Mozambique: Labour-intensive Road Rehabilitation
Road Rehabilitation after Flood Catastrophe

Ex-post evaluation

OECD sector	21020/Road transport	
BMZ project IDs	1) 1992 65 901 2) 2000 65 060	
Project-executing agency	Administraçao Nacional de Estradas	
Consultant	Stange Consult	
Year of ex-post evaluation	**2006**	
	Project appraisal (planned)	**Ex-post evaluation (actual)**
Start of implementation	1) 7/1996 2) 9/2000	1) 8/1996 2) 10/2000
Period of implementation	1) 60 months 2) 16 months	1) 83 months 2) 27 months
Investment costs	1) EUR 3.17 million 2) EUR 7.67 million	1) EUR 3.34 million 2) EUR 6.92 million
Counterpart contribution	1) - 2) -	1) - 2) -
Financing, of which Financial Cooperation (FC) funds	1) EUR 3.17 million 2) EUR 7.67 million	1) EUR 3.34 million 2) EUR 6.92 million
Other institutions/Donors involved	None	None
Performance rating	2 (Project 1) 1 (Project 2)	
• Significance/Relevance	1 (Both projects)	
• Effectiveness	3 (Project 1) 2 (Project 2)	
• Efficiency	1 (Both projects)	

Brief description, overall objectives and project objectives with indicators

The original design for the project, Labour-intensive Road Rehabilitation (BMZ No. 1992 65 901, repair of about 200 km of secondary roads in Manica Province) was changed at the end of 1995 in favour of setting up and fitting out 12 road maintenance camps in Manica and Tete Provinces to assure the sustainability of the rural gravel roads that had been repaired as part of the FC project, Road Sector Reconstruction Programme (BMZ No. 1993 65 446 (1,830 km). A part of these roads was badly damaged by devastating floods in 2000. The damage was repaired in the emergency aid programme, Road Rehabilitation after Flood Catastrophe (2000 65 060).

The overall objectives were to revive economic activities and improve the conditions of life for the population by redeveloping transport links for all-year access to rural centres. The project

objectives were to maintain all-year-round, timesaving and cost-effective trafficability of the priority gravel roadways in Manica and Tete Provinces through adequate road maintenance and the restoration of all-year trafficability of priority roads in Manica and Sofala Provinces after the flood disaster.

The attainment of the overall objectives was to be measured by a qualitative assessment of demographic trends, a rise in agricultural production and improvement in goods and services provided in the programme regions. Indicator targets for project objectives achievement were: Average driving speed of 60 km/h, a traffic volume of at least 20 vehicles/day on the repaired roads and 83 vehicles/day on the Revué Bridge as well as all-year trafficability of the stretches of road rehabilitated after the flood disaster.

Programme design/Major deviations from original programme planning and main causes

Project 1992 65 901: After amendment of the original project design, the main measures of the modified project comprised the construction and equipment of altogether 12 road maintenance camps (7 in Manica and 5 in Tete) and fitting them out with machinery, equipment and tools needed for routine road maintenance (incl. building supervision and coordination by a consultant as well as training and advisory measures for the executing agency and the camp personnel for a total of 160 expert days). The project scope also included the construction of a one-lane, 110 m-long steel-concrete bridge over the Revué River.

Project 2000 65 060: The programme measures aimed at repairing the damage (including erosion damage and repair and construction of bridges) caused by the disastrous floods in 2000 to priority roads on secondary and tertiary roadways over a total length of 378 km in Manica and Sofala Provinces, which rapidly restored their trafficability.

Key findings of impact analysis and performance rating

Role of the road sector: Owing to the geographical length of Mozambique (North-South: approx. 2,000 km), operational roadways play a key role for the social and economic development and integration of the country and make up an essential factor in poverty reduction, particularly in the rural regions and for the development of agriculture, where more than 80% of the population earn a livelihood. The still underdeveloped transport infrastructure and the resultant high transport costs hamper the marketing of surplus agricultural produce. At about 29,300 km, the length of the classified roadways has remained largely constant as compared with the initial situation in 1993. Over the last 5 years, road haulage has recorded annual growth rates of about 27%.

