

1. Name of the Project

Country:	The Republic of Indonesia
Project:	Java-Sumatra Interconnection Transmission Line Project (I)
Loan Agreement:	April 30, 2010
Loan Amount:	36,994 million yen
Borrower:	The Republic of Indonesia

2. Background and Necessity of the Project**(1) Current State and Issues of the Electricity Sector in Indonesia**

The peak demand for power in Indonesia nationwide in 2008 was 21,866 MW, and according to the Long Term Electricity Development Plan 2009-2018 (RUPTL), which was prepared by the national electricity company, PT. Perusahaan Listrik Negara (Persero) (hereinafter referred to as “PT. PLN”), the capacity of existing power supply facilities nationwide is 29,205 MW. This means that the reserve ratio for power supply facilities is 34%, which is below PLN’s target of 35%. Looking forward, and as the economy grows, demand for power is expected to increase at an average annual rate of about 9.5%. Thus, easing the stringency of power demand has become an urgent issue for Indonesia. Particularly in the Java-Bali System, it is predicted that the reserve ratio for power supply facilities will decline, and with planned outages in Jakarta being prolonged due to the substation fire in September 2009, maintaining a stable supply of power has become an urgent issue.

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

According to the National Electricity General Plan (RUKN), which was formulated by the Ministry of Energy and Mineral Resources in December 2008, in order to improve the stability and reliability of the power supply, it is important to expand and enhance power transmission systems. In the outer island regions, where each area has its own scattered power supply, the construction of power transmission infrastructure is considered to be the top priority, and interconnection among systems is considered to be important for efficient and high-quality power supply.

The island of Sumatra—the target area of the project—abounds in coal reserves, and in the south, an independent power producer is set to develop 3,000 MW of coal-fired power plants adjacent to the mines. By interchanging electricity with the hard-pressed Java-Bali System, the project will allow the reserve ratio for power supply facilities in both systems to be secured at above 35%.

(3) Japan and JICA’s Policy and Operations in the Electricity Sector

In Japan’s Country Assistance Program for Indonesia, support for achieving “sustainable growth driven by the private sector” has been set as one of the priority assistance areas, and building economic infrastructure is regarded as a priority area. In response to this policy, JICA has positioned “assistance for energy supply capacity” as one of its cooperative programs. In

the Indonesian electricity sector, Japan has provided assistance in the form of about 100 loans since 1969, worth a total commitment of about 704.7 billion yen. In technical cooperation, recently, Japan has provided assistance for such studies as the “Study of Programs that Enhance the Power Development and Operation of the Sumatra System,” “Study of Programs that Improve the Operation of Power Generation Facilities in the Java-Bali Region” and “Study of Programs for the Development of Optimum Power in the Java-Madura-Bali Region.”

(4) Other Donors’ Activities

In its Country Partnership Strategy for Indonesia (2009-2012), the World Bank states that the greater capacity of power generation facilities to meet the rapidly increasing demand in the electricity sector is needed for the purpose of strengthening competitiveness in Indonesia. In its Indonesia: Country Strategy and Program (2006-2009), the Asian Development Bank has set goals in the electricity sector of improving energy efficiency and encouraging private sector participation, and is attempting to promote sector reforms and the development of renewable energy.

(5) Necessity of the Project

As described above, the project is in line with Indonesia’s development policy, as well as with Japan’s and JICA’s priority assistance areas, and thus, it is highly necessary and relevant for JICA to support this project.

3. Project Description

(1) Project Objectives

By establishing new power transmission lines and new converter stations for converting direct currents into alternating currents, the project aims to ease the stringency of power demand and improve the reliability of power supply in both the Java System and the Sumatra System, thereby contributing to economic development in the Java and Sumatra regions through the improvement of the investment climate.

(2) Project Site/Target Area: West Java Province and South Sumatra Province

(3) Project Components

- 1) Installation of new DC submarine cables (500kV, approx. 40km)
- 2) Installation of new DC overhead transmission lines (500kV, Java side: approx. 110km, Sumatra side: approx. 384km)
- 3) Installation of new related converter stations (AC/DC converter stations, switching stations, etc.)
- 4) Installation of new AC overhead transmission lines and related substations (Java side, Sumatra side)

(4) Total Project Costs: 230,791 million yen (including the loan amount of 36,994 million yen for Japan’s fiscal year 2009; 3,886 million yen has already been provided as an Engineering Service loan for consulting services)

(5) Schedule

The project construction is scheduled from April 2010 to February 2016 (71 months in total). The project will be deemed complete when the facilities come into service (February 2016).

