

Kenya: Malindi Water Supply Project

Ex-post evaluation

BMZ project ID	1980 66 458 (preparatory project) 1980 66 516 (main project)	
Project-executing agency	National Water Conservation and Pipeline Corporation (NWPCPC)	
Consultant	H.P. Gauff GmbH & Co.	
Year of ex-post evaluation	2004	
	Project appraisal (planned)	Ex-post evaluation (actual)
Start of implementation	Q 3 1981	Q 4 1983
Period of implementation	41 months	228 months
Investment costs	EUR 20.14 million	EUR 16.72 million
Counterpart contribution	EUR 3.68 million	EUR 0.85 million
Financing, of which Financial Cooperation (FC) funds	EUR 16.46 million	EUR 15.86 million
Other institutions/donors involved	None	None
Performance Rating	2	
Significance / relevance	2	
Effectiveness	2	
Efficiency	2	

Brief Description, Overall Objective and Project Purposes with Indicators

The project comprised urgent measures to rehabilitate and expand the distribution network in Malindi (preparatory project), equipment for the waterworks in Baricho, an approx. 40-km-long transmission main to Malindi, distribution mains in Malindi and its environs, elevated tanks, water kiosks and consulting services (main project). The final follow-up for these measures was already conducted in the year 1990. The substantial funds left over at that time were used to connect the Sabaki well field, which is located near the Baricho waterworks, to procure water meters, to reduce losses and to further expand the distribution network.

Since it was an old project, the project appraisal report stated neither explicit goals nor indicators of achievement of these goals. It was, however, implicitly assumed that the project would supply the population of Malindi and its environs with clean, safe drinking water (project purpose) and limit the health hazards resulting from water-borne diseases (overall objective).

Project Design / Principal Deviations from the original Project Planning and their main Causes

The project can be broken down into the following components and phases:

- (a) Preparatory project (1983 -1985)
- (b) Main project (1984 -1989)
- (c) Development of the well field (1990-1992)
- (d) Expansion of the distribution network (2001-2002)

The measures were broken down into two projects with different project IDs solely for technical reasons related to the financing.

The project mainly comprised the construction of an approx. 40-km-long main pipeline to convey water produced by the Baricho waterworks to Malindi and also the expansion of the distribution network serving Malindi and the surrounding area. However, the Baricho waterworks, which were constructed in the mid-1970s to supply Mombasa with water and which included a capacity reserve for Malindi, had serious operational problems from the very beginning and had to be shut down at the beginning of the 1990s. Therefore, two wells were built and equipped close to the waterworks and have been feeding water into the main pipeline to Malindi since 1992. Both wells were financed out of residual funds.

The project-executing agency was originally the Ministry of Water Development, which commissioned its suborganization Coast Province Water Branch to operate the facilities in Malindi. In 1988 the NWCPC was founded as a publicly owned company and assigned responsibility for supplying Malindi with water.

Once water availability was basically ensured for Malindi in 1992 due to the construction of the two wells, substantial operating problems arose for the NWCPC in Malindi. KfW then made disbursement of the substantial residual funds that were still available for investments in network extension and reinforcement contingent on a tariff increase and later also on the involvement of a private operator. Both conditions were met by the Kenyan partners in the mid-1990s and in 2001, respectively. The network extension measures were subsequently carried out and were completed at the end of 2001.

For the reasons stated, completion of the project was heavily delayed by 17 years altogether.

At the time of the project appraisal, total demand of around 20,000 m³ per day (losses included) was expected for the year 2000. Actual water production was, however, only 10,900 m³ per day in 2003. The reasons for this include a supply rate that did not meet expectations, overestimated demand for house connections, and considerably lower specific consumption rates.

Key Results of the Impact Analysis and Performance Rating

Overall, the current supply situation in Malindi can be described as satisfactory. The supply rate in the project area is currently 77% and is rising. Thus, although it has not attained the target level stated in the project appraisal report, it is still relatively high. Altogether, around 146,000 people are currently being supplied with water. Averaging 122 l/c_d per house connection, specific consumption is relatively high, yet it remains far below the level expected in the project appraisal. About 15-20 l/c_d are consumed at water kiosks. The contribution by the water

kiosks, which supply 32% of the total population, is comparatively high and helps ensure that poor people also have access to clean, safe drinking water. The water quality is analyzed regularly and has always been without objections thus far. For the most part, operation of the water supply system has been uninterrupted.

The production facilities continue to be operated by the NWPC. The operation is appropriate, even if the well field was damaged in early 1998 by flooding following exceptionally strong rainfall (it was rehabilitated under the FC project "Protective Measures Sabaki Well Field"). Since 2001 the transmission and distribution facilities are operated by the private company Gauff Utility Services Kenya Lt. on behalf of the NWPC. Gauff receives for its services a management fee, which is designed to offer incentives for an improvement of the performance. An important feature of the management contract is the regulation that all tariff revenues remain in Malindi. The revenues in excess of operational costs are used for improvements and extensions of the water supply system. The water produced in the Sabaki well field is sold to the operator for a contractually agreed tariff.

