AFRICAN DEVELOPMENT FUND

COMPLETION REPORT

OF

PROJECT

Project Number:
Ethiopia: P-Z1-FA0-008 & P-Z1-FA0-023
Djibouti: P-Z1-FA0-010 & P-Z1-FA0-025

Ethiopia-Djibouti Power Interconnection Project

Energy, Environment and Climate Change (ONEC)

COMPLETION REPORT of PROJECT : Ethiopia: P-Z1-FA0-008 & P-Z1-FA0-023 Djibouti: P-Z1-FA0-010 & P-Z1-FA0-025

A. PROJECT DATA AND KEY DATES

I. BASIC INFORMATION

Project Number	Project Name	Country (ies)	
Project Number: Ethiopia: P-Z1-FA0-008 & P-Z1-FA0-023 Djibouti: P-Z1-FA0-010 & P-Z1-FA0-025	Ethiopia-Djibouti Power Interconnection Project	Ethiopia and Djibouti	
ID Number of all Lending Instrument(s)		**Department**	**Environmental Classification**
Ethiopia: 2100150008944 (Main Loan) 2100150017643 (Supplementary Loan) Djibouti: 2100150008945 (Main Loan) 2100155013217 (Supplementary Grant)		Energy, Environment and Climate Change Department (ONEC)	Category II
Original Commitment Amount	**Amount Cancelled**	**Amount Disbursed**	**Percent Disbursed**
Ethiopia: Main Loan: UA 20.88 million Supplementary Loan: UA 5.20 million Djibouti: Main Loan: UA 17.60 million Supplementary Grant: UA 15.72 million	Ethiopia: Main Loan: UA 0.62 million Supplementary Loan: UA 0.64 million Djibouti: Main Loan: UA 0.42 million Supplementary Grant: Extension approved to allow for completion of substation works and procurement of additional materials	Ethiopia: Main Loan: UA 20.26 million Supplementary Loan: UA 4.56 million Djibouti: Main Loan: UA 17.18 million Supplementary Grant: UA 10.84 million	Ethiopia: Main Loan: 97.03% Supplementary Loan: 87.69% Djibouti: Main Loan: 97.61% Supplementary Grant: 71.03%
Borrower			
The Federal Democratic Republic of Ethiopia (GoE) and the Republic of Djibouti (GoD)			

Executing Agency(ies) [List the main Ministries, Project Implementation Units, Agencies and civil society organizations responsible for implementing project activities.]		
Ethiopia: Ministry of Finance and Economic Development (MoFED) Ethiopian Electric Power Corporation (EEPCo) Project Implementation Unit (EEPCo)	Djibouti: Ministry of Economy, Finance and Planning Electricité de Djibouti (EdD) Project Implementation Unit (EdD)	Joint Implementation Arrangement: Ministerial/Executing Agencies Joint Steering Committee Joint Project Coordinator (JPC)
Co-financers and other External Partners [List all other sources and amounts of financing, technical assistance or other resources used in this project]		
EEPCo: USD 10.27 million (UA 6.42 million) **EdD: USD 2.17 million (UA 1.35 million)**		

II. KEY DATES

Project Concept Note Cleared by Ops. Com.	**Appraisal Report Cleared**	**Board Approval**
NA	**Main Loan: November 2004** **Supplementary Loan/Grant September 2008**	**Main Loan: November** **Supplementary Loan/Grant: November 2008**
Restructuring(s)		

	Original Date *MM/DD/YY*	**Actual Date** *MM/DD/YY*	**Difference in months**
EFFECTIVENESS	**1/1/2005**	**8/10/2006**	19.5
MID-TERM REVIEW	**NA**	**NA**	NA
CLOSING (All Loans)	**12/31/2010**	**12/31/2010**	0.0
CLOSING (Djibouti Grant)	**12/31/2010**	**12/30/2011**	12.1

III. RATINGS SUMMARY

Insert notes from the relevant tables in the different sections of the PCR. For example, please insert the "Overall Output score" in Section D.I. in the "Achievement of Outputs" box below.

CRITERIA	SUB-CRITERIA	RATING
PROJECT OUTCOME	Achievement of Outputs *(insert score from Section D.I.)*	4
	Achievement of Outcomes *(insert score from Section D.II)*	3
	Timeliness *(insert score from Section F.4)*	3
	OVERALL PROJECT OUTCOME *[Score is calculated as an average of the ratings]*	3
BANK PERFORMANCE	Design and Readiness *(insert score from Section I.I)*	3
	Supervision *(insert score from Section I.I)*	3
	OVERALL BANK PERFORMANCE *[Score is calculated as an average of the ratings]*	3
BORROWER PERFORMANCE	Design and Readiness *(insert score from Section I.I)*	3
	Implementation *(insert score from Section I.I)*	3
	OVERALL BORROWER PERFORMANCE *[Score is calculated as an average of the ratings]*	3

IV. RESPONSIBLE BANK STAFF

POSITIONS	AT APPROVAL	AT COMPLETION
Regional Director	Mr. F. Black	Mr. S. Kayizzi-Mugerwa
Sector Director	K. Bedoumra	Ms. Héla Cheikhrouhou

Sector Manager	**Mr. F. Matondo - Fundani**	**Mr. E. Nzabanita**
Task Manager	**Mr. Babu Ram**	**Mr. D. Lekoetje**
PCR Team Leader		**Ms. S. M Alissoutin (Financial Analyst)**
PCR Team Members		Mr. Bizuneh Fikru (Consultant) and Mr. S. Asfaw (Senior Energy Officer ETFO)

B. PROJECT CONTEXT

Summarize the rationale for Bank assistance. State: -what development challenge the project addresses, -the Borrower's overall strategy for addressing it,-Bank activities in this country (ies) and sector over the past year and how they performed, and -ongoing Bank and other externally financed activities that complement, overlap with or relate to this project. Please cite relevant sources. Comment on the strength and coherence of the rationale. [250 words maximum. Any additional narrative about the project's origins and history, if needed, must be placed in Annex 6: Project Narrative]

The Interconnection Project is of strategic importance to both Ethiopia and Djibouti. The PRSP (February 2004) of Djibouti identified business and industrial development critical for national employment generation and poverty reduction while the PRSP of Ethiopia (July 2002) identified agriculture and rural development a priority area of Government intervention. The interconnection project was the least cost option for addressing the energy constraint in Djibouti. For Ethiopia, besides electrifying the border towns, it was to generate foreign exchange to support GoE's electrification program to promote agriculture and rural development. In recognition of its contribution to development in both countries, the Bank's CSPs (2002-2004) for Ethiopia and Djibouti supported the interconnection project during the ADF IX lending cycle. The project was supported in line with the Bank's Strategy for Regional Cooperation and Economic Integration (2000), which encompasses promoting regional infrastructure development. It also complements (i) Bank's support to the Cooperative Regional Assessment of Power Trade Opportunities and Feasibility Study of Power Interconnection between Ethiopia, Egypt and Sudan promoted by Nile Basin Initiatives (NBI); (ii) Ethiopia-Sudan Interconnection Project funded by the World Bank; and (iii) the objectives of the New Partnership for Africa's Development (NEPAD), which attaches importance to regional infrastructure projects development. Thus, the Project will be an integral link in establishing interconnected power systems and eventually, a Power Pool for electricity trade among the countries in the Region.

C. PROJECT OBJECTIVES AND LOGICAL FRAMEWORK

1. State the Project Development Objective(s) (as set out in the appraisal report)

The development objective of the project is to improve electricity access in Ethiopia and Djibouti at affordable prices through regional cooperation in power trade.

2. Describe the major project components and indicate how each will contribute to achieving the Project Development Objective(s).

A. Development of Power Transmission Network: Construction of the transmission networks would allow transport of bulk power from Dire Dawa Substation (Ethiopian) to Djibouti and Ethiopian border towns.

B. Electricity Supply to Border Towns: Electricity would be provided to four (4) towns along the transmission line corridor in Ethiopia through construction of distribution networks.

C. Project Supervision and Management: Timely completion of the project within the allocated financial resources would be ensured through supervision by the PIUs.
D. Institutional Support: The operational performance of EEPCo and EdD would be improved through enhanced financial management & control systems and development of human capacity.
The project would (i) immediately provide clean, cheap and reliable energy to the population of twelve (12) towns in Ethiopia and 36-72 percent of yearly energy supply to Djibouti during its life and (ii) enable further electrification of the surrounding areas at little incremental cost, thus improving the quality of life of the population and advancing socio-economic development. It would also develop human capacity and improve financial management and control systems to contribute to the efficient and sustained operations of power utilities in Djibouti and Ethiopia.

3. Provide a brief assessment (up to two sentences) of the project objectives along the following 3 dimensions. Insert a working score, using the scoring scale provided in Appendix 1.

