GoI’s Policy on Renewable Energy Development

October 24, 2017
Outline

1. Renewable Energy General Overview
2. Renewable Energy Policy Development in Indonesia
3. Challenges and Follow Up Measures
Renewable Energy
General Overview
In 2014, global renewable energy proportion slightly increased to 18.3%.

The biggest challenge is there are only a small number of countries which successfully made significant progress toward global renewable energy goal (36% in 2030).

Source: Global Tracking Framework 2017- Progress Toward Sustainable Energy
ASEAN Countries’ Renewable Energy Potential (2014)

- Southeast Asia region is blessed with abundant solar energy (3.6 to 5.3 kWh/m²/day)
- Except for Singapore, all ASEAN countries have relatively high hydropower potential, which Indonesia tops by 75 GW
- Indonesia owns the biggest potential of biomass with 32.6 GW
- Indonesia also has the biggest geothermal potential with 29.5 GW

Source: ASEAN Center for Energy 2016: ASEAN Renewable Energy Development
ASEAN’s Regional Achievement on Renewable Energy

- ASEAN energy mix still relies heavily on fossil fuels (oil, coal, and natural gas)
- In 2013, 9.1% of ASEAN total primary energy supplied by different RE sources and the remainder supplied by traditional biomass
- The role of RE in TPES has been significantly increasing from 18 Mtoe in 2000 to 56 Mtoe in 2013
- The contributions of RE sources in 2014 were from hydro (81%); biomass (7%); geothermal (6%); solar (3%) and other RE sources (3%)
- Vietnam had increased renewable power capacity up to 12 GW in 2006-2014, much higher than average of other countries about 1.76 GW
Indonesia’s Renewable Energy Potential

**Hydro, Mini/Micro Hydro**
- Potential: 75 GW
- Utilized: 5.29 GW (7.07%)

**Solar**
- Potential: 207.08 GWp
- Utilized: 0.09 GWp (0.04%)

**Wind**
- Potential: 60.6 GW
- Utilized: 1.1 MWp (0.02%)

**Geothermal**
- Potential: 12.3 GW (Resources), 17.2 GW (Reserve)
- Utilized: 1.64 GW (5.6%)

**Bioenergy/Biomass**
- Potential: 32.6 GW
- Utilized: 1.78 GW (5.5%)

**Tidal/Wave**
- Potential: 17.9 GW
- Utilized: 0 GW (0%)

**TOTAL RE POTENTIAL: 443.2 GW UTILIZED: 8.8 GW (2%)**

**FOSSIL ENERGY**

Proven reserve:
- Oil: 3.6 billion barrel
- Gas: 100.3 TSCF
- Coal: 7.2 billion tonnes

Production:
- Oil: 288 million barrel
- Gas: 2.97 TSCF
- Coal: 434 million tonnes

Expected to be run out in:
- Oil: 13 years
- Gas: 34 years
- Coal: 16 years

Source: DG NRE and Energy Conservation MEMR
Indonesia’s Current Installed Capacity

RE installed capacity average growth (approximately 7.9% per year)

Source: DG NRE and Energy Conservation MEMR
Renewable Energy Policy Development in Indonesia
New and Renewable Energy Target

### PROGRAM

<table>
<thead>
<tr>
<th>2025</th>
<th>23% NRE Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>45,2 GW</td>
</tr>
<tr>
<td>Biofuel</td>
<td>13.9* Million KL</td>
</tr>
<tr>
<td>Biomass</td>
<td>8.4 Million tonnes</td>
</tr>
<tr>
<td>Biogas</td>
<td>489.8 Million M³</td>
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<tr>
<td>CBM</td>
<td>46.0 MMSCFD</td>
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<table>
<thead>
<tr>
<th>2050</th>
<th>31% NRE Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>167.7 GW</td>
</tr>
<tr>
<td>Biofuel</td>
<td>52.3* Million KL</td>
</tr>
<tr>
<td>Biomass</td>
<td>22.7 Million tonnes</td>
</tr>
<tr>
<td>Biogas</td>
<td>1,958.9 Million M³</td>
</tr>
<tr>
<td>CBM</td>
<td>576.3 MMSCFD</td>
</tr>
</tbody>
</table>

* Excludes biofuel for power generation of 0.7 million KL in 2025 and 1.2 million KL in 2050

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### ACTIVITY

1. Building NRE Power Plant:
   - **Type of PP (MW)**
     - **2025**
       - Geothermal: 7.239
       - Hydro: 20.960
       - Bioenergy: 5.532
       - Solar: 6.379
       - Wind: 1.807
       - Other NRE: 3.128
     - **2050**
       - Geothermal: 17.546
       - Hydro: 45.379
       - Bioenergy: 29.123
       - Solar: 45.000
       - Wind: 28.607
       - Other NRE: 6.383

2. Form new NRE managing body (MSOE)
3. Allocating feed-in tariff subsidy for NRE Power Plants (MEMR)
4. Gradually provide 4 million hectares of land to meet the need for biofuel raw materials to produce 15.6 million kl of biofuel (MAASP)
5. Prepare the roadmap for priority plant species of biofuel raw materials and prepare the plant seeds by maintaining food security (MoA)
6. Meet the minimum biofuel production target of 15.6 million kl in 2025 and 54.2 million kl in 2050 (MEMR)
7. Develop roadmap for biogas development and meet production target of 47.4 mmscfd by 2025 (MEMR)
8. Assign BUMN/BLU to develop PLTP (MEMR)
9. Assign a state-owned enterprise for the production and purchase of biofuel (MEMR)
10. Strengthening R&D in NRE sector (MRTHE)
11. Preparing geothermal and water resources spots in conservation and protected forest areas (MoEF)
12. Develop guidelines to encourage potential energy subsidies from Local Governments (MoHA)

