RENEWABLE ENERGY DEVELOPMENT PROGRAM IN INDONESIA

Presented at:
GLOBAL WORKSHOP ON GRID - CONNECTED RENEWABLE ENERGY
CONDUCT by USAID / USEA
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Energy Mix Situation:

- Coal: 21.5%
- Natural Gas: 19.0%
- Oil: 52.5%
- Hydro Power: 3.7%
- Geothermal: 3.0%
- Other Renewable Energy: 0.2%
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TARGET ENERGY MIX 2025:
(Presidential Decree 5 / 2006)

- Renewable Energy at least 15% of the Energy mix

*) Biomass, Nuclear, Hydro, Solar and Wind
THE ADVANTAGES OF RENEWABLE ENERGY DEVELOPMENT

1. Environment friendly.
2. Reserves efficiency.
3. Create job opportunity.
4. Abundant of potential resources.
5. Possibility to get CDM fund.
1. Large of potential resources.
2. The price tend to competitive following the increase of fossil fuel price and production cost.
3. The limited of energy access (electricity or non electricity) especially in remote area/border area.
4. Many kind of renewable energy resources.
   Such As: - Hydro Power - Solar
   - Geothermal - Wind
   - Biomass - Sea Wave
BARRIER OF RENEWABLE ENERGY DEVELOPMENT

1. Government policy to fossil fuel subsidies.

2. Renewable Energy generally required high initial investment.

3. No long term soft loan from local financial institution/bank.

4. Lack of data and supporting infrastructure.

5. Renewable Energy Resource is generally intermittent.
1. **Program on Rural Electrification**: to provide access on electrification for rural communities; since 2005 the government has been decided not to utilize diesel genset and only to implement locally available renewable energy (if the extension of grid is impossible).

2. **Program on Interconnention of Renewable Energy Power Generation**: as an innitiative for investor to develop small/medium scale power generation from renewable energy to sell of electricity to PLN (state electricity company).

3. **Integrated Microhydro Development Program (IMIDAP)**: a grant from GEF through UNDP for 2007-2012 to acclerate microhydro implementation by removing existing barriers.

4. **Micro Hydro Power Program (MHPP)**: technical cooperation with Germany through GTZ to develop capacities on technology and sustainability of microhydro implementation.
5. **Program on Urban Solar**: launched in 2003 to support solar photovoltaic implementation in urban society. The results are not significant yet.

6. **Program on Biogas**: launched in January 2009 in cooperation with Dutch government; consists of technical assistance and financing mechanism development system.

7. **Program on Energy Self-Sufficient Village**: launched in 2007 to improve energy security on village level by diversifying rural energy mix; developing locally available renewable energy sources in the form of fuel (biofuel) and electricity for household and also productive end uses.

8. **Program on regulation preparation**: as mandated by Energy Law.
RENEWABLE ENERGY FOR ELECTRICITY
ELECTRICITY UTILIZATION SHARE:

- Independent Power Producer: 13%
- Private Power Utility: 3%
- PLN: 84%
# Renewable Energy Potential in Indonesia

<table>
<thead>
<tr>
<th>No</th>
<th>Energy Resources</th>
<th>Potential</th>
<th>Installed Capacity</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hydro</td>
<td>75.670 MW</td>
<td>4.264 MW</td>
<td>± 5.6 %</td>
</tr>
<tr>
<td>2</td>
<td>Geothermal</td>
<td>27.510 MW</td>
<td>1.052 MW</td>
<td>3.82 %</td>
</tr>
<tr>
<td>3</td>
<td>Mini / Micro Hydro</td>
<td>500 MW</td>
<td>86.1 MW</td>
<td>17.22 %</td>
</tr>
<tr>
<td>4</td>
<td>Biomass</td>
<td>49.810 MW</td>
<td>445 MW</td>
<td>0.89 %</td>
</tr>
<tr>
<td>5</td>
<td>Solar</td>
<td>4.8 kWh/m2/day</td>
<td>Equivalent 12.1 MW</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Wind</td>
<td>Equivalent 9.290 MW</td>
<td>Equivalent 1.1 MW</td>
<td>0.012</td>
</tr>
<tr>
<td>7</td>
<td>Sea Wave</td>
<td>10 – 35 MW per km coast length</td>
<td></td>
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</tr>
</tbody>
</table>
Policies and Regulation on Renewable Energy for Electricity Generation

1. Regulation on Electricity Supply and Utilization (Government Regulation No. 26/2006)

🌟 As a revision of Government Regulation No. 10 Year 1989 in order to secure national electricity.
🌟 Relation with new renewable energy development:

- Putting priority to utilize locally available renewable energy resources for electricity generation;
- Process of procurement is implemented through direct selection (without tender)

- Developer: Small Enterprises
- Capacity: ≤ 1 MW

- Developer : Business Entity
- Capacity : $1 < \text{Cap} \leq 10 \text{ MW}$
PLN POWER PLANT DEVELOPMENT POLICY

- Non oil power plant development
- Non oil primary energy utilization (coal, natural gas etc) for PLN power plant
- Utilization of alternative-renewable energy sources (hydro power, geothermal, biomass, biofuel, solar, wind etc.) as long as in technically & financially feasible
- Reduce of oil consumption for power plant operation composition from 33% (2007) to 0.6% in 2018 (RUPTL- Electricity Supply General Plan 2009-2018)
ELECTRIFICATION RATIO

<table>
<thead>
<tr>
<th>Category</th>
<th>&gt; 60%</th>
<th>41 - 60%</th>
<th>20 - 40%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrification Ratio</td>
<td>8%</td>
<td>16%</td>
<td>28%</td>
</tr>
<tr>
<td></td>
<td>43%</td>
<td>53%</td>
<td>62%</td>
</tr>
<tr>
<td></td>
<td>63%</td>
<td>63%</td>
<td>64%</td>
</tr>
<tr>
<td></td>
<td>64.5%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Year

- NAD: 72.65%
- Sumut: 85.76%
- Sumbar: 68.75%
- Riau + Kepri: 63.15%
- Sumsel: 50.75%
- Babel: 69.27%
- Bengkulu: 50.64%
- Lampung: 49.23%
- Jambi: 47.03%
- Bantren: 58.44%
- Jabar: 63.40%
- Jateng: 63.77%
- Jogya: 74.37%
- Jakarta: 100%
- Kalbar: 53.74%
- Kalteng: 49.87%
- Kalsel: 63.67%
- Kaltim: 66%
- Gorontalo: 43.31%
- Sulsel: 60.81%
- Sultra: 43.88%
- Sulut: 61.84%
- Sulteng: 51%
- Sumsel: 50.75%
- Bali: 78.37%
- NTB: 30.48%
- NTT: 26.35%
- Malut: 54.15%
- Maluku: 58.06%
- Papua + Irjabar: 35.35%
PLN INCENTIVE FOR RE DEVELOPMENT

1. DIRECT NOMINATION
2. STAGING PRICE
3. LONG TERM CONTRACT
Electric Power Supply Business

On Grid
- Community Based Electric Power Supply
- Small, distributed, renewable, local
capability, village welfare oriented

Off Grid
- Large, centralized, fossil fuel, capital
technology intensive, economic oriented

GRID

NETWORK

ELECTRIC CONSUMER

Generation

Transmission
one kilowatt hour every year from a hydro power equals to one big tree in catchment area
Micro and Mini Hydro

friends of the river, conserve the nature and empower the people
THANK YOU