MINISTRY ENERGY AND MINERAL RESOURCES REPUBLIC OF INDONESIA
DIRECTORATE GENERAL OF ELECTRICITY

ELECTRICITY POLICY DEVELOPMENT & INVESTMENT OPPORTUNITY IN INDONESIA

By:
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I. CURRENT CONDITION
Objective of Electricity Development

To ensure the availability of electricity in sufficient quantity, good quality and reasonable price in order to improve the welfare of the people (article 2 clause (2)).

Utilization of Primary Energy Source

- Primary energy sources from domestic and overseas shall be used optimally in accordance with National Energy Policy to ensure a sustainable supply of electricity (article 6 clause (1)).
- Utilization of domestic energy sources will be prioritized for national interests (article 6 clause (3)).
Overview of Indonesia Electricity Condition

- **Total installed capacity (2013):** 47,328 MW (PLN 74%, IPP 22%, and PPU 4%)
- **Electricity consumption (2013):** 188 TWh (Household 41%, Industry 34%, Business 19%, Public 6%)
- **Demand growth:** 7.8% (2013), 10.1% p.a. (projected up to 2031)
- **National electrification ratio (2013):** 80.51%
- **Several area are facing limited electricity supply**
- **Energy mix in power production (2013):** Coal 51.6%, Gas 23.6%, Oil 12.5%, Hydro 7.9%, Geothermal 4.4%
- **Total investment in Power Sector (2012):** ± USD 7.16 Billion
Oil share in electricity production is still high, because:

- There are many DPP outside of Java-Bali system, it is operating in base load as well as in peak load period to fulfill the demand
- Several CCPP and GTPP are operating utilizing oil as primary energy (in Java – Bali System).
Electrification Ratio 2013

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Realization | 65.10% | 65.79% | 67.15% | 72.95% | 76.56% | **80.51%** | 81.51% | 83.18% | 86.37% | 89.56%
Based on Draft RUKN | | | | | | | | | | 

Category:
- > 70%: Green
- 50 - 70%: Orange
- < 50%: Red

Energy and Mineral Resources for People Prosperity
II. ON GOING & FUTURE PLAN
### Fast Track Program (FTP) Phase I

**SUMATERA 8 PROJECTS (1.411 MW):**

1. CFPP NAD – Nagan Raya (2x110 MW)
2. CFPP Sumut – Pangkal Jaya (2x220 MW)
3. CFPP Sumbar – Teluk Sinuh (2x112 MW)
4. CFPP Riau – Tanjung (2x110 MW)
5. CFPP Kep. Riau - Tj. Balai Karimun (2x7 MW)
6. CFPP 3 Bangka – Bangka Baru (2x30 MW)
7. CFPP 4 Bangka – Belitung (2x16.5 MW)
8. CFPP Lampung – Tarakan (2x100 MW)

**JAWA-BALI 10 PROJECTS (7.490 MW):**

1. CFPP 1 Banten – Suralaya (1x625 MW)
2. CFPP 2 Banten – Labuan (2x300 MW)
3. CFPP 3 Banten – Lontar (3x315 MW)
4. CFPP 1 Jabar – Indramayu (3x330 MW)
5. CFPP 2 Jabar – Pelabuhan Ratu (2x350 MW)
6. CFPP 1 Jateng – Rembang (2x315 MW)
7. CFPP 2 Jateng – Adipala (1x660 MW)
8. CFPP 1 Jatim – Pacitan (2x315 MW)
9. CFPP 2 Jatim – Paltan (1x660 MW)
10. CFPP 3 Jatim – Tj. Awar Awar (2x350 MW)

**KALIMANTAN 5 PROJECTS (625 MW):**

1. CFPP 1 Kalbar – Parit Baru (2x50 MW)
2. CFPP 2 Kalbar – Bengkayang (2x27.5 MW)
3. CFPP 1 Kalteng – Pulang Pisau (2x60 MW)
4. CFPP Kalsel – Asam-Asam (2x65 MW)
5. CFPP Kaltim – Tj. Balikpapan (2x110 MW)

**SULAWESI 4 PROJECTS (220 MW):**

1. CFPP 2 Sulut – Amurang (2x25 MW)
2. CFPP Gorontalo – Anggrek (2x25 MW)
3. CFPP Sultra – Kendari (2x10 MW)
4. CFPP Sulsel – Barru (2x50 MW)

