

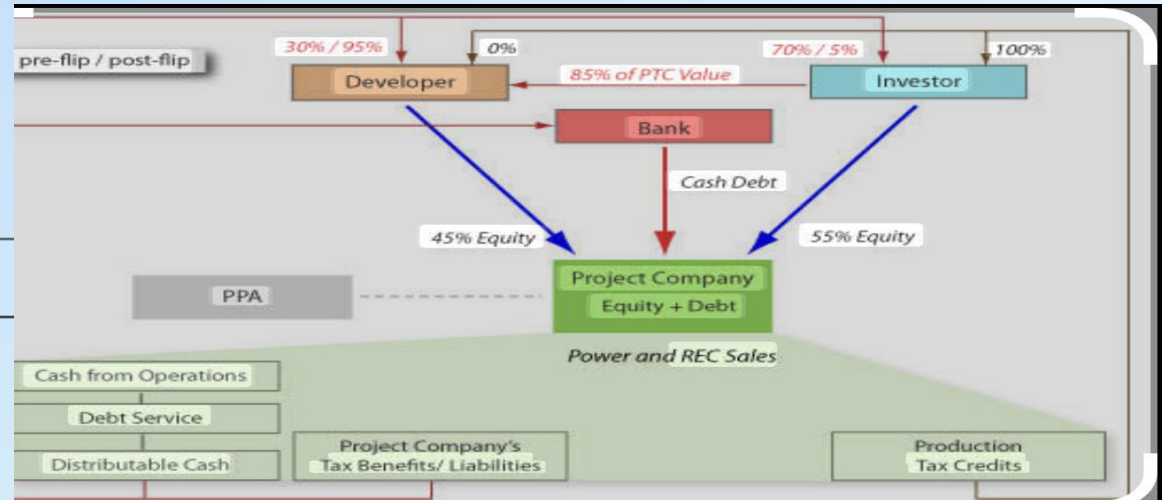
Strategy Perencanaan dan
pembiayaan infrastructure
di Kawasan Indonesia
timur



DR ELVI NASUTION

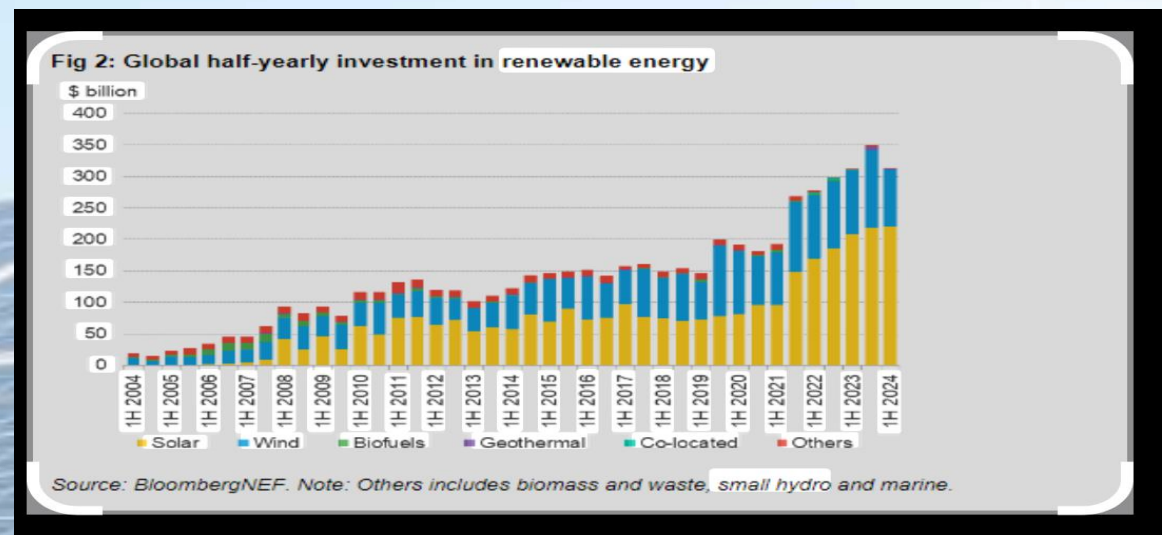
IESR RESEARCH FELLOW

Renewable Energy Trend and Typical PF Structure (Source: BNEF)



- Financing requires holistic structuring (tech + financial + policy).
- Success comes from partnership: DFIs + donors + private sector.
- Remote islands = living laboratories for renewable + storage solutions.

