1. Key development issues and rationale for Bank involvement

**Country Context**

A decade after the Asian financial crisis, Indonesia is emerging economically and fiscally stronger than many had imagined. Real GDP has been growing at 5-6 percent annually since 2003, reaching 6.1 percent in 2008. Despite the global financial crisis, the country’s fiscal position remains strong, providing Indonesia with options to respond to the global financial crisis and provide additional resources for infrastructure development priorities which are essential for the country to emerge as a strong middle income country in the coming decade.

**Sectoral and Institutional Context**

Although the power sector underwent rapid expansion between the early 1980s and late 1990s, it was significantly weakened by the Asian financial crisis in the late 1990s. For about a decade from the late 1990s to 2007, investments in the power sector were far below the level needed to ensure reliable supply. As a result, most parts of the country are currently experiencing serious power shortages and Indonesia still has the lowest per capita electricity consumption and electricity access rate among all of the Bank’s middle-income member countries in the East Asia region. The power sector is now facing the following challenges to expand capacity to sustain economic growth and social development:

- Electrification rates remain low and 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 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.\(^1\)

\(^1\) Elasticity of electricity sales growth to GDP growth was on average greater than 1.5 in the past 15 years.
around 70 million people still do not have access or reliable access to electricity. To reach the government’s target of electrifying 90 percent of the population by 2020, the power sector will need to connect roughly two million new subscribers annually, double the rate of the past few years.

- The current electricity tariff level is insufficient to cover the national power utility’s - PLN- cost of supply, leading to unsustainable government subsidies to support it. PLN’s financial viability has deteriorated significantly since the removal of petroleum fuel subsidies in 2005, and the suspension of electricity price increases since 2004 as the tariff level is insufficient to cover the supply cost. The government has consequently to provide significant subsidies to maintain PLN’s financial viability.

- 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 reduced appetite of private investors globally, effective institutional restructuring and strengthening are critical to the government’s ability to finance and improve the efficiency of the power sector.

- While abundant renewable resources are largely unexploited, rapid increase of coal in the generation fuel mix may expose the country to environmental risks, both locally and globally. According to PLN’s long-term plan, the share of coal in generation fuel mix will increase from around 35 percent today to roughly 70 percent by 2020. The magnitude of this expansion raises concerns about the likely environmental impacts in heavily populated Java and Bali, and in environmentally sensitive areas in some outer islands. Another consequence is that Indonesia’s greenhouse gas emissions will continue to grow at a much faster pace than most of its neighbors. Although Indonesia has very rich renewable energy resources, especially geothermal, hydropower and biomass, the lack of incentives and regulatory certainty, and the relatively weak institutional capacity of major national institutions have hindered the rapid development of these indigenous and clean energy resources.

After the successful completion of the general election in July 2009, the new administration was established in October. Although the new government is still re-defining its energy sector policy priorities, the emerging energy sector strategy indicates that the government is now focusing on (i) facilitating private investments and increasing public financing to increase supply capacity; (ii) improving generation fuel mix by developing coal fired and renewable energy, especially geothermal and hydropower generation; (iii) rationalizing the electricity tariff and subsidy regime; and (iv) further strengthening institutional capacity and improving management efficiency of PLN.

Relationship to CAS

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In line with the Bank’s Country Partnership Strategy (CPS), and the government’s strategic priorities, the Bank is implementing and preparing (i) a large investment lending program to finance public sector power infrastructure projects, especially renewable energy, to sustain economic growth; (ii) development policy lending programs to support government’s efforts to establish a sustainable policy environment for infrastructure project development and move the energy sector towards low-carbon development paths; and (iii) technical assistance to rationalize the electricity tariff and subsidy regime, establish incentives for geothermal resources development and strengthen the capacity of national state owned companies in the energy sector.

The proposed project will form an integral part of the Bank’s assistance program to the energy sector to rapidly eliminate the bottlenecks in major transmission systems. It was proposed by the government and PLN as a priority project of a large transmission system strengthening and expansion investment program to be undertaken by PLN. The project will strengthen the main transmission system in Java-Bali and upgrade the main transmission system in south and central Sumatra. If implemented successfully, the proposed project will play an important role in supporting economic growth in both islands in the mid and long terms.