**NUSA TENGGARA 4 PROJECTS (117 MW):**

1. CFPP 1 NTB – Bima (2x10 MW)
2. CFPP 2 NTB – Lombok (2x25 MW)
3. CFPP 1 NTT – Ende (2x7 MW)
4. CFPP 2 NTT – Kupang (2x16.5 MW)

**MALUKU 2 PROJECTS (44 MW):**

1. CFPP Malut – Tidore (2x7 MW)
2. CFPP Maluku – Ambon (2x15 MW)

**PAPUA 1 PROJECTS (20 MW):**

1. CFPP 2 Papua – Jayapura (2x10 MW)

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**TOTAL: 34 PROJECT (9.927 MW)**

- **Outside Jawa:** 25%
- **Jawa:** 75%

*Under Construction (< 50%) ር: Under Construction (50% - 85%) ሷ: Under Construction (≥ 85%) ሲ: COD 1 unit ሴ: COD all unit*
Realization and Target COD of FTP I

**Realization**
- **6,377 MW (64.2%)**

**Target**
- **3,550 MW (35.8%)**
**Fast Track Program (FTP) Phase II**

**Power Generation Composition**
- **SUMATERA**
  - HEPP: 453 MW
  - GeoPP: 2.725 MW
  - CFPP: 400 MW
  - **Total: 3,578 MW**

- **JAVA – BALI**
  - HEPP: 1,150 MW
  - GeoPP: 1,935 MW
  - CFPP: 9,720 MW
  - **Total: 12,805 MW**

- **SULAWESI**
  - HEPP: 200 MW
  - GeoPP: 195 MW
  - CFPP: 200 MW
  - **Total: 595 MW**

- **KALIMANTAN**
  - CFPP: 500 MW
  - **Total: 780 MW**

- **MALUKU**
  - GeoPP: 35 MW
  - **Total: 35 MW**

- **NUSA TENGGARA**
  - GeoPP: 75 MW
  - CFPP: 50 MW
  - **Total: 125 MW**

**Renewable vs Non-Renewable**

- **Non-Renewable**
  - 11,150 MW (62%)

- **Renewable**
  - 6,768 MW (38%)

**Developer**

- **PLN**
  - 5,749 MW (32%)

- **IPP**
  - 12,169 MW (68%)

**Outside Java**
- 29%

**Java**
- 71%
Average of national electricity demand growth 2013-2022 is about 8.4% annually.
• Total additional capacity up to about 60 GW;
• PLN and IPP projects only for ongoing and committed projects;
• The project which doesn't have the developer yet as well as funding is called “unallocated projects”.

Source: RUPTL PLN 2013-2022
Electricity efficiency effort is conducted through diversification of primary energy in power generation (supply side) by optimizing utilization of gas, reduce of oil utilization, increasing coal utilization, and developing renewable energy power generation;

Gas and coal are priority to reduce dependence on oil in power generation;

Coal will to be mainstay as base load power plant and gas as load follower power plant.

Source: RUPTL PLN 2013-2022
III. CO$_2$ EMISSION REDUCTION – CLEAN COAL TECHNOLOGY
• Emission will increase from 125 million tons in 2011 to 275 million tons in 2020.

• Most emission will come from coal combustion (almost 90%).

• For Java Bali: Grid emission factor will reduce from 0.78 kg CO2/kWh in 2011 to 0.75 kg/kWh in 2020.
Indonesia’s power sector can be mistakenly regarded as more concern about growth and use of indigenous coal than concern about global climate challenge.

However, Indonesia would actually do better than just ‘grow first – cleanup later’, it is seen from the fact that Indonesia have plan to develop large scale geothermal and small-medium-large scale hydro power, as well as clean coal technology.

PLN in its 10-year power development plan to 2022 set a policy that only SC/USC coal plants will be developed in Java for better efficiency and lower CO2 emissions.

