

Ex-Ante Evaluation (for Japanese ODA Loan)

1. Name of the Project

Country: The United Republic of Tanzania

Project: Iringa-Shinyanga Backbone Transmission Investment Project

Loan Agreement: December 13, 2010

Loan Amount: 6,048 million yen

Borrower: The Government of the United Republic of Tanzania

2. Background and Necessity of the Project

(1) Current State and Issues of the Electricity Sector in the United Republic of Tanzania

Tanzania's electricity sector provides a vital infrastructure for the country to support its economy that has been growing at an annual rate of over 5% since 2000. As a result of increasing economic activity, demand for electric power is projected to rise at an average annual rate of 10.0%, exceeding the economic growth rate, for the next 10 years starting in 2009. However, due to lingering negative impacts of the privatization of the Tanzania Electric Supply Company Limited (TANESCO), its aging and overburdened facilities are creating a serious power supply-demand imbalance nationwide. As of 2009, TANESCO's maximum power supply capacity was only 671MW compared to the maximum demand of 769MW (-13% supply-demand gap). Also, with only 14% of its total population having access to electricity (as of 2009), Tanzania still struggles to meet the 20% target set for 2010 by the National Strategy for Growth and Reduction of Poverty ("MKUKUTA" in Swahili language) formulated in 2005.

(2) Development Policies for the Electricity Sector in the United Republic of Tanzania

MKUKUTA is organized around three clusters, one of which is "Growth and Reduction of Income Poverty." It lists "provision of reliable and affordable energy to consumers" as one of the objectives of this cluster toward improving people's living standards by supplying electric power on a stable basis. The National Energy Policy (NEP), which was formulated in 2003 in an aim to ensure reliable energy supply and increase electrification throughout the country, has been a development vision of Tanzania's energy sector, including electricity. As a specific development plan for achieving the objectives of NEP, the Power System Master Plan (PSMP) was formulated in 2008 and updated in 2009 to present a long-term plan to develop electric power sources and expand the distribution grid based on demand forecast up to 2033. This Project is positioned as the highest priority transmission line project in PSMP-2009.

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

The Yokohama Action Plan adopted at TICAD IV in 2008 focuses on "Boosting Economic Growth" as one of priority areas, which includes emphasis on the development of regional power infrastructure. Also, under the Country Assistance Program that places importance on the infrastructure sector, JICA has established the "Program for Stable Electricity Supply System." This program intends to support the construction and upgrading of urban distribution network and intercity (inter-regional) transmission facilities and the maintenance capacity building while keeping in line with NEP and PSMP. In the transmission/distribution subsector, JICA has implemented one yen loan project and five grant aid projects and is considering two additional grant aid projects (as of mid-March, 2011).

(4) Other Donors' Activity

In the electricity sector, a number of aid organizations beside JICA, including the World Bank, African Development Bank (AfDB), EU, Swedish International Development Cooperation Agency (SIDA), Norwegian Agency for Development Cooperation (NORAD), Millennium Challenge Corporation (MCC) of the United States, and Export-Import Bank of Korea (Korea Exim), are making concerted efforts together to formulate the sector

strategies and to coordinate their assistance.

(5) Necessity of the Project

In recent years, demand for power is increasing as a number of gold, nickel, cobalt, and other mining projects make progress in Shinyanga and Mwanza Regions in the northern part of Tanzania and economic growth takes place especially in Arusha and Kilimanjaro Regions. While power for the north mainly comes from hydroelectric sources in the south, the current flowing through the existing 220 kV transmission line that connects Iringa in the south and Shinyanga in the north has already exceeded the firm transfer capacity, causing rolling blackouts in the north during peak hours at night and, therefore, it is urgently needed to supplement the capacity for transmitting power from the south to the north (the five northern regions of Shinyanga, Mwanza, Mara, Arusha, and Kilimanjaro, the main beneficiary areas of this Project, have a population of about 14 million, accounting for about 30% of the total population of Tanzania). Also, construction of 400kV Zambia-Tanzania-Kenya interconnections is currently under discussion, and this Project, of which transmission lines' voltage level will be raised to 400kV in the future, is expected to facilitate the effective use of excess hydroelectric power and improve the reliability of power supply in Eastern and Southern Africa in the mid- to long-term. Therefore, its necessity and appropriateness are deemed high.

