ICR Review
Operations Evaluation Department

Report Number : ICRR11780

1. Project Data:		**Date Posted :** 06/24/2004		
PROJ ID :	P001780		**Appraisal**	**Actual**
Project Name :	Mz Gas Engineering (engy)	**Project Costs (US$M)**	48.7	25.8
Country :	Mozambique	**Loan/Credit (US$M)**	30.0	25.8
Sector(s):	Board: EMT - Oil and gas (93%), Central government administration (7%)	**Cofinancing (US$M)**	ENH (local) 1.1 Private Sector 17.6	
L/C Number :	C2629			
		Board Approval (FY)		94
Partners involved :		**Closing Date**	06/30/2000	06/30/2003

Prepared by :	**Reviewed by :**	**Group Manager :**	**Group :**
Fernando Manibog	John R. Heath	Alain A. Barbu	OEDST

2. Project Objectives and Components

a. Objectives

The objectives as stated in the Memorandum of the President (MOP) and the Implementation Completion Report (ICR) differ from those in the legal documents. According to the MOP and the ICR, the project had one primary objective and three secondary objectives:

1. Enable the Borrower, together with Empresa Nacional de Hidrocarbonetos (ENH) and the private sector investors, to make a firm decision to develop Pande gas (primary);
2. Minor environmental clean-up related to previous gas exploration activities;
3. Preparing for gas supplies to suitably located Mozambican towns and the consequent opportunity for power supplies;
4. Strengthen the Borrower's relevant institutions to prepare for a substantial role in future gas operations.

The legal documents, however, stated only two objectives and excluded the second and third objectives above. This ICR review considered all four objectives.

b. Components

The project was divided into two phases:

Phase 1:

1. **Enhancement of gas reserves (US$12.7 million/ 26.1% of project cost)** including, inter alia, drilling of about three wells and shooting and processing of about 1200 km of seismic lines which should bring the remaining recoverable reserves at Pande to 2 trillion cubic feet (TCF), and carrying out of a preliminary study on financing options for the development of Pande gas.
2. **Enhancement of ENH's role as a joint venture (JV) partner and strengthening of ENH internally (US$6.4 million/13.1% of project cost)** through technical assistance and some equipment and materials, including: work on project management; assistance in negotiations; a range of studies to better prepare the gas development project and enhance ENH's position; strengthening of ENH's accounting and management information systems; a structured training program; work related to gas supplies to towns near to Pande field; and environmental support.
3. **Strengthening of the Hydrocarbons Directorate (US$1.1 million/ 2.2% of project cost),** through technical assistance, including defining environmental standards; formulating the relevant institutional and regulatory framework, tax and incentive systems; and training.

Phase 2:

4. **Activities related to the JV (US$22.5 million/ 46.2% of project cost)**, (the cost will be shared between the partners) consisting of a project management team; a full environmental assessment and mitigation plan (including equipment for monitoring); arranging the finance; further engineering of the development project; and operational training.
5. **Further support to ENH (US$5.0 million/ 10.3% of project cost)**, including materials in negotiating its participation and benefits from the project; in firming up its knowledge of issues related to its role in the project; detailed work relating to gas supplies to Maputo and other towns; and implementation of a new accounting system related to its joint-venture role.
6. **Further strengthening of the Hydrocarbons Directorate (US$1.0 million/ 2.1% of project cost)** and assistance in finalizing the institutional, tax and incentive system.

c. Comments on Project Cost, Financing and Dates

The ICR states that because the private sector did not require a contribution from Mozambique to the JV when it materialized, the project cost was reduced by US$ 17.6 million (estimated total cost of the JV was US$ 18.9 at the time of the appraisal). Excluding the JV from total actual project costs is questionable, since the JV was an important component, comprising almost 40% of project cost at appraisal. To provide a complete overview of project implementation and maximize lesson-learning, it would have been beneficial if the ICR had included the JV and related activities in reviewing the whole project. Likewise, it would have been better to include the technical assistance activities that were ultimately financed by NORAD and Sasol, as they were essential to achieving the sustainability and some of the objectives of the project. The Credit was reduced by US$4.2 million, partly because the private sector did not seek government counter-financing for the JV, but a more detailed discussion of the reduction would have been beneficial, in particular since the ICR seem to have some inconsistencies between the final project costs presented in the table on page three and those presented in annex two (such as the figures presented for training and for equipment and materials).

