Exploiting the Infrastructure Financing Boom in Indonesia

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PT Sarana Multi Infrastruktur (Persero)

1st Session- Asia Financial Leadership Program
July 2016
1. Infrastructure Sectoral Review
2. Financing Scheme Criteria Based on Project Feasibility
3. Participation of Private Sector in Infrastructure Sector
Infrastructure Is a Critical Sector For a Country's Development

Facilitates economic growth and competitiveness
- Each dollar invested in infra boosts GDP by $1.59 (USA)
- 1% rise of infra assets increases GDP per capita by ~0.1%
- Adequate infra could increase African GDP p.c. growth by 2.2% points

Reduces environmental footprint
- Enhanced roads reduce fuel use & car wear
- Less (air)port congestion reduces CO2 emissions
- Gas & electricity networks reduce reliance on Diesel gen.

Achieves social progress
- Clean water reduces child mortality by 55% (India)
- In electricity-homes 72% children read vs. 42% w/o (Colombia)
- Paved roads double girls’ school attendance (Morocco)
Infrastructure is Indonesia's highest priority.

“One of the most glaring shortcomings is Indonesia's infrastructure” — WEF Competitiveness Report

5 year infrastructure investment vision for Indonesia (2015-2019)

Source: Bappenas RPJM 2015-2019
Besides Funding, Key Bottleneck to Realize Vision is The Pipeline

<table>
<thead>
<tr>
<th>Coordination</th>
<th>Project Identification</th>
<th>Project Preparation</th>
<th>Project Tendering</th>
<th>Development &amp; Construction</th>
<th>Operation &amp; mgmt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of consistency between plans</td>
<td>Lack of clarity and consistency across regulations</td>
<td>Risk of contract termination by new government</td>
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<td>Lack of alignment between stakeholders (e.g. regional &amp; state govt)</td>
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<td>Lack of ownership of project preparation and driving the process</td>
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<tr>
<td>Slow progress of separation between operator and regulator</td>
<td>Lack of needed regulation and permits and approvals (e.g. spatial plan, PPP arbitration)</td>
<td>Difficulty in acquiring land</td>
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<td></td>
<td>Lack of financing for project preparation and feasibility studies</td>
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<td>Lack of clarity and consistency of risk-sharing &amp;guarantee arrangements</td>
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<td>Underdeveloped supply of domestic capital, including capital market</td>
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<td></td>
<td>Risk of credit worthiness for buyers (e.g. PLN, PDAM)</td>
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<tr>
<td>Regulation</td>
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<tr>
<td>Direct financing</td>
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<tr>
<td>Indirect financing</td>
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<tr>
<td>Capability</td>
<td>Lack of PPP experience &amp; capability</td>
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<tr>
<td>Low quality of project preparation</td>
<td>Cost/deadline overruns and compromises on quality due to inadequate supervision</td>
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<tr>
<td>Low quality of feasibility studies</td>
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</tbody>
</table>

As a results, low number of projects coming to market - Government action required to fix asset & funding issues

Source: Industry expert interviews, BCG Analysis
There are Also Sector Specific Challenges in Indonesia

Key challenges limiting infrastructure investment

Water supply
- Challenging local government approval process
- Lack of commitment and support towards central government initiated project

Irrigation and waterways
- No legislation supporting PPP

Power
- Investor caution due to post-1998 price renegotiations
- PLN monopoly in transmission, distribution, sales
- Lack of differentiated tariff structure

Waste
- Regulatory framework only favours waste to energy

Toll Roads and Bridges
- Land acquisition
- Maturity mismatch
- Inadequate project preparation

Public roads
- No mechanism for PPP

Railways
- PSO-IMO-TAC framework does not allow financial feasibility with current level of accounting detail
- No independent regulator
- Existing infrastructure dated: load handling cannot compete with road

Airports
- Low airport profitability due to politicised tariff setting process
- Land acquisition challenges
- Lack of expertise in airport operation
- No independent regulator

Ports
- No differentiated tariff structure
- No independent regulator
- Lack of competition, restrictions on foreign involvement
- Lack of natural deep water harbours

Oil and gas
- Declining oil production
- Little or no history of PPP

Source: Morgan Stanley Infrastructure Report; BCG Analysis
## Infrastructure Investment: Degree of Openness (1)

