PT Perusahaan Listrik Negara (Persero)

*The role of bio energy in national power supply: Current grid connected power plants and future projects*

Presented to
Renewable Energy Conference: Green Supply for Growing Demand
October 24, 2011
Outline

1. Company Overview
2. Electricity in Indonesia
4. Conclusion
SECTION 1

Overview
**Introduction**

**PLN, a power utility company in Indonesia: the only state-owned and the only fully-integrated**

- Wholly-owned by the Republic of Indonesia (represented by Ministry of State Owned Enterprises, SOE)
- Largest provider of all public electricity and electricity infrastructure in Indonesia, including power generation, transmission, distribution and retail sales of electricity
- Charges for electricity are based on electricity tariff set by the Government

  → Law Number 19/2003 on SOEs: the Government is obliged to provide a subsidy to PLN for the difference between the price charged for electricity and the cost to provide electricity

**Key Business Segments**

<table>
<thead>
<tr>
<th>Generation</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Controls approx. 28,500 MW of installed generating capacity, over 85% of Indonesia’s total</td>
</tr>
<tr>
<td>♦ Owns and operates 1,261 generation plants</td>
</tr>
<tr>
<td>♦ Main purchaser of electricity from Independent Power Producers (IPPs)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Sole provider of power transmission in Indonesia</td>
</tr>
<tr>
<td>♦ Approx. 36,800 kmc transmission lines</td>
</tr>
<tr>
<td>♦ Around 66,500 MVA of transmission transformer capacity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Sole distributor of electricity to end customers in Indonesia</td>
</tr>
<tr>
<td>♦ Approx. 685,800 kmc distribution lines and 36,500 MVA of transformer capacity</td>
</tr>
<tr>
<td>♦ Serving around 44 million customers</td>
</tr>
</tbody>
</table>
Corporate Structure

Vertical integration of power generation, transmission and distribution

- Ministry of State Owned Enterprises (MSOE)
- Ministry of Energy and Mineral Resources (MEMR)
- Ministry of Finance (MoF)
- Ministry of the Environment
- National Development Planning Authority (BAPPENAS)

Oversight

100% owned by the GoI

PT PLN (Persero)

- PT Indonesia Power
  - Electricity Generation
- PT Pembangkitan Jawa Bali
  - Electricity Generation
- PT PLN Batam
  - Regional Fully Integrated Electric Utility
- PT PLN Tarakan
  - Regional Fully Integrated Electric Utility

- Majapahit Holding B.V.
  - Financial Institution
- PT Indonesia Comnets Plus
  - Telecommunications for The Electricity Sector
- PT Prima Layanan Nasional Enjinining
  - Engineering and Construction Services
- PT PLN Batubara
  - Coal Supplier for PLN Coal Fired Power Plants
- PT PLN Geothermal
  - Geothermal Energy Generation
- PT Pelayaran Bahtera Adiguna
  - Shipping Activities

Note: Excludes Joint Ventures
Strong Government support

Gol’s active involvement emphasizes the importance of PLN’s role in ensuring stable electricity supply

**Government financial assistance**
- Extended government loan maturities, converted overdue & penalties into equity in 1998
- Channels loans in which GOI is the primary obligor to lender (2-step loan)
- Law no. 19/2003: obligation to provide subsidy to PLN
- GOI injected equity to fund development plans: Rp 3.9 trillion in 2009 and Rp 2.3 trillion in 2010
- Irrevocable & unconditional guarantee of loans for FTP I
- Presidential Regulation No. 8/2011: GOI raised the electricity tariff effective July 2010
- In 2010, GOI approved a Rp 7.5 trillion loan to finance a portion of PLN’s capex for certain projects

**Close involvement of Indonesian Government**
- Gol is involved in almost every critical stage of PLN’s operations: budget setting, capital expenditure plans, IPP developments and primary energy supply
- Direct & close involvement of various Ministries (Ministry of State Owned Enterprises, Ministry of Energy and Mineral Resources, Ministry of Finance and Ministry of the Environment)
- Government agencies (i.e. The Board of Finance and Development Control – BPKP, Corruption Eradication Commission – KPK, and Attorney General Office) assist in implementing Good Corporate Governance.