Gov of Indonesia (MEMR) and gov of Japan (JICA) are carried out a project study “Promotion of Clean Coal Technology (CCT) in Indonesia” from April 2011 to be July 2012. The CCT study team consists of Chubu Electric, JPower and Jcoal, with MEMR and PLN as counterpart team.
Rational for USC/IGCC introduction in Indonesia

Technical availability

✓ Is USC & IGCC readily available?
→ USC: readily available, IGCC: available in 2020
✓ When can it be introduced in Indonesia?
→ USC: 2017, IGCC: 2025

Alignment with Indonesia’s Policy

✓ Is it possible to use low rank coal (LRC)?
→ Yes, LRC can be utilized
✓ Does it contribute to GHG emission reduction?
→ Yes, GHG emission amount will be reduced

Economic validity

✓ Is it economically viable?
→ Yes, Generation cost will be lower than Sub-c or SC
**CCT Technology for Coal Fired Power Plants**

<table>
<thead>
<tr>
<th>USC</th>
<th>IGCC</th>
</tr>
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<tbody>
<tr>
<td><strong>Matured technology to achieve low electricity costs &amp; low GHG emissions</strong></td>
<td><strong>Promising technology to achieve low electricity cost, lower GHG emissions &amp; LRC utilization</strong></td>
</tr>
<tr>
<td>- Proven and already commercialized technology</td>
<td>- Technology yet to be commercialized</td>
</tr>
<tr>
<td>- Introduced all around the world</td>
<td>- Will be introduced at the beginning of 2020s in commercial base in the world</td>
</tr>
<tr>
<td>- Can utilize low rank coal with above average ash melting point</td>
<td>- Promising technology for low rank coal with low ash melting point</td>
</tr>
<tr>
<td>- Economic superiority to SC</td>
<td>- Economic superiority to SC and USC</td>
</tr>
<tr>
<td>- Lower GHG emission compared to SC</td>
<td>- Lower GHG emission compared to SC &amp; USC</td>
</tr>
</tbody>
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**Target for introduction of USC and IGCC in Indonesia**

- USC should be introduced for next new coal fired power plant project (2017)
- IGCC will be introduced around 2025, considering the development situation in the world
After assessing relevant factors (technical availability, low rank coal availability, economic viability, technical challenges in introducing CCT and contribution to GHG emission reduction), the CCT study concludes that the CCT technology that can be adopted by Indonesia are USC and IGCC.

USC is commercially matured, already proven and well performed in many countries, can use low rank coal having above average ash melting point, has economic merit to SubC and SC, produces lower CO2 emissions.

IGCC is a promising technology, yet not commercially matured, can use low rank coal with low ash melting point, its project cost is expected to drop and make it economical compared to SC and USC, lower CO2 emission than SC and USC.

*) Source: The Project for Promotion of Clean Coal Technology (CCT) in Indonesia, Interim Report, October 2011, Jakarta, JICA Study Team.
*) Source: The Project for Promotion of Clean Coal Technology (CCT) in Indonesia, Interim Report, October 2011, Jakarta, JICA Study Team, with modification
IV. INVESTMENT
IPP’s investment share up to 2022 is about 43%.
General Mechanism of Investment in Electricity

Investor (Foreign/Domestic) → Ministry of Energy and Mineral Resources

Registration

Investment Coordinating Board

Ap pro val

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PT. PLN (Persero) State-Owned Enterprise

Bidding Process Mechanism: Government Regulation No. 14/2012

RUPTL 2012 - 2021 (Electricity Business Plan)

Direct Selection → Direct Appointment

Permanent Business Permit of Electricity (IUPL / IO Tetap) Ministry of ESDM Regulation No. 10 of 2005

Temporary Business Permit of Electricity (IUPL / IO Sementara) Ministry of ESDM Regulation No. 10 of 2005

Ministry of Finance


Local Government

• Local Permit
• Environment Impact Analysis (AMDAL)
• etc

Bidding Process Mechanism: Government Regulation No. 14/2012

RUPTL project consist of:
• Regular Project
• FTP Phase I Project
• FTP Phase II Project
• Public Private Partnership Project

Ministrial Decree No. 2682 K/21/MEM/2008

Goods Import Plan (RIB) Dirjen Regulation No. 211.12/20/600.1/2012

Examination of Feasible Operation (SLO) Ministerial Regulation No. 46 of 2006

Certificate of Operational Feasible

Commercial

Y

Appr oval

Pre-Operation

Construction
**Investment Scheme**

*(Based on Government Regulation No. 14/2012 on Activity of Electricity Provision Business)*

