



## 1. Project Data

**Project ID**

P111598

**Project Name**

TZ- Backbone Transmission Investm.(FY11)

**Country**

Tanzania

**Practice Area(Lead)**

Energy &amp; Extractives

**L/C/TF Number(s)**

IDA-47980

**Closing Date (Original)**

31-Mar-2015

**Total Project Cost (USD)**

468,450,000.00

**Bank Approval Date**

26-Aug-2010

**Closing Date (Actual)**

31-Dec-2016

**IBRD/IDA (USD)**
**Grants (USD)**

Original Commitment

150,000,000.00

0.00

Revised Commitment

65,075,177.65

0.00

Actual

60,031,658.41

0.00

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## 2. Project Objectives and Components

### a. Objectives

According to the financing agreement (FA, p.5) and the project appraisal document (PAD, p.10) the project objective was:

"to increase availability, reliability and quality of grid based power supply to the northern regions of Tanzania."



**b. Were the project objectives/key associated outcome targets revised during implementation?**

No

**c. Will a split evaluation be undertaken?**

No

**d. Components**

The project had two components with multiple sub-components.

**1: Construction of the transmission line.** (*Appraisal cost: US\$397.87 million; Actual cost: US\$222.06 million.*)

This component consisted of the construction of a 667 km long 400 kV high voltage double-circuit transmission line along the existing single circuit 220 kV line connecting the towns of Iringa, Dodoma, Singida and Shinyanga, and also the construction of a fiber optic communication line and a shield wire system as a local distribution technology. Although the capacity of the new line would be 400kV, after the completion of the project, the line was to be operated at 220kV as this stood out as the most economically efficient option. In Phase 2, the line would be upgraded to operate at 400 kV by 2020. (Phase 2 was not part of this project.)

The investment activities related to the transmission line and the fiber optic communication line were divided into three sections, each to be financed by a different donor or donors:

- Line section Iringa-Dodoma, 225 km (*Appraisal cost: US\$117.45 million; Actual cost: US\$59.30 million which was financed by the International Development Association (IDA) of the World Bank.*)
- Line section Dodoma-Singida, 217 km (*Appraisal cost: US\$113.27 million; Actual cost: US\$52.66 million which was financed by the African Development Bank and Japan International Cooperation Agency.*)
- Line section Singida-Shinyanga, 225 km (*Appraisal cost: US\$117.45 million; Actual cost: US\$66.56 million which was financed by the European Investment Bank.*)

This component also included the upgrading of the 220kV substations at Iringa, Dodoma, Singida and Shinyanga associated with the high voltage transmission line, and environmental and social mitigation measures:

- Upgrading of four 220kV substations (*Appraisal cost: US\$31.54 million; Actual cost: US\$31.52 million which was financed by the Economic Development Cooperation Fund of South Korea.*)
- Environmental and social mitigation measure (*Appraisal cost: US\$18.18 million; Actual cost: US\$12.00 million which was financed by the Government of Tanzania.*)



**2: Technical Assistance to Tanzania Electric Supply Company Limited (TANESCO).** (*Appraisal cost: US\$10.00 million; Actual cost: US\$6.20 million.*)

This technical assistance component had two sub-components:

- Implementation support. (*Appraisal cost: US\$6.0 million; Actual cost: US\$5.7 million.*) An engineering consultant was to be hired to assist TANESCO in (i) project management and supervision of design, construction and preparation for operation and maintenance of the investment undertaken in Component 1; and (ii) supervision and monitoring of the implementation of the Environmental and Social Management Plan(ESMP) and Resettlement Action Plan (RAP).
- Capacity building for TANESCO. (*Appraisal cost: US\$4.0 million; Actual cost: US\$0.50 million.*) This sub-component was to support TANESCO in (i) enhancing its environmental and social capacity to implement this and other projects; (ii) carrying out the feasibility analysis of the Rumakali Hydropower Project; and (iii) enhancing its capacity to develop public and private generation projects through the provision of legal, technical, financial, environmental, and social advisory services.

**e. Comments on Project Cost, Financing, Borrower Contribution, and Dates**

**Project Cost:** The total project cost was originally estimated at US\$407.87 million excluding physical and price contingencies. The actual project cost at project completion was US\$228.26 million which was 56 percent of the appraisal amount. This was a result of the low prices offered by the bidders under international competitive bidding for the construction of the transmission line. The ICR (p.14) states that the decrease in the price of electrical steel from US\$2.25 per pound in 2008 to about US\$1.00 per pound in 2011 was the main reason for lower than expected offers, in addition to the competitive bidding process.

**Financing:** At appraisal, the IDA funding was estimated to be US\$140 million for the first section of the transmission line from Iringa to Dodoma, including a US\$5.5 million defined as unallocated, and US\$ 10 million for the technical assistance component. The total IDA commitment was US\$150 million. (As given in Section 2.d Components above, the AfDB and JICA funding for the second section of the transmission line from Dodoma to Singida was estimated at US\$129.71, and the EIB funding for the third section of the transmission line from Singida to Shinyanga at US\$134.50 million including physical and price contingencies. The EDCF of South Korea committed 36.06 million for the financing of the upgrading of the four substations.)

