

Tanzania: Hai II and III District Water Supply

Ex-post evaluation report

OECD sector	14030/Basic drinking water supply and basic sanitation	
BMZ project number	a) 1998 65 064 (Phase II) b) 1998 65 973 (Phase III)	
Project executing agency	Steering Committee Hai District Water Supply Project (SC)	
Consultant	Consulting Engineers Salzgitter GmbH (CES)	
Year of ex-post evaluation	2007	
	Project appraisal (planned)	Ex-post evaluation (actual)
Start of implementation	a) Jan. 1997 b) Jan. 2001	a) Jan. 1998 b) Jan. 2001
Period of implementation	a) 36 months b) 48 months	a) 36 months b) 51 months
Investment costs	a) EUR 4.4 million b) EUR 5.7 million	a) EUR 4.4 million b) EUR 6.2 million
Counterpart contribution	a) EUR 0.3 million b) EUR 0.6 million	a) EUR 0.3 million b) EUR 0.4 million
Finance, of which FC funds	a) EUR 4.1 million b) EUR 5.1 million	a) EUR 4.1 million b) EUR 5.8 million
Other institutions/donors involved	--	--
Performance rating	1	
• Relevance	1	
• Effectiveness	2	
• Efficiency	1	
• Impact	1	
• Sustainability	1	

Brief Description, Overall Objective and Programme Objectives with Indicators

As complements to the already completed programme, Uroki - Hai District Water Supply (BMZ no. 1988 66 501), the Hai II and III District Water Supply Projects, aimed at supplying hygienically safe drinking water to larger parts of the population in Hai District with insufficient access. To this end, the water supply systems Loosa-KIA, Magadini-Makiwaru, Lawate-Fuka, Masama and Rundugai were rehabilitated and enlarged.

The overall programme objective was to make a contribution to reducing the danger of water-induced illnesses (Phases II and III), improving the conditions of life for the population (Phase III) and supporting ongoing reform (Phase II). At programme objective level, the aim was to ensure a reliable supply of drinking water to the target group to meet basic needs, improve the operational management and maintenance of the supply systems and assure at least operating cost recovery through revenue from the sale of water.

Programme objective achievement was to be measured with the following indicators:

- Sufficient drinking water is available at the public taps to meet basic needs (at least 20 l per person and day).
- Water quality at the offtake point (public tap/service connection) largely complies with WHO recommendations (Phase II)/the Tanzanian standard (largely similar to WHO recommendations, Phase III).
- Average distance to the next public tap is less than 400 m (Phase II).
- Eighty per cent of the public taps are operated and maintained properly and supply stoppages are only caused by unforeseeable repairs.
- The operating and maintenance costs, including a reserve fund for repairs, are recovered through income from the sale of water (Phase III).

The set of objectives is assessed as largely adequate. Target coverage was, however, added as a major indicator for water supply at ex-post evaluation. The indicator for reliable supply geared to basic needs (provision of 20 l/d) is an output indicator in logframe logic and was therefore redefined as 'per capita consumption amounts to at least 5 l/d to meet direct consumption needs'. The programme objective on operating cost recovery is more of an efficiency criterion and is therefore treated as such in the developmental performance rating. Supporting reform is a measure under logframe logic and does not therefore belong in the overall objective. The objective horizon for measuring sustainability was also changed for all indicators in Phase III and the date of ex-post evaluation chosen as a reference.

Programme Design/Major Deviations from Original Planning and Main Causes

The programme comprised the rehabilitation and extension of all of the water supply systems of Losaa-KIA (including Kilimanjaro International Airport), Magadini Lawate-Fuka, Masama and Rundugai (untreated water offtake points, main supply lines, distribution pipes, water storage, pressure interrupters, valve chambers/ventilation and drainage shafts, public taps, service connections, water meters, administrative buildings at all sites). The topographical conditions at the slope of Kilimanjaro permitted the use of gravitational supply systems without a treatment plant in the whole programme region. The measures have been conducted essentially as originally planned and at a good quality standard. The only deviations from project appraisal was a shift in the specification of quantities. The agreed planning criteria for water availability and quality and maintenance frequency were adhered to.

During the building measures, village water committees (VWCs) were founded and trained. Made up 5 women and 5 men under Tanzanian law, the VWCs are elected every 3 years. In the catchment area of Losaa-KIA, there are 21 VWCs, in Magadini-Makiwaru, 7 and in Lawate-Fuka, 11, which administer or supervise 570 public taps in all (plus the public taps installed after handover of operation), so that every VWC has to look after approx. 15-20 public taps. The VWCs choose a chairman from among themselves. Together with the district water engineer, the chairmen of the VWCs make up the Board of Trustees. As public-benefit foundations, the water supply trusts established are equivalent to the community-owned water supply organizations envisaged in national policy and are responsible for the overall running of all operating

facilities. Operational responsibility for the public taps lies with the paid public tap attendants, who are supervised and regulated by the VWCs as representatives of the villagers.

The operating personnel were in part prepared for their tasks through collaboration in the programme implementing body, the Design and Supervision Unit (DSU) during programme implementation and trained by DSU personnel in aspects of business and technical operation.

Altogether, the measures succeeded in setting up sufficiently large, functional, easy-to-operate and very cost-effective water supply systems in keeping with the level of qualifications of the personnel. Problems have only arisen occasionally with the operation of the chlorination facilities as per water quality analyses, but solutions are already underway with the establishment of an Inter Trust Facility.