<table>
<thead>
<tr>
<th>INFRA SECTOR</th>
<th>PUBLIC / PRIVATE</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads</td>
<td></td>
<td>• Land acquisition issue &amp; source of finance</td>
</tr>
<tr>
<td>- Toll Road</td>
<td>PRIVATE</td>
<td>• Relatively mature sector with significant private sector involvement</td>
</tr>
<tr>
<td>- Rural Road</td>
<td>PUBLIC</td>
<td>• Competitive tariff and certainty in tariff increase</td>
</tr>
<tr>
<td>Electricity</td>
<td></td>
<td>• Relatively mature sector with significant private sector involvement</td>
</tr>
<tr>
<td>- Transmission</td>
<td>PUBLIC</td>
<td>• Limited issuance of PPA’s applying competitive Feed in Tariffs (FiTs) for renewable energy.</td>
</tr>
<tr>
<td>- Distribution</td>
<td>PUBLIC</td>
<td></td>
</tr>
<tr>
<td>- Power</td>
<td>PPP / PRIVATE</td>
<td></td>
</tr>
<tr>
<td>Transport</td>
<td></td>
<td>• Pending issues for the issuance of Seaport concession agreement</td>
</tr>
<tr>
<td>- Land Terminal</td>
<td>PPP / PRIVATE</td>
<td>• Excess demand for connectivity both in airports and seaports</td>
</tr>
<tr>
<td>- Sea Port</td>
<td>PPP / PRIVATE</td>
<td></td>
</tr>
<tr>
<td>- Air Port</td>
<td>PPP / PRIVATE</td>
<td></td>
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<tr>
<td>- Railway</td>
<td>PUBLIC</td>
<td></td>
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<tr>
<td>Water</td>
<td></td>
<td>• Uncertainty with regard to the license to obtain raw water (SIPA)</td>
</tr>
<tr>
<td>- Transmission</td>
<td>PUBLIC</td>
<td>• Different tariff structure and therefore possibility for targeted customers</td>
</tr>
<tr>
<td>- Distribution</td>
<td>PUBLIC</td>
<td></td>
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<tr>
<td>- Production</td>
<td>PPP / PRIVATE</td>
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</tbody>
</table>
## Infrastructure Investment: Degree of Openness (2)

<table>
<thead>
<tr>
<th>INFRA SECTOR</th>
<th>PUBLIC / PRIVATE</th>
<th>COMMENTS</th>
</tr>
</thead>
</table>
| Telecomunication        | PUBLIC / PRIVATE | • Highly competitive, rapidly changing and dynamic industry that has come to reflect significant shifts in social behaviour and interaction  
                          |                  | • Contribution to GDP: 3.47% (Information and Communications, Q3 2015)  
                          |                  | • Fixed Telephone Line Penetration: 11.72% (ITU, 2014)  
                          |                  | • Mobile Phone Penetration: 124.3% (2015)  
                          |                  | • Fixed Line Broadband Penetration: ±2% (2015)  
                          |                  | • Internet Penetration: 34.9% (APNIC, 2015)                                                                                                   |
| Waste Treatment         | PUBLIC / PRIVATE | • Government Act 18/2008 states that the new goal for waste management policy is in solid waste management  
                          |                  | • Estimates of municipal solid waste (MSW) in Indonesia increase 2 – 4% per year  
                          |                  | • According to the State Ministry of Environment (MoE), every Indonesian generates 0.76 kg/day of MSW. Thus, the total MSW produced in 2014 was over 70 million tons                                                                 |
| Sewerage                | PPP / PRIVATE    | • Barely one third of urban residents have access to a house connection from the public utility (PDAM).  
                          |                  | • Tariffs are well below cost recovery levels and many utilities have outstanding loans from the Ministry of Finance. As a result, maintenance suffers and in many cases expansion has been postponed.                        |

Even though regulatory framework has opened access for private participation, most of the infrastructure sub-sector remain dominated by State Owned Enterprises (SOEs)
SOE’s Balance Sheet are still Under Leverage

- SOEs balance sheet are still under leverage with debt level representing less than 40% of total assets

- In the past five years to 2015, limited debt fund raising has been taking place in the SOEs engage in the Airport, Railway, Land Transport, Seaport, Waste treatment and Sewerage. Most of the capital expenditures were: (1) internally sourced, and/or (2) being element of public contribution.

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<tbody>
<tr>
<td>Tahun</td>
<td>Total Debt</td>
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<td>Total Asset</td>
<td>Debt/Asset</td>
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<tr>
<td></td>
<td>14,573</td>
<td>16,709</td>
<td>850</td>
<td>1,198</td>
<td>2,966</td>
<td>30,673</td>
<td>2,405</td>
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<tr>
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<td>36,725</td>
<td>50,328</td>
<td>2,506</td>
<td>20,271</td>
<td>15,916</td>
<td>166,173</td>
<td>12,337</td>
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<tr>
<td></td>
<td>39.7%</td>
<td>33.2%</td>
<td>33.9%</td>
<td>5.9%</td>
<td>18.6%</td>
<td>18.5%</td>
<td>19.5%</td>
</tr>
</tbody>
</table>
Institutional Framework to Support PPP

Government of Indonesia

Private Sectors

Legal and Regulatory Framework

Land Fund
Guarantee Fund (PT PII)
Regulatory Reform and capital market
Infrastructure Fund

