1. Name of the Project

Country:	Republic of Kenya
Project :	Sondu-Miriu Hydropower Project Sang'oro Power Plant
Loan Agreement :	January 23, 2007
Loan Amount:	5,620 million yen
Borrower:	Kenya Electricity Generating Company Limited: KenGen

2. Necessity and Relevance of JBIC's Assistance

Kenya's power shortage is worsening mainly due to the deterioration of the existing power plants. In 2005, the total installed capacity was 1,082MW, whereas the demand at peak time was 908MW. Power demand is projected to grow at an average annual rate of 5% over the coming decade. However, it is difficult to increase the power supply because aging power plants have either been closed or are plagued with falling capacity. In addition, the import of electricity from neighboring Uganda is limited due to Uganda's own power shortage. Therefore, given the prospect of facing a tight power supply relative to growing demand, the construction of new power plants is urgently needed.

Under the Investment Program for the Economic Recovery Strategy for Wealth and Employment Creation (IP-ERS), which the government enacted in March 2004 as a midterm development plan, the Kenyan government aims at poverty reduction through economic development based on the development of infrastructure.

For the power sector, the Kenyan government has been working on the development of power plants and transmission grids, the policy and institutional reform, including organizational reform and reconsideration of the electricity tariff system, in order to supply economical and stable power to improve living standards and foster industries. For development of power plants, diverse and economical projects incorporating hydroelectric, thermal, and geothermal approaches are being planned based on the Least Cost Power Development Plan (LCPDP). Since Kenya does not produce its own coal, oil, or other fossil fuel resources, power development based on hydropower, one of the country's natural resources, has become an integral part of the overall plan under the LCPDP. The Project is given the highest priority under the LCPDP .

JBIC has provided its Yen Loan for the 60MW Sondu-Miriu Hydropower Project (scheduled to be completed in November 2007) located in the upper reaches of the Sang'oro Power Plant. The Project is an economical project that effectively utilizes the country's precious water resources by recycling the water discharged from the Sondu-Miriu Hydropower Plant before the water returns to the Sondu River.

In its Basic Strategy of Japan's ODA Loan (April 2005 - March 2008), JBIC has placed much emphasis on laying down foundations for sustainable growth, and the promotion of economic growth through the development of economic and social infrastructure, including power plants. Therefore, JBIC's assistance to the Project is highly necessary and relevant.

3. Project Objectives

By constructing a hydropower station with an installed capacity of 21.2MW in the Kisumu District of Nyanza Province in Western Kenya, the Project aims to expand the power supply, thereby contributing to sustainable economic growth of the country and the betterment of living standards for Kenya's citizens.

4. Project Description

(1) Target Area

Kisumu District of Nyanza Province in Western Kenya

(2) Project Outline

To construct a new hydroelectric power plant and transmission lines. The Sang'oro Power Plant will utilize the unused effective fall of the outlet channel which is approximately 4.7km downstream of the 60 MW run-of-river

Sondu-Miriu Hydropower Station.

(a) Construction of an outlet channel a head tank, a penstock, and a power station

(b) Provision of two 10.6MW generating equipment, construction of transmission line (132kV, 5km) and substation facilities

(c) Consulting services (revision of detailed design, assistance with the bidding process, supervision of construction, and guidance on operation and maintenance, etc.)

(3) Total Project Cost/Loan Amount

6,612 million yen (Yen Loan amount: 5,620 million yen)

(4) Schedule

April 2007 - December 2013 (total of 81 months)

(5) Implementation Structure

(a) Borrower: Kenya Electricity Generating Company Limited (KenGen)

(b) Executing Agency: Same as (a).

(c) Operation and Maintenance System: Same as (a). However, Kenya Power and Lighting Company Limited. (KPLC) will handle transmission lines and transformers.

(6) Environmental and Social Considerations

(a) Environmental Impact / Land Acquisition and Resident Relocation

(i) Category: B

(ii) Reason for Categorization:

This project is categorized as B because it does not correspond to a large-scale hydropower plant, does not expect to have a significant negative environmental impact, does not have characteristics that are likely to exert impact, and is not located in a region unsusceptible to impact, based on the "Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations" (established April 2002).

(iii) Environmental Permit

The Environmental Impact Assessment report was approved by the National Environment Management Authority in September 2004.

(iv) Anti-Pollution Measures

Water sprinkling on road surfaces and speed limits imposed on construction vehicles will serve as anti-dust measures for areas currently under construction. At the same time, as an anti-water pollution measure, a septic tank will be installed.

(v) Natural Environment

Since a portion of the construction area falls within the boundary of the Koguta Forest Reserve, KenGen obtained a construction permit from Kenya's Environment Bureau on February 8, 2006. The area, however, is characterized by shrubs and sparse woods and is not inhabited by rare species. Therefore, no particular negative impact on the natural environment is expected.

(vi) Social Environment

The project requires land acquisition of an estimated 0.3ha for building tower foundation and 15ha for constructing transmission lines. Compensation will be provided in accordance with the laws of Kenya. No resettlement is expected.

(vii) Other/Monitoring: KenGen will monitor land acquisition, water quality, etc.. Moreover, the Technical Committee that made a major contribution to the progress of the Sondu-Miriu Hydropower Project will continue to play a leading role, and lead an exchange of opinions and adjustments among stakeholders.

(b) Promotion of Poverty Reduction

None in particular.

(c) Promotion of Social Development (e.g. Gender Perspective)

In order to reduce HIV infection in the project area, KenGen is financing the Voluntary Counseling and Testing (VCT) center established in the area adjacent to the construction site of the Sondu-Miriu Hydropower Project.

(7) Other important issues

None in particular

5. Outcome Targets

(1) Evaluation Indicators (Operation and Effect Indicators)

Indicator	Baseline (2006)	Target (2015: two years after completion)
Unplanned outage hours (days / year)	N.A.	2
Capacity factor (%)	N.A.	57.2
Planned outage hours for inspection and maintenance (days / year)	N.A.	14
Net electric energy production (GWh / year)	N.A.	106.2
Maximum output (MW)	N.A.	21.2

(2) Internal rate of return

(a) Economic internal rate of return (EIRR) : 13.8%

(i) Cost: Project costs (tax excluded), operation and maintenance fees

(ii) Benefit: Construction and fuel costs for alternate thermal power plant

(iii) Project life: 50 years

(b) Financial internal rate of return (FIRR) : 11.4%

(i) Cost: Project costs, operation and maintenance fees

(ii) Benefit: Income from electricity sales

(iii) Project life: 50 years

6. External Risk Factors

Insufficient rainfall in Kenya's western region.

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

In the ex-post evaluation of previous projects, it has been learned that even though the executing agency is responsible for the social considerations of the project, it is important that JBIC monitor the situation and, when needed, provide support for them. In this project, JBIC will monitor KenGen to take appropriate measures on social issues .

8. Plans for Future Evaluation

(1) Indicators for Future Evaluation

(a) Unplanned outage hours (days/year)

(b) Capacity factor (%)

(c) Planned outage hours for inspection and maintenance (days/year)

(d) Net electric energy production (GWh/year)

(e) Maximum output (MW)

(f) EIRR, FIRR

(2) Timing of next evaluation

After project completion.