



Renewable Energy Development in Indonesia



RE & Sustainable Development in Indonesia:
Past Experience – Future Challenges
Hilmi Panigoro – Chairman of IRES



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- ❖ **Sustainable RE development in Indonesia**
- ❖ **at the right price the RE projects will be naturally developed**



- ❖ **IRES, in last term goal has prioritize :**
 - Biomass
 - Micro hydro
 - Solar/wind
 - Geothermal
- is already or has a good potential to be developed economically in the near future.



Prospects of Renewable Energy in Indonesia

- ❖ Government support: Energy Mix Policy.
- ❖ Presidential decree No. 5 – 2006.
- ❖ 15% RE in year 2025.

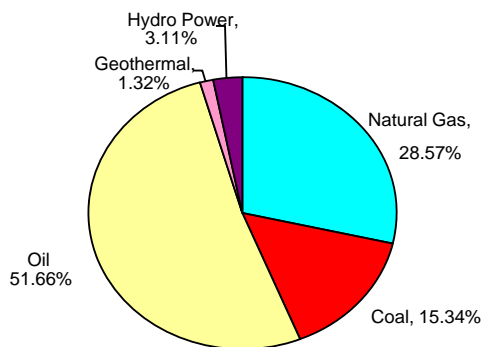


NATIONAL ENERGY POLICY (PRESIDENTIAL DECREE NO. 5 YEAR 2006)

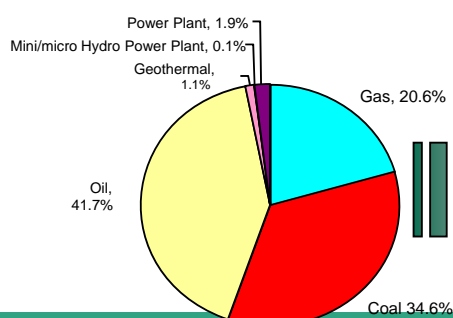
Target in 2025

1. Less than 1 for energy elasticity
2. Optimized primary energy mix

CURRENT ENERGI MIX National (Primary) Energy Mix

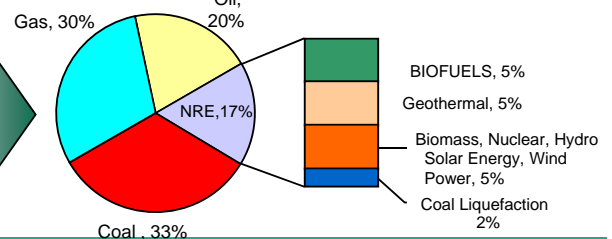


National (Primary) Energy Mix of 2025 (BaU Scenario)



OPTIMIZING ENERGY MANAGEMENT

National Energy Mix 2025 (Presidential Decree No. 5/2006)





ON-GRID RENEWABLE ENERGY POWER GENERATION

- IN OPERATION -

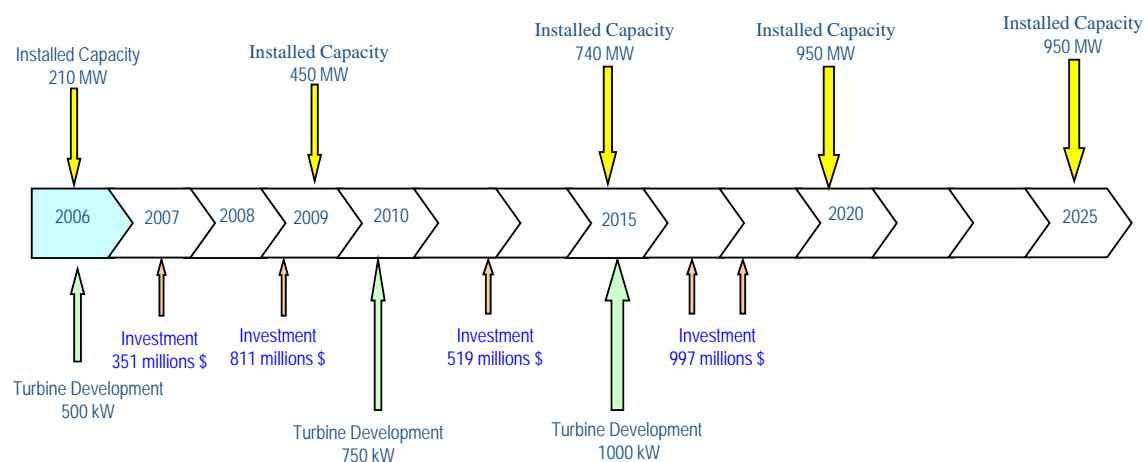
| NO | TYPE | TOTAL UNIT | CAPACITY (kW) |
|----|------------------|------------|---------------|
| 1 | MICROHYDRO | 13 | 4293 |
| 2 | SOLAR | 1 | 32 |
| 3 | WIND | 9 | 720 |
| | T o t a l | 23 | 5,045 |

