B30: History, impacts & major challenges of the Indonesian Biodiesel program

UNITED FOR A PROSPEROUS & SUSTAINABLE PALMICULTURE
XLVII National Congress of oil palm growers
XLVII General Assembly of Fedepalma
XXIX General Hall of Cenipalma
Agora Event Centre, Bogota, COLOMBIA. 5th-7th of June 2019

Paulus Tjakrawan
Indonesia Biofuels Producer Association / IBPA
Area Comparison
<table>
<thead>
<tr>
<th></th>
<th>COLOMBIA</th>
<th>INDONESIA</th>
</tr>
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<tbody>
<tr>
<td>Land Area – Million Hectare</td>
<td>103.87</td>
<td>181.16</td>
</tr>
<tr>
<td>Population</td>
<td>48.17</td>
<td>262.70</td>
</tr>
<tr>
<td>GDP/Capita, US$</td>
<td>6,408</td>
<td>3,864</td>
</tr>
<tr>
<td>Fuel Consumption/day/person, Liter</td>
<td>1.1</td>
<td>0.96</td>
</tr>
</tbody>
</table>

Sources, World Bank 2019, CIA Fact Book 2019
Global Energy Development Result

- **The need and demand are increasing**, To support an increasingly world economy
- **The energy mix is changing significantly**, Decreased coal, increased renewable energy, oil and gas remain
- **The growth of emissions is sharply reduced**, But policy changes are required
- **Indonesia's oil production is declining,**
Biofuels Production by Region
Million tonnes oil equivalent

World biofuels production
The Outline

- GOVERNMENT POLICIES & REGULATIONS
- BIODIESEL INDUSTRIES
- SUSTAINABILITY
- CHALLENGES
- CONCLUSIONS
Indonesia Biofuels Program

2005, Biofuel Program

Source: APROBI
Government Policies on Energy Mix, Biodiesel Program & NDC

Indonesia, Nationally Determined Contributions UNFCCC

<table>
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<tr>
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<th>2020</th>
<th>2030</th>
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<tbody>
<tr>
<td>2020</td>
<td>26%</td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td>29%</td>
<td></td>
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</tbody>
</table>

Biodiesel Mandatory Program

- 2006: B5
- 2016: B20
- 2020: B30

Energy Mix组成:
- Coal: 2017 - 30.1%, 2025 - 30%
- Gas: 2017 - 41.4%, 2025 - 21.2%
- Oil: 2017 - 22%, 2025 - 25%
- RE: 2017 - 7.3%, 2025 - 23%
Indonesia Biodiesel Feedstock
Palm Oil Production and Projection

- **2011 – 23 M Ton**
  - Domestic used 6Mton
  - Export 17Mton

- **2015 – 32 M Ton**
  - Domestic 10Mton
  - Export 20Mton

- **2020 – 43 M Ton**
  - Domestic 13Mton
  - Export 30Mton

Sources, APROBI 2018
Smallholders Farmers Play Significant Role in Indonesia Palm Oil Sector

Smallholders farmers share almost half of Indonesian palm oil plantation. They exist in every island of the country. Sumatera and Borneo share are the biggest, but eastern part islands of Sulawesi, Maluku and Papua also have significant share.

Smallholders Farmers Share Almost Half of the Plantation

Total 2.6 Million Farmers Employing 4.3 Million Plantation Workers

- Sumatera: 1,976,773
- Borneo: 449,000
- Papua & Maluku: 35,914
- Java: 140,879
- Total Plantation: ± 14.3 Million

Source: Ministry of Agriculture, 2018
2018 Oil Palm Production; 43,709 Mton

- Domestic, Food; 7.938 Mton (15%)
- Domestic, Oleo; 872 Mton (1%)
- Domestic Biodiesel; 3.504 Mton (6%)
- Export, Crude; 6.561 Mton (12%)
- Export, Refine, Lauric, Oleo; 33.027 Mton (61%)
- Stock; 878 Mton (2%)

BIOMASS
- EFB 35,74 Mton
- MF 24,5 Mton
- PKS 10,9 Mton
- POME 99,272 Mton

Diesel Fuel Consumption ~ 31 JT KL

Source: GAPKI, GIMNI, AIMMI, APOLIN, APROBI
Biodiesel Industry Installed Capacity

Biofuel Industries

- Biodiesel
  - 23 Companies
  - Feedstock, Palm Oil
- Ethanol
  - 13 Companies
  - Feedstock, Molasses & Cassava

Source, APROBI
• Biodiesel Supply halted in March 2015, as oil prices fell
• Government and private sector support to establish Oil Palm Plantation Fund (BPDP-KS)
• Supply resumed in August 2015

Source, EBTKE-ESDM, APROBI
B20 Program 2019 (Projection)

- Biodiesel 20%, 6.2 million KL Consumed (~39.7 million barrel)
- 20 Companies, 11.8 Mil KL Installed Capacity
- ~435,000 Upstream Jobs
- Doubling the farmers’ Income
- Reducing ~16 Mil Ton CO2eq (42% from Energy & Transportation Target)

Source: APROBI
### Upcoming Indonesia Biofuels Industry

To develop the Advanced Biofuels

| **Biodiesel** | • Projection in 2019, ~6.2 M kl and export 2 M kl.  
  • B30 test in progress for implementation in 2020 |
| **Product Development** | • Green Diesel, Gasoline, Avtur, Bio Jet Fuel/Bio Avtur  
  • HVO  
  • Biomass-based Biofuels |
| **Feedstock** | • Cellulose, hemicellulose, or lignin  
  • Micro algae  
  • Biomass, Crop residue |
| **Technology** | • Unique technologies and processes that transform a wide range of plant, waste, and cellulosic molecules into hydrocarbon molecules like those produced at conventional refineries |