PROJECT OBJECTIVES DIMENSIONS		ASSESSMENT	WORKING SCORE
RELEVANT	a) Relevant to the country's development priorities	a) The development priorities of the two countries are provided in their respective PRSP and the project was initiated in line with these priorities. The PRSPs identified business & industrial development in Djibouti and agriculture & rural development in Ethiopia as priority areas of development. In Djibouti, the project would provide clean, cheap and reliable power to promote business & industrial developments. In Ethiopia, in addition to electrifying rural towns along the transmission line corridor, it would generate foreign currency to support increased electrification and thus advance agriculture and rural development.	4

ACHIEVABLE	b) Objectives could in principle be achieved with the project inputs and in the expected timeframe	b) Project objectives were achieved within the allocated financial and human resources. In fact, savings (UA 4.68 million) were realized on completion of the project from both sides Ethiopia and Djibouti. However, the objectives of the project were achieved with ten (10) months implementation delays from re-appraisal schedule, mainly due to contractors delay in starting project activities	3
CONSISTENT	c) Consistent with the Bank's country or regional strategy	c) The Bank financed the project in line with its strategy to support the PRSPs as outlined in the CSPs and its Strategy for Regional Cooperation and Economic Integration (2000). The project would support integrated agricultural and rural development in Ethiopia and promote business and industrial development in Djibouti which are development priorities identified in the PRSPs.	4
	d) Consistent with the Bank's corporate priorities	d) The project was supported in line with the Bank's Strategy for Regional Cooperation and Economic Integration (2000), which encompasses promoting regional infrastructure development including energy infrastructure. The project would (i) improve the performance of EdD and EEPCo through training of staff; (ii) improve the financial policies and procedures and provide direction on tariff revision in EdD; (iii) provide the interconnection tariff to apply for power trade between the two countries. The project would thus promote the efficient and sustained operations in the two utilities in support of the Bank's corporate priorities.	4

4. Summarize the log. frame. If a log. frame does not exist, complete the table below, indicating the overall project development objective, the major components of the project, the major activities of each component and their expected outputs, outcomes, and indicators for measuring the achievement of outcomes. Add additional rows for components, activities, outputs or outcomes if needed.					
COMPONENTS	**ACTIVITIES**	**OUTPUTS**	**INDICATORS TO BE MEASURED**	**EXPECTED OUTCOMES**	**INDICATORS TO BE MEASURED**
Component 1: Development of Power Transmission Network	1a) Construction of 230 kV line	1a) 283 km of 230 kV double circuit line constructed	Constructed transmission line	Outcomes defined at Appraisal/Re-appraisal stage, and refer to all four (4) components: Ethiopia 1) Electricity access increased from 13% in 2003 to 20% in 2012. 2) Four (4) towns electrified and 8,517 consumers connected. 3) USD 20 million foreign exchange generated by EEPCo in twelve (12) months following commissioning. Djibouti 1) Electricity access increased from 49.5% in 2003 to 60% in 2015. 2) In Djibouti, average tariff in 2004 (22 US cents/kWh) reduced to at least by 60% in 2010. 3) About 400 GWh hydro-energy imported in twelve (12) months following commissioning.	Ethiopia 1) Electricity access 2) Electrified towns and customers 3) Foreign exchange generated by the project Djibouti 1) Electricity access 2) Level of Tariffs 3) Imported hydro-energy
	1b) Construction of 63 kV line	1b) 75 km of 63 kV double circuit line constructed	Constructed sub-transmission line		
	1c) Erection of outgoing going bay	1c) One 230 kV bay substation erected (double feeder)	Erected substation		
	1d) Erection of 230/63 kV substation	1d) One 230/63 kV substation erected (double feeder)	Erected substation		
	1e) Erection of 230/33 kV substation	1e) One 230 /33 kV substation erected (double feeder)	Erected substation		
	1f) Erection of 63/20 kV substation	1f) One 63/20 kV substation erected (double feeder)	Erected substation		
	1g) Implementation of environmental mitigating measures	1g) 16 households along the line corridor compensated	Number of households compensated		

Component 2: Electricity Supply to Border Towns					
	2a) Construction of 33kV lines	2a) 239 km 33 kV lines constructed	Distribution line constructed	Outcomes defined at Appraisal/Re-appraisal stage, and refer to all four (4) components: Ethiopia 1) Electricity access increased from 13% in 2003 to 20% in 2012. 2) Four (4) towns electrified and 8,517 consumers connected. 3) USD 20 million foreign exchange generated by EEPCo in twelve (12) months following commissioning. Djibouti 1) Electricity access increased from 49.5% in 2003 to 60% in 2015. 2) In Djibouti, average tariff in 2004 (22 US cents/kWh) reduced to at least by 60% in 2010. 3) About 400 GWh hydro-energy imported in twelve (12) months following commissioning.	Ethiopia 1) Electricity access 2) Electrified towns and customers 3) Foreign exchange generated by the project Djibouti 1) Electricity access 2) Level of Tariffs 3) Imported hydro-energy
	2b) Erection of distribution transformers	2b) 18 distribution transformers erected	Distribution transformers erected		
	2c) Electrification of towns	2c) 4 towns electrified	Number of towns electrified		
	2d) Connection of customers	2d) 8,571 customers connected	Number of consumers connected		
Component 3: Project Supervision and Management	3a) Appointment of a Joint Project Coordinator (JPC) and establishment of two (2) PIUs	3a) JPC appointed and two (2) PIUs established	Number of establishments		
	3b) Appointment of supervision consultant	3b) Supervision consultant appointed	Number of consultants employed		
	3c) Preparation of Project Audit reports	3c) Five (5) Project Audit reports prepared	Number of Audit reports generated		
Component 4: Institutional Support	4a) Establishment of Internal Audit Unit (EdD)	4a) Internal Audit Unit established (EdD)	Establishment of Internal Audit (EdD)		
	4b) Improvement of financial policy and procedures	4b) Financial policy and procedures improved (EdD)	Improvement of financial policy and procedures		
	4c.1) Undertaking Tariff Study (EdD) 4c.2) Undertaking interconnection tariff study	4c) Tariff Study prepared and recommendations implemented (EdD)	Generation of Tariff Study reports and revision of tariff		

	4d) Training of staff (EdD and EEPCo)	4d) 28 staff trained (EdD and EEPCO)	Number of trained staff		

5. For each dimension of the log. frame, provide a brief assessment (up to two sentences) of the extent to which the log. frame achieved the following. Insert a working score, using the scoring scale provided in Appendix 1. If no log. frame exists, score this section as a 1 (one).

LOG. FRAME DIMENSIONS		ASSESSMENT	WORKING SCORE
LOGICAL	a) Presents a logical causal chain for achieving the project development objectives	The revised Logframe presented the causal linkage between project developmental goal/objectives, activities and outputs.	3
MEASURABLE	b) Expresses objectives and outcomes in a way that is measurable and quantifiable	The Logframe at appraisal did not include outcomes. The re-appraisal clearly expressed the objectives and outcomes in measurable and quantifiable terms. The outcomes can be easily deduced from the Logframe.	3
THOROUGH	c) States the risks and key assumptions	The Logframe identified the assumptions and risks involved in the implementation of the project. However, the timeliness of risks were not stated in the Logframe.	3

D. OUTPUTS AND OUTCOMES

I. ACHIEVEMENT OF OUTPUTS

In the table below, assess the achievement of actual vs. expected outputs for each major activity. Import the expected outputs from the log. frame in Section C. Score the extent to which the expected outputs were achieved. Weight the scores by the activities' approximate share of project costs. Weighted scores are auto-calculated by the computer. The overall output score must be calculated as the sum of the weighted scores. Override the calculated score, if desired, and provide justification.

MAJOR ACTIVITIES		Working Score	Share of Project Costs in percentage (as stated in Appraisal Report)	Weighted Score
Expected Outputs	**Actual Outputs**			
1a) 283 km of 230 kV double circuit line constructed	1a) 282.5 km of 230 kV double circuit line constructed	4	80.7	3.23
1b) 75 km of 63 kV double circuit line constructed	1b) 81.4 km of 63 kV double circuit line constructed			
1c) One 230 kV bay substation erected (double feeder)	1c) One 230 kV bay substation erected (double feeder)			
1d) One 230/63 kV substation erected (double feeder)	1d) One 230 kV substation erected (double feeder)			
1e) One 230 /33 kV substation erected (double feeder)	1e) One 230/63 kV substation erected (double feeder)			
1f) One 63/20 kV substation erected (double feeder)	1f) One 63/20 kV substation erected (double feeder)			
1g) 16 households along the line corridor compensated	1g) 40 households along the line corridor compensated			
2a) 239 km 33 kV lines constructed	2a) 230 km of 33kV lines constructed	3	11.32	0.34
2b) 18 distribution transformers erected	2b) 41 distribution transformers erected			
2c) 4 towns electrified	2c) 12 towns electrified			
2d) 8,571 customers connected	2d) 751 customers connected			
3a) JPC appointed and two (2) PIUs established	3a) JPC appointed and two (2) PIUs established	4	6.13	0.25
3b) One Supervision consultant appointed	3b) One Supervision consultant appointed			
3c) Five (5) Project Audit reports prepared and submitted	3c) Five (5) Project Audit reports prepared and submitted			

4a) Internal Audit Unit established (EdD)	4a) Internal Audit Unit established (EdD)	3	1.85	0.06
4b) Financial policy and procedures improved (EdD)	4b) Financial policy and procedures improved (EdD)			
4c.1) Tariff Study prepared and implemented (EdD) 4c.2) Interconnection tariff prepared and implemented (EdD and EEPCo)	4c.1) Tariff Study prepared (EdD) 4c.2) Tariff study undertaken and recommendations implemented through revised Power Purchase Agreement			
4d) 28 staff trained (EdD and EEPCO)	4d) 40 staff trained (EdD and EEPCo)			
			OVERALL OUTPUT SCORE [Score is calculated as the sum of weighted scores]	4.00

Check here to override the calculated score

Provide justification for over-riding the calculated score	
Insert the new score or re-enter the calculated score	4

II. ACHIEVEMENT OF OUTCOMES

1. Using available monitoring data, assess the achievement of expected outcomes. Import the expected outcomes from the log. frame in Section C. Score the extent to which the expected outcomes were achieved. The overall outcome score must be calculated as an average of the working scores. Override the calculated score, if desired, and provide justification.

