

**Mozambique: Electricity Supply for the Port of Maputo**

**Ex post evaluation report**

OECD sector	23040 / Electricity Transmission/Distribution	
BMZ project ID	1991 65 994	
<b>Project executing agency</b>	Portos e Caminhos des Ferro de Moçambique E.P. (CFM)	
<b>Consultant</b>	Deutsche Energie Consult (Decon) Bad Homburg	
Year of ex post evaluation		
	Project appraisal (planned)	Ex post evaluation (ac- tual)
Start of implementation	4th quarter 1995	3rd quarter 1996
Period of implementation	35 months	48 months
<b>Investment costs</b>	EUR 10.2 million	EUR 9.8 million
Counterpart contribution	EUR 0.0 million	EUR 0.0 million
<b>Financing, of which FC funds</b>	EUR 10.2 million	EUR 9.8 million
Other institutions/donors involved	none	none
<b>Performance rating</b>	3	
• <b>Relevance</b>	2	
• <b>Effectiveness</b>	2	
• <b>Efficiency</b>	4	
• <b>Overarching developmental impacts</b>	3	
• <b>Sustainability</b>	3	

**Brief description, overall objective and project objectives with indicators**

The FC project comprised the construction of a main switchboard plant (33/11kV), the rehabilitation of 16 transformer stations with low-voltage distributors and the renewal of the 11kV and 0.4kV cable network in the Maputo seaport. The lighting in some of the seaport areas was also renewed, the existing diesel generators were rehabilitated and other minor measures carried out on the seaport lighting system. The funds were invested primarily in replacement investments in facilities that were absolutely necessary for port operation and in accompanying consulting services.

The objective of the project was to ensure a reliable supply and distribution of electricity in the port of Maputo. The overall objective was to safeguard jobs, to contribute to domestic value generation and to achieve net foreign-exchange revenues from the export of services.

The indicator for the overall objective was the increase in port transshipment to 5.4 million tonnes per annum by the year 2000 with a declining number of employees.

The indicator for achieving the project objective was a reliable port operation with an at least 99% availability of the electricity fed into the grid, and power cuts of less than 80 hours a year on the medium voltage level.

### **Project design / major deviations from the original project planning and their main causes**

Under the World Bank project "Maputo Corridor Revitalisation Project" (MCRP, a "Technical Assistance Project" with a volume of USD 9.3 million), which was started in 1993, the serious fundamental weaknesses of the Maputo seaport were to be solved and a contribution was to be made to restoring good transshipments in the port, which had dropped to only 2.4 million tonnes, back to its old level of 15 million tonnes. The development strategy that was pursued comprised the following elements: (a) privatisation of most of the seaport and railroad operation through long-term lease agreements or a takeover by joint ventures with government participation; (b) conversion of the state-owned agency CFM into an autonomous enterprise that was to perform mainly controlling and supervisory functions and be responsible only for the basic infrastructure such as roads and electricity supply and services such as pilot services in the port; (c) dismissal of a large part of the redundant staff on the basis of a social plan. Although delayed, the MCRP was mostly completed successfully. British development cooperation drew up a master plan for the necessary investments in the Port of Maputo in 1992. A need for investment worth USD 182 million was established for the rehabilitation and expansion of the long neglected port facilities, of which USD 20 million was for priority measures in general port areas, which also include the FC project. The services financed from FC funds were tendered on a turnkey basis, and the executing agency was supported by a consultant financed from FC funds for the preparation and evaluation of the tender, and for the supervision and acceptance of the civil works. The project costs eventually differed considerably from the original estimate. Lower contract prices were achieved, leaving a substantial balance which was partly used for the following additional measures:

- Renewal of the lighting of the main port facilities outside the concession area of the future private operator;
- Supply of lighting equipment for a newly constructed access road and a 11 kV switchboard plant for the sugar terminal;
- Rehabilitation of the two diesel generators in the main transformer station A (without capacity expansion), which can serve as an emergency power source when needed;
- Renewal of the direct current and alternating-current connections on the port cranes as the existing connections were no longer safe.

A remaining balance of EUR 0.5 million was reprogrammed for the FC project electricity supply Matola Seaport. Administrative delays within the executing agency and problems with Mozambican customs clearance led to a delay in the start of the project and prolonged the implementation period.

### **Key results of the impact analysis and performance rating**

The result of the FC measures was a functioning power supply for all electrically operated facilities and equipment in the Maputo Seaport. The design of the project measures as basic equipment was appropriate even from today's perspective. There are standard sizes for the majority of the equipment components that were installed. The smallest design standards available were usually applied that would still be appropriate for an eventual considerable expansion of the transshipment volume at a later stage.

The FC project made an important contribution to securing the supply of electricity for the Port of Maputo as one of the fundamental pre-requisites for maintaining and further developing the

port operation. Without it there would not have been any possibility of increasing the transshipment volume and implementing the privatisation (as a prerequisite for long-term sustainable operation of the port).

The transshipment volume in the port of Maputo (2004: 5.4 million tonnes) increased much more slowly than originally forecasted but showed a positive trend (2005: 6.4 million tonnes and 690 vessels handled; for 2006 CFM expects around 7 million tonnes on the basis of the current trend). International transports account for 99% of the transshipment.