Project Financing

Investor/Lender

Land Acquisition
Cost recovery/Political Risk

Preparation
Bidding
Construction
Operational

PT SMI = PT Sarana Multi Infrastruktur (Persero); PT IIF = Indonesia Infrastructure Finance; PT PII = PT Penjaminan Infrastruktur Indonesia
## Pre-Operative Task Risks

<table>
<thead>
<tr>
<th>Description</th>
<th>Risk Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Delays in land acquisition</strong></td>
<td></td>
</tr>
<tr>
<td>Refers to the risk that the project site will be unavailable or unable to be used within the required time, or in the manner or the cost anticipated or the site will generate unanticipated liabilities due to existing encumbrances and native claims being made on the site.</td>
<td></td>
</tr>
<tr>
<td><strong>Connectivity</strong></td>
<td></td>
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<tr>
<td>Refers to the risk that adequate and timely connectivity to the project site is not available, which may impact the commencement of construction and overall pace of development of the project.</td>
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<tr>
<td><strong>Financing risks</strong></td>
<td></td>
</tr>
<tr>
<td>Refers to the risk that sufficient finance will not be available for the project at reasonable cost (e.g., because of changes in market conditions or credit availability) resulting in delays in the financial closure for a project.</td>
<td></td>
</tr>
<tr>
<td>Operation Phase Risks</td>
<td>Description</td>
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<td>-----------------------</td>
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</tr>
<tr>
<td>Traffic and Ramp-up risk</td>
<td>Refers to the risk that demand for a service will vary from the initial forecast, such that the total revenue derived from the project over the project life will vary from initial expectations. This volume-related revenue risk is only for projects which have tariffs from toll operations as a revenue source. There is no risk of this sort in management contracts, in which revenue is from a fixed fee or performance-based payment.</td>
</tr>
<tr>
<td>Operations and maintenance risk</td>
<td>Refers to the risks associated with the need for increased maintenance of the assets over the term of the project to meet performance requirements.</td>
</tr>
<tr>
<td>Payment risk</td>
<td>Refers to the risk that tariffs for toll services are not collected in full or are not set at a level that allows recovery of costs. This is a risk for the private sector in all toll projects where revenue is from tariffs.</td>
</tr>
<tr>
<td>Handover Risks</td>
<td></td>
</tr>
<tr>
<td>Handover risk / Terminal value risk</td>
<td>Refers to the risk that the concessionaire will default in the handover of the asset at the end of the project life, or that it will fail to meet the minimum quality standard or realizable value of the asset that needs to be handed back to the public entity.</td>
</tr>
<tr>
<td>Other Risks</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Change in Law</td>
<td>Refers to the risk that the current legal / regulatory regime will change, having a material adverse impact on the project.</td>
</tr>
<tr>
<td>Force Majeure</td>
<td>Refers to the risk that events beyond the control of either entity may occur, resulting in a material adverse impact on either party's ability to perform its obligations under the PPP contract. These events are sometimes also called &quot;Acts of God&quot;, to indicate that they are beyond the control of either contracted party.</td>
</tr>
<tr>
<td>Sponsor Risk</td>
<td>Refers to the risk that the Sponsor will prove to be an unsuitable partner for the project, for example due to poor project management or a failure to fully recognize the agreed terms of the Concession Agreement.</td>
</tr>
<tr>
<td>Concessionaire Event of Default</td>
<td>Refers to the risk that the concessionaire will not fulfill its contractual obligations and that the government will be unable to either enforce those obligations against the concessionaire, or recover some form of compensation or remedy from the concessionaire for any loss sustained by it as a result of the breach.</td>
</tr>
</tbody>
</table>
Enhanced Coordination among bodies
- Bappenas and BPJT

Simplified Bureaucracy
- Indonesian Toll Road Authority (BPJT), Directorate General of Highway (Dirjen Bina Marga) and Public Service Agency (Badan Layanan Umum)

Empowerment of BPJT Function
- BPJT currently does not have any authority to make final decisions within its statutory domain

Enhanced Government Support
- Land acquisitions and land revolving fund

Harmonized Regulations

Law Enforcement
- Land acquisitions process
- Land expropriate
**Project Profile**

- **Project Location**
  Cikampek, Karawang Regency (KM 91,50) to Palimanan, Cirebon Regency (KM 207,174)

- **Toll Road Length**
  116,20 KM, consists of 6 sections
  - Phase 1 : Cikopo-Kalijati (26,0KM)
  - Phase 2 : Kalijati-Subang (12,0KM)
  - Phase 3 : Subang-Cikedung (28,5KM)
  - Phase 4 : Cikedung-Kertajati (21,0KM)
  - Phase 5 : Kertajati-Sumberjaya (15,5KM)
  - Phase 6A : Sumberjaya-Panjalinkidul (9,0KM)
  - Phase 6B : Panjalinkidul-Palimanan (4,2KM)