3. Project Description

(1) Project Objective(s)

This Project aims to contribute to the enhancement of living standards and vitalization of economy including the development of mining and manufacturing sector by increasing the capacity and reliability of electricity transmission from the south to the power-deprived north through the construction of 400kV double-circuit transmission lines between Iringa and Shinyanga and the extension of substations connecting these lines.

(2) Project Site/Target Area

Iringa, Dodoma, Singida, Tabora, and Shinyanga Regions. Dodoma and Singida Regions will be covered by the yen loan project.

(3) Project Component(s)

This Project will be implemented in four lots (400kv lines will be operated at 220kV until the voltage upgrade scheduled for 2020).

Lot 1: 400kV double-circuit transmission lines between Iringa and Dodoma
(total length 225km, international competitive bidding)

Lot 2: 400kV double-circuit transmission lines between Dodoma and Singida
(total length 217km, yen loan project, international competitive bidding)

Lot 3: 400kV double-circuit transmission lines between Singida and Shinyanga
(total length 225km, international competitive bidding)

Lot 4: Substations in the cities of Iringa, Dodoma, Singida, and Shinyanga
(competitive bidding among South Korean companies)

JICA, along with AfDB, will provide assistance for Lot 2 under the co-finance promotion scheme (EPSA/ACFA). The World Bank will provide assistance for Lot 1, EIB for Lot 3, and Korea Exim for Lot 4. The World Bank will also finance consulting services involving the design and construction supervision for all of the lots and the capacity building to TANESCO. AfDB will provide assistance for the project audit for all of the lots.

(4) Estimated Project Cost (Loan Amount)

44,459 million Yen (Lot 2: 12,095 million Yen, Loan Amount: 6,048 million Yen)

(5) Schedule

December 2010 to June 2015 (total 55 months). Project completion shall be determined at the time when the facilities are put into service (June 2014).

(6) Project Implementation Structure

- 1) Borrower: The Government of the United Republic of Tanzania
- 2) Executing Agency: TANESCO
- 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: This Project is classified as the "Power Transmission and Distribution Lines" according to the Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations (established in April 2002) and has characteristics that are likely to cause adverse impact on the environment.
 - ③ Environmental Permit: The Environmental and Social Impact Assessment (ESIA) report concerning this Project has been approved by the Minister of Environment of the Vice President's Office in March 2010.
 - ④ Anti-Pollution Measures: In order to prevent rivers from being muddled by eroded soil, removal of vegetation will be minimized and done manually so as to avoid large-scale soil compaction. In addition, trees and plants will be planted after the construction work.
 - ⑤ Natural Environment: Since the proposed transmission line will pass through forest reserves designated for community management for sustainable utilization, TANESCO will take charge in obtaining required permits, planting of trees after the construction work, provision of funds for the communities to grow seedlings for planting, etc. Considering the height of the transmission line and the size of land underneath the transmission line, no impact on wild animals and plants by this Project is foreseen. To protect aquatic birds from electrocution and clashing into electric cables, mitigation measures, such as putting objects to make cables more recognizable and installing new cables at the same height as the existing cables running parallel to the new ones, will be taken.
 - ⑥ Social Environment: It is estimated that this Project will necessitate acquisition of 4,669ha land and resettlement of 838 houses and their dwellers (or 1,519ha and 216 houses in the section to be financed by JICA). Resettlement will be carried out according to the procedures of the Resettlement Action Plan (RAP) to be formulated by May 2011 based on the Resettlement Policy Framework (RPF), as well as related laws of Tanzania. Completion of RAP and exercise of full compensation and resettlement is a condition of the first disbursement by AfDB and JICA. The cost of houses of resettled residents will be compensated monetarily based on the reacquisition price.
 - ⑦ Other / Monitoring: TANESCO will take charge in monitoring air quality, water quality, noise level, etc. during construction, as well as electrocution/clashing of birds, vegetation, soil erosion, and HIV/AIDS and other infectious diseases after the new transmission lines are put into service, by using prescribed forms common to all Lots. Internal and external monitoring is being planned to supervise resettlement of residents.
- 2) Promotion of Poverty Reduction: This Project fits the requirements of Poverty Project (Poverty Focused Project), as four of the five northern regions to be benefited by this Project have the poverty rate below Tanzania's national average.
- 3) Promotion of Social Development: In order to mitigate gender inequality, this Project will encourage

employment and subcontracting of women in construction work and provide materials for constructing houses for resettlement to reduce women's burden to procure them. Also, stabilized electric power supply will enable girls to do domestic chores at night, thereby lessening their burden during the day and allowing more girls to attend school. To control the spread of HIV/AIDS, contractors will conduct periodic checkups for all workers, and NGOs and TANESCO will organize HIV/AIDS awareness/prevention campaign for the workers and people living near the construction sites.