The private consortium "Maputo Port Development Company (MPDC)" has been operating the main portion of the port terminal as the main lessee since 2003. The implementation of the agreed investment programme (around USD 70 million) for the renewal and expansion of the port facilities has started. It is estimated that around USD 45 million has already been invested for various measures that have improved the performance of the port (among others, reduction of average berthing times from 13 to three hours and increase in transshipment capacity to around 15 million tonnes).

In particular the transport link to the Republic of South Africa (RSA) is of great importance for port operation. There are deficiencies in this area. The concessionary of the Ressoro Garcia train link to the RSA failed to start its contractually agreed operation. CFM rescinded the concession agreement in mid-2005 and has resumed operating the line itself, on which there is little traffic (2.1 million tonnes in 2005, around half of which was coal). The transport link is likely to improve once the World Bank-financed line rehabilitation, (cost of around USD 12 million) has been completed in early 2007. The parallel highway to the RSA, which takes around 75% of the traffic, is not a real alternative to rail transport for mass goods like coal or iron ore. Another obstacle for road transport is that the RSA offers a timeframe of only 16 hours per day for customs clearance. As a consequence of the inadequate transport link to the RSA MPDC as port operator is unable to achieve the goods transshipment presupposed by its business and financing models. MPDC has quoted the shortfall at around 7 million tonnes per year and has refused to pay part of the concession fees to CFM since 2004.

It was not possible to obtain precise information on the quality of port services and their costs because of the conflict between the CFM and the port concessionary MPDC. The operating situation appears to be unproblematic. As well, the considerable increase in goods transshipment since project appraisal and its continuous increase are indications of a generally satisfactory operating situation. The World Bank has confirmed that MPDC has been doing very good work in the area of safety, health and environmental management.

The profit and loss account of CFM reports quite a positive position, but this is not very informative as the profit of USD 30 million (2005) was based on extraordinary revenues that were not detailed. The financial situation of MPDC is problematic because it incurred high losses at the outset which severely weakened the company's equity position. The financial position of CFM and MPDC is somewhat unclear or weak, posing risks to the sustainable operation of the port. On the other hand, the South African logistics firm Grindrod Ltd. (2005: turnover of EUR 700 million, after-tax profit of EUR 115 million) acquired 12.24% of the share capital of MPDC in April 2006. Grindrod intends to further expand the port capacities and to become a driving force at MPDC. As the owner of the Matola coal terminal, Grindrod is investing USD 25 million, which gives some credibility to its announcement.

The indicator for the overall objective had been formulated as an "increase in port transshipment to 5.4 million tonnes per annum by the year 2000 with a declining number of employees". This overall objective was to be achieved through privatisation, institutional restructuring and rehabilitation of the infrastructure. As measured by the indicator, the overall objective of 5.4 million tonnes in goods transshipment was achieved in 2004, albeit four years later than planned.

The indicator for achieving the project objective was a reliable port operation with an at least 99% availability of the electricity fed into the grid and power cuts of less than 80 hours a year on

the medium voltage level. The indicator was well achieved, with downtimes of around 8.6 hours on average for the years 2003 to 2005. The availability of 99.9% can be rated good.

The project was not aimed explicitly at improving the living conditions of the poor population. No details on the impact of the project on good prices and employment were available. The project was not aimed at improving the environment nor did it cause any major adverse environmental impact. It complies with the national environmental standards and has obtained all relevant certifications. The indirect environmental impacts are minor because electricity is supplied from the existing Cahora Bassa hydropower plant. The project was not intended to resolve any gender issues and had no significant potential for achieving this either. The project did not pursue the goal of improving participatory development or governance.

Based on a combined assessment of all impacts and risks described above, we have arrived at the following rating of the developmental efficacy of the project:

#### Relevance:

The creation of efficient seaports is of great significance for Mozambique's economic development. Upgrading the main seaport (Maputo) was of particular importance because its transshipment and transshipment capacity have dropped sharply and represented a bottleneck to Mozambique's economic development. It was plausible that improving the supply of electricity, which was found to be inadequate at the time of the appraisal of the project, in connection with institutional reforms relating to port operation and further investment measures would contribute to improving the operation of the seaport. The FC-financed investments were closely agreed and coordinated with the government of Mozambique and with other donors such as the World Bank and the UK's DFID. The design of the FC project was appropriate. The government of Mozambique made a considerable political effort to implement the overall conception, particularly the restructuring of the seaport/railway sector with the aim of achieving more private sector involvement. What must be assessed negatively with a view to coherence is the hardly constructive policy of the RSA (de facto tantamount to restricting transit), which is considerably impairing the development of the port of Maputo. We classify the relevance of the project as good (sub-rating: 2).

#### Effectiveness

The objective of the project was to ensure a reliable supply and distribution of electricity in the port of Maputo. The indicator of "power cuts of less than 80 hours a year on the medium voltage level" which was adopted to measure its achievement is being well fulfilled with current downtimes of seven hours a year. The project output of "secure electricity supply" benefits the target group (port users) to a high degree because power cuts result in considerable safety risks and incremental costs of port operation. We classify the effectiveness of the project as good (sub-rating 2).