- **Investment Cost**
  Rp12Trillion ≈ USD1,0 Billion

- **Facility from SMI**
  Rp300 Billion ≈ USD25 Million with 15 year tenor

*1 USD = Rp12,000

**PPP Project Scheme**

- **Syndicated Loan**
  - Tranche A: BCA, Mandiri, BRI, SMI, others
  - Tranche B: Maybank MLY, Exim MLY, others
  - Tranche C: MDB, IIF, others

- **Civil Contractor:**
  NRC/UEM

- **EPC:**
  NRC/UEM

- **Offtaker:**
  Floats Traffic Factor

**Key Success Factor**
- Land Acquisition
- Traffic risk mitigation with SBLC from the sponsors
Port Sector

Key Market Failures In The Indonesian Maritime Industry

1. Limited access to domestic financing
2. Limited maritime expertise for domestic lenders
3. Currency mismatch for international financiers
4. High production costs due to import taxes
5. Limited ship operators on less profitable routes in remote areas
6. Low efficiency due to small-sized ships
Few local banks offering maritime financing...

Local Bank (SOE Banks) are the main banks offering shipping finance in Indonesia. 0.49% or ~ Rp17.6 Trillion of Local Banks loan portfolio is in maritime financing → very small exposure.

75% of loans for Working Capital, 25% of loans portfolio for Investment.

Financial Service Authority (OJK) asked banks to increase loan portfolio in maritime by 50%.

"Banks were wary of extending loans to the sector because of a lack of understanding between them and debtors... That’s why we’re creating a database to build up information [on the sector]"

OJK commissioner

...due to the high risk associated with the maritime sector

Many domestic banks are reluctant to lend money to maritime sector due to various risks:

- Short term tenor for loans from domestic market due to funding mismatch
- Land acquisitions in port development
- Compliance with environmental and social safeguard standard
- Permits/Concession agreement
- Usual upfront payment of 20% for the order value
- Short term tenor for loans from domestic market due to funding mismatch
- Banks require collateral valued at ~120% of loans
- Highly cyclical industry
- Unstable cashflows due to fluctuating fuel price

~4% of Non-Performing Loans reported in maritime sector in Indonesia
Many years of experience and expertise in unpredictable market with many (partially interdependent) companies

Expertise regarding types of financing and ships, new construction prices, charter rates, taxes/laws, contract forms

Highly volatile business with alternating boom and bust cycles requires stable business partners

Ability to grant loans during transitional periods of crisis is rewarded by loyalty from customers during boom cycles

Access to the capital market and bank partners

Favorable funding possibilities

Syndication loan ability

Active portfolio management and diversification
Almost all major international airports in Indonesia operate over capacity as the result of historic insufficient investment. This situation allowed them to meet rising air transport demands.

Under previous regulatory regime, Private sector involvement is limited mainly to subcontracting airport terminal services, given the regulatory monopoly of PT Angkasa Pura I (AP I) and PT Angkasa Pura II (AP II) under the law of 1992. But now under new law, private sector is invited to participate for investing, developing, and operating airport in Indonesia.

On the demand side, for passengers and freight, more growth is expected in the near future, going hand in hand with the increase in income levels and GDP expansion of the economy. On the supply side, solid balance sheet of the 2 SOE airport companies enable them to conduct sizeable investment for development.
Ports and railroads have been the main focus of transport PPPs, **Airports have been mostly ignored**
## Infrastructure Strengths and Weaknesses

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
</table>
| **Ports**      | • Natural monopoly (most times)  
• Revenues in hard currency  
• Stable demand  
• Tariffs not visible to end users  
• Cash cows for governments  
• Proven capacity for financial viability if well-managed  
• Dangers of transfers towards private monopolies  
• Mainly “superstructure concessions” – Dependant on public funds for infrastructure investments  
• Capacity to increase operational efficiency affected by non controllable administrative procedures (customs)  
• Labor issues | |
| **Airports**   | • Natural monopoly (most times)  
• Revenues in hard currency  
• Stable demand  
• Tariffs not visible to end users  
• Cash cows for governments  
• Exposed to payment delinquency from national carriers  
• Limited traffic limits opportunities for private investment (despite strong potential in demand)  
• National public as end user  
• Labor issues | |
| **Roads**      | • Often only quality roadway available  
• Cross subsidies between construction and operation activities  
• Usually sheltered from efficient intermodal competition  
• End users capacity (not necessarily willingness) to pay  
• Revenues in local currency  
• Tariffs visible to end users  
• Challenges of uni-modal competition  
• Often requires significant public revenues guarantees and up front investment  
• Must deal with perception of road as “social good” | |
| **Railways**   | • Most efficient, thus competitive, mode of transport from point to point for freight over 500 km  
• Immune to most port access and cross border and domestic administrative delays  
• Revenues in local currency  
• Challenges from unequal intermodal freight competition  
• Passengers Public Service Obligations (PSO)  
• Public financial support for infrastructure investment  
• Labor issues | |

