

Ex-Ante Evaluation (for Japanese ODA Loan)

**1. Name of the Project**

Country : Republic of Uganda

Project : Interconnection of Electric Grids of Nile Equatorial Lakes Countries Project

Loan Agreement : March 26, 2010

Loan Amount : 5,406 million Yen

Borrower : The Government of the Republic of Uganda

**2. Background and Necessity of the Project**

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

East African countries, along the Nile Basin including the Republic of Uganda, the Republic of Kenya, the Republic of Rwanda, the Republic of Burundi, and the Democratic Republic of the Congo that are the target countries of the Project, launched the Nile Basin Initiative (NBI) for the promotion of development through effective use of water resources of the Nile and, under the initiative, they formulated the Nile Equatorial Lakes Subsidiary Action Program (NELSAP). NELSAP office was set up in Uganda in December 2001 (moved to Rwanda in 2004). The NELSAP includes hydroelectric development and related electric grids development by utilizing the water resources of the river.

Power outage occurs due to power shortage and electricity demand that is expected to grow in the future is not secured in the Project target countries. They have promoted new power development mainly utilizing hydraulic and geothermal energy for which power generation cost is low while it has been working on the construction of efficient power grids. In 2011, Uganda is expected to generate surplus power, whereas some other countries including Kenya cannot meet the increasing power demand only with new power developments in their own country. Although Rwanda is expected to generate surplus power in the future, for improving the electrification rate, it currently needs to purchase electricity from surrounding countries where the unit cost of power generation is relatively cheap, as the cost in Rwanda is high. Therefore it is significant to develop regional power pool that enables exchange and wide-area utilization of power among the recipient countries.

Of the recipient countries, Uganda to which Japanese ODA loan is extended this time relied on the Nalubaale Power Station (180MW) and Kiira Power Station (200MW), both constructed on the Nile River, for most of its power supply. However, it faces a regular power shortage due to a water shortage resulting from the impact of drought. However, the power shortage problem is expected to be solved when the Bujagali Power Station begins its operation (250MW, slated to be completed in 2011, Japanese ODA loan provided in FY2007 for the development of the transmission grid). The Government of Uganda plans to develop new power sources including Karuma Power Station (180MW, slated to be completed in 2012) and Ayago Power Station (440MW, intended to be completed in 2017) based on the governmental policy to further promote development of potentially abundant hydropower

development. Once these plans are realized, the Government of Uganda will be able to sell electricity to its neighboring countries. It plans to increase power sales to Kenya and sell power to such countries as Rwanda and Tanzania.

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

Of the five recipient countries of the Project, Japanese ODA loan is extended to Uganda this time. It formulated the comprehensive national plan, the third Poverty Eradication Action Plan (PEAP), in December 2004. With the recognition that it is imperative to develop economic and social infrastructures for the economic development and improvement of production, competitiveness and income that are key goals of the plan, it has been working on the electricity sector development.

One of the goals of the Grid Development Plan 2008-2023 of the Government of Uganda is formulating as a long-term national power source development plan is to export electricity to its neighboring countries. The Project is also regarded as a priority project of regional transmission grids plan.

Furthermore, it is also included as a major project in the short-term action plan (STAP) of the New Partnership for Africa's Development (NEPAD)

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

The Yokohama Action Plan approved in the TICAD IV in May 2008 takes acceleration of growth as a key goal and states that assistance for infrastructure development with Japanese ODA loan will focus on the development of infrastructure that benefits wide areas across national borders such as international economic corridor and regional power pool. The Project meets the assistance policy of our country as it will contribute to efficient and stable power supply of the recipient countries by connecting the power network of five countries across the national borders.

Japan's ODA Rolling Plan for Uganda formulated in May 2009 takes basic economic infrastructure development, human resources development, improvement of basic human needs and agricultural development as the priority areas of assistance. The Project meets the policy to assist basic economic infrastructure development. Japan has provided a variety of assistance in the power sector in Uganda ranging from power source development to regional electrification. For example, the Bujagali Transmission Grid Development Project (Japanese ODA loan, approved in October 2007) and the Rural Electrification Project Phase II (Grant Aid, E/N signed in FY2007 and 2008) are currently underway.

JICA has also agreed to provide loans in collaboration with Africa Development Bank Group to countries that are approved to have reached the Completion Point of the extended the Debt Initiative for Heavily Indebted Poor Countries (HIPC) initiative and reduced its debts by utilizing the Accelerated Co-Financing Scheme for Africa (ACFA) under the Enhanced Private Sector Assistance for Africa (EPSA) if their capacity to repay loans and governance are recognized to be relatively good. Uganda is one of ACFA-eligible countries the Government of Japan acknowledges and the Project contributes to the private sector assistance that is the policy object of the EPSA. Therefore, it is relevant to assist the Project.

#### (4) Other Donors' Activity

Africa Development Bank Group has assisted Uganda in such projects as Owen Fall hydropower station expansion project (Africa Development Fund), and Bujagali Hydropower Project (non-sovereign loan), and Bujagali Interconnection Project (Africa Development Fund). The World Bank has extended assistance of the Bujagali Hydropower Project (IDA guarantee).

#### (5) Necessity of the Project

The Project in the form of Japanese ODA loan is highly needed and relevant for the realization of stable power supply at reduced power price by regional power exchange in Uganda and other countries involved in the Project.

