

Energizing the Power Sector

Key Messages

A reliable, affordable and sustainable supply of electricity is essential for Indonesia to emerge as a large mid-income economic power in the next decade. The power sector is now at a critical juncture and facing considerable challenges:

1. Significant investments from both public and private sectors are required to sustain economic growth and increase access of the poor to electricity.
2. Low tariff levels undermine the public energy utility, Perusahaan Listrik Negara's (PLN) financial viability, stall much needed capacity expansion and lead to unsustainable government subsidies.
3. Investment in key national power companies is hampered by the legal and regulatory uncertainty caused by the annulment of the 2002 Electricity Law.
4. High upfront costs and a lack of adequate incentives have impeded significant progress in the development of renewable energy resources, especially geothermal power.

Key Action

The government should:

1. Clarify the structure and regulatory framework of the electricity market.
2. Rationalize pricing and subsidy policies in order to encourage investment and ease the financial volatility of PLN.
3. Further support the development of geothermal and other renewable energy resources, and properly mitigate the negative environmental impacts of coal-based power generation.
4. Increase public investments in power sector infrastructure projects to sustain economic growth, increase access and create job opportunities during the current global financial crisis.

Where Indonesia Stands Now

Indonesia's power industry expanded rapidly between the early 1980s and late 1990s. Although significantly weakened by the Asian financial crisis, the power sector is gradually recovering. By the end of 2008, the total installed generation capacity of the national power system reached around 30,000 MW, making it one of the largest in the region. Given the size of its population however, Indonesia's per capita electricity consumption and electrification ratios remain the lowest among the World

Bank's large developing member countries in the region. The power sector has entered a critical period during which its ability to sustain economic growth faces significant challenges.

Large Investment Requirements

Robust and sustained economic growth is driving the demand for electricity to grow at an annual rate of over seven percent. Indonesia's power demand is projected to grow between seven percent and nine percent annually

between 2009 and 2020. There is tremendous pressure on the sector to keep pace with economic growth because of the strong correlation between energy and GDP growth in Indonesia.¹

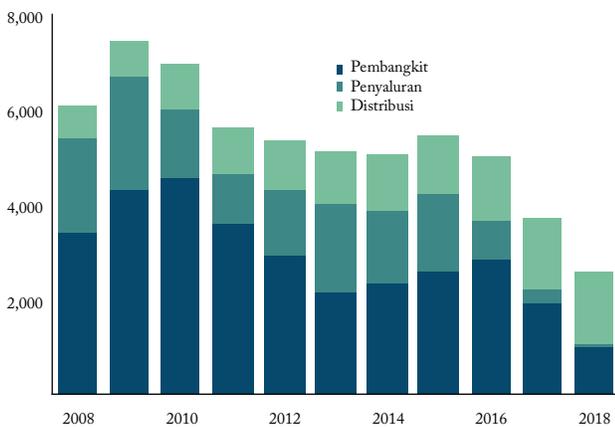
Electrification rates remain low. Over 70 million² people still do not have access to electricity. About 80 percent of those without power reside in rural areas, over half of whom live outside of the dominant economic centers of Java and Bali. To reach the government's target of electrifying 90 percent of the population by 2020, PLN will need to connect roughly two million new subscribers annually, double the rate of the past few years.

Significant public- and private sector investment is needed to meet growing demand and improve access. PLN's expansion plan between 2008 and 2018 requires an estimated US\$83.7 billion investment. Of this total, some US\$58.5 billion is expected to come to PLN from public sector financing. The balance of the funding will have to come from the private sector, both domestic and international.

Financial Viability of PLN

The current tariff level is insufficient to cover PLN's cost of supply, leading to unsustainable government subsidies to support PLN. PLN's financial viability has deteriorated significantly since the removal of fuel subsidies in 2005, and the suspension of electricity price increases since 2004. Although the price of fossil fuels has dropped considerably from mid-2008's historic highs,

Figure 1: Estimate of PLN's Financing Requirement (excluding Independent Power Producers/IPP's)



Source: PLN RUPTL, 2008

¹ Elasticity of electricity sales growth to GDP growth was on average greater than 1.5 in the past 15 years

² World Bank, "Electricity for All", 2006.

PLN's tariff level is still insufficient to cover the supply cost for almost all customer categories, including those who are able to and should pay for electricity at cost-recovery levels. The government has consequently had to provide significant subsidies to maintain PLN's financial viability. In addition, the structure of the current tariff system needs to be rationalized to reflect the economic cost structure of supply.

Regulatory and Institutional Barriers

The lack of certainty in the legal and regulatory framework governing the electricity sector hampers private investment. Following the annulment of the 2002 Electricity Law, governance of the sector reverted to the 1985 Electricity Law that was designed for a vertically integrated monopoly. Although the 2002 Electricity Law addressed the goals of the electricity reform agenda, the Constitutional Court ruled the law violated the constitution. Few Independent Power Producers (IPPs) have emerged as a result of the uncertain legal and regulatory environment caused by the law's annulment. Considering the substantial need for new generation capacity, laws and regulations clarifying the structure and regulatory framework of the electricity market are critical.

The restructuring and institutional reform of PLN remains in flux, weakening the government's ability to provide public financing for power sector development.