Due to the savings made as a result of lower than estimated prices offered by bidders for the construction of the transmission line, at the second restructuring US\$56 million was cancelled from the IDA funds. At the third restructuring, a further US\$18.76 million was cancelled from the IDA funds due to the same reason. The funding amount for the technical assistance component was also lowered by US\$3.8 million because of the decision of the GoT to cover the cost of the feasibility analysis of the Rumakali



Hydropower Project from their own resources. At project closing, the IDA financing stood at US\$63.97 and the difference was accounted as cancelled. Since the currency of the financing agreement was SDR, the US\$ figures at project closing do not add up to US\$150 million because of the fluctuations of the exchange rate between the SDR and US\$.

**Borrower contribution:** In this project, the Ministry of Finance and Economic Affairs of Tanzania was the Borrower and the Tanzania Electric Supply Company Ltd. (TANESCO) was the Implementing Agency. At appraisal, the Borrower's contribution was estimated at US\$18.18 million to cover the cost of the implementation of the Environmental Management Plan and the Resettlement Action Plan. At project closing, the Borrower's actual contribution was US\$12.0 million (ICR, Annex 1 (b)).

**Restructurings and Dates:** There were three restructurings.

- First Restructuring (March 17, 2015): The project closing date was extended for 21 months from March 31, 2015 to December 31, 2016. During the initial phases of the project, coordination of the clearance of the bidding documents by the donors took significant amount of time which led to a 30-month delay in project implementation. Project closing date extension was given to allow TENASCO to complete the implementation of all project activities which had already started at the time of restructuring. (Restructuring Paper - RES16742, p.6)
- Second Restructuring (February 16, 2016): US\$56 million was cancelled from the IDA funds allocated for the construction of the first section of the transmission line due to savings made as a result of lower than estimated prices offered by bidders. A core indicator to monitor the construction of the transmission lines was added to the Results Framework.
- Third Restructuring (December 30, 2016): A further US\$18.76 million was cancelled from the IDA funds due to cost savings.

### 3. Relevance of Objectives & Design

#### a. Relevance of Objectives

The project objective was consistent with Tanzania's development priorities at project closing. The country had one of the lowest electrification rates among sub-Saharan countries with only 25 percent of the households on mainland Tanzania connected to the grid-supplied electricity in 2016. (Energy Access Situation Report 2016, pp.40-52) The major growth in power demand is expected in Northern Tanzania fueled by mining activities and urbanization. The construction of the backbone transmission line at 400 kV established the basis for a sustainable expansion of the grid system to northern parts of the country and it will also allow in the medium and long-term cross-border connections to Kenya and Zambia. This will integrate Tanzania's power system to the East African Power Pool and South African Power Pool from where cheaper electricity could be imported to not only supply the new load centers in the country, but also allow the expansion of the grid system in rural areas due to sufficient amount of power. The National Energy Policy (NEP) 2015 of Tanzania (p.9) defines its mission as the provision of "reliable, affordable, safe, efficient



and environment friendly energy services to all”, and the power transmission and distribution specific objective (NEP, p.15) as “to enhance power reliability and coverage of transmission and distribution networks”.

The project objective was also consistent with the World Bank’s Country Assistance Strategy FY2012-2015 (CAS 2012-15) for Tanzania. (CAS 2012-15 was extended to cover 2016.) It corresponds to “Outcome 2.1: Improved access, quality, and sustainability of electricity” where IDA-financed projects, including this project, are listed as the operations to help Tanzania expand its generation and transmission capacity, which would include measures to improve the electricity service and quality. (CAS 2012-15, p.33).

## **Rating**

High

### **b. Relevance of Design**

Load shedding and power blackouts were frequent in northern Tanzania due to lack of generation capacity in the region and the operation of the existing single circuit 220kV transmission line at full capacity, which connected the hydro and natural gas generation facilities in the south to the power demand centers in the north of the country. Therefore, the project was designed to achieve the development objective to increase availability, reliability and quality of grid-based power supply to northern regions of Tanzania through the construction of a 667 km long double-circuit 400 kV high voltage transmission line between the towns of Iringa to Shinyanga and the upgrading of the related four 220kV substations. The funding was sufficient to finance these investment activities. The construction of the new double-circuit transmission line would not only increase the electricity transmission capacity to the project area resulting in an increase in the availability of power, but also satisfy the N-1 security criterion which would increase the reliability of power supply. (The N-1 security criterion is defined as the capability of delivering electricity from one point to another, i.e. from a generation site to a substation, without any load loss in case of a failure in one of multiple transmission lines between those two points.) Upgrading of the four 220 kV substations on the transmission line would decrease the fluctuations in the frequency and voltage of power supply, which would increase its quality. The construction of a fiber optic communication line along the new transmission line was to improve the telecommunication capability of TANESCO which would improve the operation and maintenance performance quality of the system operator. The activities to be implemented under the technical assistance component aimed at strengthening the project management capacity of TANESCO which would have a positive impact on the sustainability of the project outcomes. The feasibility studies to be prepared under the technical assistance component, i.e. the feasibility study for the 222 MW Rumakali Hydropower Station, would also support the achievement of the project objective through an intervention to the power generation side, the lack of which was identified as a risk at appraisal. In conclusion, there was a clear casual chain between funding, project activities, outputs and the achievement of the project outcomes.

