

Sustainable Energy for Remote Indonesian Grids (SERIG)

Pursuant to US DOE FOA – Accelerating the Deployment of Energy Efficiency and Renewable Energy Technologies in Indonesia

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SERIG Project Broad Objectives

Demonstrate business cases for high-penetration renewable energy and energy efficient technologies to replace diesel generation on selected islands and remote grids

- ✓ **Demonstrate the value of RE/EE technology solutions that enable economically sustainable energy market alternatives**
- ✓ **Support the development of a national-level policy framework to foster private investment in RE throughout remote areas**
- ✓ **Mobilize private investment in RE and EE projects, particularly by working to foster market potential for companies**
- ✓ **Leverage and promote further engagement with existing clean energy efforts in Indonesia**
- ✓ **Develop a replication plan for accelerated RE and EE deployment across hundreds of other remote grids in Indonesia.**

Project Rationale and Objectives

Indonesia

Indonesia has the 4th largest population in the world, and a rapidly expanding economy with national goals and policies to increase access to electricity while also increasing usage of renewable energy.

Rationale:

- High cost of diesel powered electricity esp. for remote island grids and relatively low levels of electrification
- Clean energy and energy efficiency and GHG goals
- Rapidly expanding market potential for clean energy technologies
- Access to renewable energy resources
- Significant international investment in RE and EE

A few of the challenges:

- National subsidies for diesel fuel
- Detailed site-specific resource data
- RE technology supply chain and expertise in remote locations
- Capacity building – operation and maintenance of RE systems
- Accessibility of island grids

Potential Mutual Benefits US and Indonesia



- Strategic planning and analysis
- Energy modeling
- Workforce development
- EE/RE technical expertise

Leverage US Technical Expertise

Assist Indonesia

- Increased use of energy efficiency and renewable energy technologies
- Replicable RE and EE models



- Increased exports of clean energy technologies and services
- Data on clean energy policy and program success and challenges