- **Tender**
  - **Basically power purchase by Tender**

- **Direct Selection**
  - **Energy diversification for power generation to non oil fuel.**
  - **IPP expansion more than needed**

- **Direct Appointment**
  - **Renewable energy**, marginal gas, mine-mouth coal and other local energy sources;
  - **Excess power**;
  - **Crisis condition or emergency of electricity supply; or.**
  - **Expansion of IPP which has already operation at the same location:**
    - **Capacity ≤ existing**
    - **Capacity > existing:**
      - more efficient technology
      - environmental friendly
      - accordance with the requirement of electricity system

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KESDM
The Government Supports

FTP II Project
- The government guarantees the feasibility of PLN business in accordance to the provisions of legislation.
- Provide facilities such as exemption from import duty and other facilities regulated by the Ministry of Finance (MoF).

PPP Project
- The government provide “the government support” or “the government guarantee”.
- If private as the initiator of the project, the government will provide some compensation:
  1. Additional value (max 10% of the initiator tender assessment); or
  2. Right to match by the initiator against the best offer in accordance with the results of the assessment in the tender process;
  3. Purchase of a joint project initiatives including intellectual property rights attached to them by the minister / head of institution / district head or by the winning bidder.
An SPC shall be formed to execute the agreement and to build and operate the IPP project.
Public Private Partnership (PPP) Project

Guarantee Agreement between GOI-IIGF-Developer


- b. Presidential Regulation No 78 of 2010

- c. Minister of Finance Regulation No 260/PMK.011/2010

Fast Track Program II (FTP II) Project

Business Viability Guarantee Letter from GOI to Developer

- a. Presidential Regulation No 4 of 2010 and 48 of 2011

- b. Minister of Finance Regulation No 139/PMK.011/2011

- c. Minister of Energy and Mineral Resources Regulation No 15 of 2010 and 01 of 2012

GA = Guarantee Agreement
RA = Recourse Agreement
PPA = Power Purchase Agreement
FA = Financing Agreement
BVGL = Business Viability Guarantee Letter
PPP Scheme
Procurement & Guarantee Processes

Pre FS review and preparation of GAP
EOI and PQ process
Submission of GAP
Draft RFP released
One on one meetings
Final RFP released
Bid Submission & Evaluation
Award & Signing

Pre FS Finalisation
Appraisal
Structuring

Issuance of In-Principle Approval

Consultation
Screening

PPP scheme determined
Appointment of Consultants

Signing of:
1. Power Purchase Agreement
2. Guarantee Agreement
3. Recourse Agreement

IIGF Guarantee Provision Process
2nd Fast Track Program (FTP 2) → Guarantee to the Developer (in the form BVGL to be issued by Minister of Finance), stating that PLN will fulfill its Financial Obligations (a positive list) under the PPA

**BVGL Issuance Process**

- A project is in the Fast Track Program List
- IPP Project Procurement has been done (the agreed final draft of PPA is available)
- PLN to submit a request (proposal) for BVGL issuance for the Project, to be attached with, among others:
  - Project Feasibility Evaluation;
  - Final (agreed) draft of PPA;
  - Financial model of the project
- MoF to evaluate the proposal. BVGL will be issued if the project is eligible for it.
IPP Procurement Timeline (FTP II & Regular)

- Announcement
  - PQ Registration (57 days)
  - PQ Evaluation
  - PQ Result Announcement
  - RFP Registration (154 days)
  - Bid Closing
  - LOL
  - PPA
  - Financial Closed (1 year)
Government will continue to improve community access to energy, particularly electrical energy through the addition of generation capacity.

The government gradually reduces dependence on oil fuel in power generation by optimizing the energy sources.

The government continues to build a conducive investment climate particularly in the electricity sector in order to encourage private sector participation to invest in the development of environmentally friendly technologies.

Indonesia will reduce the dependence on oil through diversification of primary energy in power generation.

Increasing of coal utilization is one way to reduce the dependence on oil in power generation, beside developing the renewable energy power generation.

Indonesia needs huge investment to develop power generation, so that public and private sector participation, either domestic and international investment are required and welcomed due to limitation of PLN and Government’s fund. It is vast opportunity for investment.

Yet Indonesia is committed to adopt cleaner coal technology. PLN plans only USC CFPP in Java, and adopting IGCC as soon as it is commercially matured.
Thank You for your attention