

## Ex-ante Evaluation

### 1. Name of the Project

Country: Republic of Indonesia

Project: Engineering Services for Java – Sumatra Interconnection Transmission Line Project

Loan Agreement: March 31, 2009

Loan Amount: 3,886 million JPY

Borrower: The Republic of Indonesia

### 2. Background and Necessity of the Project

#### (1) Current State and Issues of the Power Sector in Indonesia

According to the National Electricity General Plan 2008 – 2027 (RUKN) established by the Ministry of Energy and Mineral Resources in November, 2008, the peak demand for power in Indonesia nationwide in 2008 was 25,407 MW (19,389 MW in the Java-Bali System; 6,018 MW in Outer Java-Bali System), and the required capacity for power generating facilities is 33,631 MW for the entire country of Indonesia (25,205 MW in the Java-Bali System; 8,426 MW in Outer Java-Bali Systems); however, the output of the existing facilities is limited due to deterioration from aging.

In the Java-Bali System, malfunction of equipment in substation in August of 2005 caused a large-sized blackout over a wide-ranging area, including the Jakarta metropolitan area, causing significant damage. In addition, planned outages have been required in the Outer Java-Bali System due to power shortages, defects in the power transmission systems, etc., which continue to impact the reliability of the country's power supply. Power demand in Indonesia is expected to grow at an average rate of approximately 9.5% annually (approx. 9.8% in the Java-Bali System; 8.2% in the Outer Java-Bali System) in the future. Therefore, alleviating the demand gap for power, which will become acute, is a pressing issue for Indonesia.

#### (2) Development Policies for the Power Sector in Indonesia and the Priority of the Project

According to RUKN, in order to improve the stability and reliability of the power supply, it is important to expand and enhance the power transmission systems. In the Java-Bali System, one of the priority issues is the establishment of 500 kV and 150 kV high-pressure infrastructure systems for transmitting power from the eastern part of Java Island to the western part of Java Island where the power demand is significant. In the outer areas where the distribution of power supply stations is unbalanced, the construction of the power transmission infrastructure is considered to be the top priority and interconnection among systems is considered to be important for effective and high-quality power supply. In particular, the Sumatra and Java Systems are not interconnected; therefore, it is necessary to develop 500 kV transmission lines to interconnect these systems for the establishment of power interchange and supply systems.

#### (3) Japan and JICA's Policy and Operations in the Power Sector

The Government of Japan sets the goal of providing assistance with the aim of realizing sustainable growth driven by the private sector as one of the priority areas and issues through a focus on the development of economic infrastructure in its Country Assistance Program for Indonesia. In response to this, JICA considers assistance to energy supply as one of the

cooperative projects.

#### (4) Other Donor's Activity

The World Bank has set the goal of providing assistance for infrastructure development for the electric power sector in its Country Partnership Strategy (CPS) 2009 – 2012. The Asian Development Bank has set the goal of promoting sector reformation, improvement of infrastructure, and renewable energy in the field of electric power in its Country Strategy and Program Update 2006 – 2009 for Indonesia.

#### (5) Necessity of the Project

The electric power sector in Indonesia is planning large-sized coal-fired power stations at mine-mouths in the southern part of Sumatra Island, which abounds in coal reserves, developed by Independent Power Producers with plans to transmit surplus power to the Java-Bali System via an interconnected transmission line for both the Sumatra and Java Systems to respond to future power demand. From the viewpoint of power interchange and the establishment of a supply system, development of the relevant interconnected transmission line is an urgent issue.

The Project contributes to the improvement of power supply capability in both regions, the promotion of power interchange for both systems through the construction of power transmission lines for the integration of the Java and Sumatra Systems, and to the formation of the backbone of infrastructure. Supporting the program with ODA loans is, therefore, highly necessary and relevant.

### **3. Project Description**

#### (1) Project Objective(s)

The objectives of the Project are to improve the power supply capacity in Sumatra and Java, to ease the stringency of power demand in both the Java System and the Sumatra System, and to improve the reliability of power supply by establishing new transmission lines and converter stations, thus contributing to the improvement of the investment climate and economic development in the region. This ODA loan targets the engineering services regarding detailed design of the Project and promotes the smooth implementation of the Project.

#### (2) Project Site/ Target Area

West Java Province and South Sumatra

#### (3) Project Component(s)

- 1) 500 kV DC Submarine Cables (approx. 50 km)
- 2) 500 kV DC Overhead Transmission Line (Java side: approx. 280 km/ Sumatra side: approx. 450 km)
- 3) Related Converter Stations (DC/AC converter stations, switching stations, etc.)
- 4) AC Overhead Transmission Line and Related Substations (Java side, Sumatra side)
- 5) Consulting Services (Detailed design, tender assistance, supervision of construction work, etc.)

ODA loans at this time will be provided for 5) above as the engineering services (E/S) loan for the Project.

#### (4) Estimated Project Cost (Loan Amount)

4,604 million JPY (Loan Amount: 3,886 million JPY)

#### (5) Schedule

March, 2009 – November, 2015(81 months in total)

(6) Project Implementation Structure

- 1) Borrower: The Republic of Indonesia
- 2) Executing Agency: PT. Perusahaan Listrik Negara (Persero)
- 3) Operation and Maintenance System: As shown in 2)

(7) Environmental and Social Considerations/ Poverty Reduction/ Social Development

1) Environmental and Social Consideration

① Category (A, B, C, or FI): B

② Reason for categorization:

The Project is categorized into Category B, due to the fact that it is a loan for the purpose of assisting engineering services, and because it does not fall under Category C, as identified in the JBIC Guidelines for Confirmation of Environmental and Social Considerations (established in April, 2002).

③ Environmental permission or authorization: None in particular

④ Anti-Pollution Measures: None in particular

⑤ Natural Environment: None in particular

⑥ Social Environment: None in particular

⑦ Other/Monitoring: None in particular

2) Promotion of Poverty Reduction: None in particular

3) Promotion of Social Development (e.g. Gender Perspective, Measure for Infectious Diseases Including HIV/AIDS, Participatory Development, Consideration for the Handicapped etc.): None in particular

(8) Collaboration with Other Donors: None in particular

(9) Other Important Issues: None in particular

**4. Targeted Outcomes**

(1) Performance Indicators (Operation and Effect Indicator)

To be determined when executing the Project

(2) Internal Rate of Return

To be determined when executing the Project

**5. External Factors and Risk Control**

None in particular

**6. Lessons Learned from Past Projects**

Projects implemented in the past have involved some cases of construction material theft or cases requiring significant time for recovery from problems arising on power transmission lines or iron towers due to the lack of sufficient access as a result of the power transmission lines being 10 to 20 km away from the major roads. Based on these lessons, the power transmission lines will be installed along major roads; therefore, it is expected that the above-mentioned problems will not occur.

**7. Plan for Future Evaluation**

(1) Indicators to be used: To be determined when executing the Project

(2) Timing: To be determine when executing the Project