Source: IFC – International Finance Corporation
Airport Sector
Risk Allocation

Source: IFC – International Finance Corporation
Under the current scheme, Angkasa Pura acts as the owner and the main operator of major Indonesia airports.
Although PPP relatively new in Airport sector, but the scheme has been prepared to provide general idea of PPP modalities in Airport sector.
Government allows private sector’s direct investment in the airport through special purpose airport scheme in which the airport will serve their own businesses.
Characteristics of raw water
Including some factors related to the type of water source, quantity and quality, as well as debit pledge

Government policy
Focus on spatial planning, economic growth and investment as well as demographic

Production technology
Considering economic efficiency, distribution and service coverage
The concession structure for water supply sector consist of (mostly) all possible water supply-related scope of works to be transferred to private sector (PPP Co.), i.e: Transmission, Production, Operation and Maintenance, Distribution and Tariff Collection from customers.

- Typically for a green-field project which needs significant amount of investment.
- Demand risk and tariff adjustment-related risks are the most concerned type of risk for PPP Co.
- PPP Company is typically responsible for either Transmission, Production, Operation and Maintenance, Distribution or any combination thereof, **but not taking the retail Tariff Collection task**.

- PDAM is the single buyer of the water from PPP company (it will be stated in the Water Purchase Agreement)

- PDAM will distribute the water to customer
Umbulan Spring

PPP Scope
Intake Facility, Water Treatment Plant, Transmission Pipe, Reservoir

PPP Modality
Build Operate Transfer (BOT)

Volume Capacity
4000 liter/second

Length of Pipe
+ 97 km

Number of Offtakes
16 Offtakes

Estimated Project Cost
± Rp 2,1 trillion (USD 200 mio)

Gov’t Contracting Agency
East Java Provincial Government (EJPG)

Offtaker
An East Java regional owned enterprise (called PDAB) as an authorized representatives of EJPG

Buyers
5 regional owned enterprises (called PDAMs) in 5 Cities/Regencies (Pasuruan City, Pasuruan Regency, Surabaya City, Sidoarjo Regency, and Gresik Regency)
## Water Supply Sector
### Risk Allocation

<table>
<thead>
<tr>
<th>Project Risks</th>
<th>Risk Allocation</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>GCA</td>
</tr>
<tr>
<td>Catchment Area</td>
<td>√</td>
</tr>
<tr>
<td>Raw Water Quality</td>
<td>√</td>
</tr>
<tr>
<td>Raw Water Quantity</td>
<td>√</td>
</tr>
<tr>
<td>Licenses/Consents</td>
<td>√</td>
</tr>
<tr>
<td>Land Acquisition</td>
<td>√</td>
</tr>
<tr>
<td>Financial Close</td>
<td>√</td>
</tr>
<tr>
<td>Design</td>
<td></td>
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<tr>
<td>Construction</td>
<td></td>
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<tr>
<td>Testing &amp; Commissioning</td>
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<tr>
<td>Cost Overrun</td>
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<td>O &amp; M</td>
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<tr>
<td>Demand</td>
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<tr>
<td>Financing</td>
<td></td>
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<tr>
<td>Change in Law</td>
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<tr>
<td>Force Major</td>
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</tbody>
</table>
PLN distributes and sells electricity to several customer types. The electricity sold is either generated by PLN or purchased from IPPs.

**Generation Composition**

<table>
<thead>
<tr>
<th>Generation Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steam-Turbine</td>
<td>45%</td>
</tr>
<tr>
<td>Combined Cycle</td>
<td>21%</td>
</tr>
<tr>
<td>Diesel</td>
<td>15%</td>
</tr>
<tr>
<td>Gas-Turbine</td>
<td>9%</td>
</tr>
<tr>
<td>Hydro</td>
<td>8%</td>
</tr>
<tr>
<td>Geothermal</td>
<td>1%</td>
</tr>
<tr>
<td>Others</td>
<td>0.03%</td>
</tr>
</tbody>
</table>

**PLN’s Generating Capacity**

- **76%** of the generating capacity is PLN’s own generation.
- **24%** of the generating capacity is purchased from IPPs.

