Ex post evaluation – Tanzania

Sector: Basic drinking water supply and sanitation and waste water management (CRS Code 14030)
Programme/Project: A) Rural Water Supply Moshi Rural District, Inv. BMZ no. 2005 65 507*; B) Rural Water Supply Moshi Rural District, BM - BMZ no. 2005 70 390
Implementing agency: Moshi Rural District Council

Ex post evaluation report: 2017

		Inv. (Planned)	Inv. (Actual)	CM (Planned)	CM (Actual)
Investment costs (total)	EUR million	7.1	7.9	1.9	1.9
Counterpart contribution	EUR million	n.a.	0.80	0.0	0.0
Financing	EUR million	7.1	7.1	1.9	1.9
of which BMZ budget funds	EUR milli	7.1	7.1	1.9	1.9

*) Random sample 2016

Summary: The project comprised the planning and construction of a gravity-fed water supply system and a system based on drilled wells and pumps in the Kirua Kahe region of the rural Moshi district in the North East of Tanzania. The measures consisted of implementing and expanding gravity-fed supply systems for the villages located on the southern slope of the Kilimanjaro massif, the completely new construction of public standpipes and service connections, and the construction of a system of solar-powered drilled wells for the settlements located in the lowlands below the massif. As part of the complementary measure, two new village water committees have been established, for which employees have been trained in the operation of the water systems, and measures implemented to provide hygiene education.

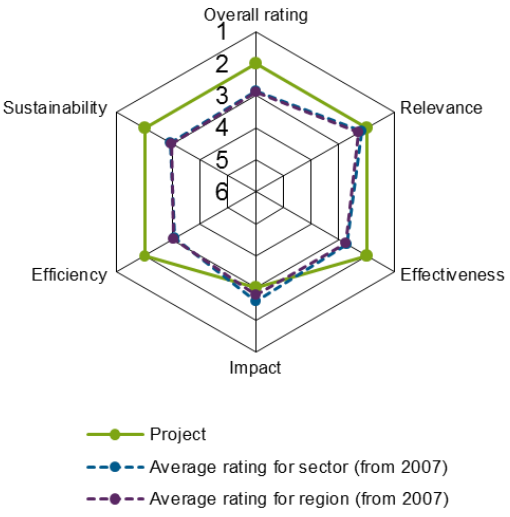
Development objectives: The project's development objective was to contribute towards improving the health situation and the overall living conditions. The programme objective was defined as the increased use of a reliable, affordable, healthy, safe and sustainable water supply by the target group.

Target group: The target group was the entire population in the area to be supplied by the newly constructed systems. The group comprised around 65,000 residents.

Overall rating: Rating 2

Rationale: The objectives of the project were largely achieved and the technical and economic performance capacity of the water companies is high. The project was able to contribute to a significant improvement in the living conditions in the Moshi rural district. These benefits are currently limited by insufficient chlorination of the water. However, the Water Service Facility (supporting external service provider in the neighbouring Hai district) convincingly reassured us they would remedy this problem. Moreover, the availability of free alternative sources for one of the two water supply companies leads to lower revenues, lower cost coverage and limited health benefits. This shows that decentralisation is a fundamental problem in Tanzania, as potentially unprofitable rural companies such as this are not cross-subsidised by urban consumers. A solution to this problem should be sought on a national level.

Highlights: The project serves as a model project in Tanzania and the concept was incorporated into the national water strategy.



Rating according to DAC criteria

Overall rating: Rating 2

The project established and supported sustainable water utilities (special purpose associations or "trusts"), which, from a technological and economical point of view, operate in an exemplary manner in comparison to many other rural and urban water utilities in Tanzania. The project contributed to improving the health situation and general living conditions of the target group and had a positive effect beyond the borders of the project region by setting an example for other regions in Tanzania.

Relevance

At the time of the project appraisal in 2006, two thirds of the population in the project region were living in areas without clean drinking water which led to health problems and limited economic and social development opportunities. Poorer population groups were particularly affected, especially women and children who are traditionally responsible for fetching water. By using the successful project implementation method from the neighbouring district of Hai, a gravity-fed water system for the region located in the Kilimanjaro foothills and a solar-powered pump system for the area in the plain at the foot of Kilimanjaro were constructed. From today's perspective, it seems to be appropriate due to the low population density.

The project aimed to reduce existing water supply shortages by building water supply systems. A complementary measure supported the formation of a new water committee.

The establishment of independent water companies in rural areas is one of the main objectives of the Tanzania Water Sector Development Programme, which came into effect in 2007. In light of this, the water supply programme in the Moshi rural district is a model project in rural areas and the concept was incorporated into the Tanzanian water strategy. Donors in the water sector coordinate themselves extremely well and pursue harmonised approaches. Since the national programme has been supported by basket funding over the past few years, donors have most recently been returning their focus to individual projects.