However, there were moderate shortcomings in the results framework. The achievement of the objectives was not fully captured by the project development objective (PDO) level results indicators. Other than the reduction in power outages caused by malfunctions in the transmission system, which is related to the reliability of power supply, the PDO level indicators, which captured the achievements in increasing the



transmission capacity and the reduction in transmission losses, were not directly linked to the project objective. The former is about the availability of transmission capacity which is a project output, whereas the latter is about the efficiency of power transmission which is not defined as a project objective. However, regarding the project objective to increase availability of electricity supply, the results framework should have captured the increase in the amount, time and duration of electricity supplied to the customers in the project area before and after the project.

**Rating**  
Substantial

#### 4. Achievement of Objectives (Efficacy)

##### **Objective 1** **Objective**

To increase availability of grid based power supply to northern regions of Tanzania.

##### **Rationale**

##### **Outputs**

- The construction of the 225 km long 400 kV double-circuit transmission line between Iringa and Dodoma was completed. This project activity was financed by the IDA.
- The construction of the 445 km long other two sections of the transmission line from Dodoma to Shinyanga was completed, which was financed by other donors.
- The upgrading of the four substations was completed. This project activity was financed by the EDCF of South Korea.
- Technical assistance was provided for the preparation of a power purchase agreement with a private investor for the 100 MW Singida Wind Farm project.
- The preparation of the feasibility study for the 222 MW Rumakali Hydroelectric Power Plant was not implemented. TANESCO decided to finance this feasibility study from their resources.
- An owner's engineer firm financed by IDA funds supported TANESCO in project management, including fiduciary aspects and social and environmental safeguards.
- The ICR (p.12) states that fiber optical communication line was also constructed. The results framework did not include any indicator to monitor this project activity.

##### **Outcomes**

- The transmission capacity between the towns of Iringa and Shinyanga (henceforth the subsystem) increased to the target value of 1,200 MW from a baseline value of 200 MW.



- The cumulative duration of outages linked to the malfunctions in the subsystem was reduced to four days from a baseline value of seven days per year. The target was three days per year. However, as the project team later clarified, the ICR reports only the measurements made during the first three months of 2017 after project closing. The project team requested TANESCO to provide an update of the data for 2017, but such an update was not received by the project team before the posting of this review.

A technical report of Energy Sector Management Assistance Program (ESMAP) titled “Beyond Connections – Energy Access Redefined” defines (p.73) the availability of power supply as “the amount of time during which electricity is available”. The results framework did not include any outcome indicator measuring the duration of power supply in total number of hours per day, i.e. 24-hour period, nor in the number of evening hours when demand for power is generally the highest. The first PDO indicator of the project, i.e. maximum transmission capacity in the subsystem (MW), does not capture the increase in the availability of power supply, either, because it is related to the increase in transmission capacity.

On the other hand, the cumulative duration of outages, which are directly related to the reliability of power supply, can be used as a proxy to measure the increase in power availability: a decrease in the cumulative duration of outages corresponds to a higher availability of power supply. After project closing, the cumulative duration of outages dropped to four days from a baseline value of seven days per year. The target was three days. Therefore, it can be argued that the project has nearly achieved its objective to increase availability of power supply. However, according to the information provided by the project team, the measurements made after project closing cover only the first three months of 2017. Although the project team requested TANESCO to provide an update of the data showing cumulative duration of outages for 2017, the project team did not receive any update. Therefore, it is not clear how a comparison could be made between the target values and the achievements of the project after closing.

However, additional evidence is available in other donors’ project completion reports to evaluate the achievement of this objective. EDCF Project Completion Report (p.27) gives the baseline, target and actual values of consumable demand of electricity in four provinces of the project area. According to that information, in the northern end of the transmission line, i.e. Shinyanga, the baseline value of consumable demand for electricity was 252,897 MWh and the target was to increase this amount to 337,365 MWh. At project completion, consumable demand for electricity in Shinyanga increased to 483,306.7 MWh, which is 175 percent higher than the target value. The other three project cities have also experienced similar increases in the consumable demand for electricity, which proves that the project was successful in increasing the availability of power supply in the project area.

**Rating**  
Substantial

**Objective 2**  
**Objective**





To increase reliability of grid based power supply to northern regions of Tanzania.

## Rationale

### Outputs

- The construction of the 225 km long 400 kV double-circuit transmission line between Iringa and Dodoma was completed. This project activity was financed by the IDA.
- The construction of the 445 km long other two sections of the transmission line from Dodoma to Shinyanga was completed, which was financed by other donors.
- The upgrading of the four substations was completed. This project activity was financed by the EDCF of South Korea.

### Outcomes

- The cumulative *duration* of outages linked to the malfunctions in the subsystem was reduced to four days from a baseline value of seven days per year. The target was three days per year. However, measurements made after project closing covers only the first three months of 2017. The project team requested TANESCO to provide an update of the data for 2017, but such an update was not received by the project team before the posting of this review.
- The *number* of power outages linked to the malfunctions in the subsystem was reduced to four from a baseline value of 30 per year. The target was to reduce the number of power outages to ten. However, measurements made after project closing covers only the first three months of 2017. According to the additional data the project team received from TANESCO, the number trippings in the newly built transmission line was three in 2017. The data in the ICR included outages caused by events unrelated to the performance of the transmission line.

The reliability of power supply is defined in terms of frequency and duration of unscheduled outages (ESMAP Report, p.73). The project outcomes listed above show that the frequency of outages decreased from 30 to four, which is lower than the target value of ten, and the duration of outages decreased from a baseline value of seven to four days. However, as was informed by the project team, the measurements of actual values were taken during the first three months of 2017 after project closing. The additional data received by the project team from TANESCO shows that the number of trippings in the system for 2017 was three.