Once Gauff took over as operator, the management procedures and therefore also the operational situation improved significantly. Improved pressure management, better equipment with bulk water meters and the creation of consumption zones successfully decreased water losses from over 50% to 22% during a period of three years. The maintenance and operating procedures are unobjectionable. A collection efficiency of almost 100% is an indication of both strict collection practices and high customer satisfaction. The supply rate has improved continually, due partly to additional, self-financed water kiosks. Demand for house connections remains high. At 13 staff members per 1,000 house connections, the system is slightly overstuffed.

The economic results of operation are at least sufficient to ensure proper maintenance of the system in the medium term. The tariff system of the NWPC, which is also applied in Malindi, is subject to approval by the sector ministry. It is a progressive block system although the quantity-based progression and therefore its ability to curb excessive demand are not very strong. The tariff revenues are sufficient to finance the operational costs, including the purchase of the water and payment of the operator fee. In addition, small surpluses are generated that are invested in the expansion of the system. Since only one component of the operating costs - the expenses for water deliveries - is variable and consumption is expected to rise in the future, cost coverage will presumably improve further. Calculated over a period of 20 years the effective tariff revenues cover 65% of the full costs and 151% of the operating costs.

The sanitary situation in the project area is problematic. A central sewage disposal system does not exist. Shallow wells are still in use in the city which pose health risks since they may be contaminated by pathogens originating from latrines. At the end of the 1990s there was an outbreak of cholera. Efforts by the operator of the water supply facilities to have these wells shut down have been unsuccessful thus far. Possible ways to alleviate the sanitary situation are to be analyzed in a study financed by FC. Despite the continuing risks, the local health authority reported that instances of water-borne diseases have declined substantially since the distribution system was expanded.

Kenya's water sector is currently being restructured, which is necessary since in the past, the structures were rather inefficient. In particular, the NWPC will presumably be obliged to step down as operator of the water supply systems. It will probably be replaced by public or private licensees from regional water boards that are currently being established. In order to bridge the gap until the new sector structures are in place, the contract with Gauff is to be extended by three more years. Initial considerations as to the future operating concept for the funded system indicate that a regional concession may be awarded for the northern coastal region.

Overall, the developmental impact of the project has been assessed as follows:

- The objectives of the project have largely been reached, although the installed capacities are not utilized to the expected extent. Nevertheless, the effectiveness of the project is satisfactory (partial rating 2).
- The project has improved significantly the living conditions of the population, among them many poor people. It has made an important contribution to the improvement of the health situation, although there remain some risks due to the unresolved sanitary problems. The benefits of the project are broadly distributed among the target group. It also has contributed to the development of the economy by enhancing the attractiveness of the region for tourism. In addition it has had an impact on the structure of Kenya's water supply sector by providing a positive example for private sector involvement. Overall, the developmental relevance and significance are satisfactory (partial rating 2).
- Measured by the specific investment costs the objectives have been reached with a modest allocation of funds. The resources used for operation and maintenance are adequate. Thus, production efficiency requirements are met. The criterion of allocation efficiency is only partly met, since tariff revenues are significantly lower than the full costs. It is also worth mentioning that the heavy delays that have occurred indicate an inefficient implementation. Overall, the efficiency is still deemed sufficient (partial rating 3).

Under consideration of the relevant facts and the remaining risks the overall developmental effectiveness is rated as satisfactory (rating 2).

General Conclusions applicable to other Projects

- As regards the resolution of problems in the field of sanitation, a centralized system should not automatically be built in small towns. The introduction of adequate sewage tariffs could give rise to problems if the ability of the population to pay for drinking water has already reached its limit. An alternative strategy could be to combine administrative measures by the community (stronger controls of the sanitary situation, shutdown of shallow wells in the project area), better demand management through stricter progression of the water tariffs, and isolated solutions (septic tanks) for problem areas such as schools, markets etc.
- If water supply from kiosks functions well, it can make a significant contribution to supplying the poor with water. How successful the kiosk solution is depends primarily on whether a suitable incentive system is in place that aims for low cost prices for the licensees (low lease charge, low water purchase price). In this way, a high degree of interest in operating a water kiosk can be generated.
- Within only a few years, the involvement of a private operator brought about a tremendous improvement in practically every key performance indicator (water losses, collection rate, cost coverage, equipment with meters, connection rates, customer satisfaction). A decisive factor in this regard was the introduction of improved management procedures (pressure management, control of losses through the introduction of measurement zones, reduced response times in cases of damages, strict tariff collection). This illustrates the tremendous importance of proper technical and administrative operation for the sustained success of water and sanitation projects. If necessary, this aspect should be given priority over the implementation of investment measures.

Legend

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

Criteria for the Evaluation of Project Success

The evaluation of a project's "developmental effectiveness" and its classification during the final evaluation into one of the various levels of success described in more detail above 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, organizational and/or technical support has come to an end.