(6) Project Implementation Structure

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

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

- 1) Environmental and Social Consideration
 - (i) Category: A
 - (ii) Reason for Categorization: The project is classified as Category A because it applies to a power transmission and substation sector listed in the “Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations” (established in April 2002) and involves the laying of submarine transmission cables.
 - (iii) Environmental Permit: As for the environmental impact assessment (EIA) report for this project, approval for the Java-side DC/AC converter stations, including AC overhead transmission lines, and the DC transmission lines was given by the Ministry of the Environment in August 2009; and approval for the Sumatra-side AC overhead transmission lines was given by the South Sumatra Province Environment Office in May 2009.
 - (iv) Pollution Control Measures: Based on the environmental management plan (RKL), it is expected that avoidance and mitigation measures pertaining to noise, vibrations and so forth during construction will be taken, and Indonesian environmental standards and emissions standards will be met.
 - (v) Natural Environment: Although the project site is not located in or around any susceptible areas, such as national parks, impacts on coral reefs associated with the laying of submarine transmission cables are expected. The project is designed to avoid excavating coral wherever possible, and there are plans to transplant any coral in places where excavation is unavoidable.
 - (vi) Social Environment: The project will acquire approximately 272 hectares of land, and it is expected to result in the resettlement of two households. Once final confirmation has been made following the detailed design, land will be acquired and resettlement procedures put in place in accordance with the land acquisition and resettlement plan and with relevant domestic laws.
 - (vii) Other/Monitoring: Both during construction and after operations have commenced, air quality, noise and so forth will be monitored in accordance with the environmental monitoring plan (RPL). Furthermore, the condition of the coral once the submarine transmission cables have been laid will be monitored, and the results will be reported by the executing agency to JICA.
- 2) Promotion of Poverty Reduction: None in particular
- 3) Promotion of Social Development: None in particular

(8) Coordination with Other Donors: None in particular

(9) Other Important Issues: None in particular

4. Targeted Outcomes

(1) Performance Indicators (Operation and Effect Indicators)

Indicator	Baseline (actual value in 2008)	Target (2018) [2 years after completion of the project]
(i) Capacity utilization rate (%)		
Bogor, Muara Enim converter stations 500kV bus	N.A	99.9
Bogor, Muara Enim 500/275kV, 500/150kV transformer	N.A	98.6
Sumatra side 500kV AC Transmission Line	N.A	99.6
Bogor-Muara Enim 500kV DC transmission facility (including transducers)	N.A	96.0
(ii) Power transmission loss ratio (%)		
Bogor-Muara Enim 500kV DC transmission facility (including transducers)	N.A	5.0

(1) Internal Rate of Return

Based on the conditions indicated below, the economic internal rate of return (EIRR) for this project is 12.06%.

[EIRR]

Costs: Project costs (excluding taxes), operating and maintenance costs

Benefits: Substitution with coal thermal power generation on the islands of Java and Sumatra

Project life: 30 years

5. External Factors and Risk Control

None in particular

6. Lessons Learned from Findings of Similar Projects Undertaken in the Past

From past ex-post evaluations of completed ODA loan projects, it has been learned that, because power transmission lines are about 10-20km away from major roads, it is not possible to conduct proper patrols and so there are occasional thefts of construction materials, and also it sometimes takes a considerable amount of time to restore power if there is some kind of problem on a power transmission line or pylon. In this project, most power transmission lines

will be installed along major roads, and therefore, it is expected that the abovementioned problems will not occur.

7. Plan for Future Evaluation

(1) Indicators for Future Evaluation

- 1) Capacity utilization rate (%)
- 2) Power transmission loss ratio (%)
- 3) Economic internal rate of return (EIRR) (%)

(2) Timing of Next Evaluation

Two years after the project's completion