Overall, based on the additional data provided by the project team, the achievement of this objective is rated Substantial

### Rating

Substantial





### Objective 3

#### Objective

To increase quality of grid based power supply to northern regions of Tanzania.

#### Rationale

#### Outputs

- The upgrading of the four substations was completed. This project activity was financed by the EDCF of South Korea.

#### Outcomes

The quality of power supply refers to the level and stability of voltage. Therefore, the upgrading of the four substations, which was financed by the EDCF of South Korea, must have improved the regulation of voltage in the project area. However, neither the results framework of this project, nor the project completion report prepared by the EDCF of South Korea includes an indicator monitoring the improvement in voltage fluctuations. There is no evidence provided to confirm that the project objective to increase the quality of power supply has been achieved. The fourth PDO indicator, which measured the *number* of outages in the subsystem, in other words the *frequency* of outages rather than their *duration*, could be used as a proxy indicator. Yet, due to the mismatch between the data collection period of the target figure, which was annual, and that of the actual figure, which was measured for the first three months of 2017, this indicator could not be used to validate the achievement of this objective as reported in the ICR. However, according to the additional data received by the project team from TANESCO, the number of trippings in the transmission line was recorded as three for 2017, which is lower than the target of ten.

In Annex 7 of the ICR, which is titled "Summary of Borrower's ICR and/or Comments on Draft ICR", it is stated that after the construction of the transmission line there was a reduction in dips and swells, and also diesel generators were used less to support system voltage (ICR, p.32). Although TANESCO later confirmed that the regulation in the project area had improved, there is no evidence to back these assertions.

Overall, due to the additional information provided by the project team about the number of outages in the transmission line which is used as a proxy for validation, IEG rates the achievement of this objective as Substantial, but barely so.

#### Rating

Substantial



## 5. Efficiency

### Economic Analysis

Four alternatives were considered for delivering power to northern Tanzania: (i) building a new power plant in the north was rejected due to limited options for power generation; (ii) importing power from Kenya was not found to be a viable option due to the limited availability of power in Kenya and restricted transmission capacity between the two countries; (iii) off-grid electrification solution was also rejected, because the power output would not be high enough to meet the power demand in northern Tanzania which had been growing fast due to urbanization and mining investments. Therefore, the construction of a new 400 kV double-circuit transmission line connecting the low-cost power generation facilities in the south to the load centers in the north of the country stood out as the only viable option.

In order to decide on the configuration of the 400kV transmission line, five alternatives were used to carry out the economic analysis of the project. Cost of generation in the south and the economic cost of transmission, which included the investment cost of the transmission line, operation and maintenance cost, cost of outages (or energy not served) and the cost of transmission losses, were included in the economic analysis. The net present value (NPV) and the economic rate of return (ERR) of different line configurations were calculated by comparing the costs to the valuation of power in the north. All the key assumptions were adequately identified and sound. The assessment period was 30 years. As a result, the fourth configuration, i.e. construction of a 400kV double-circuit line with both circuits strung and operated at 220 kV in the first phase, and system upgrade to 400 kV in the second phase, was found to be the most economical with the highest ERR of 42.7 percent and NPV of US\$2.61 billion at a discount rate of 10 percent. At appraisal, these calculations were made for the whole project including both Phase 1 and Phase 2, although the IDA financing was provided for a part of the Phase 1 project activities. When benefits from CO2 emission reduction were included in the economic analysis, the ERR increased to 47.8 percent and the NPV to US\$3.25 billion.

At project closing, the same methodology was used for economic analysis, but this time the calculations were made for the first phase of the project only. This resulted in an ERR of 42.8 percent and an NPV of US\$1.6 billion. The ICR compares these figures to the appraisal figures of 28.9 percent for the ERR and US\$1.4 billion for the NPV which were calculated for Phase 1 of the project. The ICR does not report the ERR and NPV when benefits from CO2 emission reduction are included in economic analysis.

The reason for the sharp increase in the ERR and the NPV is the cost savings achieved due to the lower offers received through international competitive bidding for the construction of the transmission line, which was mostly caused by the sharp decline in the price of electrical steel. In Annex 3: Economic and Financial Analysis, the ICR (p.26) reports the total estimated cost of the transmission line and the four substations at appraisal at US\$468.45 million and the actual cost at US\$176.42 million. However, US\$468.45 is the estimated total project cost at appraisal (PAD, p.12), not the cost of the transmission line and four substations only. Furthermore, the ICR does not explain how the actual cost of US\$176.42 million was calculated for the transmission line and four substations.

### Financial Analysis



Project-level financial analysis was carried out by using the same conceptual approach at appraisal. The main financial benefit was defined as the revenue from electricity transmission which is calculated by high voltage retail tariff minus long run marginal cost of generation. The main financial costs were the capital expenditures and O&M costs, which were assumed to be 1 percent of total investment cost. The assumptions for financial analysis were adequately defined and sound.

At project closing, the FIRR was calculated at 19.9 percent compared to 19.6 percent at appraisal. The NPV calculation was US\$201.3 million, which is lower than the appraisal calculation of US\$381 million. The ICR (p.27) states that “the NPV is lower because of the lower investment costs”. According to the information provided by the project team, the FIRR calculation at appraisal covered both Phase 1 and 2; however, at project closing the FIRR was calculated for Phase 1. The project team further commented that since the investment cost and the revenue stream for Phase 1 was lower than the appraisal figures, the NPV calculation at project closing resulted in a lower figure.