From Indonesia’s total installed generation portfolio of 49,688 MW:

- **71.1%** in Java-Bali
- **17.9%** in Sumatera
- **4.0%** in Kalimantan
- **4.6%** in Sulawesi
- **0.6%** in Papua
- **0.5%** in Maluku
- **0.5%** in NTT
- **0.7%** in NTB

**Urgent Needs to be Addressed**

- To fulfill the areas that lack of power supply
- To provide electricity to areas that do not have power supply, including border and remote areas, in both the short and long term
- To replace oil-fired or coal power plant with a non-petroleum fuels or renewable energy

The use of new and renewable energy as an energy source

Source: PLN
### National Energy Mix

**2011**
- Oil: 47%
- Natural Gas: 24%
- Coal: 24%
- NRE: 5%

**Target on 2025**
- Natural Gas: 30%
- Coal: 33%
- Oil: 20%
- NRE: 17%

*NRE = New & Renewable Energy*

---

### Renewable Energy Potential in Indonesia

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>Installed Capacity</th>
<th>Resource Potential</th>
<th>Undeveloped Potential (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydropower</td>
<td>4,264 MW</td>
<td>75,760 MW</td>
<td>94</td>
</tr>
<tr>
<td>Geothermal</td>
<td>1,052 MW</td>
<td>27,510 MW</td>
<td>96</td>
</tr>
<tr>
<td>Mini-hydropower</td>
<td>86.1 MW</td>
<td>500 MW</td>
<td>83</td>
</tr>
<tr>
<td>Biomass</td>
<td>445 MW</td>
<td>49,810 MW</td>
<td>99</td>
</tr>
<tr>
<td>Solar</td>
<td>12.1 MW</td>
<td>4.8 kWh/m²/day</td>
<td>-</td>
</tr>
<tr>
<td>Wind</td>
<td>1.1 MW</td>
<td>9,190 MW</td>
<td>99</td>
</tr>
<tr>
<td>Ocean</td>
<td>-</td>
<td>35 MW</td>
<td>100</td>
</tr>
</tbody>
</table>

*Source: PLN & Ministry of Energy and Mineral Resources Republic of Indonesia*
<table>
<thead>
<tr>
<th><strong>Hydropower</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth Factors</td>
<td>Opportunity Factors</td>
</tr>
<tr>
<td>High demand new and renewable energy for national power security</td>
<td>Hydro power plant development</td>
</tr>
<tr>
<td>Investment in hydro and micro hydro power plant</td>
<td>Equipment and service in hydro power plant</td>
</tr>
<tr>
<td>The largest power energy source potential in Indonesia</td>
<td>Micro hydro power plant is the most popular for hydro energy source</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Solar Energy</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth Factors</td>
<td>Opportunity Factors</td>
</tr>
<tr>
<td>High demand new and renewable energy for national power security</td>
<td>Solar PV equipment (solar cell, battery and power storage) producer and provider</td>
</tr>
<tr>
<td>Investment in solar energy power source</td>
<td>Solar PV equipment service maintenance provider</td>
</tr>
<tr>
<td>High potential in solar source</td>
<td>Solar energy for power electricity investment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Geothermal</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth Factors</td>
<td>Opportunity Factors</td>
</tr>
<tr>
<td>High demand new and renewable energy for national power security</td>
<td>Geothermal field exploration and production activities</td>
</tr>
<tr>
<td>Investment in geothermal exploration and production</td>
<td>Geothermal production service provider</td>
</tr>
<tr>
<td>The second largest for geothermal energy potential after the United States</td>
<td>Geothermal power plant development</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Bioenergy</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth Factors</td>
<td>Opportunity Factors</td>
</tr>
<tr>
<td>High demand new and renewable energy for national power security</td>
<td>Biomass power electricity production development</td>
</tr>
<tr>
<td>Investment in biofuel</td>
<td>Biofuel plant</td>
</tr>
<tr>
<td>Investment in biomass power production facilities</td>
<td>Biofuel transportation technology</td>
</tr>
<tr>
<td>Petroleum reserves is depleting</td>
<td>Biomass energy source production (e.g. waste processing plant)</td>
</tr>
<tr>
<td></td>
<td>Biomass and biofuel tools and equipment</td>
</tr>
</tbody>
</table>
High power demand and low electrification ratio

Abundance of new energy and RE potential resources

Rational tariff for commercially investment

Indonesian high economic and industry growth

National energy policy (energy mix) & incentives

Land acquisition issues and long chain of bureaucracy

Investment issue and subsidy scheme

Limited information and awareness

Need for more expertise

Market Drivers

High

Low

Market Restraints

Low

High

Power Sector
Drivers and Restraints of Renewable Energy Power
Known geothermal regions
Countries with installed geothermal power capacity
1. includes India, Thailand, Taiwan
Note: Installed capacity as of 2010; Resource estimates as of 1999; Units in MW
Source: Geothermal Energy Association; BCG analysis

Indonesia has more than 2X of other regions but <5% has been developed
Power Sector
Geothermal Energy Potential Projects

- Mt Talang Bukit Kili (225 MWe)
- Bonjol (165 MW)
- Mt Talang Bukit Kili (120 MW)
- Danau Ranau (210 MWe)
- Mt Endut (80 MW)
- Mt Pandan (72 MWe)
- Mt Lawu (95 MWe)
- Arjuno Welirang (110 MW)
- Oka II Ange (40 MW)

Priority projects
Non-priority projects
Sponsor

• Limited equity
• Limited flexibility of financing

Operator

• Included in sponsor
• Conventional management

Bank

• Not many banks or other financial institutions are interested in providing financing to small hydro projects power