### **3. Project Description**

#### (1) Project Objective

To develop electricity pool that interconnects the Republic of Uganda, the Republic of Kenya, the Republic of Rwanda, the Republic of Burundi, and the Democratic Republic of the Congo in order to enable efficient, stable and inexpensive power supply in those countries, thereby contributing to promotion of regional integration and their economic and social development.

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

Uganda (southwestern and southeastern regions), Kenya, Rwanda, Burundi, and DR Congo

#### (3) Project Components

##### 1) Construction of transmission lines and construction and expansion of substations

① Transmission line between Uganda and Rwanda: between Mbarara substation (Uganda) and Birembo substation (Rwanda)

Construction of transmission lines (172km/220kV), expansion of Mbarara substation, Mirama substation and Birembo substation

② Transmission line between Uganda and Kenya: construction of transmission line between Bujagali substation (Uganda) to Lessos substation (Kenya) (256km/220kV), expansion of Lessos substation (Kenya), Tororo substation and Bujagali substation

③ Transmission line that connects Rwanda, Burundi and DR Congo

JICA's assistance is extended to the part in Uganda in ① and ②.

##### 2) Consultant: Shortlist method (not subject to JICA assistance)

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

Project cost for Uganda subject to JICA assistance: 6,944 million JPY (total project cost: 23,111 million JPY) / (Loan amount: 5,406 million JPY)

#### (5) Schedule

The planned implementation schedule of the project is from March 2010 to March 2015 (58 months in total). The use of the facilities will start in March 2015, which is regarded as the completion date of the project.

#### (6) Project Implementation Structure

1) Borrower : The Government of the Republic of Uganda

2) Executing Agency : Uganda Electricity Transmission Company Ltd.

Monitoring of the overall project will be conducted by Nile Basin Initiative (NBI)

3) Operation and Maintenance System : Same as 2)

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

1) Environmental and Social Consideration

① Category: A

② Reason for Categorization

The Project is classified in Category A of the “Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations” (established in April 2002), because it falls into the power transmission and transformation sector and has characteristics that are likely to exert environmental impact.

③ Environmental Permit

The Environmental and Social Impact Assessment (ESIA) report concerning the Project was approved by the National Environment Management Authority in October 2008.

④ Anti-Pollution Measures

Water will be sprayed regularly for preventing dust during the construction and a waste management plan will be formulated for proper prevention of water and soil pollution.

⑤ Natural Environment

The target site is not situated in an area that is vulnerable to the environmental impacts by national parks, etc. or its surrounding areas and it will have minimum adverse impact on the natural environment. Reflection boards are planned to be installed on steel towers in order to control bird strikes.

⑥ Social Environment

The Project requires the acquisition of approximately 555 hectares of land (183ha for transmission lines between Uganda and Rwanda, 372ha for transmission lines between Uganda and Kenya) and relocation of 439 households (331 for transmission lines between Uganda and Rwanda, 108 for transmission lines between Uganda and Kenya). The land acquisition and household resettlements will be arranged according to Ugandan procedures set within the country. It is confirmed in discussions with residents that they are not against implementing the Project.

⑦ Other / Monitoring

Air quality, water quality, noise and land acquisition are monitored during the construction by the executing agency.

2) Promotion of Poverty Reduction

None

3) Promotion of Social Development (e.g. Gender Perspective, Measure for Infectious Diseases Including HIV/AIDS, Participatory Development, Consideration for the

Handicapped etc.)

None

(8) Collaboration with Other Donors

Co-financed with AfDB Group

(9) Other Important Issues

None

#### 4. Targeted Outcomes

(1) Performance Indicators (Operation and Effect Indicator)

Indicator	Baseline (Actual Value)	Target
Electrification Rate (%)	9 (2010)	13 (2015)
Average Unit Cost of Power Generation (US cents/kWh)	20 cents (2008)	8 cents (2020)

(2) Internal Rate of Return

Based on the conditions indicated below, the Economic Internal Rate of Return (EIRR) of this project and the Financial Internal Rate of Return (FIRR) of this project are as follows:

Internal Rate of Return of the Project (Unit:%)		
	EIRR	FIRR
Uganda-Rwanda	22.32	15.21
Uganda-Kenya	23.78	17.69

#### 【EIRR】

Cost : Construction cost, operation and maintenance cost (excluding tax)

Benefit : Investment cost reduction, power generation cost reduction

Project Life : 30 years

#### 【FIRR】

Cost : Construction cost, operation and maintenance cost

Benefit : Revenue from electricity selling

Project Life : 30 years

#### 5. External Factors and Risk Control

None

#### 6. Lessons Learned from Past Projects

It has been pointed out that, in past ex-post evaluations, it is necessary to request the executing agency to take initiative and coordinate and supervise the overall project when

JICA co-finances projects with other donors. Information is planned to be shared sufficiently with the executing agency through AfDB Group in the ACFA framework.

It is also pointed out that coordination of project implementation between two countries is important when a project involves two countries. Project Coordination Unit to be established by NBI through AfDB Group is planned to supervise the progress for smooth coordination.

## **7. Plan for Future Evaluation**

(1) Indicators to be Used

- 1) Electrification rate (%)
- 2) Average unit cost of power generation (US cents/kWh)
- 3) Internal Rate of Return (FIRR and EIRR (%))

(2) Timing

Two years after project completion