### **Operational and Administrative Efficiency**

The project implementation period was estimated to be four years at appraisal. This was a realistic estimate given the scope of work. However, due to delayed effectiveness of the project by two months and the procurement problems at the initial stages of the project caused by coordination issues among five donor institutions, first major contracts could only be awarded in August 2013 almost three years after the approval of the project by the World Bank Board. This resulted in a one-time extension of the project closing date by 21 months. Although the construction works started with some considerable delay, the owner's engineer hired by the project funds improved the operational efficiency of the project by supporting TANESCO in managing the project, which did not have sufficient institutional capacity especially in project supervision. The project activities were completed by the extended project closing date.

Overall, despite some concerns about the methodology used in the calculations of the ERR and FIRR at project closing, IEG notes that there was a substantial reduction in the project cost and the completion of the construction works was less than four years as planned at appraisal. However, due to insufficient evidence in the ICR to come to a judgment about the achievement of project objectives, it was not possible to conclude that the project objectives were achieved efficiently. In other words, the transmission line and related works, which are project outputs, might have very well be completed under budget, but there might not have been any improvement in the reliability and quality of the power supply. The project team later provided additional data as evidence for the achievement of the second and the third objectives. Therefore, IEG rates the efficiency of the project in achieving project objectives Substantial.

### **Efficiency Rating**

Substantial



a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	28.90	0 <input checked="" type="checkbox"/> Not Applicable
ICR Estimate	✓	42.80	0 <input checked="" type="checkbox"/> Not Applicable

\* Refers to percent of total project cost for which ERR/FRR was calculated.

## 6. Outcome

The project objectives are highly consistent with Tanzania's development priorities and the Bank's country assistance strategies. The results framework had moderate shortcomings in capturing the achievement of the project objectives. The achievement of the project objectives are rated Substantial which was supported by evidence found by the IEG in another donor's project report and the additional data provided by the project team. Lastly, the project efficiency is rated Substantial, based on the additional data provided by the project team for the achievement of the project objectives. Overall, the outcome is rated Satisfactory.

### a. Outcome Rating

Satisfactory

## 7. Rationale for Risk to Development Outcome Rating

At appraisal, two key factors were identified by the PAD that could affect the sustainability of the project's development objective: (i) sound and timely expansion of least cost generation in Tanzania; and (ii) financial viability of TANESCO (PAD, p.17). The ICR does not address these two key factors and rates the risk to development outcome as low.

However, although the financing agreement (pp.15-16) included two financial indicators as legal covenants, i.e. a debt service cover ratio equal to or greater than 1.3 to 1.0, and an earnings-before-interest-taxes-depreciation-and-amortization (EBITDA) margin equal to or greater than 20 percent, TANESCO failed to comply with both (ICR, p.7) and the Bank did not take any action to remedy this situation. Furthermore, according to the information in the online news outlets, TANESCO sought an 18.19 percent tariff increase to improve its financial situation at the end of 2016 when project was closed, yet, the Energy and Water Utilities Regulatory Authority (EWURA) approved an 8.53 percent tariff increase. (<https://www.reuters.com/article/tanzania-energy/tanzania-raises-power-tariffs-by-8-5-pct-idUSL5N1EQ07K>) Therefore, TANESCO might face difficulties in properly implementing its operation and maintenance activities due to lack of funds, and the sustainability of new investments both in the transmission and generation sides would be at risk.



In addition, the sound and timely expansion of least cost generation in Tanzania in medium term poses a moderate risk for the sustainability of the project development outcomes, as well. IEG notes that the project resulted in a major increase in the transmission capacity between the generation sites in the south of the country and major load centers in the north. However, given the rapid increase in power demand, a slow-down in the expansion of the power generation capacity could cause a deterioration in the availability, reliability and quality of power supply, not only in the northern regions of Tanzania, but all over the country. The sustainability of the project development outcomes will depend on how successful Tanzania will be in developing its hydroelectric and natural gas-fired generation capacity in the short and medium term.

In conclusion, due to the financial viability risk of the system operator TANESCO, and the insufficient generation capacity risk in the medium term, IEG rates Risk to Development Outcome as Substantial.

#### **a. Risk to Development Outcome Rating**

Substantial

### **8. Assessment of Bank Performance**

#### **a. Quality-at-Entry**

At appraisal, northern regions of Tanzania, where demand for electricity had steadily increased because of urbanization and mining activities, lacked sufficient and reliable power supply due to the existing 220 kV transmission line operating at full capacity. The project was expected to not only solve this power supply problem, but also create the backbone of the 400kV transmission grid which was planned to be connected to the grids of neighboring countries with further expansion of the grid which would result in the integration of the power pools in Eastern Africa and Southern Africa. Therefore, the strategic relevance of the project to the conditions in Tanzania was very high.

The project benefited from the Bank's experience gained in similar projects. Furthermore, the project design included the lessons learned during the implementation of the Tanzania Energy Development and Access Expansion Project (P101645). Although the project was the first 400kV transmission line investment in Tanzania, the technical design was simple and the proposed high voltage alternating current (HVAC) line was a proven technology. Five alternatives were considered for the construction of the HVAC line between Iringa and Shinyanga and the one with the highest ERR and NPV was chosen which was the construction of a double-circuit 400kV operated at 220kV in the first phase. Assumptions for the economic and financial analyses were strong and the analyses were sound (PAD, Annex 9).