Off taker:
PT Perusahaan Listrik Negara (PLN)

• Proven Off taker*
• Certain/Regulated Pricing (<10 MW)
• Simple procurement

Mini Hydro Power Plant

Sustainability issues of water discharge level
• Catchment area
• Difficult to access location

Machine Supplier

• Simple technology
• Low maintenance

Contractor

• Lower middle
• Unproven project management capabilities
• Lack of ability to handle cost overruns case

Project Preparation Consultant

• Small and medium class
• Less comprehensive feasibility study (probability of cost overruns and design changes)

Water Supply

Government

• Licensing
• Land (Acquisition, or Usage Permission of Forestry Ministry)

Case Study: Mini-Hydro Power Plant

Power Sector

Low
Low to Medium
Medium
Medium to High
High

Not many banks or other financial institutions are interested in providing financing to small hydro projects power

Simple procurement

Conventional management

Lack of ability to handle cost overruns case

Less comprehensive feasibility study (probability of cost overruns and design changes)
1. Infrastructure Sectoral Review
2. Financing Scheme Criteria Based on Project Feasibility
3. Participation of Private Sector in Infrastructure Sector
## Financing Scheme Criteria Based on Project Feasibility

<table>
<thead>
<tr>
<th>Project Feasibility</th>
<th>Financing Scheme</th>
<th>Modalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Economically Feasible, Financially Not Feasible</td>
<td>SOE</td>
<td>Government Assignment</td>
</tr>
<tr>
<td>2. Economically Feasible, Financial Margin Feasible</td>
<td>Private</td>
<td>PPP with VGF support or other Creative Financing such as PBAS, Infrastructure Bank, etc</td>
</tr>
<tr>
<td>3. Economically Feasible, Financially Feasible</td>
<td>Private</td>
<td>Regular PPP / Business to Business (B-to-B)</td>
</tr>
<tr>
<td>4. Economically Not Feasible, Financially Not Feasible</td>
<td>Government</td>
<td>State Budget</td>
</tr>
</tbody>
</table>

Source: Bappenas
In Financing, "White Space" Exists In Areas Of High Economic Feasibility But Low/Marginal Financial Feasibility

Government & aid agencies focus on sectors with low/marginal financial feasibility and high economic benefits

- e.g., Trans Sumatra, Trans Sulawesi, Pelabuhan Bitung?

Source: Press Search, BCG Analysis
Delivery Modalities

**Traditional Procurement**
- Government Contracting Agency
- Contractor(s)

- Source of fund: 100% government budget
- Fund disbursement follows State/Regional Budget mechanism
- Government manages multiple contracts
- Risks are borned by the Government

**SOE Assignment**
- Government Contracting Agency
- State Owned Enterprise
- Business Entity

- Source of fund: 100% SOE
- Requires sets of regulation on assignment
- Depends on SOE balance sheet, and might require equity injection from Government
- Risks sharing between Government and SOE
- Possible B-to-B opportunities with SOE

**Public-Private Partnership**
- Government Contracting Agency
- Business Entity

- Source of fund: Government and Business Entity
- Government manages cooperation agreement with Business Entity
- Risks sharing between Government and Business Entity
- Leveraging private sector efficiency

Examples of SOE operators:
- PT Pelindo II, PT KAI, PT Pertamina, PT AP II, PT Jasa Marga, Hutama Karya
Hutama Karya gets Rp 1.24t loan for Trans Sumatra project

The Jakarta Post
The Jakarta Post

State infrastructure financing firm PT Sarana Multi Infrastruktur (SMI) has signed a loan agreement worth Rp 1.24 trillion (US$90.97 million) with state construction firm PT Hutama Karya to fund a segment of Hutama Karya’s Trans Sumatra highway development project.

The loan will be used to finance the 22 kilometer Palembang-Indralaya segment as part of the 2.700 kilometer highway mega project that aims to spur economic growth in Sumatra.

The segment itself is estimated to cost Rp 3.3 trillion, while the rest will be covered by a state capital injection (PMN) from the 2015 revised state budget.

SMI president director Emma Sri Martini said that the loan for the Palembang to Indralaya segment would be divided into three tranches.

Emma said the first tranche of the loan, amounting Rp 690 billion, would mature in 25 years. The second Rp 800 billion would mature in 15 years and the third, amounting Rp 250 billion, would mature in 25 years.

The second tranche would be offered to banks to take over once construction had started, she said.

In order to attract the banking industry to take part in the financing, SMI will provide financial support for potential cash deficiencies in a measure to try and counter the project’s lack of commercial appeal.

Source: Jakarta Post
The Umbulan Water Supply project is a water supply project that utilizes Umbulan Spring (one of the finest quality spring water in the world). The objective is to distribute 4,000 liters/second of bulk water from Umbulan spring to Pasuruan, Sidoarjo, Surabaya and Gresik (East Java) through the development of pumping system and a 97 km transmission system.

