

Barriers of Implementing of Solar PV Project in Rural Areas

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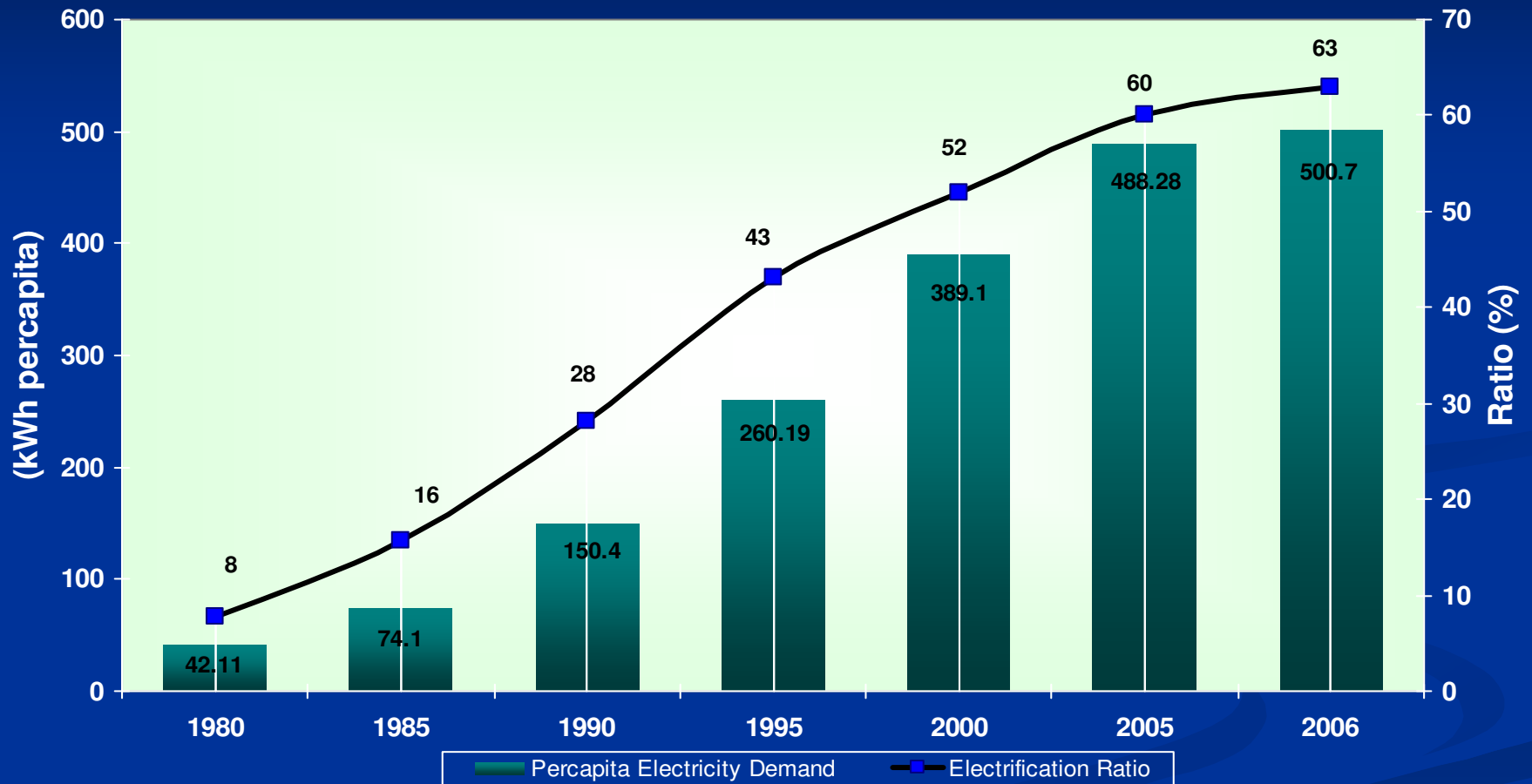
Jakarta, 15 November 2007

Presentation Outline

1. Current rural electricity condition
2. Renewable energy development program
3. Lesson learned and future challenge
4. Conclusion