Regarding the safeguards policies, the second component of the project included activities to strengthen institutional capacity of TANESCO in the implementation of the Environmental and Social Management Plan (ESMP) and the Resettlement Action Plan (RAP). Provisions for safeguard policy compliance were adequately defined. The same project component also included activities to support TANESCO in procurement. The risks were realistically assessed and the mitigation measures were sufficient. However, as



the ICR (p.7) states the risk of poor coordination among the donors during the implementation stage was not identified at appraisal. The Joint Missions arrangement agreed by the donors was not sufficient to improve donor coordination in procurement, which resulted in a significant delay in project implementation.

However, as explained in the Relevance of Design section, the results framework had moderate shortcomings. The project objective did not capture the outcome of technical assistance activities. Monitoring and evaluation (M&E) arrangements were to capture the progress in the implementation of the investment activities, however, the PDO level indicators were not sufficient to monitor the achievement of the project objectives. The risk of lack of coordination among the donors was not captured at appraisal, which eventually caused lengthy delays in project implementation.

Overall, due to moderate shortcomings, IEG rates the quality at entry as Moderately Satisfactory.

### **Quality-at-Entry Rating** Satisfactory

#### **b. Quality of supervision**

There were three Task Team Leader (TTL) changes during project implementation of six years. First two TTLs were stationed in Tanzania. Supervision missions were held regularly. Faced with coordination problems among the donors related to procurement process, the project team's main agenda during the two years of project implementation was to solve these problems. After the signing of the major construction contracts, the Bank's focus was on the implementation progress. The Bank, together with the owner's engineer, took proactive action to speed up project implementation. However, the M&E framework did not include adequate indicators to monitor the progress in implementation. Furthermore, due to the nature of the investment activities, PDO level indicators, which were not fully aligned with the project activities, could only be measured after project closing.

Bank supervision did not result in a revision of the M&E framework to better monitor project implementation and the achievement of the project objectives. No action was taken for TANESCO to comply with the financial covenants of the loan agreement.

The Bank's supervision of fiduciary and safeguards aspects was adequate. During supervision missions, the financial management of the project was found satisfactory. The project design included specific activities to improve the institutional capacity of TANESCO in the implementation of safeguard policies. As a result of the Bank's close supervision, the project was compliant with the safeguard policies.

Overall, due to the moderate shortcomings in the Bank supervision, such as lack of action to revise the M&E framework to better monitor the project implementation and the achievement of the objectives and to ensure TANESCO's compliance with the financial covenants, the Quality of Supervision is rated Moderately Satisfactory.





### **Quality of Supervision Rating**

Moderately Satisfactory

### **Overall Bank Performance Rating**

Moderately Satisfactory

## **9. Assessment of Borrower Performance**

### **a. Government Performance**

The Government of Tanzania's (GoT) ownership of the project was strong. The GoT, with financial and technical support from an ongoing IDA project, i.e. Tanzania Energy Development and Access Expansion Project (P101645), took the initiative to prepare the Backbone Transmission Project. The project was included in the Capital Investment Plan of TANESCO. The GoT cooperated with the Bank and the other donors to overcome the implementation problems.

On the other hand, as the ICR (p.19) states, there were moderate shortcomings in GoT's performance. Because of the delay in the issuance of the legal opinion by the country's Attorney General, the project became effective two months later than originally planned. The slow progress in budgeting processes resulted in a delay in the compensation payments to 2,389 project-affected people. This issue was also recognized by the GoT and in the Borrower's ICR under lessons learned, the GoT requested some flexibility from the lenders in future projects to include the cost of such compensations in the loan amount (ICR, p.33). Lastly, the GoT issued a restructuring request letter only one month before the original project closing date, although the need for such a restructuring was recognized during the midterm review six months earlier.

Overall, IEG rates Government Performance as Moderately Satisfactory.

### **Government Performance Rating**

Moderately Satisfactory

### **b. Implementing Agency Performance**

TANESCO was the sole implementing agency of the project. At appraisal, the implementation arrangements were defined in detail. However, according to the ICR (p.19), during the initial years of the project implementation it became apparent that TANESCO lacked capacity to implement a project at this scale. This manifested itself especially in TANESCO's handling of procurement related issues, such as delays in replying to donor's objections or comments to procurement solutions. Therefore, a separate unit was established, which was responsible for overseeing the implementation of the project. As the project implementation progressed, the project implementation unit (PIU) improved its implementation capacity by appointing key staff.

With the support of the owner's engineer, which was hired under Component 2, the PIU monitored the





progress of works through weekly and monthly reporting. This allowed PIU to process payments corresponding to work completed (ICR, p.21). Furthermore, TANESCO was successful in strengthening its environmental and social capacity with the support of the project. At project closing, TANESCO had already upgraded its environment unit to a department headed by a manager. TANESCO implemented the ESIA and the ESMP satisfactorily and the safeguard policies were complied. Regarding the compensation payments to the project-affected people (PAP), although there were delays caused by budgetary problems as explained in the Government Performance section above, and TANESCO's internal processes, there was no outstanding payment to any of the 2,389 PAPs at project closing.