In several steps since 1999, there has been a far-reaching reorganization of tasks in the road sector. Altogether, the sectoral reforms aimed at decentralizing responsibilities, involving the private sector more and separating road policymaking, management and finance by reallocating operative tasks to individual, largely autonomous institutions (Administraçao Nacional de Estradas (ANE) and the Road Fund). Road maintenance is accorded top priority by the government, while rehabilitation or construction of new roads is only considered if the requisite financial resources are available for upkeep. While total costs for routine road maintenance have already been covered for some years from fuel taxes and transit charges, for lack of finance for periodical upkeep to a set schedule the government only carries out specific repair measures on certain stretches to keep them trafficable. Road rehabilitation and roadway extensions are largely carried out using donor funds.

Objectives achievement: The conditions of life for the rural population have improved distinctly in the two provinces since 1996 and a major necessary, if not sufficient, contributory factor for this was the improvement in the transport infrastructure through the rehabilitation and maintenance of rural roads in both provinces. Access to public goods and services (education, health stations, markets, agricultural extension, drinking water supply, etc.) has improved between 1997 and 2003 by 74% in Manica Province and by 93% in Tete Province. In the same period, the share of the poor population has declined in Tete Province from 82% to 60% and from 63% to 44% in Manica Province. The production of staple foods (maize+millet) rose between 1996 and 2003 in Tete by some 50,000 t or 33% and in Manica by 94,000 t or 84%. In 1996, virtually no cash crops were planted, whereas in the two provinces in 2003 about 6,700 tonnes of cotton and some 23,000 tonnes of tobacco were produced, which has induced several multinational companies to locate processing facilities to Tete Province in recent years.

On weighed average for all stretches, the traffic volume on the rural roads financed from FC amounted to 71 vehicles a day (project target: > 20 vehicles/day). The volume of traffic on the bridge over the Revué River amounts to 159 vehicles (project target: 83 vehicles/day). On the vast majority of the stretches, vehicles can reach an average driving speed of 60 km/h. All roads financed from FC funds are passable all year round. The overall objective and project objective indicators were thus reached or surpassed.

Operation: On the whole, the maintenance camps and their equipment are in a good condition. Written-off and defunct equipment has been replaced from own reserves. The routine maintenance measures under the camp system were carried out continuously and systematically throughout the year and achieved better quality results as compared with routine maintenance without road camps. The camp system introduced as a pilot measure by the project under review is now in use in other provinces, too. The costs for the camp-based routine maintenance measures ranged between approx. 35-55% under the costs for routine maintenance without road maintenance camps. Also thanks to the better quality of the camp-based road maintenance, the necessary, costly, periodical maintenance measures could be conducted at longer intervals. Despite the quality advantages of camp-based routine maintenance, the scale of the periodical maintenance measures still fell short of real requirements. With budget funds short, more selective repair measures were therefore conducted on degraded or erosion-prone stretches.

Macroeconomic, socio-economic assessment: The road repair and ongoing road maintenance have considerably reduced costs for passenger and goods traffic on the FC-financed stretches of road. Lower transport costs ease the burden on the regional population's household income and raise their mobility.

The repair of the flood damage on the roads and the systematic routine maintenance by the camps has secured durable, cost-effective and timesaving access to the rural regions, some of which were wholly or in large part inaccessible prior to the road repairs in the Road Sector Reconstruction Programme (1993 65 446). Thanks to the transport development of these regions, there has been a distinct rise and diversification in agricultural production, which has contributed to more income and less poverty in the rural population. In addition, access to public goods and services has improved significantly as a result of better transport facilities.

Most roads record an above-average high macroeconomic yield of between 27-158%, largely due to the unexpectedly high volume of traffic on the project roads.

The camp-based routine maintenance has proved effective and makes an important contribution to the sustainability of the roads financed from FC funds. The project executing agency sees the maintenance system introduced as a prototype for other regions in the country. One sustainability risk, however, is the postponement of periodical maintenance measures due to

lack of budget funds, although this is offset by the generally good quality of the camp-based routine maintenance and selective repair measures.