- IN PROGRESS -

| NO | TYPE | TOTAL UNIT | CAPACITY (kW) |
|----|------------------|------------|---------------|
| 1 | MICROHYDRO | 43 | 80,880 |
| 2 | SOLAR | 2 | 70 |
| 3 | WIND | 12 | 960 |
| | BIOMASS | 1 | 5000 |
| | T o t a l | 58 | 86,910 |



ROAD MAP OF MICROHYDRO DEVELOPMENT





Micro & Mini Hydro powers

- ❖ RE < 10 MW
w/o auction
- ❖ PLN has ceiling price, long term contract
- ❖ Issue :
socialization of the regulation



Location: Cinta Mekar Project



Renewable Energy on Phase II 10,000 MW Program (2012-2014)

| | |
|--------------------------------------|------------------|
| Total generation capacity | 11,144 MW |
| i. Coal | 7,664 MW |
| ii. Renewable energy | 2,435 MW |
| - Geothermal | 2,135 MW |
| - Hydro including micro hydro | 300 MW |
| iii Combined Cycle | 1,065 MW |

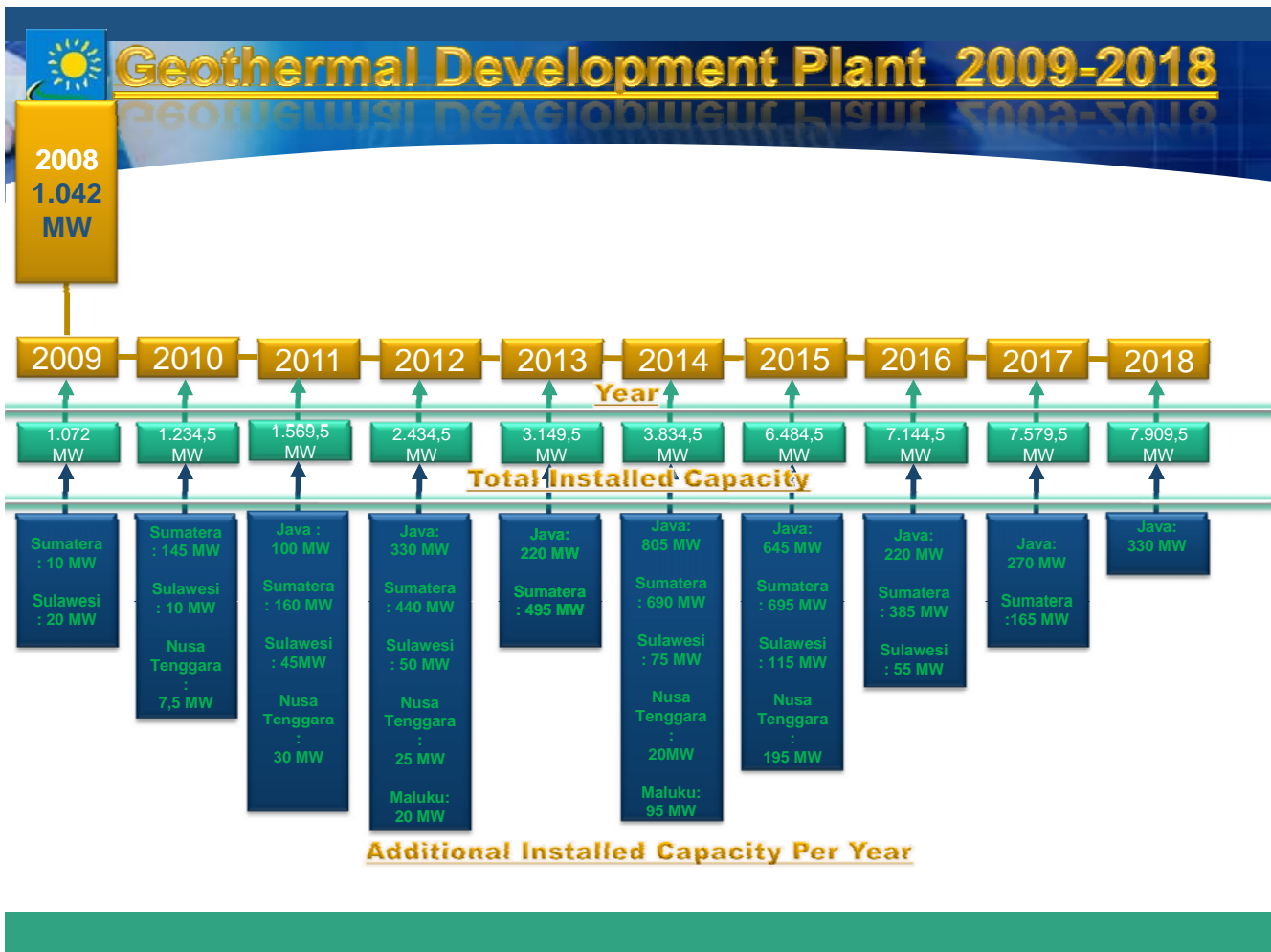
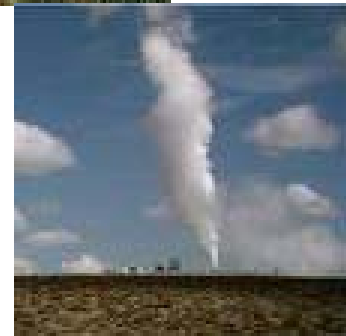