→ “Policy → Finance → Technology → Community.”



Renewable Energy Project Criteria in the Eastern Part of Indonesia

• Technical & Grid Criteria

- Resource Quality & Reliability
- Solar irradiation, wind speeds, or geothermal/hydro potential must be well studied.
- Variability is more critical in small island grids due to limited balancing capacity.
- Grid Absorption Capacity
- Maximum RE penetration before stability issues (often capped at 30-50% without storage).
- Need for energy storage (batteries, pumped hydro) to smooth variability and Technology Fit
- Preference for modular and scalable technologies (solar PV, wind + storage, biomass).
- Hybrid systems (diesel + RE + storage) often favored for resilience.

• Financial Criteria

- Project Size & Economies of Scale
- Small projects may struggle to attract big investors; blended finance or concessional loans are common.
- Tariff Structure / PPA Terms
- Secure long-term Power Purchase Agreement (PPA) with government or utility.
- Bankable tariff (covering levelized cost of energy + risk premium).
- Cost of Capital
- Islands often face higher financing costs due to perceived risk and smaller deal size.
- Access to concessional finance, green funds, or climate finance instruments is critical.
- Creditworthiness of Off-taker & Financial health of the island utility or government guarantees (sovereign backing if needed).

Risk and Innovative financing mechanisms

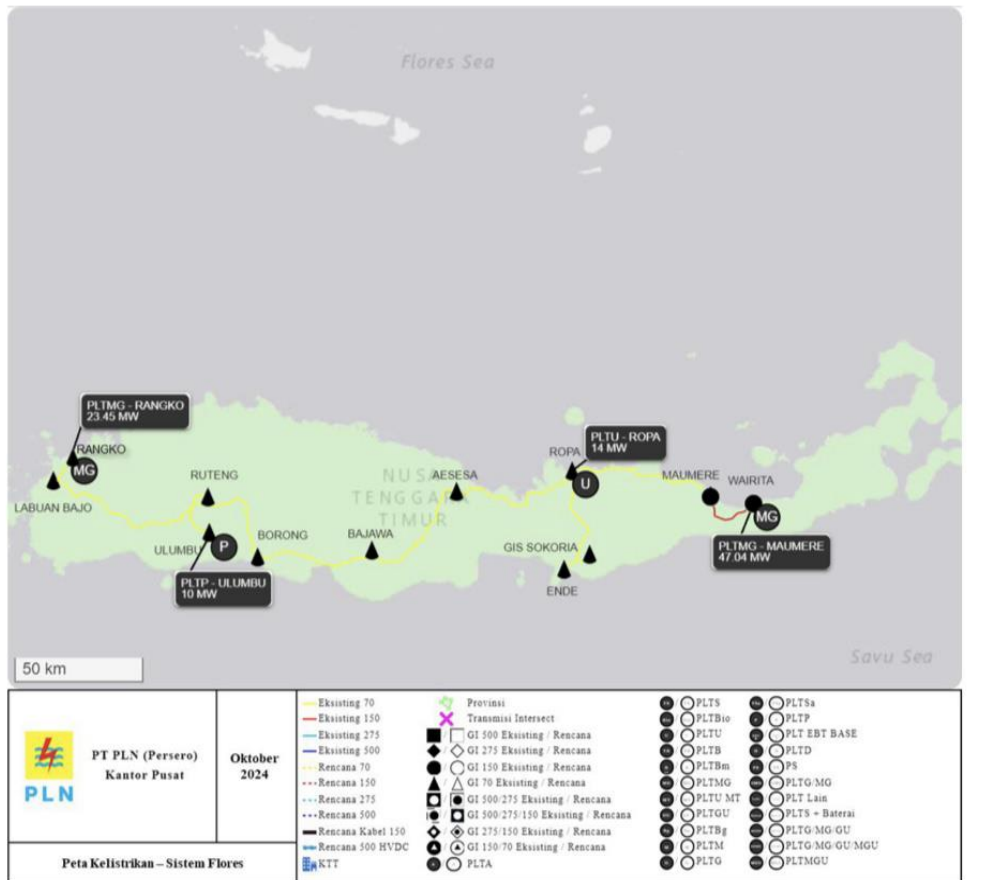
• Risk & Mitigation

- Fuel Price Volatility Risk (if hybrid with diesel)
- RE helps hedge against diesel import volatility, but financiers assess integration risk.
- Climate & Disaster Risk
 - - Islands often face cyclones, storms, and sea-level rise. Technology choice and insurance become crucial.
- Currency Risk
 - Many island grids are in emerging markets with volatile currencies. Dollar-denominated PPAs or hedging mechanisms are often required.
- Community & Social Acceptance
 - - Strong local buy-in needed; resistance can derail small projects.

