INVESTING IN NEW AND RENEWABLE ENERGY IN INDONESIA

Energy for All Investor Forum
Manila, 16 June 2015
THE PARADOX OF INDONESIAN ENERGY - NO LONGER AN OIL EXPORTER

“Proven reserves of petroleum are feared to be exhausted within 10-13 years”
-RPJMN 2015-2019, 7 January 2015

Source: IEA dan EIA/AS

Historical changes of Indonesian energy, from Member of OPEC to Oil importer
THE ENERGY SITUATION IN INDONESIA - TARGETING 23% FROM NRE SOURCE

17% increase of new & renewable energy (NRE) in 11 years

National Energy Mix 2014
- Gas: 23%
- Oil: 41%
- Coal: 30%
- NRE: 6%

National Energy Mix Target 2025
- Gas: 22%
- Oil: 25%
- Coal: 30%
- NRE: 23%

<table>
<thead>
<tr>
<th>NO</th>
<th>NRE</th>
<th>RESOURCES</th>
<th>INSTALLED CAPACITY (IC)</th>
<th>RATIO OF IC/RESOURCES (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>75,000 MW</td>
<td>7.572 MW</td>
<td>10.1%</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>28,910 MW</td>
<td>1.403.5 MW</td>
<td>4.9%</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>32,654 MW</td>
<td>1.717.9 MW</td>
<td>5.4%</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>4.80 kWh/m²/day</td>
<td>48.05 MW</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>3 – 6 m/s</td>
<td>1.87 MW</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>49 GW ***)</td>
<td>0.01 MW ****)</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>3,000 MW *)</td>
<td>30 MW **)</td>
<td>-</td>
</tr>
</tbody>
</table>

*) Identified in the Kalan Basin in West Kalimantan
**) As a center of research, non-energy
***) Source: National Energy Council
****) BPPT’s Prototype

Indonesia NRE potential could reach more than 200,000 MW. Today, Indonesia has just used 6.8% of the total NRE Potential.
A TOTAL OF 135 BILLION USD INVESTMENT IN 2025

- 23% NRE
- 39 Billion USD
  - Geothermal 7%
  - Bioenergy 10%
- 27 Billion USD
  - Hydro 3%
  - Others 3%
- 54 Billion USD
- 13 Billion USD

2020: 78 Billion USD
2025: 135 Billion USD
CHALLENGES FOR INVESTMENTS ON NRE

Challenges
- Access to site condition
- Availability of logistic facility (ports, road availability)
- On-site main resources
- Availability of local construction company and material

Risks Factors
- Land/site contractual risk
- Capital cost over-run: licenses, logistics (transport facilities), construction delay, grid interconnection, etc
- Technology: life-time and efficiency of module and equipment, grid reliability
- Financial viability of PLN (long-term PPA)
- Disasters: flood, fire, earthquake

Tariff
- Existing FiT shall be attractive enough for the investor to cover risk and gain expected financial return (ROR > 15%)
- Technology supply relies on mainly from offshore

Barrier to entry
- Capacity and technology transfer: lack of experience of local investor to build and operate utility scale plants needs experience partner
- Low learning curve, slow market penetration
- Limited access to most efficient technologies
FOUR PILLARS OF BREAKTHROUGH

1. **POLICY**
   Issuing policy package, facilitating good energy industries development for all NRE program and investment.

2. **FINANCIAL**
   Innovative funding mechanism that allows the channeling of various sources of funding to renewable energy initiatives.

3. **TECHNOLOGY**
   Breakthrough of technological advancement in the development of renewable energy.

4. **CAPACITY**
   Increase in public and industrial capabilities in the supply and use of renewable energy.
SETTING UP INVESTMENT CLIMATE FOR NRE DEVELOPMENT

- One Step Service (OSS) for license application.
- Interlink with sectoral Ministries.

**INVESTMENT COORDINATING BOARD**

**MINISTRY OF FINANCE**
- Fiscal Incentives
- Import Duty Facilities
- Tax Holiday
- Tax Allowance
- PPP facilities for NRE projects: i) PDF; ii) VGF; iii) Guarantee; iv) Infrastructure Fund

**MINISTRY OF ENERGY AND MINERAL RESOURCES**
- Data and Information Update
- Capacity building to stakeholders
- Subsidies and infrastructure support to poor and remote communities
- Policy on Tariff
- Facilitation-based planning and budgeting

RENEWABLE ENERGY FUND
RENEWABLE ENERGY FUND TO ACCELERATE NRE DEVELOPMENT

Sources of funds (grants, loans, investment)
- Hydro power plant
- Biomass/Biogas
- Solar power plant
- Wind power plant
- Others

Intermediary institution
- Fund Management
- Project Assessment & Monitoring
- Project Development