3. Achievement of Relevant Objectives:

1. Enable the Borrower, together with ENH and the private sector investors, to make a firm decision to develop Pande gas (primary objective). *This objective was largely achieved.* The parties reached a decision to develop (and export) gas in Mozambique partly as a consequence of the project. The seismic survey and drilling program increased proven recoverable reserves from 1.64 to 1.85 TCF, an increase of 13% (but below the goal of 2 TCF). Subsequent to the IDA-financed drilling and seismic survey, private companies explored elsewhere (specifically the nearby Temane field) and discovered an additional 0.4 TCF. The private sector then considered the combined reserves of the Pande and Temane fields sufficient to invest in field development. However, unnecessarily costly and lengthy negotiations may have led to a sub-optimal result for the Borrower, partly because of an underestimation of the institutional training needs during project preparation.

2. Minor environmental clean-up related to previous gas exploration activities. *This objective was partially achieved.* The objective aimed at environmental clean-up after a blow out in the 1960s. To achieve this objective, water was desalinated and new vegetation was planted. However, the crater was not filled because it was deemed too expensive compared to the expected benefits. The ICR does not provide any further details on the environmental clean-up.

3. Preparing for gas supplies to suitably located Mozambican towns and the consequent opportunity for power supplies. *This objective was achieved,* from a purely physical perspective, as stated. Gas production (mainly utilized for electricity production) for use nearby the fields increased at an annual rate of almost 35% from 1994 to 2002. However, the local grid may not be financially viable or sustainable, as the gas is currently provided for free.

4. Strengthen the Borrower's relevant institutions to prepare for a substantial role in future gas operation. *This objective was partly achieved.* ENH was restructured from an operator with a staff of 250 to a national oil company with a staff of 120 (further reduction is expected). However, considerable strengthening is still required of the legal and financial skill of EHN staff, and promising Mozambicans had yet to be hired for this purpose when the ICR was written. No significant transfer of skills was achieved through on-the-job training of well-qualified Mozambicans working with external consultants and advisors. There was little focus on "training trainers". The ICR provides no discussion of results of the strengthening of the Hydrocarbons Directorate or any of the other institutions that benefited from the training program.

4. Significant Outcomes/Impacts:

Partly thanks to the project, an agreement to export Pande gas was finally signed forty years after discovery and after twenty years of government attempts to reach an agreement.

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

* The substantial need for improving the Borrower's capacity to assume such a complex project was not sufficiently recognized during project preparation.
* The training and capacity building program should have been heavily front-loaded to provide the Borrower with more essential skills necessary for effectively negotiating with private companies in the best interest of Mozambique. The eventual course of the project illustrates the large room for improvement in this regard.
* ENH depended to a large extent on external advice for appraising and negotiating with the petroleum companies, but given the limited participation of ENH staff and Mozambicans in this process, few essential skills were transferred to Mozambique's relevant institutions.
* No mechanism monitored the progress or provided quality control of the training programs; little attention was paid to the work of consultants.
* Despite the importance of extractive sector revenue management, the ICR provides no evidence that this issue was addressed during project implementation.

6. Ratings:	ICR	OED Review	Reason for Disagreement /Comments
Outcome:	Highly Satisfactory	Moderately Satisfactory	[The ICR's 4-point scale does not allow for

			a moderately satisfactory rating]. Although the ICR's summary ratings rate overall outcome as highly satisfactory, the ICR text rates the project's two phases as unsatisfactory and satisfactory, respectively, which is a confusing inconsistency. Gas development was achieved without using a competitive process, and the negotiations consequently proved to be both costly and lengthy. In the absence of financial and economic information on the gas export project, it is difficult to ascertain whether the final outcome was the best possible for Mozambique. Moreover, as discussed above, the important goal of strengthening the Borrower's capacity for gas sector operations was only partially achieved; environmental clean up was also only partially achieved; and use of gas supplies in surrounding towns was physically achieved but on a financially non-viable basis.
Institutional Dev .:	Modest	Modest	Refers only to ENH. No discussion is provided on the project's ID impact on other institutions. ENH totally depended on external advisers and no significant transfer of skills occurred, as intended. Considerable EHN strengthening is still required; Mozambique staff with legal and financial skills have yet to be hired.
Sustainability :	Highly Likely	Likely	The ICR provides no discussion of the future fiscal revenues and economic benefits to Mozambique of future gas exports in spite of the fact that these are presented as the major benefit of the engineering project. [The summary figures in the Borrower's section of the ICR are not directly comparable to the MOP estimates, and an update would have been useful.] Moreover, sustainability is vulnerable to a lack of adequate skills transfer and local capacity building, and by a lack of focus on "training trainers" to ensure future domestic capabilities to train their own people internally.
Bank Performance :	Satisfactory	Unsatisfactory	The Bank did not use its leverage to steer Mozambique away from repeatedly granting exclusive rights to a single private company (despite the unhappy experience with Enron) and toward the use of a more competitive process. The result was lengthy and costly negotiation for which the country was not prepared, and therefore the final result was likely sub-optimal for Mozambique. Furthermore, when preparing the project, the Bank should have recognized the vast capacity building needs and the substantial resources required to achieve them and taken sufficient measures to ensure the transfer of skills to Mozambique. The Task Manager was