Summarizing, we assess the project impacts as follows:

- The project objectives of both projects were reached or surpassed by a clear margin. Of the roads financed from FC funds, 55% are in a good and 45% in an acceptable condition, even 9-10 years after their completion. Accounting for the sustainability risk due to delay in periodical maintenance measures, we gauge the effectiveness of Project 1992 65 901 as sufficient (Subrating: 3). Owing to the emergency aid focus of Project 2000 65 060, this deficit cannot be accorded the same status so that we can rate the effectiveness as satisfactory (Subrating: 2).

- The FC-funded roads repaired and rehabilitated after the flood disaster and the maintenance camps for their ongoing maintenance have been a key contributory factor to the significant improvement in the conditions of life for the rural population since (overall objective), as partly attested by a distinct rise in agricultural production and a reduction of poverty by about 20% in the two provinces. The camp-based road maintenance system was introduced as a pilot measure in the project under review and has proved to be effective. Due to their lower logistical costs as compared with conventional road maintenance, the maintenance camps are also particularly advantageous for small, local building firms. As a result of the favourable experience gained with the new scheme, it has also been introduced in other FC road projects and taken up by other donors and has thus had a capacity-building impact. We assess the significance and relevance of the projects as good (Subrating: 1).

- With one exception, the cost-benefit analysis of 8 representative stretches of road recorded above-average macroeconomic returns. The camp-based maintenance scheme was also more economical compared with the costs of conventional road maintenance. We therefore rate the allocative efficiency (high returns) and production efficiency (efficiency gains through introducing the maintenance scheme) of both projects as very good (Subrating: 1).

Based on the above subratings, altogether we attest Project 1992 65 901 satisfactory developmental efficacy (Rating 2) and Project 2000 65 901 good developmental efficacy (Rating 1).

Conclusions and recommendations

- In suitable cases, the camp-based road maintenance approach can contribute to a more economical organisation for securing the sustainability of investments in the road sector. This applies in particular where the building sector lacks capacity or the rural areas are too sparsely populated for efficient alternatives in maintenance. As far as possible, implementation responsibility should be entrusted to private entrepreneurs and opportunities for privatizing the camps afforded by improvements in the general conditions should be taken. Given the general conditions in LDCs, the basic equipment and low technical and organizational requirements involved are enabling factors for road maintenance. The approach can promote the development of smaller companies, in the building sector in this case. Independent, qualified consultings play a major role for quality assurance in maintenance measures.

- Improving road infrastructure can make a significant contribution to poverty reduction in rural areas, particularly if the region possesses latent economic potential.

Key

Developmentally successful: Ratings 1 to 3	
Rating 1	**Very high or high degree of developmental efficacy**
Rating 2	**Satisfactory developmental efficacy**
Rating 3	**Overall sufficient degree of developmental efficacy**
Developmental failures: Ratings 4 to 6	
Rating 4	**Overall slightly insufficient degree of developmental efficacy**
Rating 5	**Clearly insufficient degree of developmental efficacy**
Rating 6	**The project is a total failure**

Criteria for the Evaluation of Project Success

The evaluation of the "developmental efficacy" of a project and its classification during the ex-post evaluation into one of the various levels of success described in more detail below concentrate on the following fundamental questions:

- Are the **project objectives** reached to a sufficient degree (aspect of project **effectiveness**)?
- Does the project generate sufficient **significant developmental effects** (project **relevance** and **significance** measured by the achievement of the overall development-policy objective defined beforehand and its effects in political, institutional, socio-economic and socio-cultural as well as ecological terms)?
- Are the **funds/expenses** that were and are being employed/incurred to reach the objectives **appropriate** and how can the project's microeconomic and macroeconomic impact be measured (aspect of **efficiency** of the project conception)?
- To the extent that undesired **(side) effects** occur, are these tolerable?

We do not treat **sustainability**, a key aspect to consider for project evaluation, as a separate category of evaluation but instead as a cross-cutting element of all four fundamental questions on project success. A project is sustainable if the project-executing agency and/or the target group are able to continue to use the project facilities that have been built for a period of time that is, overall, adequate in economic terms, or to carry on with the project activities on their own and generate positive results after the financial, organisational and/or technical support has come to an end.