Bioenergy Development in Indonesia

Delivered by:
EDI WIBOWO
Head for Engineering and Environment of Bioenergy Division

Presented by:
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Energy and Mineral Resources for People’s Welfare

National Energy Policy

CURRENT CONDITION - 2012

- Oil: 46.77%
- Coal: 23.91%
- Natural Gas: 24.29%
- NRE: 5.03%

ENERGY ELASTICITY = 1.65
NON FOSSIL ENERGY SHARE ≈ 5%

by 2025
NRE: 23%
(Bioenergy: 10%)

by 2050
NRE: 31%
(Bioenergy: 14%)

Note:
Based on draft of Government Regulation on National Energy Policy that has been approved by Parliament and being processed to signed by the President for substitute Presidential Regulation No.5/2006.
Increasing the use of biofuel as a fossil fuel substitution

Increasing contribution to national economy through development of bioenergy industries

Utilization of organic waste as source of energy

Increasing the sustainability supply of bioenergy feedstock through development of energy farms/forest

Developing bioenergy based power plant (as based load)

**MAIN VISION FOR BIOENERGY DEVELOPMENT**

- **Production**
  - 190 (2009)
  - 243 (2010)
  - 232 (2011)
  - 669 (2012)
  - 1,048 (2013*)

- **Export**
  - 10 (2009)
  - 43 (2010)
  - 199 (2011)
  - 552 (2012)
  - 757 (2013*)

- **Domestic**
  - 1,500 (2009)
  - 1,812 (2010)
  - 2,221 (2011)
  - 2,805 (2012)
  - 3,048 (2013*)

*Thousand kL
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**Issue:**
- Provision of sustainable bioenergy feedstock.
- Increasing trend of the export of biomass wastes.

**Strategies:**
- Regulating waste/biomassa for export purposes.
- Development of integrated bioenergy production facility with dedicated feedstocks.

**Opportunity:**
- There are huge potential resources for biofuels.
- High potential of biomass waste from agricultural waste and municipal solid waste as a fuel stock for biomass based power generation.

<table>
<thead>
<tr>
<th>Year</th>
<th>Type</th>
<th>Area (million ha)</th>
<th>Total National Production (million tonne)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>Palm</td>
<td>9</td>
<td>23.50</td>
</tr>
</tbody>
</table>

*Palm oil has the lowest area land use for cultivation, but has oil yield production highest amongst other vegetable oils.*

*Total area oil crop world in 2011 = 253.9 mil hectares.*

Source: Oil World 2012
### Bioenergy Development In Indonesia – Main Policies

<table>
<thead>
<tr>
<th>Policy/Regulation</th>
<th>Details</th>
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<tbody>
<tr>
<td>Law No. 30 Year 2007</td>
<td>Priority supply and use of renewable energy, one of them is bioenergy.</td>
</tr>
<tr>
<td>Presidential Regulation No. 5 Year 2006</td>
<td>Biofuel target 5% by 2025 from the national energy mix.</td>
</tr>
<tr>
<td>Presidential Instruction No. 1 Year 2006</td>
<td>Instructions related to the Minister, Governor and Mayor to take action in order to accelerate the provision and utilization of biofuel;</td>
</tr>
<tr>
<td>Ministry of Energy And Mineral Resources Regulation No. 4 Year 2012 and No. 19 Year 2013</td>
<td>Electricity Price (Feed-in Tariff) for Bioenergi Based Power Plant (Biomass, Biogas, and Municipal Solid Waste)</td>
</tr>
<tr>
<td>Ministry of Energy And Mineral Resources Regulation No. 25 Year 2013</td>
<td>Implementation of bioenergy based power plant has increase significantly since the issued of new feed-in tariff for electricity generation based on biogas, biomass, and municipal solid waste.</td>
</tr>
</tbody>
</table>

#### Current capacity of bioenergy based on-grid power plant in year 2013 was 90.5 MW (palm waste 76 MW; municipal solid waste 14.5 MW) and based off-grid power plant was 1,626 MW.

#### Biofuel usage mandatory for fossil fuel substitutions on transportation, industry, and electricity generation as a percentage to fossil fuel consumption (domestic market creation for biofuel).

#### Since 1 September 2013, Indonesia has implemented biodiesel blending B-10 on transportation and industry sector and up to B-30 on electricity.

#### Now the Government are preparing preparation stages to implement B-20 on 2016.
Role of Bioenergy Development In Indonesia

- To support deploy of bioenergy, governments adopt policies by act and regulation for mandate, target and tax-incentives or feed in tariff.

- Bioenergy can provide fuel diversity, reduce dependence on foreign energy sources from fossil for increases national energy security and its instrumental in safeguarding the environment, generation of new job opportunities, sustainable development and health improvements in rural areas.

- Bioenergy should be developed based on domestic wisdom that is suitable land, climate and biodiversity. Indonesia such as Malaysia (South East Asia) has a role for biofuel deployment base on palm oil.

- For sustainable of bioenergy Government has been developing standar for certified such as Indonesian Sustainable Palm Oil (ISPO), SNI – Biodiesel etc.

- Indonesia also conduct as Pilot Testing of GBEP Indicators for Sustainable Bioenergy in Targeted Developing Countries sponsored by FAO.
Strategic for Further Implementation of Bioenergy in Indonesia

1. Increasing the mandatory implementation of biofuel in all sector (transportation, Industry and Power Generation), has be done by Ministry of Energy and Mineral Resources Regulation No. 25 Year 2013.

2. Utilisation of biomass on existing power generation.

3. Regulating waste/biomass for export purposes.

4. Utilisation of biomass wastes in agroindustry, for example regulation on palm oil mill effluent in palm oil industry,

5. Allocating special fund for implementation by local government as energy access program.
1. Develop non-edible and dedicated feedstock for biofuel (candle nut, jatropha).
2. Improve productivity of main feedstocks such as palm oil, cassava and sugar cane;
3. Implement integrated energy farming for bioenergy industries;
4. Develop second generation of biofuel that will create sustainable and low cost biofuel industry;
5. Seek cooperation on R&D on lignocellulosic based or woody-biomass bioethanol.
6. Indonesia will continue to work with other countries and international community to develop sustainable biofuel industry and also global environmental issues.
MINISTRY OF ENERGY AND MINERAL RESOURCES
DIRECTORATE GENERAL OF NEW RENEWABLE ENERGY AND ENERGY CONSERVATION

JALAN PEGANGSAAN TIMUR NO. 1, MENTENG, JAKARTA 10320. INDONESIA.
Phone: +62 21 39830077 Fax: +62 21 31924585
www.esdm.go.id - www.ebtke.esdm.go.id
Email: edbowo@Gmail.com; sarrie_mdy@yahoo.com

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