#### Efficiency

The FC-financed measures provided most of the basic technical equipment necessary for achieving the project objectives, although the equipment dimensions technically could not be strictly geared to the transshipment volume. The investment costs of the FC-financed measures that were put in place were acceptable (production efficiency). What must be rated negative in terms of allocation efficiency is the operation of the electricity supply facilities, which were financed from FC funds and are probably not operating on a fully cost-covering basis, and the financial weaknesses of port operation. Given the shortcomings in this area we rate the project's efficiency as slightly insufficient (sub-rating 4).

#### Overarching developmental impacts

The overall objective was to safeguard jobs, to contribute to domestic value generation and to achieve net foreign-exchange revenues from the export of services through an increased transshipment volume. This objective was realistic and its formulation also corresponds with the current state of knowledge. Additional impacts include the opening of the seaport to private inves-

tors and the increase in foreign direct investment, as well as the transfer of know-how. At the time of project appraisal, risks were identified rather on the sector level and in the technical area, while the diverging interests of countries and enterprises were given less consideration, although they were responsible for the fact that the transshipment volume remained below the expectations. As a result, the indicator for the overall objective of "increasing port transshipment to 5.4 million tonnes annually by the year 2000 with a declining number of employees" could only be achieved with a four-year delay. Since then there has been a clearly positive trend in the transshipment volume we rate the overarching developmental impacts as satisfactory (sub-rating 3).

### Sustainability

Given a lifetime of 20 to 30 years for the electricity supply equipment financed from FC funds, the main criterion for sustainability is whether CFM and MPDC will be able to keep the port operating throughout this period. So far the experience has been positive. The transshipment volume has grown significantly in the past years, and various lessees have made considerable investments to further improve port operation. We expect the main bottlenecks to lie in the financial situation of MPDC and CFM as the main institutions responsible for port operation. Given the weak financial position of both MPDC and CFM there is a risk that the operation of the port might deteriorate in the future. However, we do not expect the effectiveness of the project, which we have so far rated positive, to deteriorate to such an extent as to prevent positive developmental impacts in the foreseeable future. The following factors contribute to this: although the financial situation at MPDC and CFM is currently unsatisfactory, a private investor (Grindrod) is prepared to invest in MPDC. Grindrod is a credible investor who holds high stakes in a functioning electricity supply for the Port of Maputo and has already made substantial investments in a terminal in the neighbouring port of Matola. Given the strategic importance of the port it can be assumed that maintaining its operation is a high priority for the Mozambican government. The Mozambican state is now in much better economic shape than at the time of project appraisal and is capable of raising the necessary funds. We therefore assume that the positive impact of the project can be maintained over the relevant period (sub-rating 3).

In consideration of the sub-criteria mentioned above, we rate the developmental effectiveness of the project as sufficient overall (rating 3).

### **General conclusions and recommendations**

When financing infrastructure under German Financial Cooperation, national self-interest should be taken into account more strongly in cases where the projects have international impacts. This also applies to projects with strong private sector relevance. In order to make concessions more successful, greater care should be taken to determine whether a lessee has a clear long-term interest or whether their commitment is driven primarily by short-term profit expectations.

### **Notes on the methods used to evaluate project success (project rating)**

Projects are evaluated on a six-point scale, the criteria being relevance, effectiveness, "overarching developmental impact" and efficiency. The ratings are also used to arrive at a final assessment of a project's overall developmental efficacy. The scale is as follows:

- 1 Very good result that clearly exceeds expectations
- 2 Good result, fully in line with expectations and without any significant shortcomings
- 3 Satisfactory result – project falls short of expectations but the positive outcomes dominate
- 4 Unsatisfactory result – significantly below expectations, with negative outcomes dominating despite discernible positive outcomes

- 5 Clearly inadequate result – despite some positive partial outcomes, the negative outcomes clearly dominate
- 6 The project has no impact or the situation has actually deteriorated

A rating of 1 to 3 is a positive assessment and indicates a successful project while a rating of 4 to 6 is a negative assessment and indicates an unsuccessful project.

Sustainability is evaluated according to the following four-point scale:

Sustainability level 1 (very good sustainability)

The developmental efficacy of the project (positive to date) is very likely to continue undiminished or even increase.

Sustainability level 2 (good sustainability)

The developmental efficacy of the project (positive to date) is very likely to decline only minimally but remain positive overall. (This is what can normally be expected.)

Sustainability level 3 (satisfactory sustainability)

The developmental efficacy of the project (positive to date) is very likely to decline significantly but remain positive overall. This rating is also assigned if the sustainability of a project is considered inadequate up to the time of the ex post evaluation but is very likely to evolve positively so that the project will ultimately achieve positive developmental efficacy.

Sustainability level 4 (inadequate sustainability)

The developmental efficacy of the project is inadequate up to the time of the ex post evaluation and an improvement is very unlikely. This rating is also assigned if the sustainability that has been positively evaluated to date is very likely to deteriorate severely and no longer meet the level 3 criteria.