Providing a large market for renewable energy



Geothermal

- ❖ One of the largest geothermal resources in the world.
- ❖ Pricing policy is still the main issue.



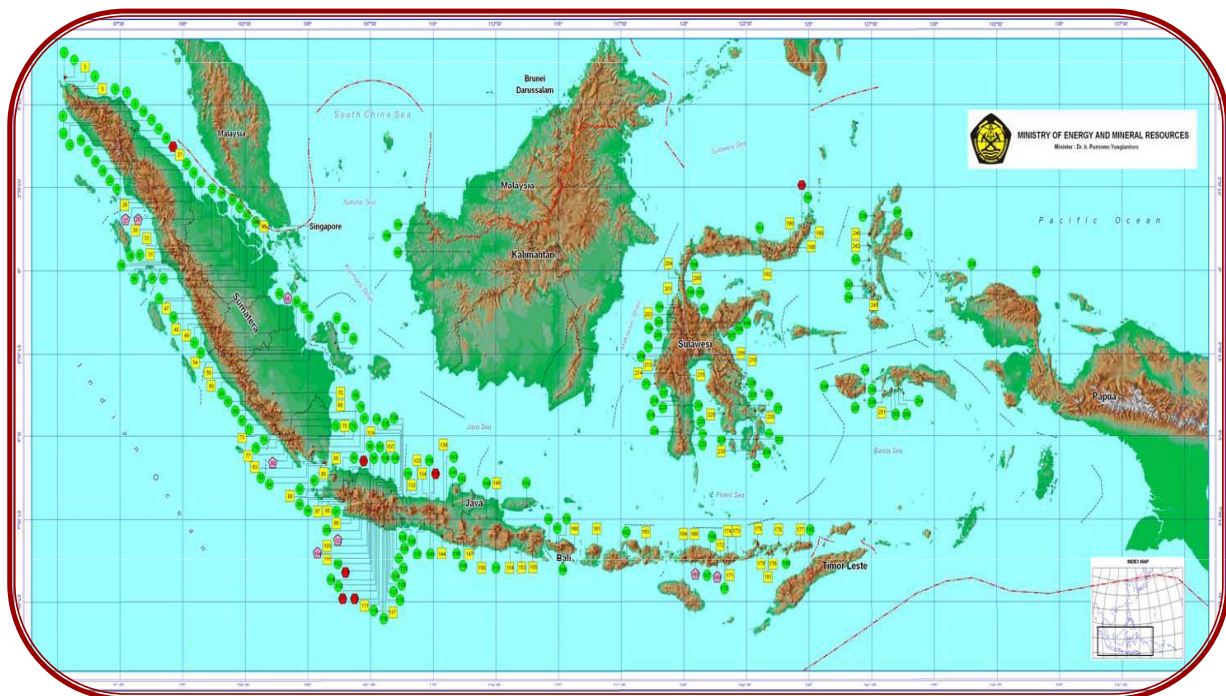


Geothermal Potential in Indonesia

in MW

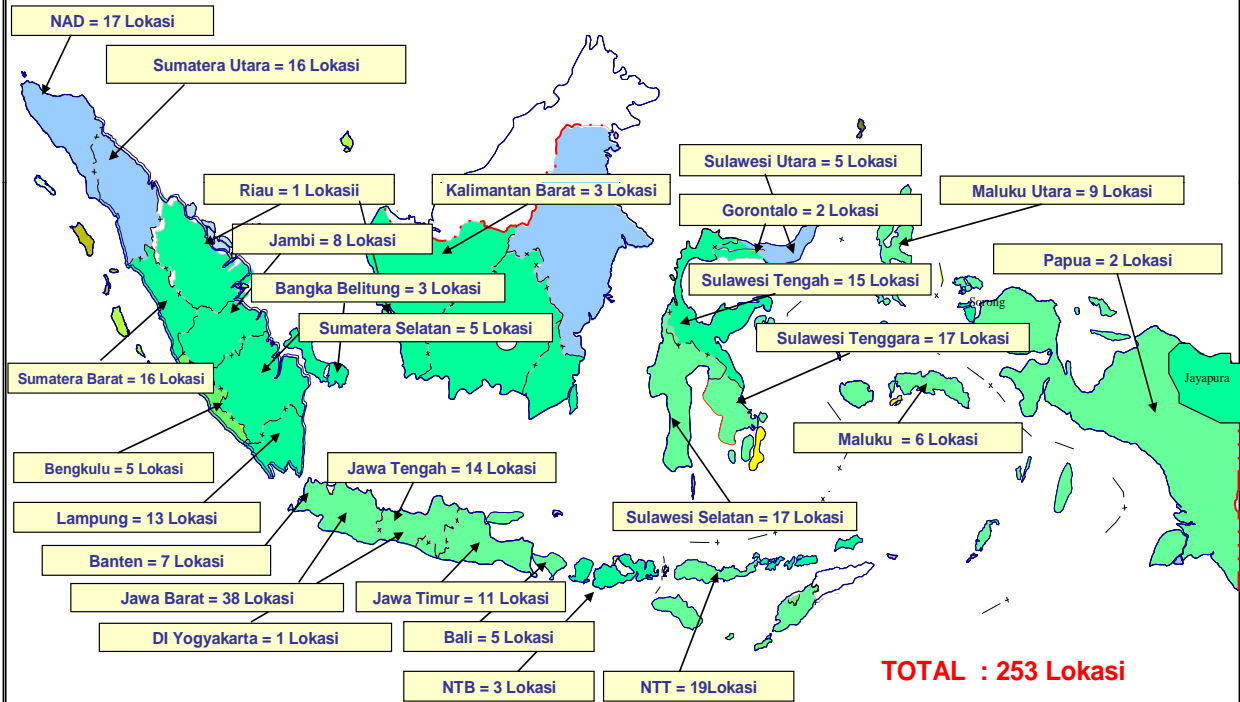
| Location Name | Resources | | Reserves | | | Installed Capacity |
|-----------------------------|--------------|---------------|---------------|--------------|---------------|--------------------|
| | Speculative | Hipotetive | Probable | Possible | Proven | |
| Sumatera | 5,000 | 2,194 | 5,745 | 15 | 380 | 2 |
| Jawa | 1,960 | 1,771 | 3,225 | 885 | 1,815 | 1,000 |
| Bali-Nusa Tenggara | 410 | 359 | 973 | - | 15 | - |
| Kalimantan | 45 | - | - | - | - | - |
| Sulawesi | 900 | 32 | 865 | 150 | 78 | 40 |
| Maluku | 370 | 37 | 327 | - | - | - |
| Papua | 50 | - | - | - | - | - |
| Total (256 Location) | 8,735 | 4,393 | 11,135 | 1,050 | 2,288 | 1,042 |
| | | 13,128 | | | 14,473 | |
| | | | | | 27,601 | |