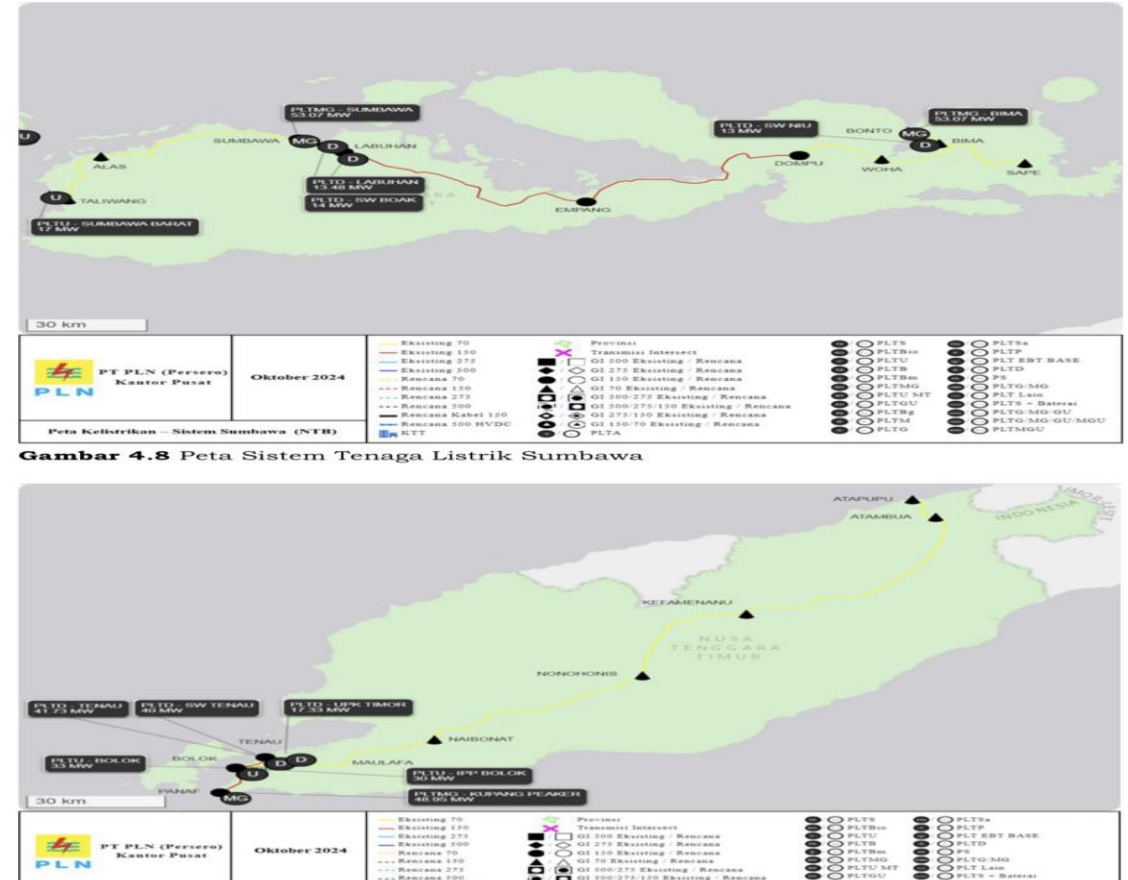
• Innovative Financing Mechanisms

- Blended Finance – Mix of concessional capital (multilaterals, DFIs) with private investment.
- Climate Funds & Grants – Green Climate Fund, Global Environment Facility, etc.
- Results-Based Financing (RBF) – Payments linked to verified renewable energy output.