The programme design corresponds to the Water Sector Concept of the BMZ and aligns with the DC strategy of the BMZ, which continues to focus on water supply and sanitation management as its priorities.

During the planning phase it was already foreseeable that the pump system would have difficulty fully covering the costs. However, the planned consolidation of the two trusts, which would have enabled the cross-subsidisation of the pump system tariffs, could not be implemented due to political differences.

Given the project's high degree of significance for the target group, we rate the project as having a good relevance rating.

Relevance rating: 2

Effectiveness

The formulated project objective was defined as the increased use of a reliable, affordable, healthy, safe and sustainable water supply by the target group. The following indicators were defined for measuring the project objective:

Indicator of the FC measure objective	Initial values	Target values	Ex post evaluation
(1) Target group covers their drinking water needs using the public supply network	31%	> 80%	Gravity-fed system: 92% Pump system: 96%; **exceeded considerably in both systems**
(2) The tariff structure allows the minimum requirement of 20 lpc/d (litre per person per day) to be attained for those who use public standpipes, where the expenditure for water is below 5% of the average household income of the target group.	N/A	20 lpc/d < 5%	20 lpc/d is provided in both systems Gravity-fed system: 1% of income Pump system: 4% of income; **fulfilled in both systems**
(3) The water quality is in accordance with Tanzania standards for at least 95% of the samples taken.	N/A	> 95%	>95%, **fulfilled but with limitations** (see below)
(4) The percentage of water unaccounted for due to technical problems is less than 30%	N/A	< 30%	Gravity-fed system: 15% Pump system: 15%; **exceeded considerably in both systems**
(5) Water is available 24 hours a day	N/A	24 h	**Fulfilled in both systems**
(6) The collection rate is at least 85%	N/A	>85%	Gravity-fed system: 95% Pump system: 96%; **target exceeded considerably in both systems**
(7) The revenue from operating organisations covers the operating costs and depreciation	N/A	100%	Gravity-fed system: 100% Pump system: operating cost coverage 100%, depreciation: 14% **Partially achieved**

Due to the target group's great willingness to help themselves, a large proportion of the construction measures were able to be completed thanks to their personal contribution, with the support of consultants. The investment and complementary measures led to the development of independent and economically sustainable water supply systems.

The trust for the gravity-fed system aims to cover all costs, whereas the trust for the pump system aims to cover the operating and maintenance costs fully, but only 14% of the costs arising due to depreciation. The main reason for this is that the operating costs for the pump system are considerably higher than for the gravity-fed system. At TSH 1,250 per m³ (EUR 0.52 per m³) at public standpipes and TSH 1,750 per m³ (EUR 0.73 m³) for service connections, the tariffs for the pump system are four times higher than those of the gravity-fed system (TSH 300 per m³ for public standpipes and TSH 400 per m³ for service connections, equivalent to EUR 0.13 and EUR 0.17 per m³) and cannot be raised any further. Since there are other water sources (springs, streams, ditches) available in the region as free alternatives, the target

group uses the free alternative water sources for everyday use and obtains only small amounts of water from the pipe network. This leads to lower revenue for the trusts, problems in cost coverage and health risks for the users. The question remains as to whether the pricing policy of the pumping trusts could have been adjusted. At project appraisal, a fusion of the two trusts was considered to allow for cross-subsidisation of the tariffs. However, opposition from the members of the gravity-fed system trust meant this did not come to fruition and can still not be implemented today. Even so, a Memorandum of Understanding exists between the pump system trust and the district administration; the latter assumes the investment costs for pump and solar panel replacement to ensure that operation remains sustainable, even if this is not covered completely through private funds.

In some cases, supply units had to be created due to geographical, hydrological and even social circumstances which were so small that not all the units were able to cover their costs. A cross-subsidisation solution should be sought on a national level to solve this problem.

The water quality at both trusts is measured once a quarter by analysing water samples at the Saint Luke's Foundation Laboratory in Moshi. The results of these measurements consistently show values of less than 10 colonies of coliform bacteria per 100 ml of water, which is considered a "low risk" by Tanzanian standards. However, measurements of the residual chlorine content at various standpipes taken as part of the evaluation mission show values of under 0.1 mg per litre in all samples, which is too low for samples taken from near a water tank. Here, the water treatment practices of the trust should be adjusted with the support of the Water Service Facility in the neighbouring Hai district in order to ensure consistently high water quality.

The trusts established as part of the complementary measure are operating successfully, with the exception of the problems addressed above. We can assume that the training programmes provided in management, correct installation of service connections and maintenance of the systems made a significant contribution to these target values being achieved.

In summary, we can conclude that 5 out of 7 target indicators have been met without making any compromises, and 2 out of 7 have been met with some minor compromises. We therefore rate the effectiveness of the project as good.

Effectiveness rating: 2

Efficiency

Due to the significant share of voluntary work carried out by the target group, a large portion of the construction measures were able to be carried out thanks to their personal contribution, which made the implementation extremely efficient. The quality of the system installed is good. The production efficiency is rated as good.