OUTCOMES		**Working Score**
Expected	**Actual**	
1) In Ethiopia, electricity access increased from 13% in 2003 to 20% in 2012.	1) In Ethiopia, electricity access increased from 13% in 2003 to 41% by 2010, an overachievement compare to appraisal estimate.	4
2) In Ethiopia, four (4) towns electrified and 8,517 consumers connected.	2) In Ethiopia, twelve (12) towns electrified and 751 consumers connected (About 4000 meters have been purchased and this could electrify more customers).	3
3) USD 20 million foreign exchange generated by EEPCo in twelve (12) months following commissioning.	3) USD 14.6 million foreign exchange generated by EEPCo in twelve (12) months following commissioning.	3
4) In Djibouti, electricity access is increased from 49.5% in 2003 to 60% by 2015.	4) In Djibouti, electricity access is increased from 49.5% in 2003 to 55% in 2010, very close to the 60% estimated for 2015	4
5) In Djibouti, average electricity tariff in 2004 (22 US cents/kWh) reduced to at least by 60% by 2010.	5) In Djibouti, average electricity tariff in 2004 (22 US cents/kWh) increased by about 60% (35 US cents/kWh) by 2010.	1

6) In Djibouti, account receivables reduced to 60 days of collection by 2010.	6) In Djibouti, account receivables increased to over 12 months of collection by end 2010.	1
7) In Djibouti, about 400 GWh energy imported in twelve (12) months following commissioning.	7) In Djibouti, about 243 GWh energy imported in twelve (12) months following commissioning.	3
	OVERALL OUTCOME SCORE [Score is calculated as an average of the working scores]	3

Check here to override the calculated score

Provide justification for over-riding the calculated score	
Insert the new score or re-enter the calculated score	0

2. Additional outcomes. Comment on the project's additional outcomes not captured in the log. frame, including cross-cutting issues (e.g., gender).

The project also provided short-term employment for about 1,190 people in Ethiopia and 460 in Djibouti. Furthermore, it generated opportunities for jobs and transfer of know-how to sub-contractors in Djibouti and Ethiopia. In Djibouti, import of the low cost hydropower would help to suppress the costly thermal generation resulting in cost savings through reduced oil import which can be used for other developmental activities. Furthermore, suppressing part of thermal generation would contribute to reduction of greenhouse gas emissions, which are causes of global warming. The interconnection also enables the two systems to support each other during emergencies.

The transmission line integrated communication system which is supported by the installation of an Optical Ground Wire (OPGW). The capacity of the OPGW is much higher than that required for the operation of the Interconnector. EEPCo and EdD intend to lease the spare capacities to the telecommunications

The transmission line in Ethiopia passes near Aysha town where GoE plans to develop 120 MW wind farm for power generation. The project will thus enable connecting the wind power to the grid at substantially reduced cost. Hence, the project will contribute to the viability of the wind farm project by reducing the project cost and promote the development of clean energy in remote part of Ethiopia.

The site visits (PCR Mission) and data collected have shown that the electrification would support households, schools, health centers, small businesses, small flour mills and garages. The supply of power would also contribute to improved quality of social services and improved livelihoods through for example re-allocation of the time, ordinarily used in fuel-wood collection (undertaken mainly by women and children), to more productive activities such as education.

3. Risks to sustained achievement of outcomes. State the factors that affect, or could affect, the long-run or sustained achievement of project outcomes. Indicate if any new activity or institutional change is recommended to help sustain outcomes. The analysis should draw upon the sensitivity analysis in Annex 3, where appropriate.

The Power Purchase Agreement (PPA), among others, specifies that the type of energy to be imported should be negotiated on yearly basis. Accordingly, the energy to be imported during the first year will be non-firm energy. Considering other export commitments, it is probable that EEPCo will continue to provide non-firm energy to Djibouti in the short-run putting the project at risk. However, GoE, under its Growth and Transformation Plan (GTP), is committed to build huge hydropower plants to increase the generation capacity from the current level of about 2,000 MW to at least 8,000 MW by 2015. This will generate substantial surplus, in excess of domestic consumption and other export commitment, beyond 2015. Hence, EdD will benefit with continuous import of excess firm energy during this time. On the other hand, it is necessary for EdD to (i) implement the recommendations of the Tariff Study to encourage business & industrial developments and (ii) take measures to reduce the level of account receivables in order to generate sufficient revenue to ensure the sustainable operation of the utility.

At an initial phase between 2010 and 2013, about 4,000 households would be connected under the project financing. Unless the power supply in the border towns supported by the development of businesses and small industries, the customers may find it difficult to generate revenue to settle their electricity bills and contribute to the electrification program. The new Ethiopia-Djibouti railway line, which passes in the vicinity of the border towns, is expected to promote businesses and small industries, and thus encourage using the electricity for productive purposes to advance economic growth and make supply to customers sustainable.

E. PROJECT DESIGN AND READINESS FOR IMPLEMENTATION

1. State the extent to which the Bank and the Borrower ensured the project was commensurate with the Borrower's capacity to implement by designing the project appropriately and by putting in place the necessary implementation arrangements. Consider all major design aspects, such as extent to which project design took into account lessons learned from previous PCRs in the sector or the country (please cite key PCRs); whether the project was informed by robust analytical work (please cite key documents); how well Bank and Borrower assessed the capacity of the implementing agencies and/or Project Implementation Unit; scope of consultations and partnerships; economic rationale of project; and provisions made for technical assistance.

[200 words maximum. Any additional narrative about implementation should be included at Annex 6: Project Narrative]

Appraisal was based on the feasibility study prepared by EEPCo-EdD. The Bank's experience in the energy sector in Djibouti was limited as it only supported a geothermal exploration project 26 years ago. In Ethiopia, the main performance weakness noted then was implementation delays of projects implemented by EEPCo. The implementation arrangement was designed based on a desk review of available implementation notes on the completed projects. Bank's appraisal mission also had consultations with key donors involved in the energy sector in Ethiopia and Djibouti.

A JPC was appointed to coordinate the activities of the PIUs. One consultant was appointed to assist in supervision of the whole project to ensure the integrity of the project.

Even though contracts for works to be implemented in each country were separately awarded, same contractors were selected to avoid interfacing problems. The PIU supervised the project well and its performance is rated good.

At system review stage, EEPCo-EdD realized that the initial Interconnector would not have sufficient capacity to accommodate the unexpected demand growth in Djibouti. Hence, the Interconnector was upgraded from single to double circuit. At time of re- appraisal, the project was found financially viable (FIRR of 14.5% and EIRR of 29%).

2. For each dimension of project design and readiness for implementation, provide a brief assessment (up to two sentences). Insert a working score, using the scoring scale provided in Appendix 1.			
PROJECT DESIGN AND READINESS FOR IMPLEMENTATION DIMENSIONS		**ASSESSMENT**	**WORKING SCORE**
REALISM	a) Project complexity is matched with country capacity and political commitment.	a) The project is more complex in terms of design, implementation coordination and operation. Even though it was the first of its kind implemented by the two countries, the technical capacities and strong political commitment contributed to ease the implementation of the project. In addition, strong PIUs were established and extensive training was provided to EEPCO and EdD staff to assist in the operation of the interconnection system.	4
RISK ASSESSMENT AND MITIGATION	b) Project design includes adequate risk analysis.	b) the project design identified two main risks, namely: (i) lack of institutional capacities in the utilities to operate the Interconnector and (ii) possible shortage of hydro-energy surplus in Ethiopia for export to Djibouti. To address the former risk, the relevant staffs of EEPCo and EdD were trained under the project. The latter risk is mainly related to drought which is localized. This risk is minimized given that Ethiopia's hydroelectric dams are diversely located in different river basins within the country, and feed electricity into the Interconnected System which Djibouti will be supplied from. Furthermore, the realization of the planned generation projects will increase the capacity in Ethiopia to ensure the availability of continuous surplus power for export. The risk of supply shortage in Djibouti will be mitigated by continued implementation of the generation expansion plan in Djibouti to fully meet the country's demand.	4
USE OF COUNTRY SYSTEMS	c) Project procurement, financial management, monitoring and/or other systems are based on those already in use by government and/or other partners.	c) The project as designed made limited use of country systems, or those already in use by other partners. The exceptions include (i) procurement, where the World Bank Standard Bidding Documents for large projects (adopted to reflect Rules of Procedure of the Bank) were used even though the World Bank was not a co-financier of the project; (ii); safeguards, where the Governments' procedures on environment and social aspects were used; and (iii) financial management where the management systems of Borrowers/Executing Agencies were used.	3