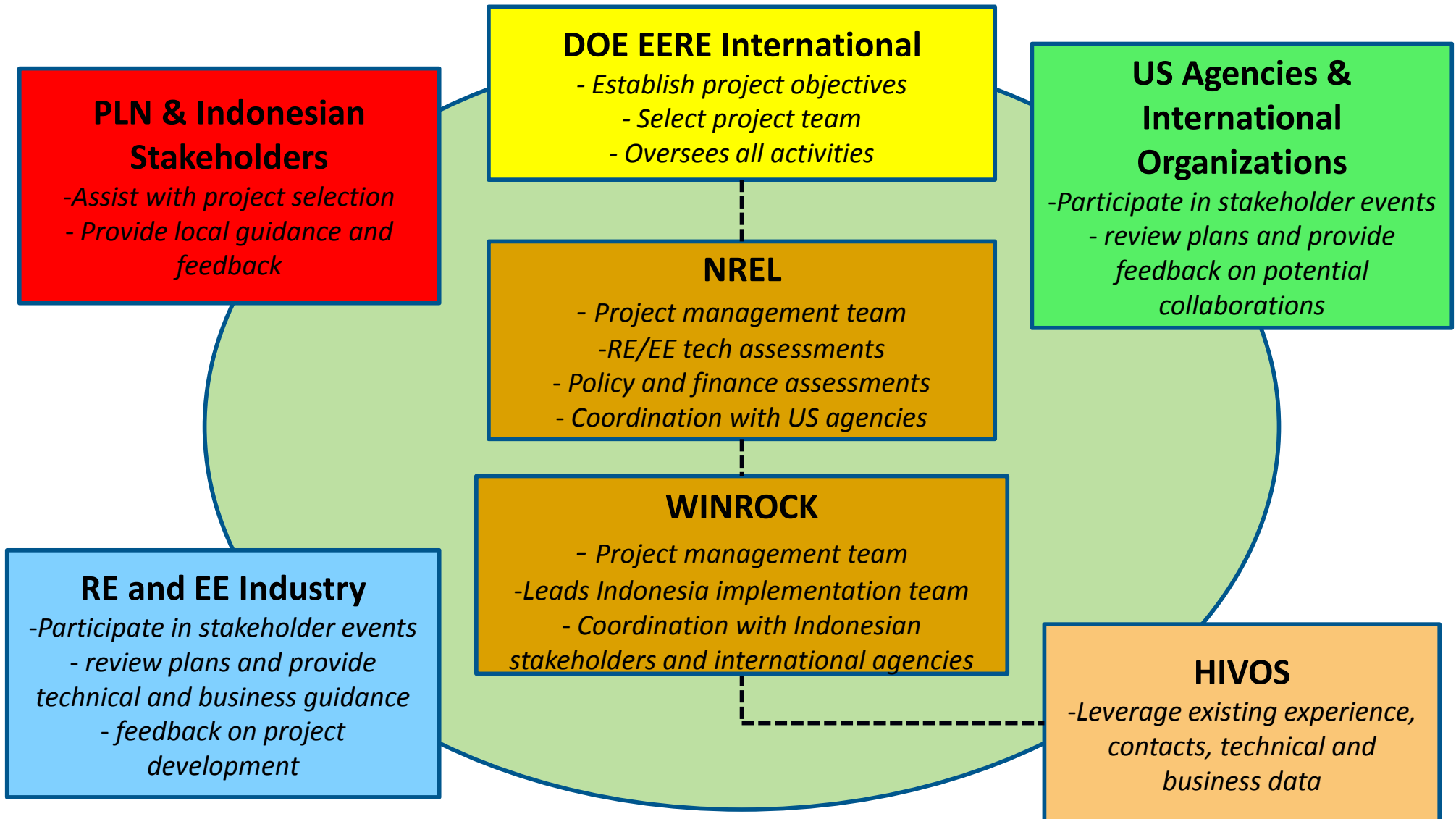
Potential US Benefits

Project Focus

- Focus on integrated set of RE & EE technologies in pilot regions (2-3 pilot grids)
- ***Initial*** candidate project locations:
 - Sumba
 - East Nusa Tenggara
 - South and Central Kalimantan
- Provide technical assistance to demonstrate techno-economic rationale
- Support policy that facilitates RE/EE for isolated grids
- Partner with financing entities, donors, RE/EE industry to implement projects
- Develop replication model

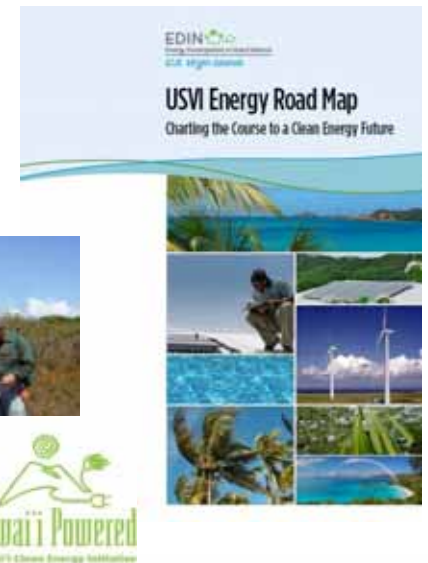


Project Team and Partners



NREL Synergistic Activities

- Millennium Challenge Corporation - Indonesia
- NREL support for USAID EC-LEDS
- Clean Energy Solutions Center
- EE/RE Integrated Deployment
 - Hawaii Clean Energy Initiative
 - US Virgin Islands
 - Alaska Clean Energy
- US DOI Pacific Island projects
 - Guam, Samoa, CNMI, Palau
- Access to RE and EE technology and energy systems integration expertise throughout the lab