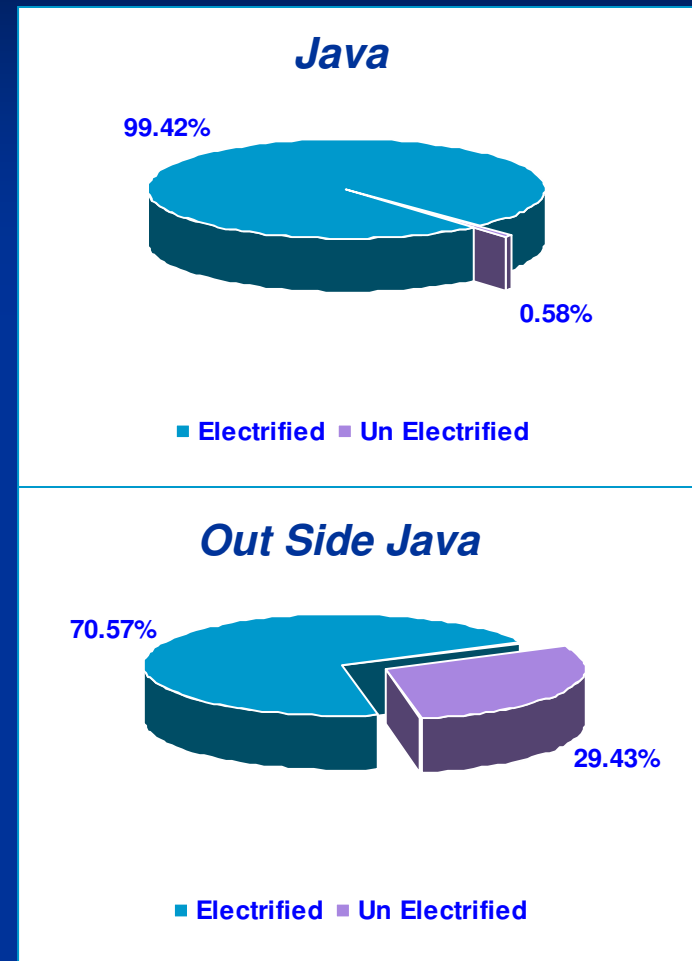
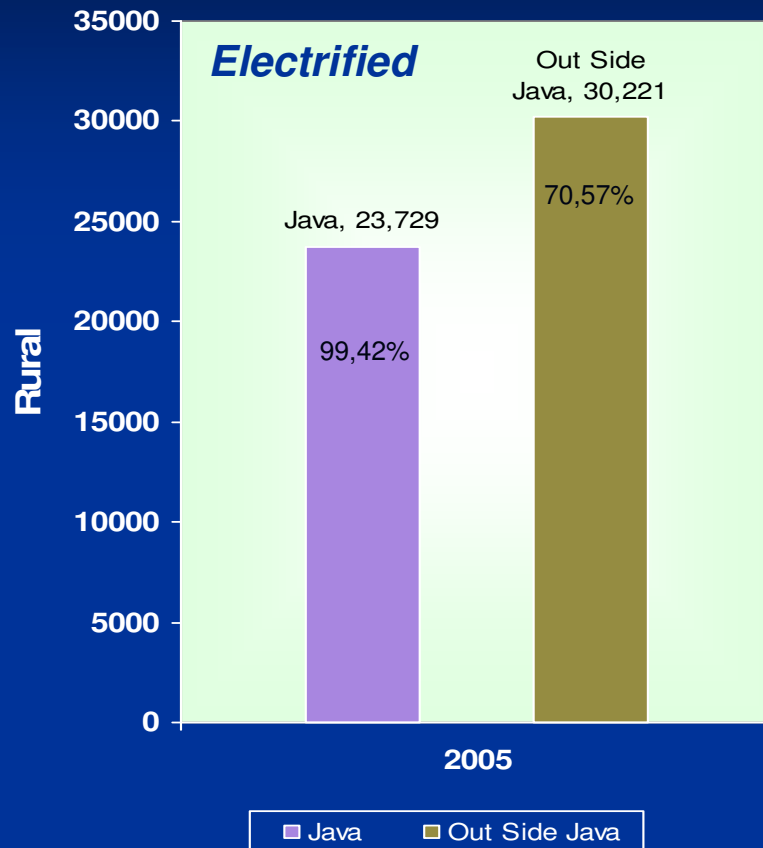
***Current Rural Electricity
Condition***

Ratio Electrification



National Electrification Ratio 2006 : 63%

Rural Electrification Ratio (2005)