The Bank’s involvement in the proposed project will allow continued policy dialogue with the government and implementation and monitoring of capacity building initiatives for PLN proposed by the Bank’s other operations in the power sector. The proposed project is also consistent with the objective of the Country Partnership Strategy, which is to build effective and accountable institutions in the power sector to effectively deliver development outcomes in Indonesia.

2. Proposed objective(s)

The development objective of the proposed project is to increase the capacity of the power transmission systems in Java and south-central Sumatra to meet increasing electricity demand. This will be achieved through: (a) the expansion and construction of several main 500 and 150 kV substations in Java, and (b) upgrading several major 275 and 150 kV substations in Sumatra.

Achievement of the development objective will be assessed through the effect of the capacity increase of the high voltage transmission networks in Java and south-central Sumatra to deliver the amount of electricity to the customers.

3. Preliminary description

The power transmission systems of Indonesia have recently experienced congestion and bottlenecks in a number of regions, including Java-Bali and Central- Southern Sumatra and are causing serious power shortages in these regions. In the Java-Bali power system, some major 500 kV and several 150 kV substations require urgent capacity expansion to accommodate the growing power demand and the requirements of higher supply security. In Sumatra, the transmission backbone from Lahat to Kiliranjao was designed and built as a 275 kV transmission line in the late 1990s but has been operating at 150 kV for several years. Rapid demand growth in central Sumatra in the past few years requires urgent upgrading of the 150 kV system to its design level of 275 kV to address the supply shortage in central Sumatra, reduce losses, improve
operational efficiency and reliability of the system. In addition, several 150 kV substations need to be expanded to accommodate increasing demand. The recent strong earthquake and the related re-construction efforts in the South and West Sumatra region have made the Sumatra component of the proposed project even more urgently needed.

The proposed project will provide support for PLN to expand and construct several major 500 kV and 150 kV substations in Java-Bali, upgrade the 275 kV systems from Lahat to Kliranjao and expand some key 150 kV substations in Sumatra. The total project cost is estimated at US$ 220 million. It is proposed by PLN that around US$ 200 million will be financed by the Bank and the rest will be financed by PLN with its own resources. Following are a preliminary description of the project components identified at this stage. Other components will be identified during the project preparation and/or implementation:

**Component 1: Expansion of 500 kV Substations in Java-Bali System**

Under this component, four 500/150 kV substations in Java will be expanded by adding one new transformer and associated equipment at each substation and one new 500/150 kV substation will be constructed. These five substations are:

- Ujung Berung 2 x 500/150 kV substation (new) in West Java;
- Depok 500/150 kV substation (existing) in West Java;
- Pedan 500/150 kV substation (existing) in Central Java; and
- Krian 500/150 kV substation (existing) in East Java.
- Balaraja 500/150 kV substation (existing) in West Java.

**Component 2: Upgrading of the Transmission System in Sumatra**

The five existing 150/20 kV substations in the Sumatra system will be upgraded by adding one or two new 275/150 kV transformers and associated equipment each under the project component. These five substations are:

- Lahat 275/150 kV Substation: 2X500 MVA transformer and associated equipment;
- Lubuk Linggau 275/150 kV Substation: 1X250 MVA transformer and associated equipment;
- Bangko 275/150 kV Substation: 1X250 MVA transformer and associated equipment;
- Muara Bungo 275/150 kV Substation: 1X250 MVA transformer and associated equipment; and
- Kiliranjao 275/150 kV Substation: 1X250 MVA transformer and associated equipment.

4. Safeguard policies that might apply

As the key project activity is to install new transformers and associated equipments in existing substations in Java and Sumatra, the negative environmental and social impacts of the proposed project are expected to be limited and manageable.
Preliminary assessments also indicate that the confirmed components in Java will not require land acquisition or involuntary resettlement. In Sumatra, only small amount of lands will be acquired to accommodate the installation of new equipments and relocation of two to three transmission towers.

5. Tentative financing

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6. Contact point

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