

**Mozambique: Underwater fibre-optic cable  
Maputo – Beira – Nacala, Phase I**

**Ex post-evaluation report**

<b>OECD sector</b>	22020 / Telecommunications	
<b>BMZ project ID</b>	1998 65 106	
<b>Project executing agency</b>	TDM Telecomunicações de Moçambique	
<b>Consultant</b>	Deutsche Telepost Consulting GmbH, Bonn (DETECON)	
<b>Year of ex post evaluation</b>	<b>2006</b>	
	<b>Project appraisal (planned)*</b>	<b>Ex post evaluation (actual)</b>
<b>Start of implementation</b>	2nd quarter 1998	3rd quarter 1998
<b>Period of implementation</b>	17 months	44 months
<b>Investment cost</b>	EUR 30.68 million	EUR 38.34 million
<b>Counterpart contribution</b>	EUR 2.6 million	EUR 4.5 million
<b>Financing, of which FC funds</b>	Commercial loan EUR 5.1 million FC EUR 7.7 million	Commercial loan EUR 3.6 million FC EUR 7.7 million
<b>Other institutions/donors involved</b>	EUR 15.3 million (DBSA)	EUR 22.6 million (DBSA)
<b>Performance rating</b>	2	
<b>• Significance/relevance</b>	2	
<b>• Effectiveness</b>	2	
<b>• Efficiency</b>	2	

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

The aim of the project was to create modern telecommunications options for businesses, public authorities and for the population of the economic region between Maputo and Beira. The project objective was to meet the demand for transmission capacities for all types of telecommunications services between Maputo and Beira up to the year 2015. The achievement of the objectives is measured by *system availability* (target value: at least 95%) and by the increase in *traffic volume* between Beira and the other regional centres directly connected to the long-distance cable and Maputo (162 erlang at project appraisal; target; at least 301 erlang<sup>1</sup>).

The installation of an undersea cable was intended to increase the efficiency of businesses and public administration and to improve access to telecommunications and information for the population (overall objective). As a measure of success, the system was to be used primarily for productive purposes, with businesses and public administration accounting for most of the revenues (over 50%).

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<sup>1</sup> A unit of measurement that describes traffic density in a line in a given unit of time. One minute of traffic in one minute is equal to one erlang.

The project executing agency is the state-owned company Telecomunicações de Moçambique (TDM). As part of the liberalisation of the sector, the mobile telecommunications segment of TDM was spun off into a separate enterprise and TDM as a fixed telephony provider was transformed into a 100% state-owned limited liability company in 2002.

The recipient of the financial contribution and borrower of the commercial loan is the Republic of Mozambique represented by Banco de Moçambique.

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

At the time of project appraisal, building a functioning telecommunications infrastructure between the country's main cities Maputo and Beira as the backbone for the further development of the country's long-distance telecommunications was considered a prerequisite for reconstruction and economic development after the end of the 16-year civil war. This view is still maintained, and the importance of the project can be measured by the number of telephone users existing today: Whereas the total demand for telephony throughout the country was estimated to reach around 130,000 users by the year 2005 at the time of project appraisal, today around 1.6 million users have a telephone connection (mobile and fixed network). The fibre-optic cable laid in the framework of the project enables local, regional and international connections in the fixed and mobile telecommunications network, and it transmits data services in a far greater volume than expected at the time of the appraisal (internet, leased lines) as well as radio and television broadcasts. All of this enables an improved exchange of and access to information for businesses, public administration and the population.

The project has made a significant contribution to these objectives. The intended increase in traffic volume between Maputo and Beira (project objectives) from 245 E1<sup>2</sup> was already surpassed in 2005 (251 E1). A decisive factor was mobile telephony, but the lease of data lines also contributed greatly, doubling since 2003 (final inspection) from 12 to 23 leased lines. Given these developments, TDM is planning to advance the capacity expansion, which was already technically scheduled when the fibre-optic cable was initially installed, to the year 2007; it requires only a moderate financial effort.

Businesses and public administration in particular benefit from improved access to telecommunications services (overall objective). The system is being used primarily by productive users (fixed network and leased lines); 75% (target: >50%) of the revenues attributable to the cable are being generated by commercial users. Public administration accounts for 13% of revenues - among other activities, they conduct their budgetary planning through the newly created telecommunications channels. Revenues have risen considerably since the time of project appraisal, both in absolute and in relative terms.