			changed five times during the project and this hurt the continuity and supervision of project progress. The apparent lack of supervision missions during the last two years of the project further contributed to this (the region indicates that some supervision took place in connection with preparation missions for follow up projects). The institutional capacity-building progress and other secondary objectives were not closely monitored, and neither was the work of consultants and advisors.
Borrower Perf .:	Satisfactory	Unsatisfactory	Mozambique granted exclusive rights to the Pande field to Enron using a non-competitive agreement. The agreement effectively contained no obligation for Enron to invest in Mozambique. Despite the lack of progress in the negotiations with Enron (no agreement was reached after six years of negotiations), the exclusive rights were renewed several times. The granting of exclusive rights over the Pande field to a single company proved to be an extremely costly negotiating procedure. Moreover, it raises the question to what extent it could have been possible for Mozambique to achieve higher tax and royalty revenue from the extraction of its natural resources, had a more competitive procedure been used. Furthermore, a similarly non-competitive procedure was again followed when awarding the rights to distribute gas in the Maputo region in spite of past lessons. Finally, quarterly reports were submitted erratically, and audited project and corporate accounts were submitted late. Several accounts were not consistent with International Accounting Standards.
Quality of ICR :		Unsatisfactory	

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

7. Lessons of Broad Applicability:

Institution building. Developing the skills and competence necessary for undertaking a major gas export project and develop it in the best interest of an inexperienced country requires a major effort and investment and must be recognized in the design of the project. The training component should be front-loaded to ensure that the local government receives essential skill - such as an understanding of complex negotiations - *prior to* undertaking them.
On-the-job training. Well qualified local participants should be actively involved in the work of external consultants and advisors to allow them to obtain essential skills. Training should focus on training the trainers to ensure local sustainability.

8. Assessment Recommended? ● Yes ○ No

Why? The petroleum sector is becoming an important engine of growth for Mozambique, and petroleum projects in Mozambique have yet to be evaluated. A cluster assessment of this and subsequent projects could provide valuable lessons for the future of the petroleum sector in Mozambique. The assessment could provide valuable lessons for how to develop petroleum export competence in a country with limited institutional capacity. These lessons could be particularly valuable for other developing countries, and is particularly relevant as the extractive sector continues its expansion into frontier markets, and as the Bank's role in these project faces intense scrutiny.

9. Comments on Quality of ICR:

In spite of its efforts to provide a candid assessment of the project's experience, the ICR is rated as unsatisfactory overall. A major flaw is that the ICR does not discuss the economic benefit to Mozambique of gas development and exports even though this is presented as the primary achievement of the engineering project . No updated estimates of the value of gas exports or government taxes and revenue are provided in the ICR, even though the export project's potential to raise government revenue and consequently finance poverty reduction programs is mentioned as consistent with the CAS and a major reason for undertaking the project . Furthermore, text and annex ratings are inconsistent in places: as noted in section 6, overall outcome is rated highly sat. while phase I and phase II are assessed as unsat. and sat. respectively (para. 4.2 of ICR). There seem to be some inconsistencies in the project costs presented in the table on page three and that presented in annex two, such as total expenses for training and equipment/materials. The ICR does not assess major parts of project which ended up being funded by others (JV, training financed by NORAD and Sasol). The ICR does not discuss the rationale behind the fact that final operating expenses under phase I ended up at a hefty US$ 3.2 million - US$2.7 million higher than the US$0.5 million estimated at appraisal (the Credit funded fuel purchases, insurance and maintenance of ENH's aircraft, and vehicle and insurance expenses). The ICR provides no direct explanation of why the closing was delayed by three years, leaving the reader to guess whether this is related to the lengthy negotiation process and delays caused by the changing the project manager several times. Finally, there is no explanation in the ICR as to why supervision costs were very high at US$118,000 per year (roughly double the Bank's norm) for the first years of the project, then no supervision mission took place in the final two years.