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*Source: DG NRE and Energy Conservation MEMR*
Nationally Determined Contribution (NDC) on Energy Sector

- Ratification of Paris Agreement through Law No. 16/2016, promulgated October 25, 2016
- The endorsement document was submitted to UNFCCC on November 6, 2016
- NDC Indonesia (29% mitigation by 2030)
- Unconditional Target (own capability): 314 Million Tonnes CO2 (11%)

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost (Trillion IDR)</th>
<th>Emission Reduction (Million Tonnes CO2)</th>
</tr>
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<tbody>
<tr>
<td>NRE for Electric Power</td>
<td>1445</td>
<td>156.6 (49.9%)</td>
</tr>
<tr>
<td>NRE for Other Purpose</td>
<td>84</td>
<td>13.8 (4.4%)</td>
</tr>
<tr>
<td>High Efficiency Power Plant</td>
<td>3854</td>
<td>31.8 (10.1%)</td>
</tr>
<tr>
<td>Energy Conservation</td>
<td>92</td>
<td>96.3 (30.7%)</td>
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<tr>
<td>Fuel Switching</td>
<td>17</td>
<td>10.0 (3.2%)</td>
</tr>
<tr>
<td>Land Reclamation</td>
<td>4</td>
<td>5.5 (1.7%)</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>5496</strong></td>
<td><strong>314.0</strong></td>
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</table>

Source: DG NRE and Energy Conservation MEMR
### 35.000 MW + 7.000 MW Projects 2016-2019 (as in PT PLN’s RUPTL)

<table>
<thead>
<tr>
<th>NO</th>
<th>TYPE OF POWER PLANT</th>
<th>35 GW PROGRAM</th>
<th>7 GW PROGRAM</th>
<th>TOTAL CAPACITY 2016-2019 (MW)</th>
<th>% CAPACITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CAPACITY (MW)</td>
<td>CAPACITY (MW)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Hydro PP</td>
<td>454,0</td>
<td>200,0</td>
<td>654,0</td>
<td>1,52</td>
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<tr>
<td>2</td>
<td>Wind PP</td>
<td>180,0</td>
<td>0</td>
<td>180,0</td>
<td>0,42</td>
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<td>3</td>
<td>Biomassa PP</td>
<td>30,0</td>
<td>0</td>
<td>30,0</td>
<td>0,07</td>
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<td>4</td>
<td>Gas PP</td>
<td>2,043,0</td>
<td>0</td>
<td>2,043,0</td>
<td>4,74</td>
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<td>5</td>
<td>Steam Gas PP</td>
<td>7,485,0</td>
<td>30,0</td>
<td>7,515,0</td>
<td>17,42</td>
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<td>6</td>
<td>Steam Gas/Machine Gas PP</td>
<td>2,150,0</td>
<td>0</td>
<td>2,150,0</td>
<td>4,98</td>
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<td>7</td>
<td>Micro Hydro PP</td>
<td>475,0</td>
<td>74,13</td>
<td>549,13</td>
<td>1,27</td>
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<tr>
<td>8</td>
<td>Machine Gas PP</td>
<td>1,330,0</td>
<td>539,0</td>
<td>1,869,0</td>
<td>4,33</td>
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<tr>
<td>9</td>
<td>Geothermal PP</td>
<td>725,0</td>
<td>650,0</td>
<td>1,375,0</td>
<td>3,19</td>
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<tr>
<td>10</td>
<td>Solar PP</td>
<td>2,0</td>
<td>0</td>
<td>2,0</td>
<td>0,00</td>
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<tr>
<td>11</td>
<td>Coal PP</td>
<td>19,713,0</td>
<td>6018,5</td>
<td>25,732,0</td>
<td>59,65</td>
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<td>12</td>
<td>Pump Storage</td>
<td>1,040,0</td>
<td>0</td>
<td>1,040,0</td>
<td>2,41</td>
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<td></td>
<td>Total (MW)</td>
<td>35,627</td>
<td>7,512</td>
<td>43,139</td>
<td>100</td>
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</table>

**NRE Capacity**

3.830 MW (9%)

Source: DG NRE and Energy Conservation MEMR
Challenges and Follow Up Measures
NRE Development Challenges

- Setting NRE not as an alternative
- The importance of technology innovation
- The importance of partnership, i.e. for *Capacity Building*
- Business model and attractive incentives
- Network interconnection system
All Parties Required to be Actively Participating in NRE Development

**GOVERNMENT**
- Develop regulations and policies
- Facilitator
- Provide coaching and supervision
- Implementing the NRE development program
- Dissemination of NRE program information

**ACADEMICS**
- Developing R & D sector
- Technology innovation (reverse engineering - reducing dependence on foreigners)
- Recommendation of technical regulations / standards
- Capacity building

**BUSINESS**
- Conduct NRE exploitation
- Produce NRE
- Contribute to state revenues and economic activities

**COMMUNITY**
- Encourage the NRE utilization
- As beneficiaries, contribute in maintaining the sustainability NRE
- Contribute to dissemination of information on NRE utilization
Follow Up Measures on Renewable Energy in Indonesia

With the trend of RE growth in the last 5 years, government needs strategic measure and program, as follow:

1. Socialization to have same level of perception with other stakeholders in developing RE
2. Promoting priority development, such as:
   • Short term (1-3 years): promoting bioenergy power plant, solar pv power plant, and wind power plant;
   • Long term (4-7 years): promoting geothermal power plant, and hydro power plant
3. Providing transmission line, using state budget and/or PLN’s budget
4. Providing incentive and ease of doing business for RE project
5. Implementing MEMR Regulation No.50/2017
Thank You