Source, APROBI
# B30 Performance & Road Test

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Performance &amp; Road Test</td>
<td>40,000 km</td>
</tr>
<tr>
<td>One loop</td>
<td>534 km</td>
</tr>
<tr>
<td>Terrain</td>
<td>Sea level till mountainous</td>
</tr>
<tr>
<td>Time period</td>
<td>May – October 2019</td>
</tr>
<tr>
<td>Area</td>
<td>Lembang (West Java) – Guci (Central Java)</td>
</tr>
<tr>
<td>Vehicle, Pax Car and Truck</td>
<td>11</td>
</tr>
<tr>
<td>Driver</td>
<td>44</td>
</tr>
</tbody>
</table>

**Involving**
1. Ministry of Energy, Transportation & Industry
2. Indonesia Car Manufacture Association
3. Center for research and development on oil and gas technology
4. Agency for the assessment and application of technology
5. Institute Technology of Bandung
6. State Oil & Gas Enterprise/Pertamina
7. Indonesia Biofuels Producer Association
8. Oil Palm Plantation Fund
B30 Performance & Road Test
B30 Performance & Road Test
Stakeholder Synergies

**Government**
As and initiator of Biofuel development, GOI (Ministry of Agricultures, Industries, Energy, Finance, Trade), consistence to support the Biofuels program.

**Industries**
Biodiesel Industries, Oil & Gas/ Pertamina and others, Automotive Industry, Railways, Truck Transport Association, Shipping & Oil Palm Industries works together to implement biodiesel program

**Research Center**
Institute for Petroleum and Natural Gas, Agency for Assessment and Application of Technology, The National Standardization Agency of Indonesia, some Universities Research center, also Industries R&D hand in hand to develop the best quality of Biodiesel

**OPPF**
The Oil Palm Plantation Fund supports the R&D and testing of Biodiesel program
Toward Sustainability

- Indonesia has implemented the moratorium on deforestation for any use since 7 years ago, and moratorium for new Palm plantation last year.
- Also, it has been formed Peat Restoration Board in 2017
- Palm Oil Sustainability Standard RSPO (Roundtable on Sustainable Palm Oil) standard. 51% from Indonesia Plantation
- ISPO (Indonesia Sustainable Palm Oil) standard. More than 400 Indonesia plantations already ISPO certified
- ISCC (International Sustainability & Carbon Certification), lot of Indonesian Companies got if ISCC certification.
- Continue to develop the Biofuel environment friendly processing technology
B20 Program and CPO Price

Farmers income increase 100% within one year after B20 implementations

Sources, INDEXMUNDI
Significant B20 Contribution to GHG Emission Reduction Target

Emission reduction target for 2020 from Energy and Transportation sector is **0.038 Giga Ton CO2eq**

- **2016**
  - 7.98 Mil Ton CO2eq Reduction
  - 21% Contribution on Energy & Transportation Target

- **2017**
  - 6.88 Mil Ton CO2eq Reduction
  - 16% Contribution on Energy & Transportation Target

- **2018**
  - 10.58 Mil Ton CO2eq Reduction
  - 27% Contribution on Energy & Transportation Target

- **2019 (Projection)**
  - 16 Mil Ton CO2eq Reduction
  - 42% Contribution on Energy & Transportation Target

Source, APROBI Januari 2019
Biodiesel Program Supports the UN SDG’s

1. NO POVERTY
2. ZERO HUNGER
3. GOOD HEALTH AND WELL-BEING
4. QUALITY EDUCATION
5. GENDER EQUALITY
6. CLEAN WATER AND SANITATION
7. AFFORDABLE AND CLEAN ENERGY
8. DECENT WORK AND ECONOMIC GROWTH
9. INDUSTRY INNOVATION AND INFRASTRUCTURE
10. REDUCED INEQUALITIES
11. SUSTAINABLE CITIES AND COMMUNITIES
12. RESPONSIBLE CONSUMPTION AND PRODUCTION
13. CLIMATE ACTION
14. LIFE BELOW WATER
15. LIFE ON LAND
16. PEACE AND JUSTICE STRONG INSTITUTIONS
17. PARTNERSHIPS FOR THE GOALS
Challenges

• **Biodiesel Quality**
  - To meet the transportation technology demand, we are always renewing/improving our Biodiesel Quality Standard and the technology.

• **Stakeholder support**
  - We are working with the Renewable Energy Research Centre and Universities, Car Manufacture Association, Pertamina and Energy and Mineral Resources Ministry to research and to make a road test for Biodiesel program.

• **Pricing policy**
  - All the stake holders support to have the Biodiesel price affordable

• **Trade Barriers & Protectionism**
  - EU RED II, US RFS 2, Subsidy and Anti Dumping cases from EU and US, EU Parliament resolutions on Palm Oil and Biodiesel
  - It causes a barrier for technology growth

Source, APROBI December 2018
Conclusions

Energy Security and Affordable

Supporting the GHG Emission Reduction

Increasing Workforce

Increasing Farmers Income

Towards B30

High time to make cooperation with Colombia
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THANK YOU & HAVE A NICE DAY