**Timely & adequate subsidies**
- MoF RegulationNo. 111/PMK.02/2007 and its amendments: Blanket Subsidy
- Continuous review ensuring adequacy and timely subsidy payments
- 8% margin for 2010 and 2011, approved

### Total budgeted Government Subsidy to PLN (Rp Trillion) 1)

<table>
<thead>
<tr>
<th>Year</th>
<th>Subsidy</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>33.9</td>
</tr>
<tr>
<td>2007</td>
<td>37.5</td>
</tr>
<tr>
<td>2008</td>
<td>78.6</td>
</tr>
<tr>
<td>2009</td>
<td>53.7</td>
</tr>
<tr>
<td>2010</td>
<td>58.1</td>
</tr>
<tr>
<td>1H2011</td>
<td>40.9</td>
</tr>
</tbody>
</table>

1) Government’ electricity subsidy as a result of audit by the State Auditor, except for the first half of 2011

### Subsidy Calculation

**Cost covered by Subsidy**
- Power purchase
- Fuel & Lubricants
- Maintenance
- Personnel
- Administration
- Depreciation
- Financing costs

**Plus ...**
- 8% PSO Margin based on Unit Cost in each voltage level

**Minus ...**
- Electricity sales

**Equals ...**
- Electricity Subsidy
SECTION 2

Electricity in Indonesia
Projection of Electrification Ratio - 2012

Category:
- > 60%
- 41 - 60%
- 20 - 40%

NAD 87,2%
Sumut 84,5%
Sumbar 68,7%
Sumsel 64,8%
Riau + Kepri 48,1%
Bengkulu 63,9%
Babel 63,1%
Jambi 63,5%
Lampung 63,7%
Bantren 82,5%
Jabar 71,1%
Jateng 76,9%
Jatim 69,1%
Jogya 78,6%
Jakarta 91,1%
Kalbar 55,2%
Kalsel 71,4%
Kalteng 54,5%
Kaltim 55,0%
Kalsel 71,4%
Kaltim 55,0%
Bali 69,1%
Gorontalo 55,6%
Bali 69,1%
Sulbar 42,4%
Sultra 55,5%
Sulsel 66,3%
NTB 62,7%
NTT 61,7%
Sulut 68,4%
Maluku Utara 59,1%
Papua Barat 53,0%
Papua 56,5%
PLN distributes and sells electricity to several customer types. The electricity sold is either generated by PLN or purchased from IPPs.

Energy Sold (in TWh)

Produced Energy Composition
Growing Electricity Demand

Backed by strong macroeconomic indicators, energy demand in Indonesia is expected to grow significantly in the next few years.

Growing Electricity Demand up to 2019

Additional Generation Capacity Plan

Additional Capacity Plan 2010 - 2019 (MW)

- Hydro
- Geothermal
- Mini/Micro Hydro
- Biomass
- Solar
- Wind

(TWh)

<table>
<thead>
<tr>
<th>Year</th>
<th>Outside Java &amp; Bali</th>
<th>Java &amp; Bali</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>36</td>
<td>125</td>
</tr>
<tr>
<td>2013</td>
<td>44</td>
<td>150</td>
</tr>
<tr>
<td>2015</td>
<td>55</td>
<td>179</td>
</tr>
<tr>
<td>2017</td>
<td>68</td>
<td>213</td>
</tr>
<tr>
<td>2019</td>
<td>82</td>
<td>253</td>
</tr>
</tbody>
</table>
SECTION 3

Bio-energy Development:

Opportunity & Challenges
### Current Bio-energy Power Plants connected to PLN’s Grids