Map of Geothermal Potential Distribution





DISTRIBUTION LOCATIONS GEOTHERMAL (POTENTIAL)



Data : Badan Geologi Dep. ESDM Th. 2005



Our Dream



Our target is 880 MWp Installed capacity in 2025 =
58 MWp per year
Year to date : 12 MWp



Biofuels

❖ Production (2008)

- Biodiesel 1,238,300 KL
- Bioethanol 144,500 KL

Target Energy mix in 2025 :

biodiesel Demand 20% (D20) 9.25 million KL

bioethanol 15% (E15%) is 4.3 million KL

❖ Brazil :

- Financing low rate from Development Bank for plantation
- CTC-Research Center for Sugarcane
- Petrobrass- Blending & Piping Distribution



Successful Government Initiatives: Self Sustain Energy Village

The Self Sustain Energy Village (SSEV) concept is empowerment of renewable energy sources for economic and productive activities to create environmentally sound sustainable development.

Source by Prof. Dr. Kamaruddin Abdullah

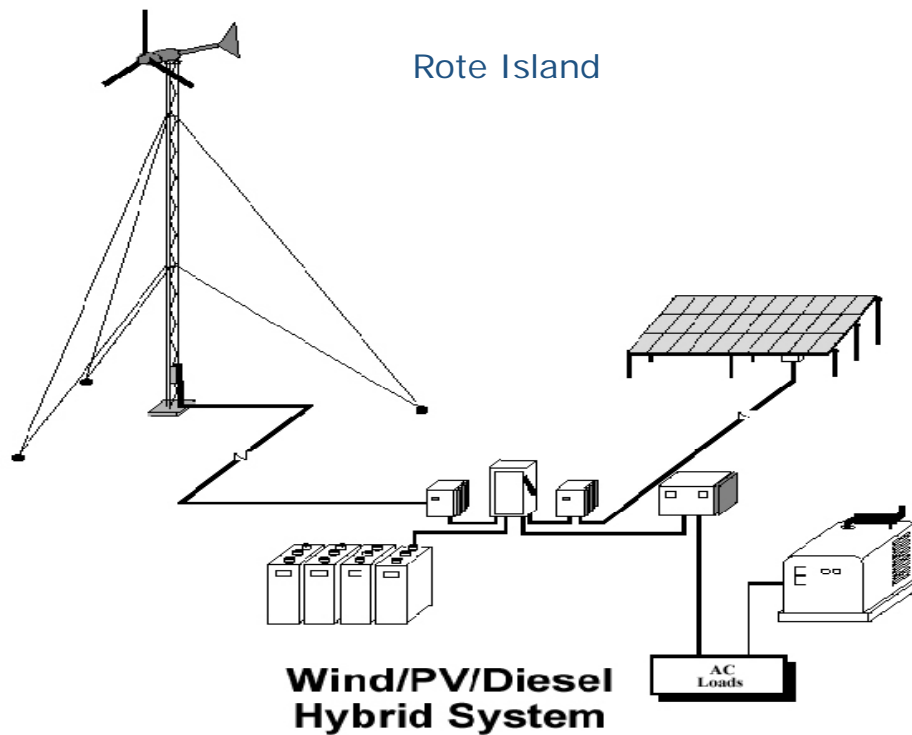
- ❖ In 2006 Government held SSEV
- ❖ Nusa Penida-Bali
- ❖ Rote Island



Solar PV and Wind Energy in Rote Island



Wind Energy in Nusa Penida Island



Roles I RES

- ❖ Facilitating ABG for RE development.
- ❖ As a media for communication, consultation and cooperation among various players of RE development and business.
- ❖ To accelerate the increasingly important role of RE in meeting the national energy demand.



Summary

- ❖ Indonesia has a big potential of Renewable Energy
- ❖ IRES will take role to be the facilitator for achieving the energy mix target
- ❖ Incentives from government are needed.
- ❖ The Self Sustain Energy Village (SSEV) is a very good program for the remote areas in Indonesia.



Thank You !

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Sources of Data :

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NEA-ENN China Dec. 22, 2008 ICEF III, E3i Concept: Prof Kamaruddin Abdullah