The system is operating on a cost-covering basis and with a profit. In the coming years of operation, expenditures will rise as a result of higher maintenance needs, but maintenance costs account for a low share of the overall cost. Because of the low cost of operation the internal rate of return amounts to around 15% in nominal terms, significantly higher than the 8% target in the sector.

The implementation was 30 months overdue against the original planning. Delays were caused by lengthy negotiations of the financing and on-lending agreements, the time-consuming awarding procedure and problems in the actual implementation. The project conception was generally in line with the nature of the project and the delays cannot be attributed to it.

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

We rate the developmental efficacy of the project "Undersea fibre-optic cable Maputo – Beira – Nacala, Phase I" as follows:

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<sup>2</sup> E1 represents the smallest units of transmission capacity available in the cable; one E1 is equal to 30 parallel telephone channels

The investment has **relevance** as the line was and continues to be a central element of the telecommunications infrastructure between the country's main cities. The project has demonstrated that it has **significant impacts**. The economy and public administration in particular benefit from improved access to telecommunications services -- today 75% of the revenues attributable to the cable is generated by commercial users. The public sector contributes 13% of the revenues; it is already planning and realising its budget in part through the new telecommunications channel and will process its entire budget through the system in future. The intended target groups are being reached (sub-rating: 2).

The cable capacity utilisation is entirely satisfactory. The availability of the cable is above the target of 95%. From today's perspective, there does not appear to be any risk to the sustainable operation, neither with regard to the staff nor financially; the project executing agency has sufficient funds to finance even major repairs. The long-term achievement of the project objectives (**effectiveness**) is not at risk as we consider the occurrence of risks to the sustainability referred to below to be rather unlikely, and their impact on the project would be minor (sub-rating: 2).

Laying a fibre-optic cable in the sea involves specific high investment costs but also entails low operating and maintenance costs. The specific cost of the investment was appropriate. The running costs of operation and maintenance can be met by the connection and communication fees in the fixed network and by revenues from leased lines. The profitability calculation revealed an IRR of 15%. In view of the operational risks that might result from the initiated reorganisation of TDM in connection with staff downsizing, we rate the long-term **efficiency** of the project as not very good but satisfactory (sub-rating: 2).

**Risks to sustainability:** No operational risks to sustainability can be identified. In view of the measures introduced so far by the project executing agency TDM to improve the quality of service and customer relations and to downsize the staff, it can be assumed that TDM will respond early to new developments. The risk that revenues will be insufficient to meet the planned investment (overestimated demand, continuing decline in tariffs) can therefore be considered minimal. A further risk might occur if the state were to exert pressure on TDM to make an excessive amount of unprofitable investments in rural regions. On the other hand, the sectoral decisions made by the government in the past all made economic sense. Only if several of the risks mentioned above were to occur without adequate countermeasures being taken would long-term negative consequences have to be expected for the project executing agency. There appears to be little likelihood of such a development occurring.

In consideration of the sub-criteria mentioned above, we rate the developmental efficacy of the project as **satisfactory overall (rating 2)**.

No immediate employment effects were achieved during implementation or operation. The poor benefit only indirectly from the project as the improvement of telecommunications contributes to economic development and, thus, to creating job opportunities. A specific contribution to sustainable poverty reduction was not intended at the time of project appraisal and has not been achieved either.

Positive environmental effects were not planned at the time of the project appraisal. The cable was laid on land in existing cable channels. The environmental effects of the project are negligible even considering the power supply for the facilities installed. Projects of this kind have no potential for any specific gender equality impact -- this was not intended and did not occur. The project did not aim to achieve participatory development or good governance.

### **General conclusions and recommendations**

Over the last decade, the mostly privately financed investments in the telecommunications sector in developing countries have largely focused on expanding mobile telecommunications networks. For this reason mobile telephony has therefore reached a substantially higher penetration in many developing countries than the fixed telephone networks. All over the world, margins and turnovers of purely fixed network operators have been falling as a result, making it increasingly harder for them to invest. This trend has adversely affected and will continue to negatively influence the further development of telecommunications in rural regions, but also broadband

connections, particularly in the least developed countries, hampering efforts to increase support for information and communication technologies in the interest of development. While pure FC funds are not essential for urban networks given their commercial attractiveness, the need for public funds for telecommunications development in rural regions will continue in many developing countries because of the trends described above. Where sector conditions are favourable, setting up and structuring a universal service fund could also be a sound approach for FC in addition to the classical project approach.

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

Projects are evaluated on a six-point scale, the criteria being relevance, effectiveness, “over-arching 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.