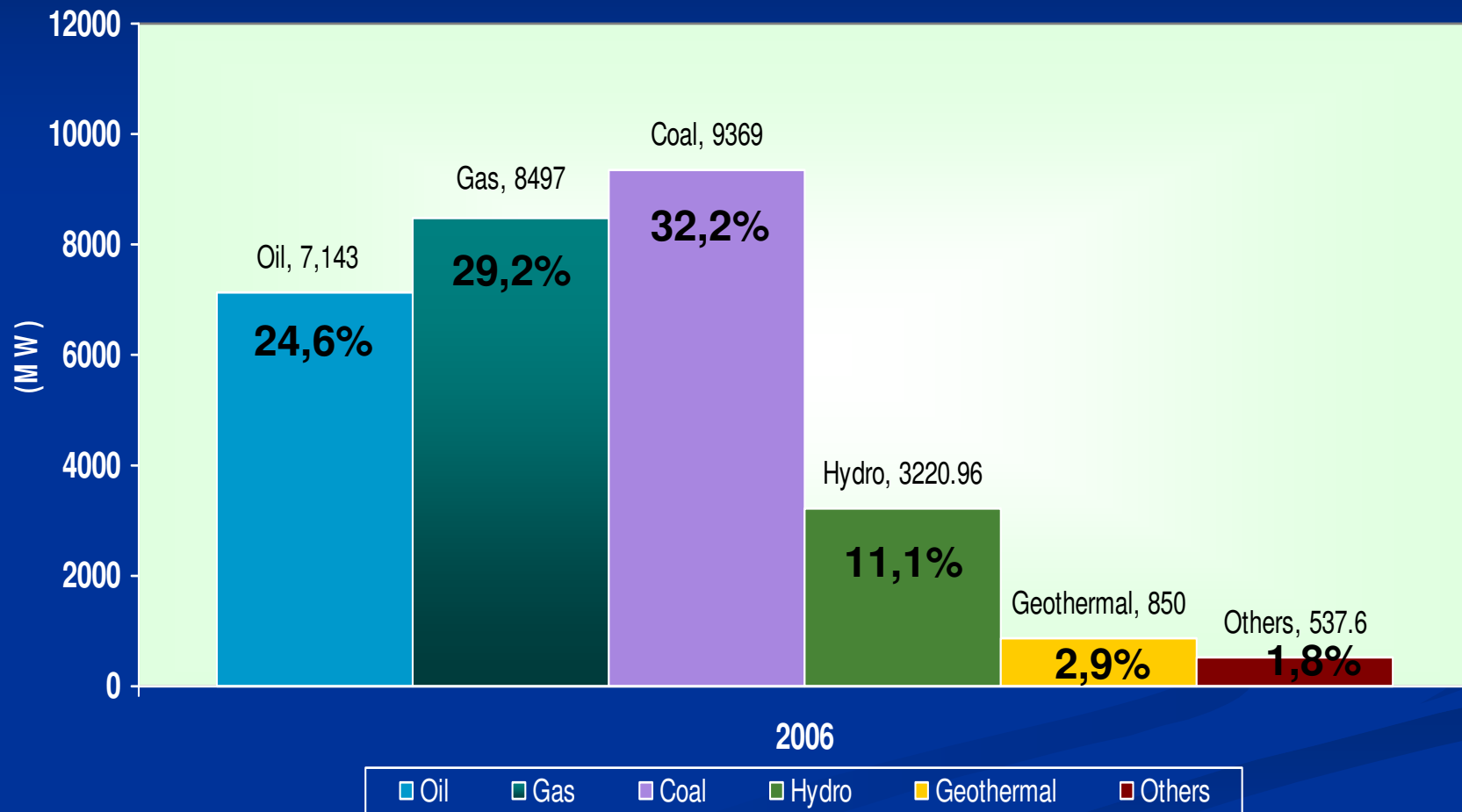


Indonesia

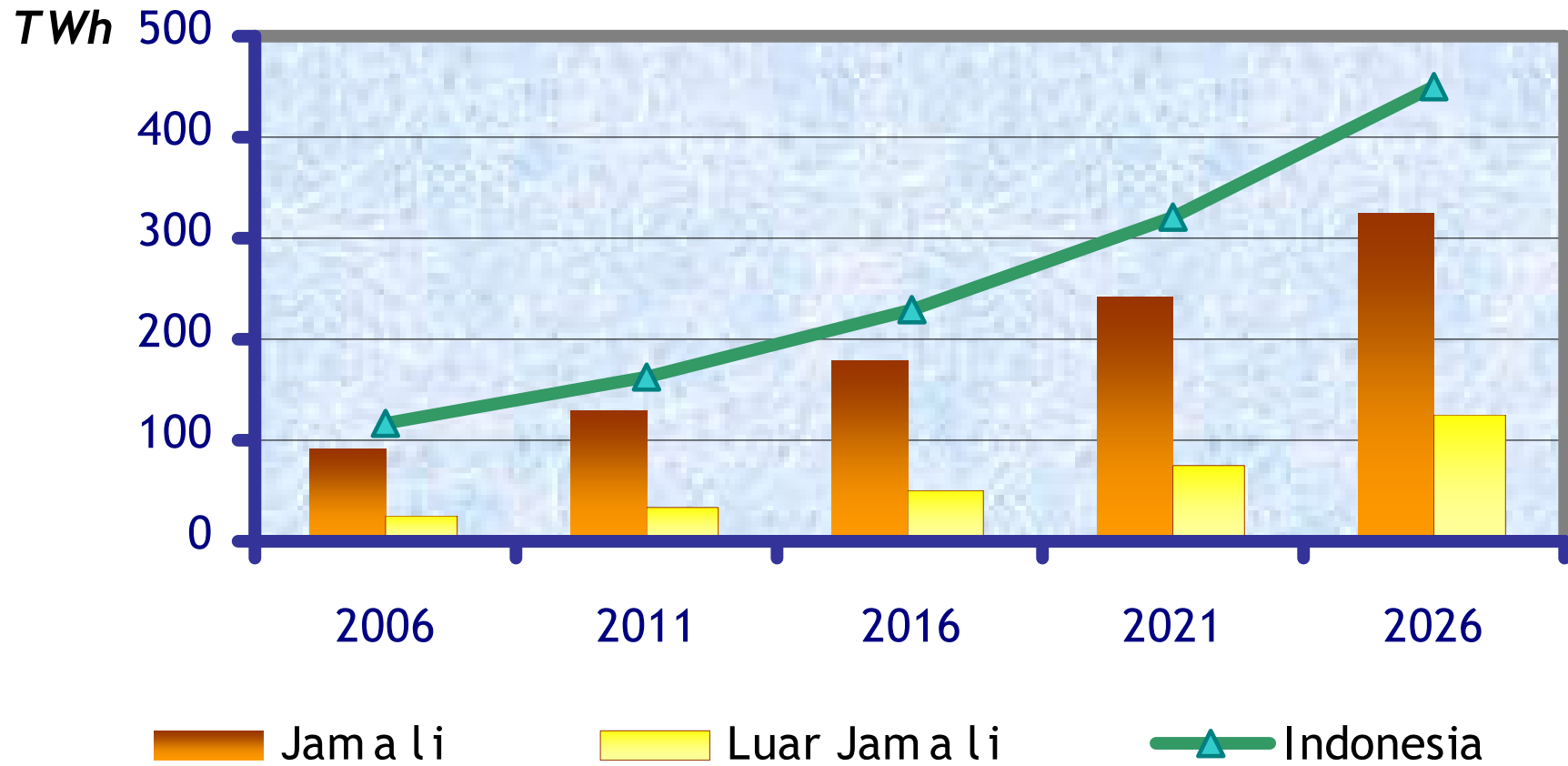
Electrified : 53.950 rurals (80,89%)

Un-electrified : 12.744 rurals (19,11%)

Total Power Generation Capacity by Type of Energy (2006)



Electricity Demand (RUKN 2006 - 2026)





***Renewable Energy
Development Program***

Renewable Energy Development For Rural Electrification

- Development of renewable energy with the utilization of local energy resources (such as micro hydro, wind, solar pv, etc) to support rural electrification program especially in remote areas and isolated system through:
 - Stand alone
 - Hybrid system: Diesel-Solar PV, Micro hydro-Solar PV, Wind-Solar PV.