- Energy-as-a-Service Models – Private developer owns and operates; utility or community pays per kWh.

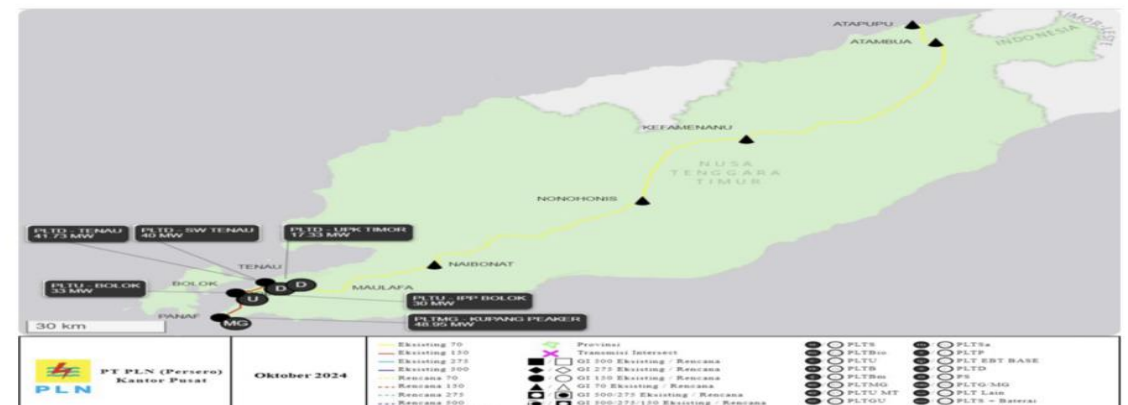
EASTERN INDONESIA: FLORES, SUMBAWA AND TIMOR ELECTRICITY SYSTEM



Gambar 4.10 Peta Sistem Tenaga Listrik Flores



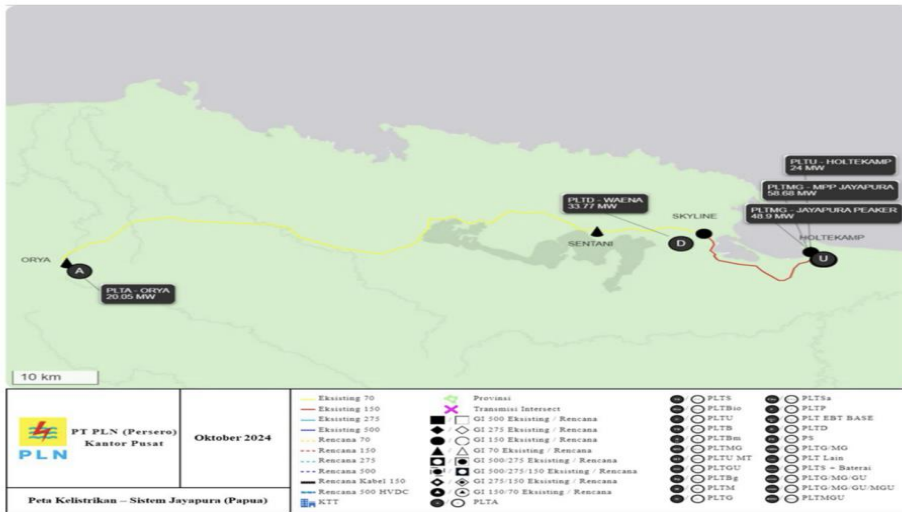
Gambar 4.8 Peta Sistem Tenaga Listrik Sumbawa