For the following dimensions, provide separate working scores for Bank performance and Borrower performance:			WORKING SCORE	
			Bank	Borrower
CLARITY	d) Responsibilities for project implementation were clearly defined.	The responsibilities for the project implementation were clearly defined to respective PIU within EEPCo and EdD and within each utility a PIU was established to assist in the design and management of the project. A Joint Steering Committee was established to oversee the implementation of the project, and provide direction if and when it is needed.	4	4
PROCUREMENT READINESS	e) Necessary implementation documents (e.g. specifications, design, procurement documents) were ready at appraisal.	Given the nature of the project, preparation of the detailed design and procurement documents was done after appraisal. During design review, demand-supply analysis revealed the need to construct 230 kV double circuits, instead of single circuits as appraised, in order to avert line capacity constraints in the medium term. The transmission line was therefore redesigned.	3	3
MONITORING READINESS	f) Monitoring indicators and monitoring plan were agreed upon before project launch.	The monitoring indicators and monitoring plan were agreed upon between the Bank and Borrowers/Executing Agencies and clearly indicated in the Appraisal Report (Logframe) but progresses were not monitored overtime.	3	3
BASELINE DATA	h) Baseline data were available or are were collected during project design.	Much of the baseline data necessary for project appraisal were collected in the context of the Feasibility Study (electricity access, customer willingness to pay for electricity, etc.) while for the detailed design were collected during implementation.	3	3

F. IMPLEMENTATION

1. State the major characteristics of project implementation with reference to: adherence to schedules, quality of construction or other work, performance of consultants, effectiveness of Bank supervision, and effectiveness of Borrower oversight. Assess how well the Bank and the Borrower ensured compliance with safeguards.

[200 words maximum. [Any additional narrative about implementation should be included at Annex 6: Project Narrative.]

The project was completed in April 2011 and commissioning was finalized in May 2011 as opposed to June 2010 planned at re-appraisal. The project activities were completed with ten (10) months delay. Poor performance of transmission and substation contractors contributed to implementation delays. The performance of BP Power (UK) and RSW (Canada) Consortium, consultant is rated very good. The performance of ETDE (France), distribution contractor, is also rated very good. The performance of Kalpataru Power Transmission Ltd (India) (transmission contractor), and Siemens SPA (Italy) (substation contractor) were rated good and fair, respectively. Two PIUs and the JPC, assisted by the consultant, supervised the project well. GoD did not meet two of the three Other Conditions. Overall performance of the Borrowers/Executing Agencies is rated good. The Bank supervised the project nine times during years (2005-2011), averaging 1.29 times/year, marginally lower than 1.5 times/year normally accepted by the Bank. Moreover, ETFO provided support in the project supervision and management. The Bank responded to the requests of the Borrowers/EA in reasonable time, and the Bank's performance is rated good.

2. Comment on the role of other partners (e.g. donors, NGOs, contractors, etc.). Assess the effectiveness of co-financing arrangements and of donor coordination, if applicable.

The Ethiopian Five-Year Power Sector Development Program (2000/01-2004/05) and the Djiboutian PRSP were supported by a number of donors. The Bank's appraisal included consultative meetings in order to coordinate its intervention in the energy sector in general and the power sub-sector integration in Eastern Africa region in particular. Such consultative meetings helped the Bank in its intervention to support the Ethiopia-Djibouti Power Interconnection Project. The key donors consulted include AFD, World Bank, USAID, UNDP, GTZ and IGAD.

3. Harmonization. State whether the Bank made explicit efforts to harmonize instruments, systems and/or approaches with other partners.
At appraisal, the Bank's consultations with the relevant donors also targeted at harmonizing its intervention with the activities of other donors in the sector. The consultations helped the Bank to consider, in the appraisal of the project, donors' integrated efforts to support the energy sector in both countries, including regional integration of the power sub-sector. Specifically, the Bank harmonized (in terms of available energy in Ethiopia for export) with the Ethiopia-Sudan interconnector, which was then earmarked for the World Bank financing, as both projects were competing for the hydro-energy surplus in Ethiopia.

4. For each dimension of project implementation, assess the extent to which the project achieved the following. Provide a brief assessment (up to two sentences) and insert a working score, using the scoring scale provided in Appendix 1.				
PROJECT IMPLEMENTATION DIMENSIONS		**ASSESSMENT**		**WORKING SCORE**
TIMELINESS	a) Extent of project adherence to the original closing date. If the number on the right is: below 12, "4" is scored between 12.1 to 24, "3" is scored between 24.1 to 36, "2" is scored beyond 36.1, "1" is scored	Difference in months between original closing date and actual closing date or date of 98% disb. Rate. 12.1	Disbursement of the 3 loans was completed on the original closing date (December 2010). However, the closing date of the Djibouti grant was extended to 31 July 2011 to allow for the purchase of additional distribution equipment and materials.	3
BANK PERFORMANCE	b) Bank complied with:			
	Environmental Safeguards	The Bank imposed a conditions precedent to first disbursement to ensure that the Borrowers/Executing Agencies settle compensation before commencement of construction.		4
	Fiduciary Requirements	The Bank's Fiduciary Requirements were specified in the relevant Bank's documents, including the Standard Bidding Documents and Procurement Guidelines.		4
	Project Covenants	The Bank included other conditions to Djibouti loan in order to improve the performance of EdD. Except the establishment of an Internal Audit Unit in EdD, the Bank has not been successful to have fulfilled the remaining other conditions (reduction of account receivables and electricity tariffs, the latter due to late approval of the interconnection tariff).		2
	c) Bank provided quality supervision in the form of skills mix and practicality of solutions	The Bank supervised the project 9 times over 7 years (2005-2011). The missions included the right skills mix and provided quality supervision and practical solutions to the issues raised during the supervisions. In addition to Head Quarters supervisions, ETFO supported the project with field supervisions, review and processing of procurement and disbursement documents.		3
	d) Bank provided quality management oversight	The time taken by the Bank to react/respond to the various requests of the Borrowers/Executing Agencies was, by and large, reasonable.		3

BORROWER PERFORMANCE	e) Borrower complied with:		
	Environmental Safeguards	The Borrowers/Executing Agencies generally complied with the loan condition requirement to settle compensation before commencement of construction. In addition, an Environmental, Health, and Safety Management Plans were developed and implemented.	4
	Fiduciary Requirements	The Borrowers/Executing Agencies complied with the Bank's Fiduciary requirements.	4
	Project Covenants	The Borrowers fulfilled the conditions for loan effectiveness with 12 months delay. Except establishment of an Internal Audit Unit in EdD, GoD has not fulfilled the remaining other conditions (reduction of account receivables and electricity tariffs).	2
	f) Borrower was responsive to Bank supervision findings and recommendations	The Borrowers were responsive to the Bank Supervision Mission findings and recommendations except in not meeting the other conditions of Djibouti loan.	2
	g) Borrower collected and used monitoring information for decision making	The information collected by the Borrowers through field supervision, contractors/consultants reports, PIUs progress/Audit reports, Aide Memoires of Bank's Supervision Missions assisted to monitor the progress of implementation and quality of outputs.	3

G. COMPLETION

1. IS THE PCR DELIVERED ON A TIMELY BASIS, IN COMPLIANCE WITH BANK POLICY?			
Date project reached 98% disb. Rate (or closing date if applicable)	**Date PCR was sent to pcr@afdb.org** *MM/DD/YY*	**Difference in months**	**WORKING SCORE if the difference is 6 months or less, a 4 is scored. If the difference is 6.1 or more, a 1 is scored**
12/31/10	06/15/11	5.5	4

2. Briefly describe the PCR Process. Describe the Borrower's and co-financers' involvement in producing the document. Highlight any major differences of opinion concerning the assessments made in this PCR. Describe the team composition and confirm whether a site visit was undertaken. Mention any major collaboration from other development partners. State the extent of field office involvement in producing the report. Indicate whether comments from Peer Reviewers were received on time (provide names and positions of Peer Reviewers). [100 words maximum]

The PCR was prepared in accordance with the Bank's guidelines. The mission teams undertook project documents desk review including the EA's and the Consultant's PCRs. The mission team held discussions with officials from utilities, Government representatives and PIUs. The PCR Mission comprised of Ms. S.M Alissoutin (Financial Analyst), Mr. S.Asfaw (Senior Energy Officer, ETFO) and Mr. B.Fikru (Consultant). The draft PCR has been sent to four peer reviewers on 1st July 2011. Comments by Ms. Emelly Mutambatsere, Senior Economist (EDRE.1), Mr. Bokar Toure, Senior Energy Economist (ONEC.1) and Mr. Zakaria Bellot , Investment Officer (ONEC.2) were considered finalizing the report.