- Existing Renewable Energy Installed Capacity for Rural Electrification:
 - Solar PV : 10 MW
 - Micro hydro : 84 MW
 - Wind : 520 KW
 - Biomass : 150 kW

Renewable Energy Development For Rural Electrification

- Target to be achieved in 2025 → Rural Electrification 95%
- Typical renewable energy applications in rural areas :
 - Lighting
 - Water pumping
 - Machines
 - Productive end-us

Policy Related to Rural Electrification Development

- Law No. 30 Year 2007 on Energy, regulated among others: Provision of energy by Government is prioritized in underdeveloped region, remote areas, and rural areas by utilize local source of energy particularly renewable source of energy (Article 20.2);
- Ministerial Decree No. 1122 L/30/MEM/2002 on Small Distributed Power Generation using Renewable Energy;
- Ministerial Regulations No. 002/2006 on Medium Scale Power Generation using Renewable Energy;
- Government Regulation No. 26 Year 2006 on Electricity Supply and Utilization, etc. that prioritize renewable energy for power generation.

Renewable Energy Development Program

Micro hydro:

- Increasing micro hydro utilization to accelerate electrification ratio
- Optimizing irrigation channel potential for micro hydro development
- Developing pico hydro to fulfill rural electricity demand

Solar Energy:

- Rural PV: increasing rural community accessibility to electricity; targeting electricity demand in remote area
- City PV: reducing electricity consumption to the utility especially during peak load; targeting middle and high class household, real estate, office and commercial buildings, hotel and resort, industry

Approach to Develop Renewable Energy (1)

- Introducing systems designed for community services, the community were served without having them pay for the service (very low sense of belonging).

Problem emerged:

- Social jealousy among the portion of the communities which do not receive the benefits from the project, they interfere with the plans of the projects event to the point of damaging
- A tendency to increase electricity consumption beyond the allocated amount that caused system breakdowns
- The necessity of significant level of technical knowledge for a proper operation and maintenance of the system that requires training and hiring

Approach to Develop Renewable Energy (2)

- Shifting to individual household approach, individual responsibility and ownership. Local organization was established, technician was trained and hired, plus a requirement to pay fee.

Problem emerged:

- No longer technical but social in that people were reluctant to pay fees for reason that the system came from the Government and hence they were entitled to it without paying
- The system was abandoned by the users due to the coming of the utility's electricity which was much cheaper and more convenient

SELF-SUFFICIENT ENERGY VILLAGE (SSEV)

- **SSEV is a village having capability to produce a part/whole their energy demand for consumptive and productive use.**
- **CRITERIA**
 - Utilization of locally available energy (renewable energy)
 - Creation of productive activities
 - Job creation
- **PROGRAM:**
 - Utilization of locally available energy resources
 - Development of productive activities
 - Development of applicable technologies
 - Development of institution and people participatory

TARGET SSEV (Cumulative)

Program	2007	2008	2009
Biofuel-based SSEV	100	500	1000
Non-biofuel-based SSEV	100	500	1000

***Lesson learned and
Future Challenge***

Barriers in Extent Grid to Increase Electrification Ratio in Rural Areas

- Geographic condition
- Low density population and scattered
- Higher investment cost while low people's capability to pay

Efforts to Remove Rural Electrification Barriers

- Promoting private investment in electricity development;
- Enhancing partnership with local and international agency in development new and renewable energy

Lesson Learned

- Better satisfactory business environment needed for success in a market development project
- Project design should focus as much on profitability as on affordability
- Support to financial institution necessary to increase their knowledge of the market
- Household and institutional market segments should be targeted flexibly
- Availability of highly-subsidized systems can undercut market development projects
- Socio-economic survey should be done to assess development impact

Further Rural Electrification Program

- Replacing diesel power plant by using local energy sources: micro hydro, solar PV, wind, biomass (stand alone/or hybrid system)
- Government and regional government provide budget for rural electrification → rural consumers are obliged to pay monthly payment
- Establishing local institution in operation and maintenance of the asset.

Future Challenge

- Better scheme for solar power, micro hydro, and hybrid renewable power
- More favorable economic climate
- Integrating lesson learned
- Carbon finance



Conclusion

Conclusions

- The potential of solar power, micro hydro, and hybrid renewable power is abundant although up to now the potential has not been widely utilized.
- Most of renewable energy technologies are mastered, reach commercial stage and ready to be mass implemented
- If develop precisely, renewable energy can hold a big role in transforming rural communities and can be an entry point to boost community economy and creating job.
- To encourage development and utilization solar power, micro hydro, and hybrid renewable power, the Government of Indonesia has launched various development program.
- Solar power, micro hydro, and hybrid renewable power need to be approached in an integral way as a sustainable activity. Program such as Self Sufficient Energy Village is one of the driver to achieved sustainable development.

Thank You
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