(8) Collaboration with Other Donors: In addition to JICA, the World Bank, AfDB, EIB, and Korea Exim take part in this Project. JICA, along with AfDB, will provide assistance for Lot 2 under the co-finance promotion scheme (EPSA/ACFA)..

(9) Other Important Issues: None

4. Targeted Outcomes

(1) Quantitative Effects

1) Performance Indicators (Operation and Effect Indicator)

Indicator	Baseline (2010)	Target (2015) [Expected value 1 year after project completion]
Transmission capacity between Iringa and Shinyanga (MW)	225	825
TANESCO's revenue increase (million Tanzanian shilling)	-	20
Transmission losses between Iringa and Shinyanga (%)	5	2.4
Frequency of outages of new lines (hours/year)*	-	240

* The estimated unavailability of the new line once in operation. Since this is a new line, there is no baseline to compare.

2) Internal Rate of Return

Based on the conditions indicated below, Economic Internal Rate of Return (EIRR) including all lots of this project will be 35.6%. Financial Internal Rate of Return (FIRR) will be 19.6%.

[EIRR] Cost: project cost (excluding tax), operation and maintenance cost

Benefit: the cost of constructing, operating, and maintaining an alternative thermal power plant to supply equivalent amount of electricity to the northern regions, economic effects brought by the reduction of power outages and of transmission losses.

Project Life: 30 years

[FIRR] Cost: project cost, operation and maintenance cost

Benefit: income from commissioning (difference between electric charges and long-term marginal cost associated with power generation)

Project Life: 30 years

3) Contribution to greenhouse gas reduction

This Project is estimated to reduce 26,047 tons per year (2016) in carbon dioxide equivalent and for this reason is qualified as a Climate Change ODA Loan.

(2) Qualitative Effects

Increased supply of electricity to the northern regions with improved reliability is expected to bring about the following benefits:

- Promotion and facilitation of mining development projects in Shinyanga and Mwanza Regions that will lead to economic vitalization and increased tax revenues and employment opportunities.
- Economic development and improved livelihoods in and around Kilimanjaro Region as a result of supplying electricity (one existing loan project, one existing grant aid project, and one grand aid project currently under review (as of mid-March 2011)).

5. External Factors and Risk Control

In this Project, the World Bank will finance the total cost of consulting services for the entire lots. The donors to this Project will dispatch two joint supervision missions during the first year of construction work and one mission thereafter to check the progress and identify problems. Since AfDB will supervise Lot 2 according to the ACFA guidelines, JICA will check the status of this Project on a continuing basis through AfDB and request AfDB to submit a report after each joint supervision mission. Also when necessary, JICA will directly contact the executing agency via JICA Tanzania Office and participate in joint supervisory missions.

6. Lessons Learned from Past Projects

In the ex-post evaluations of similar past projects, it has been pointed out that in projects where JICA is a co-financer, JICA needs to demand the executing agency to take strong initiative in supervising the project and coordinating with consultants and contractors. Since delays frequently occurred in the past EPSA/ACFA projects, it is necessary not only to constantly follow up on each progress report, but also to set up meetings as necessary to check the status and give advice jointly with AfDB to the executing agency.

7. Plan for Future Evaluation

(1) Indicators to be Used

- 1) Transmission capacity between Iringa and Shinyanga (MW)
- 2) TANESCO's revenue increase (million Tanzanian shilling)
- 3) Transmission losses between Iringa and Shinyanga (%)
- 4) Frequency of outages of new lines (hours/year)
- 5) Economic Internal Rate of Return (EIRR) (%)
- 6) Financial Internal Rate of Return (FIRR) (%)

(2) Timing

Two years after the project completion