H. LESSONS LEARNED

Summarize key lessons for the Bank and the Borrower suggested by the project's outcomes
[250 words maximum. Any additional narrative about lessons learned, if needed, must be placed in Annex 6: Project Narrative]

The key lessons learned are:

1. The project was successfully implemented between Ethiopia and Djibouti having different cultures, speaking different languages and disparity in institutional and human development between the utilities. These disparities, have been overcome, thanks to, the (i) the trust developed between the utilities, (ii) political support extended by the two Governments and (iii) given that EdD had relatively limited experience in the implementation of similar projects, the close cooperation between the PIUs and appointment of experienced JPC from EEPCO played vital roles for successful completion of the project. It is therefore to be recognized that in spite of disparity in institutional capacity and cultural & language differences, regional projects can be successfully implemented if and when there is a strong political commitment and institutional cooperation.
2. The conditions of the loan to Djibouti requires the Borrower to create an Internal Audit Unit in EdD, make adjustment to electricity tariffs, and reduce the level of account receivables of electricity sales. The Borrower only established the Internal Audit Unit in EdD. It is recommended that the Bank continues engaging the Government towards fulfilling conditions.
3. One of the reasons for supplementary financing was high tender prices. It was also observed that tender prices of recently financed projects (Rural Electrification I and Rural Electrification II) in Ethiopia were low resulting in substantial loan savings. The Bank may consider applying Advance Contract arrangement, in line with the Bank Procurement Rules, in future Bank supported projects in order to base costs on prevailing market prices.
4. During the project preparation/ appraisal, all the conditions precedent to loan effectiveness, first disbursement and other loan conditions shall be aligned and made more consistent with Country's capacity and be more realistic as much as possible. The conditions will be made more achievable within a shorter period..
5. For future operations, the Bank shall ensure that key conditions necessary for sustainability are met during the project implementation.

I. PROJECT RATINGS SUMMARY

All working scores and ratings must be found in the relevant section in the PCR. For example, please insert the "Overall Output score" in Section D.I. in the "Achievement of Outputs" box below.

CRITERIA	SUB-CRITERIA	WORKING SCORE
PROJECT OUTCOME	Achievement of outputs *(insert score from Section D.I.)*	4
	Achievement of outcomes *(insert score from Section D.I.)*	3
	Timeliness *(insert score from Section F.4.)*	3
	OVERALL PROJECT OUTCOME SCORE *(score average)*	**3**
BANK PERFORMANCE	**Design and Readiness**	
	Project Objectives were relevant to country development priorities. *(Insert score from Section C.3.)*	4
	Project Objectives could in principle be achieved with the project inputs and in the expected time frame. *(Score from Section C.3.)*	3
	Project Objectives were consistent with the Bank's country or regional strategy *(insert score from Section C.3.)*	4
	Project Objectives were consistent with the Bank's corporate priorities *(insert score from Section C.3.)*	4
	The log frame presents a logical causal chain for achieving the project development objectives. *(Insert score from Section C.5.)*	3
	The log frame expresses objectives and outcomes in a way that is measurable and quantifiable. *(Insert score from Section C.5.)*	3
	The log frame states the risks and key assumptions. *(Insert score from Section C.5.)*	3
	Project complexity was matched with country capacity and political commitment. *(Insert score from Section E.2.)*	4
	Project design includes adequate risk analysis. *(Insert score from Section E.2.)*	4
	Project procurement, financial management, monitoring and/or other systems were based on those already in use by government and/or other partners. *(Insert score from Section E.2.)*	3
	Responsibilities for project implementation were clearly defined. *(Insert score from Section E.2.)*	4
	Necessary implementation documents (e.g. specifications, design, procurement documents) were ready at appraisal. *(Insert score from Section E.2.)*	3
	Monitoring indicators and monitoring plan were agreed upon during design. *(Insert score from Section E.2.)*	3
	Baseline data was available or were collected during design. *(Insert score from Section E.2.)*	3
	PROJECT DESIGN AND READINESS SUB-SCORE *(score average)*	**3**
	Supervision:	
	Bank complied with:	
	Environmental Safeguards *(insert score from Section F.4.)*	4
	Fiduciary Requirements *(insert score from Section F.4.)*	4
	Project Covenants *(insert score from Section F.4.)*	2
	Bank provided quality supervision in the form of skills mix provided and practicality of solutions. *(insert score from Section F.4.)*	3
	Bank provided quality management oversight. *(Insert score from Section F.4.)*	3
	PCR was delivered on a timely basis *(insert score from Section G)*	4
	SUPERVISION SUB-SCORE *(score average)*	**3**
	OVERALL BANK PERFORMANCE SCORE *(score average)*	**3**

BORROWER PERFORMANCE	**Design and Readiness**	
	Responsibilities for project implementation are clearly defined. *(insert score from Section E.2)*	4
	Necessary implementation documents (e.g. specifications, design, procurement documents) are ready at appraisal. *(insert score from Section E.2)*	3
	Monitoring indicators and monitoring plan are agreed upon and baseline data are available or are being collected. *(insert score from Section E.2)*	3
	PROJECT DESIGN AND READINESS SCORE *(score average)*	**3**
	Implementation	
	Borrower complied with:	
	Environmental Safeguards *(insert score from Section F.4)*	4
	Fiduciary Requirements *(insert score from Section F.4)*	4
	Project Covenants *(insert score from Section F.4)*	2
	Borrower was responsive to Bank supervision findings and recommendations. *(insert score from Section F.4)*	2
	Borrower collected and used of monitoring information for decision-making. *(insert score from Section F.4)*	3
	IMPLEMENTATION SUB-SCORE *(score average)*	**3**
	OVERALL BORROWER PERFORMANCE SCORE *(score average)*	**3**

J. PROCESSING

STEP	SIGNATURE AND COMMENTS	DATE
Sector Manager Clearance	Mr. E. Nzabanita	6/19/2011
Regional Director Clearance	Mr. S. Kayizzi-Mugerwa	8/10/2011
Sector Director Approval	Ms. Héla Cheikhrouhou	8/15/2011

LIST OF ANNEXES

Mandatory

1. Project Costs and Financing
a. Project costs by component
b. Financing by sources of funds

2. Bank Inputs. List the key team members, and their specialties, during preparation and supervision. Provide a consolidated list of Preparation, Supervision and Completion Missions in chronological order. Provide the date and ratings of the last supervision report.

3. Economic Analysis (ERR) and Financial Analysis, if appropriate Re-estimate the economic rates of return based on costs and benefits at completion, and compare with apprailsal estimates. Break down by components as appropriate. Analyze the sensitivity of the ERR to key assumptions. Present a financial analysis for project beneficiary entities.

4. Procurement Plan. Please attached the most recent Procurement Plan

5. List of Supporting Documents

Optional

6. Project Narrative. Key factors not covered in the main template that affected the design and implementation of the project. Such factors, both positive and negative, could include: climate and weather, political changes, contractual or personnel matters, technical issues, procurement processes, and interactions with other partners. If any of these factors is significant enough to affect the evaluation ratings, it should be noted in the template with a reference to this annex.

PROJECT COMPLETION REPORT (PCR)

Annex 1: Project Costs and Financing Plan

Annex 1 (a) Project Costs and Financing Plan for EEPCo

(In Million UA)

No.	Components	Total			ADF			EEPCo		
		F.E	L.C	Total	F.E	L.C	Total	F.E	L.C	Total
	Ethiopia									
A	Transmission Network Development	**21.43**	**5.69**	**27.12**	**18.53**	**0.00**	**18.53**	**2.88**	**5.69**	**8.57**
A1	Construction of Transmission Lines	15.74	3.70	19.44	12.82	0.00	12.82	2.88	3.70	6.58
A2	Construction of Substations	5.69	2.00	7.68	5.71	0.00	5.71	0.00	2.00	2.00
B	Electricity Supply to Border Towns	4.71	3.64	8.35	4.73	0.00	4.73	0.00	3.64	3.64
C	Project Supervision & Management	2.67	0.22	2.89	2.68	0.00	2.68	0.00	0.22	0.22
D	Institutional Support	0.13	0.00	0.13	0.13	0.00	0.13	0.00	0.00	0.00
	Ethiopia Total	**28.95**	**9.55**	**38.50**	**26.07**	**0.00**	**26.07**	**2.88**	**9.55**	**12.43**

Annex 1(b) Project Costs and Financing Plan for EdD

No.	Components	Total			ADF			EdD		
		F.E	L.C	Total	F.E	L.C	Total	F.E	L.C	Total
	Djibouti									
A	Transmission Network Development									
A1	Construction of Transmission Lines	12.20	1.36	13.56	12.20	0.32	12.52	0.00	1.05	1.05
A2	Construction of Substations	16.81	2.05	18.86	16.81	1.17	17.98	0.00	0.86	0.86
C	Project Supervision & Management	1.59	0.04	1.63	1.59	0.00	1.59	0.00	0.04	0.04
D	Institutional Support	1.21	0.02	1.23	1.21	0.02	1.23	0.00	0.00	0.00
	Total Djibouti	**31.81**	**3.47**	**35.28**	**31.81**	**1.51**	**33.32**	**0.00**	**1.96**	**1.96**