Although the government started to pursue the decentralization, unbundling, corporatization, and restructuring of PLN as early as 1993, progress has been inconsistent and slow because of the Asian financial crisis and ongoing legal uncertainty. Given the current lack of private investors globally, effective institutional restructuring is critical to the government's ability to finance and improve the efficiency of the power sector.

Environmental Challenges

In order to reduce its dependence on oil, the Government of Indonesia wants to significantly increase the share of coal in the power generation fuel mix.

According to PLN's long-term plan, the share of coal will increase from around 35 percent today to roughly 70 percent by 2020. The magnitude of expansion raises concerns about the likely environmental impacts on heavily populated Java and Bali, and environmentally sensitive areas in some outer islands. One consequence is that Indonesia's greenhouse gas emissions will continue to grow at a much faster pace than most of its neighbors.

Indonesia's renewable energy resources are still largely unexploited or underdeveloped, despite their high potential as clean, indigenous energy resources.

Indonesia has very rich renewable energy resources, especially geothermal, hydropower and biomass. Major efforts to scale up renewable energy development that began in the 1990s have been impeded by the high upfront capital cost of technology, the lack of incentives and regulatory certainty, and the relatively weak institutional capacity of major national institutions

How Indonesia Can Rise Further

Clarify the structure and regulatory framework of the electricity market to restore confidence in the sector.

Clear policies and predictability in the legal and regulatory framework are necessary to the sustainable development of the power sector. In this regard, it is essential to fill the legal void caused by the annulment of the 2002 Electricity Law with a new electricity law and the corresponding implementation regulations. The new law and implementation regulation should define the structure of the power market, and roles of the central and sub-national governments, PLN, and the private sector in the market.

Rationalize pricing and subsidy policies in order to encourage investment and ease the financial volatility of PLN. The current electricity tariff and subsidy policy require urgent review: the government should rapidly formulate a new tariff system based as closely as possible on the costs of meeting electricity demand in order to promote economic efficiency. Proper regionalization of the tariff system may benefit the development of the geographically diversified power sector. This tariff system should also meet the sector's financial and social objectives (e.g. subsidizing poor consumers) in accordance with sound practices and specific government mandates.

Further build up the institutional capacity of large national power companies. International experience suggests that the strong institutional capacity and efficient operations of key national power companies are essential for power sectors in developing countries to supply reliable and affordable electricity for social and economic development. The objective of capacity building over the next few years should be to strengthen PLN's ability to run an efficient commercial power company. Capacity building should focus on "fundamental" issues facing commercial power companies, such as corporate planning, financial management, infrastructure project construction management, and operational management.

Optimize the fuel mix and protect the environment.

The government should prioritize and promote the development of Indonesia's abundant renewable energy resources, especially geothermal, and ensure the sustainable development of fossil fuel power generation.

- ◆ A systematic government intervention is needed to integrate various initiatives and focus efforts on enabling greater development of renewable energy resources. Immediate actions need to be taken to (i) formulate pricing, fiscal and other incentives to encourage greater investments; (ii) reduce the barriers faced by embedded power producers, especially from the renewable energy sector, who wish to sell electricity to the grid; (iii) increase the sector's credibility by establishing clear and transparent processes including the institutional arrangements for offering renewable opportunities for investors; (iv) enhance the domestic capability to develop and operate renewable power generation facilities; and (v) enhance the financial viability of renewable energy development projects through carbon trading and other low-carbon financing mechanisms.
- ◆ It is important to ensure that the environmental impacts of expanded coal-fired power plants are thoroughly assessed and mitigation measures are implemented in accordance with environmental laws and regulations. In Java-Bali and other large power grids, clean coal technologies should be progressively promoted whenever they are feasible and economically justified. In small power grids, wherever feasible, large, modern power generation technologies should be adopted for coal-fired power plants.

Increase public financing in power infrastructure. The recent downturn in global credit markets has reduced the availability of short- and medium-term funding. Globally, project developers are experiencing a withdrawal of potential investors and commercial lenders, and face higher funding costs. Governments are increasingly being called upon for capital infusions or credit support to cover funding requirements. An estimated US\$4.4 billion is needed to fund public power projects in Indonesia in 2009/10, of which only US\$3.1 billion was secured by the end of 2008.³ The US\$1.3 billion shortfall is likely to considerably hamper growth in the power sector. It is essential that the government step in to finance the gaps.

³ Estimated by the World Bank team

How The World Bank Can Help

In the next few years, the World Bank's power sector strategy will follow three major themes:

- ◆ **Financing public sector power infrastructure projects to sustain economic growth and increase electricity access to the poor.** The World Bank's investment lending support will focus on infrastructure projects where public financing is justified, such as pumped storage hydropower projects, renewable energy investments, and power transmission and distribution projects.
- ◆ **Reforming the tariff and subsidy system, and improving the efficiency of the national power companies.** In line with a primary government strategic priority, the World Bank will help the government and PLN fully review existing pricing and subsidy policies for the long-term sustainable development of the power sector. In addition, technical assistance will be provided to key national power companies for capacity building and efficiency improvements.
- ◆ **Moving the sector towards an environmentally friendly and low-carbon development path.** This strategy will be implemented through lending, carbon finance and technical assistance operations with major power sector institutions such as PLN, the Pertamina Geothermal Company (PGE), and the Ministry of Energy and Mineral Resources.

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