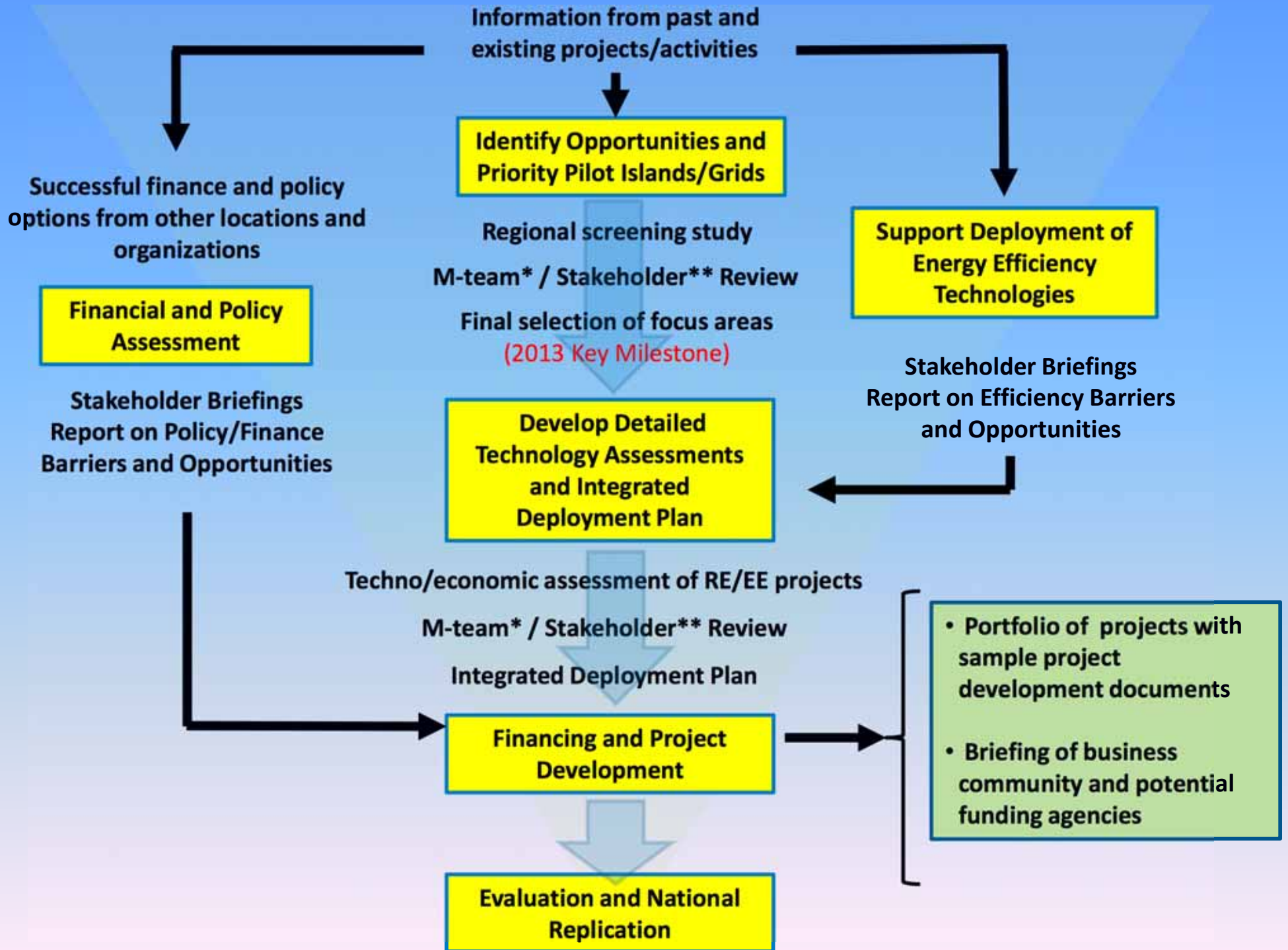


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Commonwealth of the Northern Mariana Islands Initial Technical Assessment Report








Jan Baring-Gould, Randolph Hunsberger, Charles Visser, and Philip Voss





Next Steps (year 1)



ACTION	
	Project Implementation Plan (12/2012)
	US Project Launch Meeting (3/2013)
	Finalize Winrock Subcontract (6/2013)
	Indonesia Stakeholder Meetings (6/2013)
	Develop site selection criteria
	Indonesia Kickoff Meeting
	Conduct Regional Screening Study
	Final selection of focus area projects (10/2013)



completed



in-progress



priority

SERIG Project Status / Progress

- **Conducted first in-country SERIG coordination meetings June 10-13, including:**
 - NREL / Winrock
 - US Embassy / USAID
 - Perusahaan Listrik Negara (PLN), RE and R&D divisions
 - US Treasury, Resident Advisor to PLN
 - Millennium Challenge Account – Indonesia (MCA-I)
 - Ministry of Energy and Renewable Resources (MEMR), Director of Energy Conservation
 - Agency of the Application and Assessment of Technology (BPPT)
 - GE Energy – Indonesia
 - Sewatama – Indonesia CAT distributor (diesel and electricity service provider)
 - Asia Development Bank
- **Individual Stakeholder Coordination Meetings**
 - Provided introductions of key players
 - Project overview – objective, approach, timeline and status
 - Discussed opportunities for collaboration and sought initial feedback

SERIG Project Status / Progress

- **Selection Criteria and Site Selection**
 - Winrock has developed an initial survey of 10 candidate locations
 - Developed preliminary selection criteria and ranking metrics, including:
 - Renewable resource availability (wind, solar, biomass/biogas, hydro potentials)
 - Existing electrification ratios
 - Grid capacity
 - Generation cost
 - Replication potential
 - Local PLN support and plans for RE implementation
 - Local government and agencies support
 - Accessibility / suitability
 - Opportunities for reduced consumption via energy efficiency
- **Seeking stakeholder feedback on criteria and sites**
- **Collecting site data to fill out selection matrix**
- **Plan to vet initial sites with local stakeholders and choose 2-3 sites by October 2013**