With an estimated population of 112,700 in the programme region, the specific per capita investment costs amount to approx. EUR 80. This figure is relatively high in comparison to the per capita costs of similar water systems due to the dispersed settlement structure and the resulting necessary network lengths, but this can still be rated as appropriate.

All connections were fitted with water meters and loss rates are extremely low, with values of 15%. The collection rate is very good at 95% and 96% and also shows no sign of declining.

At both trusts, revenue covers the full costs of operation and maintenance. Moreover, the gravity-fed system trust covers 100% of depreciation, and the pumping trust 14%. For a rural water supply system, this is remarkable. An alternative water supply system does not need to be considered thanks to the reliable supply provided by the trusts.

In summary, we rate the efficiency as good.

Efficiency rating: 2

Impact

The overall developmental objective of the project was to contribute towards improving the health situation and the overall living conditions of the target group.

Indicator	Ex post evaluation status
Significant downturn in the number of registered cases of diarrhoea in the wards affected.	The health statistics of the health stations in the project region demonstrate a considerable decrease in the cases of diarrhoea and other water-induced diseases.
Considerable reduction in time required to acquire water	The average distance to the next public standpipe is less than 200 m, which is significantly less than the distances recorded at project implementation. The time required to acquire water has thus been considerably reduced.

Statistics from health units in the region show that the health situation has improved considerably since 2012. With the exception of 2015, when the project region experienced flooding, there have been no further cases of cholera since the project was implemented. Furthermore, the prevalence of diarrhoeal diseases and typhus in the region equipped with the gravity-fed system has been greatly reduced. However, there are still cases of amoebae and worm diseases, which can also be attributed to generally poor hygiene practices. In the region equipped with the pump system, where alternative water sources have also been used increasingly, the health situation of the population has indeed improved, but not as significantly as seen with the gravity-fed system.

In summary, a clear improvement in living conditions can be determined. Because the hygiene practices of the population fall somewhat short of acceptable standards, the chlorination process has not been carried out as effectively as possible, and the population in the region equipped with the pump system uses unclean, alternative water sources, we rate the impact as satisfactory.

Impact rating: 3

Sustainability

The current situation with the gravity system trust is very positive, and satisfactory in the case of the pump system trust. In both systems, all connections have functional water meters and the current management allows full (gravity trust) or partial (pump trust) self-financing for necessary maintenance work. The operations work independently and are able to make efficient use of their revenue.

However, at the pump trust, the availability of free alternative water sources is leading to low revenues and therefore to a reduction in the trust's ability to cover their costs. One task of the trust is to work with the support of the WSF to formulate and implement a strategy for increasing the use of clean drinking water, or, as an alternative, to lower the prices so that the demand for drinking water rises.

A sustainable operational organisation is particularly based on the ongoing acceptance and willingness of the population to pay the costs for the water supply and the ability of the trusts to manage their personnel and maintenance of the system efficiently. During the evaluation phase, both trusts expressed interest in continuing to cooperate with the Water Service Facility (WSF) in the neighbouring Hai district. Apart from the problems in the pump system already mentioned above, no further risks have been identified as preventing regular support from the WSF.

Problems do not exist in either trust with regard to water availability and the expansion of the systems is possible in the medium term without limiting resources. The revenue situation, however, needs to be improved before the pump system is expanded. If the pump system is unable to sustain itself, state subsidies will be required.

An appropriate wastewater and sewage disposal system is particularly important for service connections. The WSF in the Hai district operates a lorry which empties cesspits in the Moshi rural district and trans-

ports the sanitary wastewater to the nearest treatment plant. As the vehicle is in frequent use, we do not see any risks here.

In summary, the sustainability of the operation is good overall.

Sustainability rating: 2

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

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

Level 1	Very good result that clearly exceeds expectations
Level 2	Good result, fully in line with expectations and without any significant shortcomings
Level 3	Satisfactory result – project falls short of expectations but the positive results dominate
Level 4	Unsatisfactory result – significantly below expectations, with negative results dominating despite discernible positive results
Level 5	Clearly inadequate result – despite some positive partial results, the negative results clearly dominate
Level 6	The project has no impact or the situation has actually deteriorated

Rating levels 1-3 denote a positive assessment or successful project while rating levels 4-6 denote a negative assessment.

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 is very unlikely to improve. 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.

The **overall rating** on the six-point scale is compiled from a weighting of all five individual criteria as appropriate to the project in question. Rating levels 1-3 of the overall rating denote a "successful" project while rating levels 4-6 denote an "unsuccessful" project. It should be noted that a project can generally be considered developmentally "successful" only if the achievement of the project objective ("effectiveness"), the impact on the overall objective ("overarching developmental impact") and the sustainability are rated at least "satisfactory" (level 3).