



1. Project Data:		Date Posted : 05/22/2001	
PROJ ID : P001662		Appraisal	Actual
Project Name : Power V	Project Costs (US\$M)	231.28	139.87
Country : Malawi	Loan/Credit (US\$M)	55.00	53.53
Sector(s) : Board: EMT - Power (98%), Renewable energy (2%)	Cofinancing (US\$M)	112.49	68.2
L/C Number : C2386			
	Board Approval (FY)		92
Partners involved : EIB; KfW; CDC; FMO	Closing Date	06/30/1998	06/30/2000
Prepared by :	Reviewed by :	Group Manager :	Group:
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2. Project Objectives and Components

a. Objectives

Original objectives :

The overall objective of the project was to implement the power component of the least cost energy strategy adopted by the Government of Malawi.

The specific objectives were to:

- (i) meet the growth in demand for power in a least cost manner through the construction of the Kapichira hydroelectric scheme and the rehabilitation of the hydro, standby gas, and diesel power plants;
- (ii) improve the quality of power supply through reinforcing the transmission and distribution systems to minimize outages and reduce losses;
- (iii) strengthen the capacity of energy sector institutions to plan, manage, and operate the energy sector facilities and institutions; and
- (iv) assist in rationalizing sector-wide energy pricing policy.

Revised objectives :

Due to lack of co-financing, the objective of improving the quality of power supply through reinforcing the transmission and distribution system was dropped during project restructuring in June 1998.

b. Components

Power components : Kapichira Hydroelectric Scheme: (i) construction of a dam (originally 800m long but later reduced), two steel penstocks, a power house, a tailrace and a switchyard; (ii) installation of two Francis turbines coupled to two 25 MW generators; (iii) switchgear and control equipment for Kapichira Switchyard and extension of substations at Tedzani and Blantyre West; (iv) construction of about 58 km 132 kV single circuit transmission line; (v) extension of the System Control and Data Acquisition (SCADA) system to include Kapichira and upgrading the existing generation control microcomputer center at Nkula B power station and interface of the telemetry software with the existing system; (vi) establishment of single channel PLC and telephone links to Kapichira; and (vii) associated engineering services for the hydroelectric scheme. An intake canal was cancelled after a redesign of the Kapichira power house, in response to recommendations by the Environmental Assessment. Generation Rehabilitation: improvement of the availability of the existing power plants through the reconditioning or replacement of the runners, guide vane, and cooling systems; provision of essential spares and rehabilitation of the intake structure for the hydro power stations; and acquisition of spares for the gas turbines and diesel power plants. Dredging of the Nkula reservoir and installation of four Kapichira generators were added after appraisal. Transmission and distribution reinforcement components to improve the reliability of the distribution system and the transmission system to the Northern Region were cancelled after project restructuring in June 1998. Institutional Strengthening of ESCOM: consultancy services for studies to determine the least cost option for power supply after Kapichira and provision of expert services; establishing a strategy for computerizing ESCOM's financial and technical operations, provision for the acquisition of one central computer system at ESCOM's headquarters and 18 microcomputers; and provision for training of ESCOM's staff to assist in building capacity to plan, manage and operate ESCOM's facilities and systems. **Non-Power Component :** Energy Planning and Policy: a household energy strategy study which will establish a database for household energy supply and demand, examine the supply and marketing of various forms of household energy and recommend a household energy strategy; and expert services to advise the Government on energy-related issues. Petroleum Supply: expert services to review arrangements for

petroleum product procurement, transportation, and bulk storage and the legal framework of the Petroleum Control Commission (PCC). An energy efficiency component to demonstrate energy efficient barn designs for tobacco curing was cancelled at project restructuring. Advisory services for the development of a Power Sector Policy was added.

c. Comments on Project Cost, Financing and Dates

Total project costs were US\$ 139.87 million compared to the SAR estimate of US\$ 231 million. The difference is partly due to the cancellation of a number of project components. IDA financed about US\$54 million, EIB US\$20 million, KfW US\$18 million, CDC US\$24 million, and FMO US\$5 million. About US\$.49 million of the IDA credit was undisbursed at project closing. ESCOM contributed about US\$18 million equivalent in local costs. Although it was agreed at negotiations that the Government would reach an agreement with AfDB for co-financing of the two Kapichira turbines and generators and the transmission and distribution component, AfDB was unable to meet its financing commitments following credit effectiveness. The transmission and distribution components canceled by the project are now being financed by SIDA, NDF, and NORAD.