Annex 1 (c): Summary of Project Costs by Component

No.	Components	In Million UA			In Million US$		
		F.E	L.C	Total	F.E	L.C	Total
A	Transmission Network Development						
A1	Construction of Transmission Lines	27.94	5.06	33.00	45.96	8.31	54.27
A2	Construction of Substations	22.50	4.04	26.54	37.00	6.65	43.65
B	Electricity Supply to Border Towns	4.71	3.64	8.35	7.75	5.99	13.73
C	Project Supervision & Management	4.26	0.26	4.52	7.00	0.43	7.44
D	Institutional Support	1.35	0.02	1.37	2.21	0.03	2.25
	Total	60.76	13.02	73.78	99.91	21.42	121.33

Annex 1 (c): Project Financing Plan

Source	Million UA			Million USD		
	F.E	L.C	Total	F.E	L.C	Total
ADF Main Loan (Ethiopia)	20.88		20.88	31.77	2.57	34.34
ADF Supplementary Loan (Ethiopia)	5.20		5.20	8.55	0.00	8.55
ADF Loan (Djibouti)	16.33	1.27	17.60	26.85	2.09	28.94
ADF Grant (Djibouti)	15.48	0.24	15.72	25.46	0.39	25.85
EPPCo	2.88	9.55	12.43	4.74	15.70	20.44
EdD		1.96	1.96	0.00	3.22	3.22
Total	**60.77**	**13.02**	**73.79**	97.37	23.98	121.35

MULTINATIONAL: ETHIOPIA-DJIBOUTI POWER INTERCONNECTION PROJECT
PROJECT COMPLETION REPORT (PCR)

Annex 2: Bank Inputs

No.	Activity	Period		Mission Conducted by	Profession
		From	To		
1	Preparation Mission	11-Apr-04	28-Apr-04	Mr. Babu Ram	Power Engineer
				Mr. A.T. Diallo	Financial Analyst
				Mr.Samba Idrissa	Environmentalist
2	Appraisal Mission	16-Aug-04	3-Apr-04	Mr. Babu Ram	Power Engineer
				Mr. Lamin Barrow	Financial Analyst
				Mr. Daniel Lekoetje	Public Utilities Economist
3	Launching Mission	27-Jan-05	8-Feb-05	Mr. E. Nzabanita	Power Engineer
				Mr. Lamin Barrow	Financial Analyst
				Mr. A. Benbarka	Procurement Specialist
4	Supervision Mission	29-Jan-06	1-Feb-06	Mr. E. Nzabanita	Power Engineer
				Mr. Orison Amu	Public Utilities Economist
				Alemseged Eskendir	Infrastructure Expert
5	Supervision Mission	18-Nov-07	24-Nov-07	Mr. E. Nzabanita	Power Engineer
				Mr. Malan Jan	Financial Analyst
6	Supervision Mission	19-Apr-08	30-Apr-08	Mr. E. Nzabanita	Power Engineer
				Mr. Malan Jan	Financial Analyst
				Mr. Daniel Lekoetje	Public Utilities Economist
7	Supervision Mission	18-Apr-09	2-May-09	Mr. E. Nzabanita	Power Engineer
				Mr. Daniel Lekoetje	Public Utilities Economist
8	Supervision Mission	10-Apr-10	16-Apr-10	Mr. Daniel Lekoetje	Public Utilities Economist
				Mr. S. ASFAW	Energy Specialist
				Mr. Farari Kanonda	Financial Analyst
				Mr. Asay Fasal	Procurement Specialist
9	Supervision Mission	12-Dec-10	19-Dec-10	Mr. S. ASFAW	Energy Specialist
				Ms. Senidu Fanuel	Financial Management Specialist

10	Supervision Mission	1-Mar-11	12-Mar-11	Daniel T. Lekoetje	Public Utilities Economist
				Mr. S. ASFAW	Energy Specialist
				Ms. Senidu Fanuel	Financial Management Specialist
11	PCR Mission	14-Mar-11	15-Apr-11	Ms. S. M Alissoutin	Financial Analyst
				S. ASFAW	Energy Specialist
				Mr. Bizuneh Fikru	Consultant

MUTLTINATIONAL:DJIBOUTI/ ETHIOPIA INTERCONNECTION POWER PROJECT

PROJECT COMPLETION REPORT (PCR)

Annex 3: Financial and Economic Analysis

The financial and economic returns of the project are estimated at completion to confirm the viability of the interconnection project in light with the realized outcomes and parameter estimates at April 2011.

Table below capture the major differences between the main assumptions used for computation of IRRs at Appraisal and those at PCR

Parameters	Appraisal Estimates	**PCR Estimates**
General assumptions		
	Constant price analysis	Constant price analysis
Dicount Rate	10%	10%
Base Year	2008	2006
Salvage value	0	0
Sales to Djibouti	50% the first year of operation	7 months for year 2011
Financial Analysis Assumptions		
Investment costs	including contingencies as of 2008 (re- appraisal) + cost of replacement for equipement after 10 years. Salvage values were ignored	Actual disbursements made on ADF resources and by the Government
Operatings and maintenance costs	2.5% of total investment cost per annum	2.5% of total investment cost
Project life	30 years	30 years

Energy exports sales	300GWh per annum with 3% increase per annum over the project life	See Annex_6 Load forecast assumptions
Energy exports revenues	Average tariff Usc 6/KWh multiplied by power exported by Ethiopia to Djibouti	Tariff as per the amended PPA between the countries (see table below)
Distribution Revenue	Revenue calculations for the 4 border towns in Ethiopia assume 8571 connections at an average consumption of 303kWh per year multiplied by EEPCO's average tariff (Usc 6KWh	Average consumptions have been estimated as of completion time and forecasted onwards
Economic Analysis assumptions		
Ethiopia Incremental costs	investments costs, O & M costs + costs of power exported to EdD grid	Idem
Ethiopia Incremental benefits	power sales (export)	power sales and revenues from border towns
Djibouti costs savings	With and without the project EdD expenditures on power generation and or purchase of power (import power) from EEPCo	Difference between generation costs without the project and imports costs
EdD generation cost CF	0.5	CF for costs: 0.807
EdD costs adjustment	applicable CF of 1.05	CF for revenues: 1.0455
Additional benefits to border towns	Increased productivity for small commercial enterprises.	It has not been able to estimate the benefit to the border towns which shall include the benefits to non- paying users, the increased consumption, the job creation, the economic development in the border towns, the avoided costs due to the improvement of the network. The economic analysis could have accounted for the resettlement costs
	time saving for tayloring shops working 240 days procuring 2 shirts per day, earning a profit of ETB 25 for each additional shirt	
	about 15% of the electrified commercial establishment are	

	taylors	and for the excess costs due to delays (Siemens)
	CF= 1.05 (standard)	
	Sewing machine cost: ETB 2500	
	Revenues from tayloring shops: ETB 1 130 794	
Benefits derived from sales of ice	Refrigerator cost! ETB 3000	
	25% of commercial establishment mostly food shops will be electrified	
	Revenues from ice sales: ETB 1 978 890	
Increased consumption (Consumer surplus)	Due to the difference in the prevailing average tariff in Djibouti at 22 US cent per KWh and the off peak LRMC price in Ethiopia at 6 US cent per KWh	
	EdD being able to resort to 50% usage of the capacity in Djibouti for reserve purposes	

The Ethiopia- Djibouti interconnection project was meant to establish power trade between Ethiopia and Djibouti and to improve electricity access at affordable price. During the re- appraisal in 2008, the project was expected to facilitate the tariff reduction by 60% by 2010, to generate foreign exchange revenues to EEPCo to at least US$ 20 million, to allow for over 8000 consumers in the border towns by 2010, to allow for 100 MW of exports from Ethiopia and electricity trade increase from zero in 2008 to in excess of 400 Gwh. At completion, some of those ambitious targets are not met, mainly in respect with the tariff reduction in Djibouti and the number of connections in the border towns.

The Power Purchase Agreement (PPA) initially signed on 21st April 2006 has been amended in March 2011. According to the amended PPA, the yearly energy to be sold to Djibouti will be of 242.712 GWh. The two parties agreed on the energy tariff to be of 6 US cents/KWh during wet season off- peak hours and 7 US cents/KWh during dry season off- peak and wet season peak hours.

The financial projections at completion show that the energy export to Djibouti will reach the appraisal estimate level only in 2027 (422GWh), more than 15 years after commissioning. If the tariffs are maintained at their current level (as per the amended PPA), the forex revenues will increase consistently with the growth in energy exports and reach the appraisal estimate level in 2018. New connections at the border towns are not yet materialized. However, the EEPCo

regional commercial department in Dire Dawa mentioned that 4400 meters have been purchased and will serve to connect households at the border towns through Adigala substation. Around 500 connections are expected over the short run.