Source: Jakarta Globe
Business to Business and State Budget Finance Projects

**Business-to-Business Financing and Investment**

**Indonesia Targets US$30bn Chinese Investment**

TEMPO.CO, Jakarta—The Investment Coordinating Board (BKPM) is hoping to secure Chinese investment commitments worth US$30 billion in 2016. "In 2017, the target would be doubled to US$60 billion," said BKPM Chief Franky Sibarani in Jakarta, Monday, March 21, 2016.

According to him, the high investment commitments is targeted to bolster investment from China since its investment ratio stands at under 10 percent. "While improving the companies to invest in Indonesia," he said

Based on BKPM record, total investment commitments from China secured by Indonesia throughout 2015 reached US$22.6 billion or rose from previous year's figure of US$15.7 billion. Whereas Chinese investment commitments throughout January-February 2016 reached US$3.2 billion.

Franky said that data from Financial Times, per February 2016, shows that Chinese outbound investments throughout 2010-2015 reached US$219.9 billion and around US$23.2 billion of the investments entered Indonesia (11%). "Indonesia itself sits at second place in Chinese foreign investment destination, behind the United States, followed by Russia and India," he said.

He added that the decision to admit China as one of the priority countries for inbound investment is based on BKPM's data mapping which ranks the country at fifth place of the world's largest contributor of investment in Indonesia, behind the United States, Japan, Germany and the United Kingdom.

Source: Tempo

**State Budget Spending**

**Jokowi pledges railway project in Sorong**

In his efforts to bring about more inclusive development and increase welfare in Papua, President Joko ‘Jokowi’ Widodo says the construction of a railway may begin this year.

Jokowi has sought more inclusive development across the country, particularly in remote areas in eastern Indonesia, such as Papua, which remain among the poorest regions despite abundant natural resources.

Citing the example of the trans-Sulawesi railway construction project, which is planned to connect at least four provinces in Sulawesi. Jokowi said the railway construction in Papua might start in Sorong, West Papua, some time this year.

"We have just started the construction of a railway project in Sulawesi; later this year, [a railway project will start] in Papua," Jokowi said as quoted by Antara newsagency.

The comment was made during a dialogue with locals in South Sorong regency on Friday, which was his last day in Papua during his third visit to the region.

Jokowi initially predicted that the feasibility study for the project would be completed late last year, but the study has required more time.

"It’s alright; what is important is that the [construction of the] line can be started [soon]. It is likely to be started in Sorong; therefore, other areas should not be upset about this," said the President, who has often expressed his optimism regarding the railway project in Papua.

Source: Jakarta Globe
1. Infrastructure Sectoral Review
2. Financing Scheme Criteria Based on Project Feasibility
3. Participation of Private Sector in Infrastructure Sector
### Participation of Private Sector in Infrastructure Sector

<table>
<thead>
<tr>
<th>Port</th>
<th>Airport</th>
<th>Railways</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port concessions shall be granted to port business entities through a tender mechanism (refers to Pres Reg 13/2010).</td>
<td>In determining private partner, the government will hold an open tender. Concession period will be determined based on the calculation of investment return and fair profit to the business entity.</td>
<td>In determining private partner, the government will hold an open tender. The business permit from MoT will valid for a period 30 years and can extended for maximum of 20 years (Gov Reg 56/2009)</td>
</tr>
<tr>
<td>The maximum concession period is 30 years as of signing date of the concession agreement. (Gov Reg 61/2009)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Various business model Refers to Gov Reg 61/2009, threre 3 possible cooperation: 1. BOT (Build-Operate-Transfer) 2. BLT (Build-Lease-Transfer) 3. ROT (Rehabilitate-Operate-Transfer)</td>
<td>Law 1/2009 introduces several forms of cooperation: 1. BOO (Build-Operate-Own) 2. BOT (Build-Operate-Transfer) 3. Contract Management</td>
<td>Law 23/2007 introduces several forms of cooperation: 1. DBB (Design – Bid – Build) 2. BOT (Build-Operate-Transfer) 3. BOO BOO (Build-Operate-Own) 4. DBFO (Design-Build-Finance-Operate)</td>
</tr>
<tr>
<td>Tariff setting Tariff of port services managed by a port business entity is determined by port business entity itself based on the type, structure and category of tariff stipulated by the government (Law 17/2008)</td>
<td>Airport business entities may determine tariff charges after consulting with the Minister of Transportation (Gov Reg 70/2001)</td>
<td>Law 23/2007, government will stipulate tariff guidelines for railways charges based on capital, calculation, operational cost, maintenance cost and profit calculation</td>
</tr>
</tbody>
</table>

Tariff setting
THANK YOU FOR YOUR KIND ATTENTION

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