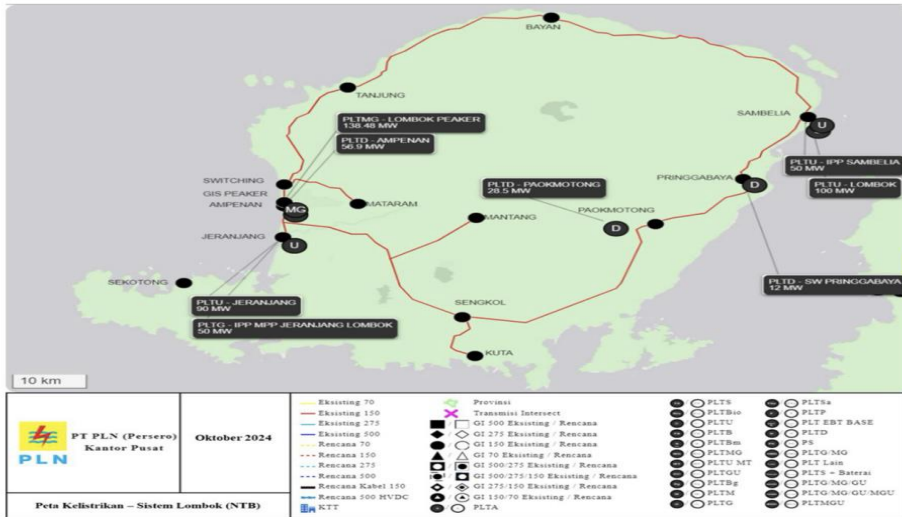
Gambar 4.9 Peta Sistem Tenaga Listrik Timor

EASTERN INDONESIA: LOMBOK, JAYAPURA AND AMBON ELECTRICITY SYSTEM

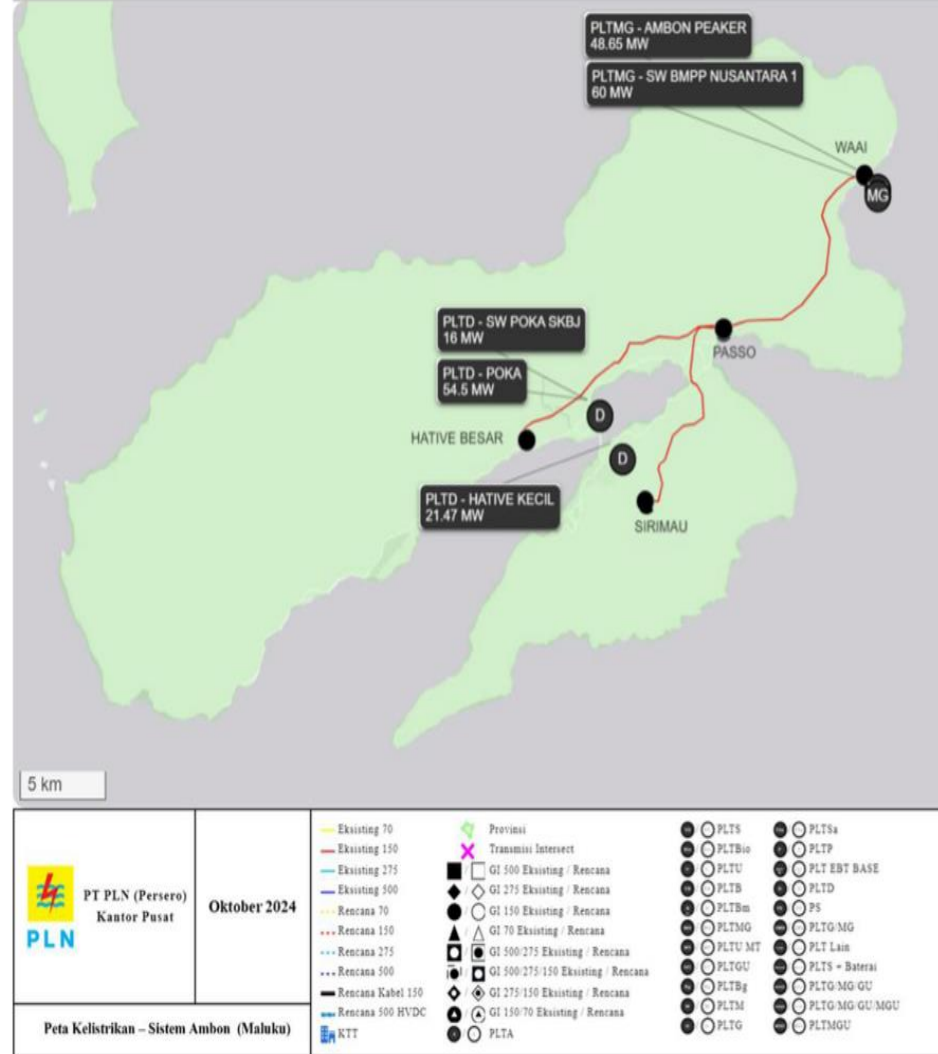
(Source: Ruptl 2025)