Results indicate that the FIRR at completion is about 11.06%, lower than the 14.5% estimated at appraisal. The project revenues are formed by the revenues from energy export to Djibouti and from distribution to border towns. Appraisal estimates appear to be higher than the one at completion: initially assumed to be of 300 GWh per annum, the energy exports are projected to be at a lower level; energy consumption at border towns at appraisal (303 KWh per year) looks very much higher than at completion; export tariff at appraisal was assumed to be at 6 US cent/KWh whereas the tariff is set to be of 7 US cent/ KWh during dry season off- peak hours and wet season peak hours. There will be no power export to Djibouti during dry season peak hours.

In spite of the above captured statements, the project financial viability remains satisfactory and is shown to be sensitive to changes in energy export to Djibouti, energy demand in borders towns, O&M rates.

The economic analysis at completion shows that the interconnection project has proven to be a success. Some economic benefits have not been estimated due to lack of accurate statistical data. However, the EIRR stands at 28.05%, just a little bit lower than the 29% estimated at appraisal. Economic viability is among others, highly sensitive to changes in the actual generation cost in Djibouti.

Overall, the Interconnector project financial and economic viability is confirmed at completion.

MULTINATIONAL ETHIOPIA DJIBOUTI POWER INTERCONNECTION PROJECT

FINANCIAL RATE OF RETURN ('000 US $)

Year	Inv. costs Ethiopia	Inv. costs Djibouti	**Total Inv. Costs**	O & M Costs Ethiopia	O & M Costs Djibouti	**Total O & M Costs**	**Total Costs**	Sales GWh	Power Export Revenues	Consumption in border towns	Tariff	Distribution Revenues	Total Revenues	Net CashFlow
2005	-	-	-			-	-						-	-
2006	741		741			-	741						-	(741)
2007	6,403	1,047	7,450			-	7,450						-	(7,450)
2008	7,892	7,459	15,352			-	15,352						-	(15,352)
2009	17,945	24,067	42,011			-	42,011						-	(42,011)
2010	9,855	10,821	20,676			-	20,676						-	(20,676)
2011	6,182	2,734	8,916	2,859	2,691	5,550	14,466	121	7,323	12	0.06	733	8,056	(6,410)
2012			-	4,902	4,613	9,515	9,515	243	14,646	21	0.06	1,256	15,902	6,387
2013			-	4,902	4,613	9,515	9,515	243	14,646	22	0.06	1,319	15,965	6,450
2014			-	4,902	4,613	9,515	9,515	243	14,646	23	0.06	1,385	16,031	6,516
2015			-	4,902	4,613	9,515	9,515	243	14,646	24	0.08	1,939	16,585	7,070
2016			-	4,902	4,613	9,515	9,515	307	18,532	25	0.08	2,036	20,567	11,053
2017			-	4,902	4,613	9,515	9,515	324	19,533	27	0.11	2,939	22,472	12,957
2018			-	4,902	4,613	9,515	9,515	341	20,588	28	0.11	3,086	23,674	14,159
2019			-	4,902	4,613	9,515	9,515	360	21,699	29	0.11	3,240	24,940	15,425
2020	1,225	1,153	2,379	4,902	4,613	9,515	11,893	301	18,190	31	0.11	3,402	21,592	9,699
2021			-	4,902	4,613	9,515	9,515	331	19,955	34	0.11	3,742	23,697	14,183
2022			-	4,902	4,613	9,515	9,515	362	21,814	34	0.11	3,742	25,557	16,042
2023			-	4,902	4,613	9,515	9,515	274	16,533	34	0.11	3,742	20,276	10,761
2024			-	4,902	4,613	9,515	9,515	308	18,599	34	0.11	3,742	22,341	12,827
2025			-	4,902	4,613	9,515	9,515	344	20,777	34	0.11	3,742	24,519	15,004
2026			-	4,902	4,613	9,515	9,515	382	23,072	34	0.11	3,742	26,814	17,299
2027			-	4,902	4,613	9,515	9,515	422	25,491	34	0.11	3,742	29,233	19,718
2028			-	4,902	4,613	9,515	9,515	465	28,040	34	0.11	3,742	31,782	22,268
2029			-	4,902	4,613	9,515	9,515	509	30,727	34	0.11	3,742	34,470	24,955
2030			-	4,902	4,613	9,515	9,515	556	33,560	34	0.11	3,742	37,302	27,788
2031			-	4,902	4,613	9,515	9,515	606	36,545	34	0.11	3,742	40,287	30,773
2032			-	4,902	4,613	9,515	9,515	658	39,691	34	0.11	3,742	43,433	33,919
2033			-	4,902	4,613	9,515	9,515	713	43,008	37	0.11	4,117	47,125	37,610
2034			-	4,902	4,613	9,515	9,515	771	46,503	37	0.11	4,117	50,620	41,106
2035			-	4,902	4,613	9,515	9,515	832	50,188	37	0.11	4,117	54,304	44,790
2036			-	4,902	4,613	9,515	9,515	879	53,056	37	0.11	4,117	57,172	47,658
2037			-	4,902	4,613	9,515	9,515	927	55,921	37	0.11	4,117	60,038	50,523
													NPV	$9,428.34
													FIRR	**11.06%**

MULTINATIONAL ETHIOPIA DJIBOUTI POWER INTERCONNECTION PROJECT

ECONOMIC RATE OF RETURN ('000 US $)

Year	Inv. costs Ethiopia	Inv. costs Djibouti	**Total Inv. Costs**	O & M Costs Ethiopia	O & M Costs Djibouti	**Total O & M Costs**	**Loan repayment**	**Total Costs**	Power Export Revenues	Distribution Revenues	**Benefits to Consummers Djibouti**	Costs saving in Djibouti	Total Revenues	Net CashFlow
2005	-	-	-			-	-	-					-	-
2006	598		598			-	79	677					-	(677)
2007	5,168	845	6,012			-	431	6,443					-	(6,443)
2008	6,369	6,020	12,389			-	442	12,831					-	(12,831)
2009	14,481	19,422	33,903			-	482	34,385					-	(34,385)
2010	7,953	8,732	16,685			-	620	17,305					-	(17,305)
2011	4,989	2,206	7,195	577	543	1,120	676	8,991	7,656	766	17	7,092	15,531	6,540
2012			-	989	931	1,920	697	2,617	15,312	1,313	40	14,339	31,004	28,387
2013			-	989	931	1,920	702	2,621	15,313	1,379	50	14,338	31,080	28,458
2014			-	989	931	1,920	702	2,621	15,313	1,448	51	14,338	31,150	28,529
2015			-	989	931	1,920	702	2,621	15,313	2,027	52	14,338	31,730	29,109
2016			-	989	931	1,920	702	2,621	19,375	2,128	66	18,390	39,960	37,338
2017			-	989	931	1,920	1,284	3,204	20,422	3,073	72	19,433	42,999	39,795
2018			-	989	931	1,920	1,284	3,204	21,524	3,226	76	20,533	45,359	42,155
2019			-	989	931	1,920	1,284	3,204	22,687	3,388	80	21,692	47,846	44,642
2020	3,956	3,722	7,678	989	931	1,920	1,355	10,953	19,018	3,557	67	18,034	40,676	29,723
2021			-	989	931	1,920	1,355	3,275	20,863	3,913	73	19,873	44,722	41,447
2022			-	989	931	1,920	1,355	3,275	22,807	3,913	80	21,812	48,612	45,337
2023			-	989	931	1,920	1,355	3,275	17,285	3,913	61	16,306	37,565	34,290
2024			-	989	931	1,920	1,355	3,275	19,445	3,913	68	18,460	41,886	38,611
2025			-	989	931	1,920	1,355	3,275	21,722	3,913	76	20,730	46,441	43,166
2026			-	989	931	1,920	1,355	3,275	24,121	3,913	85	23,122	51,241	47,966
2027			-	989	931	1,920	2,520	4,439	26,650	3,913	94	25,644	56,301	51,861
2028			-	989	931	1,920	2,520	4,439	29,315	3,913	103	28,303	61,634	57,194
2029			-	989	931	1,920	2,520	4,439	32,125	3,913	113	31,104	67,255	62,815
2030			-	989	931	1,920	2,662	4,581	35,087	3,913	123	34,056	73,179	68,598
2031			-	989	931	1,920	2,662	4,581	38,208	3,913	134	37,169	79,424	74,842
2032			-	989	931	1,920	2,662	4,581	41,497	3,913	146	40,450	86,005	81,424
2033			-	989	931	1,920	2,662	4,581	44,965	4,304	158	43,907	93,333	88,752
2034			-	989	931	1,920	2,662	4,581	48,619	4,304	171	47,551	100,645	96,064
2035			-	989	931	1,920	2,662	4,581	52,471	4,304	184	51,392	108,351	103,770
2036			-	989	931	1,920	2,662	4,581	55,470	4,304	195	54,383	114,352	109,770
2037			-	989	931	1,920	2,662	4,581	58,466	4,304	206	57,369	120,345	115,763
													NPV	**$172,578.98**
													FIRR	**28.05%**