Selection Criteria Matrix

No	Selection Criteria		Belitung	Lamandau	Kota Baru	Gili	Komodo	Riung	Halura	Sawu	Rote	Semau
			Island BABEL	(Lamandau Reg) central Kalimantan	(Kota Baru Reg) South Kalimantan	Island NTB	Island NTT	(Ngada Regency) NTT	Island NTT	Island NTT	Island NTT	Island NTT
1	Renewable Energy Resource Potential at Identified location	Wind	Rated									
			Score									
		Solar PV	Rated									
			Score									
		Biomass/Biogas	Rated									
			Score									
Hydro	Rated											
	Score											
2	Ratio of electrification*		Rated									
			Score									
3	Capacity of grid at identified location		Rated									
			Score									
4	Generating cost per kWh		Rated									
			Score									
5	Potential for replication of RE pilot project		Rated									
			Score									
6	Planning of local PLN to implement RE at identified location		Rated									
			Score									
7	Support of Local Government and Agencies		Rated									
			Score									
8	accessibility / Suitability of pilot project		Rated									
			Score									
9	Opportunity of Reduced energy consumption		Rated									
			Score									
10	Generating cost per kWh		Rated									
			Score									
	Remarks											
	Total score											
	Overall assessment											



*Regency

SERIG Initial Island Site Visits

Sumba Island site visit, June 14-16



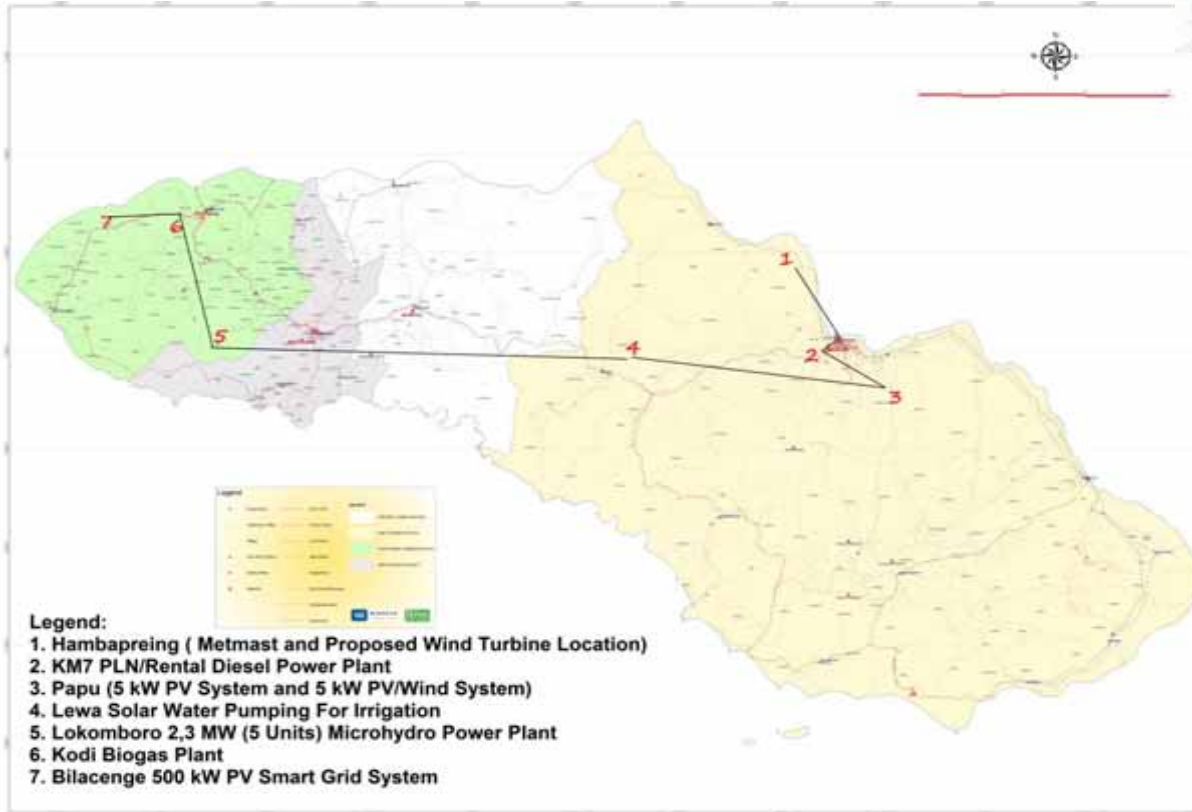
Home biogas



5kW village solar with storage



5kW village solar pumping



Planned 500kW wind site



PLN diesel power plant



500kW solar smart grid



2.3 MW micro-hydro

Mahalo Terima kasih!