Gambar 4.6 Peta Sistem Tenaga Listrik Jayapura



Gambar 4.7 Peta Sistem Tenaga Listrik Lombok



Gambar 4.5 Peta Sistem Tenaga Listrik Ambon

Summary

⚡ In summary: Financing renewable energy for island grids depends heavily on grid stability (storage integration), tariff bankability, concessional finance support, and off-taker creditworthiness. Investors want assurance that the project is resilient (technical + climate), economically viable (tariffs + subsidies), and backed by a credible policy framework

Blended Finance in Pacific Small Island Developing States (Multiple Projects)

- In the Pacific islands (e.g. Fiji, Vanuatu, Solomon Islands), several utility-scale renewable energy projects (solar, wind, hydro) have been enabled through combinations of aid / donor finance, concessional loans, and private investment.
- These islands have committed to high renewable targets (sometimes 100% renewables) by 2030, which helps with Lessons / Challenges:
- Despite targets, high upfront costs, remote logistics, and small project sizes remain hurdles. Need for strong local institutions to maintain systems.

Key Takeaways / What Makes Blended Finance Effective in Island

- Financing / Blended Elements:
 - Use of concessional finance to lower cost of capital.
 - Grants or donor funding (for feasibility, preliminary studies) to build pipeline.
 - Private sector participation where risk mitigated by guarantees, assistance
 - Why It Worked:
 - Strong government / policy commitment.
 - Donor / multilateral support to cover early stage risks.
- Projects structured to match island-scale and constraints (logistics, capacity).

Country	Technology	Scale (indicative)	Blended stack (examples)	Off-taker model	Headline impacts
Cook Islands	PV + BESS (multi-island)	Multi-site	ADB sovereign + GCF grant + gov/EU	Utility (state)	Cuts diesel use; enables VRE on small grids.
Tonga (TREP)	BESS + mini-grids	System-level	GCF + ADB + Australia grants	Utility (TPL)	Stability for higher renewables; ~13.6 ktCO ₂ /yr ↓.
Maldives (ASPIRE/ARISE)	PV (IPP) + ~50 MWh BESS	~53.5 MW PV	IDA grants + guarantees to mobilize private IPPs	Utility/government PPAs	~US\$30m/yr fuel savings; PPP template.
Barbados	PV + BESS + H ₂ ; ESaaS pilots	Utility + C&I	GCF concessional + IDB	Utility & C&I contracts	Firm renewables + customer capex



THANK YOU