MULTINATIONAL: ETHIOPIA-DJIBOUTI POWER INTERCONNECTION PROJECT
PROJECT COMPLETION REPORT (PCR)

Annex 4: Procurement Plan

Annex 4 (a): Construction of Transmission Lines (EDPIP-A1), Construction of Substations (EDPIP-A2) and Electrification of Border Towns (EDPIP-B)

No	Activities	Contract Packages		
		EDPIP-A1	EDPIP-A2	EDPIP-B
1	Issue of Procurement Notice	Jan-07	Jan-07	Jan-07
2	Bid Issued	Feb-07	Feb-07	Feb-07
3	Bid closing date	Apr-07	Apr-07	Apr-07
4	Evaluation completed and submitted for Bank's No Objection	Jul-07	Jul-07	Jul-07
5	Bank's No Objection on Evaluation Report granted	Jul-07	Jul-07	Jul-07
6	Contract Awarded, Ethiopia	Sep-07	Sep-07	Sep-07
7	Contract Awarded, Djibouti	Sep-07	Sep-07	Sep-07

Annex 4 (b): Consultancy Services

No	Activities	Contract Packages	
		Project Supervision and Management	Institutional Support
1	Short list approved	Aug-05	Aug-05
2	RFP submitted to the Bank	Sep-05	Oct-05
3	RFP issued	Oct-05	Oct-05
4	Proposal submitted	Dec-05	Dec-05
5	Technical Evaluation completed and submitted for Bank's No Objection	Jan-06	Jan-06

6	Bank's No Objection for Technical Evaluation Report granted	Feb-06	Feb-06
7	Fianacial and Technical Evaluation completed and submitted for Bank's No Objection	Mar-06	Mar-06
8	Bank's No Objection for Financial and Technical Evaluation Report granted	Apr-06	Apr-06
9	Draft Contract Negotiated and submitted to the Bank	May-06	May-06
10	Bank's No Objection for Draft contract granted	Jun-06	Jun-06
11	Contract awarded, Ethiopia	Aug-06	Aug-06
12	Contract awarded, Djibouti	Aug-06	Aug-06

MULTINATIONAL: ETHIOPIA-DJIBOUTI POWER INTERCONNECTION PROJECT
PROJECT COMPLETION REPORT (PCR)

Annex 5: List of Supporting Documents

No.	Description
1	Project Preparation/Appraisal/Re-appraisal Reports
2	Loan Agreements
3	ADF Disbursement Ledgers
4	Supervision Mission Aid Memoires
5	Bank - GoE/GoE and GoD/EdD Correspondences
6	Quarterly Progress Reports & Project Audit Reports
7	Executing Agency's Project Completion Report
	Consultant's Project Completion Report
8	Contract Documents
8.1	Construction of 230 kV and 63 kV Transmission Networks (Lot 1 and Lot 2)
8.2	Erection of 230/63/20 kV, 230/33 kV and 63/20 kV Substations
8.3	Construction of Distribution Networks (33 kV and 0.4/0.22 kV lines, 33/0.4 kV station, street light and service drops)
8.4	Consultancy Agreement - Supervision of Substation Construction (EEPCo)
8.5	Consultancy Agreement - Supervision of network construction (EdD)
8.6	Consultancy Agreement - Institutional support
9	Reports on Institutional Capacity Building component of the project (EdD Load Forecast, EdD Generation Expnasion Plan, EdD Institutional Study, EdDTariff Study and Training (EdD & EEPCo)
10	Compensation Plan
11	EEPCo - Independent Auditor's Reports and Financial Statements, July 2009
12	EdD-Independent Auditor's Reports and Financial Statements, July 2009
13	Ethiopia-PRSP
14	Djibouti - PRSP
15	Ethiopia - Country Strategic Paper (CSP) (2002-2004)
16	Djibouti - Country Strategic Paper (CSP) (2002-2004)
17	Bank’s Strategy for Regional Cooperation and Economic Integration (2000)

Annex 6: **Assumptions for Demand and Supply Analyses**

1. The load forecast for EdD is based on the Tariff Study/Generation Expansion Plan prepared under the project by the Institutional Consultant.

Demand

2. The actual generation figure (320 GWh) is the take off value in the projection of generation demand in EdD.
3. The generation demand in 2010 is projected to grow at an annual average growth rate of 5.4%.
4. The losses are those estimated in the Tariff Study.

Supply

5. The generation demand is met through local generation and import through the Interconnector.
6. The PPA specifies that energy import would be negotiated on yearly basis, and the import for the year following the commissioning of the project would be 243 GWh. It is assumed that the project will supply power (121.5 GWh) for half year in 2011; and 243 GWh/annum between 2012 and 2015.
7. It is further assumed excess power will be available in 2016 and beyond and therefore the import is assumed to increase. However, the minimum local generation will remain at 30% of demand until 2019 to maintain system operational requirements.
8. It is expected 20 MW (about 120 GWh/annum) each geothermal plants will be operational in 2017, 2020 and 2023. The cumulative generation of geothermal energy will be 120 GWh in 2017, 240 GWh in 2023 and 360 GWh in 2023.
9. As these plants are base load power plants, EdD will fully use the geothermal supply and import the balance. Therefore, the local generation in 2020-2022 will be 240 GWh and in 2023-2035 will be 360 GWh, as opposed to 30% of demand. The supply in 2036-2040 will be 30% of demand.

MULTINATIONAL: ETHIOPIA-DJIBOUTI POWER INTERCONNECTION PROJECT
PROJECT COMPLETION REPORT (PCR)
Demand Forecast and Project Revenue

Year	Djibouti Demand			Djibouti Supply							Remark
				Local Supply		Interconnection Supply					
	Sales Energy (GWh)	Losses (%)	Sent Out Energy (GWh)	%	GWh	%	Supply (GWh)	Losses GWh (@4.5%)	PK12 Sent Out @DD Substation(GWh)	Interconnection Revenue In MUSD (@6USC/kWh)	
2010	253	20.9	320	100	320	0					
2011	268	20.4	337	64	216	36	121.5	5.7	127.2	7.3	
2012	285	19.9	355	32	112	68	243.0	11.5	254.5	14.6	
2013	302	19.4	375	35	132	65	243.0	11.5	254.5	14.6	
2014	320	18.9	395	38	152	62	243.0	11.5	254.5	14.6	
2015	340	18.4	416	42	173	58	243.0	11.5	254.5	14.6	
2016	360	17.9	439	30	132	70	307.1	14.5	321.6	18.4	Sufficient surplus in 2016 and beyond
2017	382	17.4	462	30	139	70	323.7	15.3	338.9	19.4	20 MW geothermal in Djibouti
2018	405	16.9	487	30	146	70	341.2	16.1	357.2	20.5	
2019	429	16.4	514	30	154	70	359.6	16.9	376.5	21.6	
2020	455	15.9	541	44	240	56	301.4	14.2	315.7	18.1	Add 20 MW geothermal in Djibouti
2021	483	15.4	571	42	240	58	330.7	15.6	346.3	19.8	
2022	512	14.9	602	40	240	60	361.5	17.0	378.5	21.7	
2023	543	14.4	634	12	360.0	43	274.0	12.9	286.9	16.4	Add 20 MW geothermal in Djibouti
2024	575	13.9	668	12	360.0	46	308.2	14.5	322.7	18.5	
2025	610	13.4	704	12	360.0	49	344.3	16.2	360.5	20.7	
2026	647	12.9	742	12	360.0	52	382.3	18.0	400.4	22.9	
2027	685	12.4	782	12	360.0	54	422.4	19.9	442.3	25.3	
2028	722	12.4	825	12	360.0	56	464.7	21.9	486.6	27.9	
2029	761	12.4	869	12	360.0	59	509.2	24.0	533.2	30.6	

2030	803	12.4	916	12	360.0	61	556.1	26.2	582.3	33.4	
2031	846	12.4	966	12	360.0	63	605.6	28.5	634.1	36.3	
2032	892	12.4	1018	12	360.0	65	657.8	31.0	688.7	39.5	
2033	940	12.4	1073	12	360.0	66	712.7	33.6	746.3	42.8	
2034	990	12.4	1131	12	360.0	68	770.6	36.3	807.0	46.2	
2035	1044	12.4	1192	12	360.0	70	831.7	39.2	870.9	49.9	
2036	1100	12.4	1256	12	376.8	70	879.2	41.4	920.7	52.8	
2037	1160	12.4	1324	12	397.2	70	926.7	43.7	970.4	55.6	
2038	1222	12.4	1395	12	418.6	70	976.8	46.0	1022.8	58.6	
2039	1288	12.4	1471	12	441.2	70	1029.5	48.5	1078.0	61.8	
2040			1550	12	465.0	70	1085.1	51.1	1136.2	65.1	
									Total revenue generated from Interconnector (MUSD)	909.3	
									Average yearly generated revenue (MUSD)	30.3	

Information on EEPCo Losses (2009 actual figures)

Transmission Losses 5.34%
Distribution Losses 11.50%
Sales (Non-technical Losses 6.24%
Generation 3702.9 GWh
Sales 2888 GWh
Total Loss 22.01%