3. Achievement of Relevant Objectives:

(i) Meet the growth in demand for power in a least cost manner : This objective has been achieved. The construction of the Kapichira hydroelectric scheme has made a significant contribution to the ESCOM's energy production capability. Despite creating an initial energy surplus because of lower than expected growth in electricity demand, it came on line when the reserve margins were near zero, increasing ESCOM's installed hydro generating capacity by 30 percent and its energy production capability by about 40 percent. The added capacity will allow ESCOM to better meet peak demands and operate more efficiently. Although demand has been lower than forecasted, the ERR for the project is still acceptable at 11%. Generation rehabilitation and the dredging of the regulating reservoir for the Nkula power plant has augmented supply. However, the low reliability of the transmission and distribution systems will continue to constrain the quality of service. Recent Bank efforts have resulted in the successful mobilization of financing for transmission and distribution reinforcement.

(ii) Strengthen the capacity of energy sector institutions : This objective has been partially achieved. The household and biomass studies will be a valuable contribution to the National Energy Strategy under preparation. Petroleum sector reforms made the petroleum study irrelevant. In terms of strengthening ESCOM's operations, the preparation of a least cost development plan has helped identify least-cost development alternatives for the power system. However, a Systems Operations Model developed under the project did not become operational and the installation of a new billing system was delayed and experienced serious problems.

(iii) Assist in rationalizing sector-wide energy pricing policy : This objective has not been achieved. Electricity tariff adjustments were inadequate, severely compromising ESCOM's financial performance.

4. Significant Outcomes/Impacts:

- (1) While sector reform was not a stated objective, the project acted as a catalyst for power sector dialogue between the Bank and the Government. Advisory services provided under the project assisted in the drafting of the Power Sector Policy paper which aims to increase private sector participation in the provision of electricity services.
- (2) This was the first project in the Africa region to be subject to a full Environmental Assessment. Implementation of EA recommendations was highly satisfactory with many social and environmental benefits extending beyond the limits of the site specific mitigation measures.

5. Significant Shortcomings (including non-compliance with safeguard policies):

Despite project efforts to strengthen ESCOM's operations, ESCOM was a much weaker institution both financially and operationally at project closing than it was at appraisal. Problems with operationalizing a new billing system and inadequate adjustments to electricity tariffs contributed to declining financial performance and quality of electricity service.

6. Ratings:	ICR	OED Review	Reason for Disagreement /Comments
Outcome:	Unsatisfactory	Moderately Unsatisfactory	The project achieved one of its key objectives of meeting growth in power demand in a least cost manner.
Institutional Dev.:	Modest	Modest	
Sustainability:	Unlikely	Unlikely	
Bank Performance:	Satisfactory	Unsatisfactory	The Bank, at entry, failed to: (1) secure all project financing prior to Board approval; (2) undertake a rigorous update of demand growth forecast during the 11/2 year delay in project effectiveness, given that according to available data, by project effectiveness, real growth electricity sales were less than 1% compared to the forecasted 10%; and (3) adequately assess Borrower commitment

			to tariff adjustments. Without this commitment, the use of loan conditionalities proved to be a weak vehicle in promoting tariff reforms.
Borrower Perf .:	Unsatisfactory	Unsatisfactory	
Quality of ICR .:		Satisfactory	

NOTE: ICR rating values flagged with '*' don't comply with OP/BP 13.55, but are listed for completeness.

7. Lessons of Broad Applicability:

- (1) Borrower commitment to institutional and tariff reform must be carefully assessed at appraisal . Without full ownership, the Borrower may be a weak and ineffectual partner in implementing such reforms . As evidenced by this project, implementation of key reforms is not ensured by their inclusion in loan conditionalities .
- (2) Initial sector reforms may not be a good indicator of Borrower commitment . For instance, the creation of an independent electricity regulator did not have strong political commitment, compromising its autonomy and subsequent impact on the economic regulation of the sector .
- (3) Lack of co-financing caused the cancellation of the transmission and distribution components, seriously impacting the overall quality of electricity services and project outcome . Commitments of co-financiers should be agreed upon as early as possible during project appraisal and negotiations, to ensure timely implementation .
- (4) Flexibility by the Bank in reallocating funds helped the project achieve some satisfactory outcomes, including expansion of generation capacity and advisory services for sector reforms .

8. Assessment Recommended? ☐ Yes ☒ No

9. Comments on Quality of ICR:

The ICR is well-written and comprehensive, including information on social and environmental impacts .