RE Projects

Supported by: PT SMI, as SOE in financing PPP infrastructure development
Indonesian Infrastructure Guarantee Fund (IIGF), as SOE providing guarantee facility for infrastructure development
SOME CASES OF INVESTMENT OPPORTUNITIES:
1. BIO ENERGY INDUSTRY
2. SOLAR PV INDUSTRY
3. BALI AS CLEAN ENERGY ISLAND
### BIOFUEL SUPPLY SCENARIO 2015-2025

**Target of biodiesel production capacity increase**
- 2015: 4.7 million kiloliter (covered from existing production of CPO)
- 2019: 7.6 million kiloliter
- 2025: 18.1 million kiloliter

**Total land needed**
- 2015: 0.6 million Ha
- 2019: 2.9 million Ha
- 2025: 11.0 million Ha

**Total land needed till 2025:** 3.3 million Ha

**Target of bioethanol production capacity increase**
- 2015: 0.9 million kiloliter
- 2019: 2.9 million kiloliter
- 2025: 8.5 million kiloliter

**Total land needed**
- 2015: 0.6 million Ha
- 2019: 2.9 million Ha
- 2025: 11.0 million Ha

**Total land needed till 2025:** 3.8 million Ha

**Exports target:** 30%
STRENGTHENING BIOENERGY VALUE CHAIN AND INDUSTRY

APPROACH ON STRENGTHENING BIOENERGY SUPPLY CHAIN AND INDUSTRY

Assertiveness of Government policies presents on every stage of bioenergy supply chain

<table>
<thead>
<tr>
<th>DEGRADED LAND AND LOCAL COMMUNITY</th>
<th>CONNECTIVITY AND FEEDSTOCK PRICE</th>
<th>PRODUCTION INCREASE</th>
<th>DISTRIBUTION CAPACITY AND SUPPLY</th>
<th>INDUSTRY AND MARKET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planting on degraded lands.</td>
<td>Encourage proper transport modes with policy and incentives.</td>
<td>Encourage new establishment of bioenergy factories or production capacity increase with incentives.</td>
<td>Encourage proper bioenergy distribution modes with policy and incentives.</td>
<td>Monitoring of biofuel blend policy application.</td>
</tr>
<tr>
<td>Diversification of feedstock type based on soil characteristics and localities.</td>
<td>Maintain feedstock price with incentive/subsidy.</td>
<td>Support blending plant technology.</td>
<td>Increase network capacity.</td>
<td>End user target: mining industry, power plant &amp; transportation.</td>
</tr>
</tbody>
</table>

- Encourage new establishment of bioenergy factories or production capacity increase with incentives.
- Support blending plant technology.
- Develop intermodal network & connectivity.
- Encourage proper bioenergy distribution modes with policy and incentives.
- Increase network capacity.
- Maintain supply with Domestic Market Obligation policy.

- Monitoring of biofuel blend policy application.
- End user target: mining industry, power plant & transportation.
- Ensure OEM (Original Equipment Manufacturer) to support biofuel utilization.
- Encourage automotive industries to support biofuel utilization.
**Definition of Degraded Land:** land that is critically assessed based on several parameter conditions including vegetation cover, slope, erosion, and land management conditions. (Dirjen Decrees No. 041 / Kpts / V / 1998)

**Table:**

<table>
<thead>
<tr>
<th>Category</th>
<th>%</th>
<th>Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slightly Critical</td>
<td>65.4</td>
<td>45,878,466</td>
</tr>
<tr>
<td>Critical</td>
<td>27.9</td>
<td>19,564,909</td>
</tr>
<tr>
<td>Very Critical</td>
<td>6.8</td>
<td>4,738,384</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>70,181,759</strong></td>
</tr>
</tbody>
</table>

Source: Directorate PEPDAS, DG BPDAASPS Ministry of Forestry, 2013
TARGET OF BIO ENERGY DEVELOPMENT IN KATINGAN & PULANG PISAU DISTRICT, CENTRAL KALIMANTAN PROVINCE

A glance of degraded land in Central Kalimantan
INVITING INVESTMENT ON SOLAR PV INDUSTRY

- Feed in tariff: USD 25 cent/kwh
- Quota: 1 GW per year
- Transfer technology policies
- Rooftop PV policy program
- Regional-based feed in tariff
Bali as Clean Energy Island

Bali Hosts Centre of Excellence

- Geothermal
- Bioenergy
- Solar PV
- Hydro Power
- Biofuel Utilization

Building Technologies
DEVELOPMENT OF CENTER OF EXCELLENCE

- Coordination center for the development of NRE technology;
- Facilitation of technology implementation at local and industrial level;
- Enhancing energy efficiency and conservation; and
- Boost knowledge on NRE research and development

Knowledge Support
- Technical Information
- Landscape Analysis
- Project Facilitation
- Basic Knowledge

Support Team
- Technical
- Training
- Business
- Knowledge

Implementation Support
- Partnership Program
- Monitoring and Evaluation
- Manufacture and Processing
- Technology Innovation
THANK YOU