<table>
<thead>
<tr>
<th>No.</th>
<th>Company</th>
<th>Power Plant</th>
<th>COD</th>
<th>Grid</th>
<th>Location</th>
<th>Fuel Supply</th>
<th>Capacity (MW)</th>
<th>GWh Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PT Growth Sumatra Industry, Ltd. (#1)</td>
<td>Steam</td>
<td>2009</td>
<td>20 kV</td>
<td>North Sumatera</td>
<td>Shell of Desicated Coconut</td>
<td>6.0</td>
<td>24.0</td>
</tr>
<tr>
<td>2</td>
<td>PT Growth Sumatra Industry, Ltd. (#2)</td>
<td>Steam</td>
<td>2009</td>
<td>20 kV</td>
<td>North Sumatera</td>
<td>Shell of Desicated Coconut</td>
<td>9.0</td>
<td>24.0</td>
</tr>
<tr>
<td>3</td>
<td>PT Listrindo Kencana</td>
<td>Steam</td>
<td>2006</td>
<td>20 kV</td>
<td>Bangka</td>
<td>Biomass</td>
<td>5.0</td>
<td>17.5</td>
</tr>
<tr>
<td>4</td>
<td>PT Belitung Energy</td>
<td>Steam</td>
<td>2010</td>
<td>20 kV</td>
<td>Belitun</td>
<td>Biomass</td>
<td>7.0</td>
<td>24.5</td>
</tr>
<tr>
<td>5</td>
<td>PT Navigat Organic Energy Indonesia</td>
<td>Waste</td>
<td>2008</td>
<td>20 kV</td>
<td>Bali</td>
<td>Sampah</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>6</td>
<td>PT Navigat Organic Energy Indonesia</td>
<td>Waste</td>
<td>2010 *1)</td>
<td>20 kV</td>
<td>West Java</td>
<td>Waste</td>
<td>1 *1)</td>
<td>14 *2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2011 *2)</td>
<td></td>
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<tr>
<td></td>
<td>Total</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>43.0</td>
<td>92 ++</td>
</tr>
</tbody>
</table>

*1) November 2010 – January 2011
*2) Began on August 2011

### Next Bio-energy Power Plants...

<table>
<thead>
<tr>
<th>No.</th>
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<th>COD</th>
<th>Grid</th>
<th>Location</th>
<th>Fuel Supply</th>
<th>Capacity (MW)</th>
<th>GWh Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PT Energy Alam Raya</td>
<td>Steam</td>
<td>2012</td>
<td>20 kV</td>
<td>Aceh</td>
<td>Shell of desicated coconut</td>
<td>1.2</td>
<td>7.0</td>
</tr>
<tr>
<td>2</td>
<td>PT Indo Sawit</td>
<td>Steam</td>
<td>2012</td>
<td>20 kV</td>
<td>South Sumatera</td>
<td>Shell of desicated coconut</td>
<td>1.2</td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.4</td>
<td>13.0</td>
</tr>
</tbody>
</table>
Bio Energy IPP: Opportunity & Challenge

Opportunities

- Huge market
- Government policy: Direct Appointment for capacity ≤ 10 MW
- Attractive tariff for outside of Java & Bali (as set out in MEMR Regulation No. 31 / 2009)

Challenges

- Pricing and Funding
- Offshore lender’s concern on Government Support
- Readiness of domestic investor
- Scarcity of bio-energy fuel; changes of status: waste material → commodity
- Enhancement of technology for attractive selling price

MEMR Regulation No. 31/2009:

- PLN is obliged to purchase electricity from Renewable Energy with 10 MW Maximum installed capacity
- Tariff is set as:
  - 7 c USD /kWh (connected to medium voltage line)
  - 10.8 c USD /kwh (connected to low voltage line)
  - Incentive factor of 1.1 – 1.5 for outside Java-Bali
- Tariff higher than setting tariff: B to B mechanism and subject to GOI approval
Comparison of Generation Cost / Price (Average, Rp / kWh)

- Coal Fired: 750 Rp/kWh
- Hydro: 400 Rp/kWh
- Operating Geothermal: 600 Rp/kWh
- Geothermal Under Proc.: 850 Rp/kWh
- Fuel Oil: 1900 Rp/kWh
- Bio Energy: 656 Rp/kWh
- Gas: 500 Rp/kWh

Bio-energy: How far can you go...?
SECTION 4

Conclusion
Attractive Investment in Bio-energy

- Bio-energy development plays an important role on future Indonesia’s development

- Due to increasing national electricity demand, low electrification ratio and limited investment capacity of PLN to increase power generation capacity, PLN most welcome for the private sector participation as Independent Power Producers (IPP)

- The increasing private sector participation in IPP projects after economic crisis has shown an initial success of PLN’s efforts in attracting private investments in power generation.

- Such success has been supported by the commerciality of PPA terms offered by PLN that provide long term, stable and predictable income streams to the investors, as well as supportive Government policy

- PLN is actively looking for foreign and domestic private participations for investment in IPP projects in the form of equity participation and / or debt financing

- PLN is ready to further dialog and facilitate discussion between investors and related Government institution for better understanding
Thank you