The PIU complied with the quarterly interim financial reporting requirements and there was qualified staff in charge of financial management and disbursement arrangements. Internal controls were in place and there were no major issues regarding financial management. In close cooperation with the owner's engineer, TANESCO "closely monitored all procurement procedures with due diligence and in accordance with the legal agreements" (ICR, p.10).

However, TANESCO failed to comply with the financial covenants of the loan agreement. IEG regards this as a moderate shortcoming, since this also raises concern about the sustainability of the project outcomes which is related to the financial viability of TANESCO. Because of TANESCO's non-compliance with the financial covenants and the shortcomings in the initial years of the project implementation especially in procurement, IEG rates the Implementing Agency Performance Moderately Satisfactory.

### **Implementing Agency Performance Rating**

Moderately Satisfactory

### **Overall Borrower Performance Rating**

Moderately Satisfactory

## **10. M&E Design, Implementation, & Utilization**

### **a. M&E Design**

The objectives were clearly defined, but they were closer to the output level within the results chain. The indicators partially reflected the objectives. For example, the first PDO indicator, i.e. maximum transmission capacity in the subsystem in MW, captured the increase in the transmission capacity only, rather than the increase in the availability of power supply. The increase in the quality of power supply was only monitored through the reduction in the number of outages. Although one sub-component of the project was related to the rehabilitation of four substations, there was no indicator measuring the outcome of these rehabilitation works. The Borrower commented that after the completion of the project there was a reduction in the outages, dips and swell, and the usage of diesel generators used to support system voltage was also minimized (ICR, p.32). IEG understands that TANESCO was able to measure such voltage related changes in the system, which are directly related to the quality of power supply. But these indicators were not included in the M&E design of the project. Despite these shortcomings, the indicators related to the construction of the transmission line were



measurable in terms of numbers, timing and location. As the implementing agency, TANESCO was responsible for providing this information.

The M&E design did not capture the achievements in the technical assistance component of the project. As the ICR (p.8) states, Intermediate Indicator 5, i.e. timely and satisfactory implementation support provided during the construction of the transmission line, is not a measurable indicator in terms of numbers, timing and location. The M&E framework only monitored the number of members of staff trained in environmental and social issues, which captures the achievement at the output level.

## **b. M&E Implementation**

The M&E activities were restricted to the monitoring of the project implementation progress, especially in the construction of the transmission line. TANESCO and the owner's engineer provided information about project implementation progress which resulted in the timely intervention to speed up the process. As a result, the project was completed by the extended closing date.

On the other hand, although the second and the third PDO indicators measured the outages in the subsystem on an annual basis, according to the information provided by the project team, after project closing, the outages were measured only during the first three months of 2017. Therefore, it was not clear how a comparison could be made with the baseline figures and the actual achievements. Despite its apparent weaknesses, the Bank did not take any action to revise the M&E framework to better capture the progress towards achieving the project objectives.

## **c. M&E Utilization**

Due to the nature of the investment activities, it was assumed that an increase in the transmission capacity would automatically result in an increase in the availability, reliability and quality of power supply, therefore the M&E data were used to monitor the timely progress of the investment activities, especially those related to the construction of the transmission line. Even though it was apparent in early project implementation phases that the technical feasibility study for hydropower project, which was monitored by Intermediate Indicator 7, and the development of the wind power plant project, which was monitored by Intermediate Indicator 8, could not be achieved, this did not lead to a strategy change.

### **M&E Quality Rating**

Modest

## **11. Other Issues**



## a. Safeguards

The project was classified as Category A under OP/BP 4.01 (Environmental Assessment), and OP/BP 4.04 (Natural Habitats), OP/BP4.11 (Physical Cultural Resources) and OP/BP 4.12 (Involuntary Resettlement) were triggered.

**Environmental Assessment OP/BP 4.01:** The project was initially classified as Category B under this safeguard policy. However, to have a consistent approach to the implementation of safeguards among the donors, the project's classification was changed to A at Quality Enhancement Review. An Environmental and Social Impact Assessment (ESIA) acceptable to the Bank was finalized in November 2009 and disclosed in the InfoShop in December 2009. In-country disclosure of the ESIA was also completed at the same time (PAD, p.27).

The project implementing agency TANESCO was provided with technical assistance to strengthen its capacity in the implementation of safeguard policies. TANESCO had a fully staffed department responsible for environmental issues. The department was led by a manager and the number of members of staff increased from seven to 18 (ICR, p.9).

There were no significant issues of non-compliance with the environmental safeguards policy. TANESCO and contractors' implementation of the ESIA and the Environmental and Social Management Plan was satisfactory to the Bank (ICR, p.9).

**Involuntary Resettlement OP/BP 4.12:** Along with the ESIA, a resettlement policy framework (RPF) acceptable to the Bank was finalized in November 2009 and disclosed in the InfoShop in December 2009. In-country disclosure of the RPF was also completed at the same time (PAD, p.27). Based on this RPF, an action plan was prepared for the resettlement of 2,389 people.

The major problem in the implementation of the resettlement action plan (RAP) was the timely payments of compensation. The budgetary processes were the main cause of delay in the compensation payments. Another factor was the difficulties in the measurement of properties due to the customary nature of land ownership. Because of these two reasons, the grievance committee received complaints related to resettlement, yet, these grievances were resolved and by project closing there was no unresolved issue identified.

