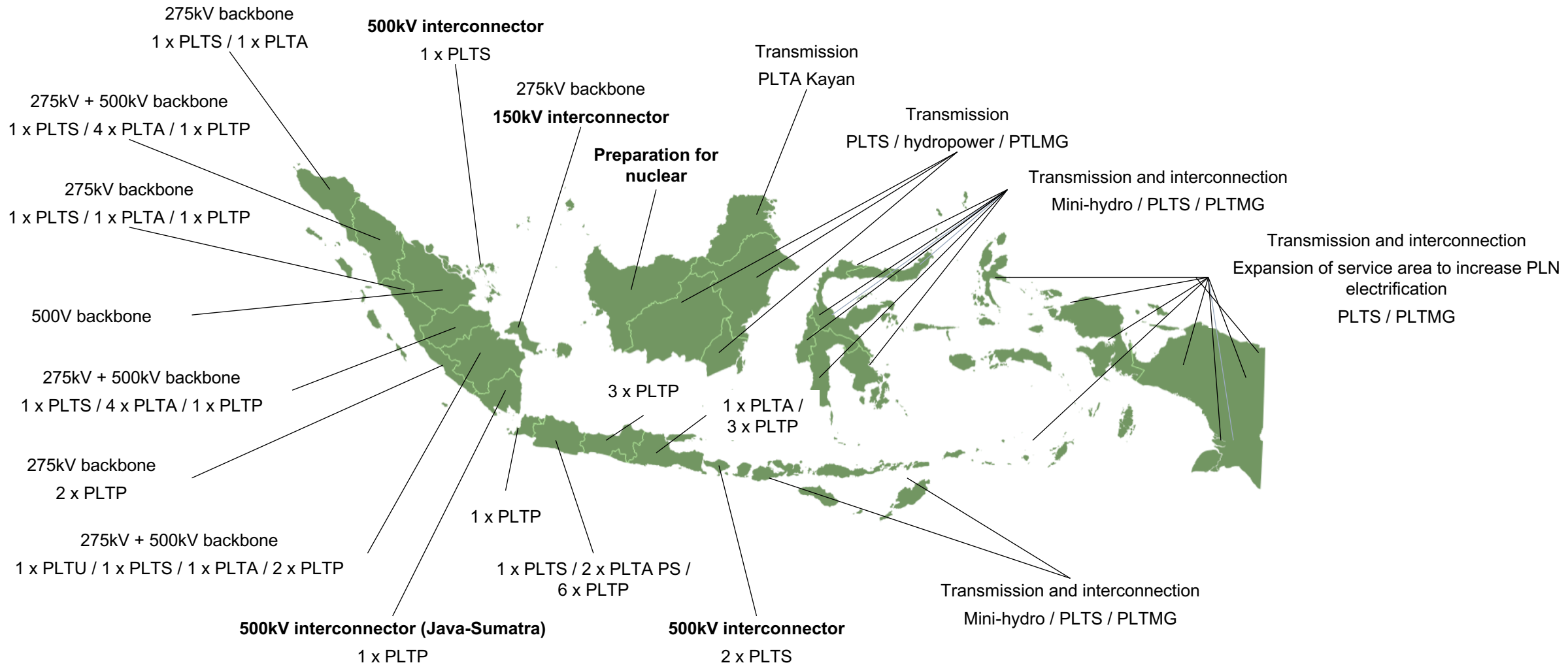
Renewable energy intelligent micro-grids

Address sustainability issues by deploying remote monitoring and automation of solar + BESS systems

Identified Projects to Support RPJMN 2025-2029 (2)



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Source: [Perpres No 12 Year 2025 \(Volume IV\)](#)

Proposed Reform to Support National Priority Development Agenda



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Requirement to Increase Delivery Capacity

Types of Plants	Increase Delivery
Coal	0.7X
Gas	2.95X
Hydro	7X
Geo	1.4X
Bioenergy	12.5X
Solar	40X
Wind	20X



Requirement Investment Capacity

increase average capital expenditure by
2,1X
(Rp69 trillion → Rp 147 trillion)

Private financing of grid infrastructure



Identification of opportunities and effective **private financing mechanisms to accelerate the development and strengthening of electricity grid infrastructure** in a sustainable manner.

Potential to introduce privately-financed transmission projects

Tariff and subsidy reforms



A review of **tariff and subsidy** reforms to create a more equitable, efficient and sustainable electricity tariff structure and encourage electricity sector investment.

Reducing PLN reliance on compensation income

National system operator



Study on the establishment of **National System Operator** to improve efficiency, transparency, and reliability of national electricity system management.

Establishing a state-owned SO to improve transparency

Source: Consultant recommendations and calculations



Inclusive collaboration among multiple stakeholders is one of the keys to the success of low-carbon development, especially for sustainable electricity development.



The development planning process as **a tool for coordination** among electricity development actors and integration to finance implementation.



The policy coherent and consistency in the long term will determine the success of national development goals, particularly on low carbon electricity development.





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THANK YOU

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Deputy of Infrastructure
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