**Other Safeguard Policies:** The ICR did not provide information about the implementation of other safeguard policies. The project team confirmed that the project was compliant with OP/BP 4.04 (Natural Habitats) and OP/BP4.11 (Physical Cultural Resources).

## b. Fiduciary Compliance



## Financial Management

In line with the Bank guidelines, a financial management (FM) assessment of TANESCO was carried out and the overall residual risk of TANESCO was rated moderate which satisfied the Bank's minimum requirement for OP/BP 10.02 - Financial Management (PAD, p.64). Project FM arrangements were given in detail in Annex 7 of the PAD.

Although there were some shortcomings identified at appraisal with the FM capacity of TANESCO, such as the outdated FM manual, the delays in the submission of the audited accounts during the three years before the approval of the project, the ICR (p.10) states that during project implementation, FM and disbursement arrangements were properly implemented. Staff in charge of FM was qualified and project's internal controls were in place. Quarterly interim financial reporting requirements were fully complied. The project audit reports were also submitted without any delay and they were unqualified (ICR, p.10).

Counterpart funding was to cover the cost of the implementation of the Environmental Management Plan and the Resettlement Action Plan. Due to slow budgetary processes, funds were not available for timely compensation payments to the people-affected by the project. However, at project closing, there was no outstanding compensation payment.

The financing agreement included two financial covenants: TANESCO was to achieve (i) a debt service cover ratio equal to or greater than 1.3 to 1.0; and (ii) an EBITDA margin equal to or greater than 20 percent (FA, p.16). TANESCO failed to comply with both covenants.

Due to the savings made as a result of lower than expected prices offered at bids, at the second restructuring in February 2016, US\$56 million was cancelled from the IDA funds. At the third restructuring in December 2016, an additional US\$18.76 million was also cancelled due to the same reason. The ICR does not report any misuse of funds.

## Procurement

Due to the number of donors, the project had a complex procurement design. All procurement of goods, works and services financed by the donors was to be conducted in consideration of the relevant donor's procurement guidelines (PAD, p.24). Although the Bank's standard bidding document was to be used for transmission line works, the decision to have a joint bidding process required no objection from all donors. Differences in the procurement guidelines of donors led to a prolonged procurement process and the first major contracts could only be signed after a 30-month delay (ICR, p.10). TANESCO's limited procurement capacity in the initial years of project implementation was the other reason for delay in procurement. Under Component 2, TANESCO was provided technical assistance in procurement.

Procurement reviews did not reveal any irregularities in the procurement aspects of the project implementation (ICR, p.10). Owner's engineer supported TANESCO in the procurement procedures which were monitored in accordance with the provisions of the legal agreements. As explained in the previous sections, as a result of international competitive bidding process and lower electrical steel prices, a significant reduction in project cost was achieved.



**c. Unintended impacts (Positive or Negative)**

None.

**d. Other**

None.

**12. Ratings**

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Satisfactory	---
Risk to Development Outcome	Negligible	Substantial	TANESCO's financial viability and uncertainties about the increase in generation capacity pose substantial risks to the sustainability of project outcomes.
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	---
Borrower Performance	Moderately Satisfactory	Moderately Satisfactory	---
Quality of ICR		Modest	---

**Note**

When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.

The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

**13. Lessons**

Two lessons are derived from the ICR by IEG.

**Absence of mechanisms for the coordination of procurement decisions in a multi-donor-financed project can result in delays in project implementation.** The need for close coordination among donors during project implementation to ensure efficient procurement and project implementation was noted at appraisal (PAD, p.12). However, the lack of mechanisms to coordinate procurement decisions among donors, especially when there were disagreements, resulted in a 30-month delay until the first major contracts could be signed.



**The quality of the owner's engineer hired to support the implementing agency (IA) in project implementation can not only result in an on-time and successful completion of the project activities, but also help the IA strengthen its weak institutional capacity to be utilized in future projects.** Despite the initial long delay in signing the major contracts for the transmission line, the support from a highly experienced and reputable owner's engineer ensured the successful completion of the project activities. At the project closing date, an additional extension was not needed because there were no delays in construction works at that point. The same owner's engineer was also instrumental in strengthening TANESCO's institutional capacity in project implementation, including safeguard policies.

#### 14. Assessment Recommended?

Yes

Please explain

A detailed assessment of the project would provide additional evidence to evaluate the achievement of the project objectives while assessing the project's social and economic development impact in the project areas.

#### 15. Comments on Quality of ICR

The overall narrative of the ICR is concise and candid. It is internally consistent. Annex 1, Project Costs and Financing is well prepared.

However, rather than providing an outcome-driven explanation of the project, the ICR is more of an implementation narrative. The ICR relies on three PDO indicators to assess efficacy, which do not fully capture the project outcomes. There is not sufficient evidence in the ICR on the achievement of the project objectives. Despite the explanation provided by the project team, the ICR's economic and financial analysis is still confusing. The discussion on the price of electrical steel is unnecessarily long. The ICR refers to the Tanzania Country Partnership Framework for FY2018-2022, which had not yet been approved by the Board. The Bank Performance, Borrower's Performance and M&E sections could have benefited from more detailed discussions. The ICR does not provide an explanation why TANESCO failed to comply with the financial covenants of the financing agreement. The lessons learned are formulated mostly as findings or suggestions, but lacking implications for similar operations. The discussion of the safeguards triggered by the project was incomplete.

##### a. Quality of ICR Rating

Modest