The target group was closely involved in project planning and implementation (in the form of work contributions). The regional tradition of community work facilitated speedy work performance. Handing over operational responsibility for the public taps to water user committees and to public tap attendants reinforced the ownership approach.

The measures were appropriate for alleviating the core problem and achieving additional beneficial side-effects.

Key Results of Impact Analysis and Performance Rating

The fully-autonomous trusts are very efficient and have recorded good to very good performance in both technical and administrative operation.

According to the village water committees (VWCs), the target group and the physicians in the district hospital, there has been a significant fall in water-induced illnesses (diarrhoea, amoeboids, worms, typhoid fever, cholera) in the whole programme region (Overall objective 1). The water from the programme facilities is primarily used for drinking and hygiene. This has contributed to an additional reduction in skin and eye ailments. The VWCs and the target groups also report additional health benefits for pregnant women, who now suffer fewer miscarriages due to the large reduction in the exertions of fetching water. Altogether, the women feel healthier and more resilient due to less physical strain.

Notably, improved conditions of life (Overall objective 2, Phase III) were stressed above all in the focus group discussions held during the local ex-post evaluation. Hai District and in particular the programme areas have undergone an economic upswing, generating higher income. This has also been facilitated by migration, the location of small-scale enterprises (furniture making, repair shops, etc.) and the establishment of market places as a result of water supply. Furthermore, the female population, which was occupied with fetching water for up to 8 hours before programme start now frequently engages in (more) economic activities (fruit and vegetable growing, livestock farming) and earns additional income from this of up to TZS 30,000 a month (monthly income now amounting to between TZS 50,000 and TZS 100,000). Thanks to less expenditure on water (At the public taps, water from the programme facilities costs TZS 5 for 20 l, while commercial water vendors in the past charged up to TZS 300 per 20 l and even at dug wells it cost up to TZS 20 for 20 l.), medical treatment and medicine, disposable income can be used for other purposes. Now investments are made in setting up micro-enterprises, enlarging cattle herds or in larger acquisitions, such as bicycles, for example.

A number of other benefits of water supply were also cited: In the past, children frequently missed school because the mothers left home at about 5.00 hrs to fetch water and they awaited their return for a meal and water to drink. Today, the mothers send their children to school after breakfast. A very frequent point made in the focus group discussions was the reduction in family disputes as a result of the programme, because the women are now able to prepare meals regularly and on time. Very great value was attached to the scope now available to allocate time for the household, children, the garden, visits to the market, church-going and social contacts, etc. Moreover, in the Magadini-Makiwaru system, the programme has contributed to preventing forced labour as happened in extreme situations in the past and sexual exploitation. These ex-

treme situations occurred when access to water was particularly difficult due to climatic conditions.

The plan was to benefit altogether 131,800 people through improved drinking water supply over two phases by 2010. The Losaa-KIA system reached about 45,820 water users in 2006. La-wate-Fuka supplied about 35,670 people and Magadini-Makiwaru, 21,500 in 2006. The target group figure up to 2006 therefore still falls short of that planned (about 103,000). Due, however, to substantial migration, part of which had already taken place in 2007, another 57,000 people are expected to be supplied from the systems by 2010, which would exceed the target figure by approx. 20%. Based on previous practice in installing new connections, it is realistic to expect that this number of people will be connected in the next 4 years.

The programme was geared to user-based supply and this was included as a secondary objective in the set of objectives via public tap operation.

Most of the target group is not poor as defined by Tanzanian standards, but the poorer classes have also benefited from the programme measures, especially in the Lower Belt. Their participation in planning and implementation and their own unpaid contributions have contributed to a high level of target-group ownership.

There was scope for gender equality and use was also made of this. Women have benefited from the programme through shorter distances to obtain water and the attendant reduction in physical effort and time. The time gained is used for alternative employment opportunities, which in part have even afforded women a source of own income. Women have parity representation in the user committees and discuss or take decisions on an equal basis.

Environmental protection and resource conservation was not a programme objective. No adverse environmental impacts have been caused.

The programme addressed a development constraint in Tanzania (insufficient quality and quantity of drinking water supply), conformed with the goals of German development cooperation and directly supported the priorities of the partner government. The programme design and the measures carried out were based on a logical results chain and were appropriate for achieving the objectives. Moreover, the institutions set up, which in part emerged from the implementing agencies (trusts), thus securing know-how capacity, and the technology chosen (gravitational water supply from surface water) proved to be decisive for programme success. The Hai District Water Supply Project is regarded as a showcase for rural water supply and has been accordingly adopted in the national water strategy (community-owned water supply organisations), which forms the basis for the newly established sector-wide programme (SWAp). Particularly due to the prototype function of the programme, **relevance** is classified as **very good (Subrating 1)**.

The set of objectives was largely appropriate and was modified where required at ex-post evaluation. The objective indicators on per capita consumption, continuous water supply and distance to the next public tap have been met. Indicators have been exceeded in public tap operation and coverage. Only the indicator on water quality has been assessed as merely sufficient, due to coli contamination of the drinking water. The **effectiveness** of the project is rated as **satisfactory (Subrating 2)**.

Accounting for the population forecast at the end of the planning horizon, the specific costs amount to EUR 59/person (Phase II) or EUR 57/person (Phase III). Both figures are adequate for gridded systems. At 20%, the rate of loss is very good in all trusts. The low utilization of capacity in all systems (25-43%) has no detrimental effect on the production/supply costs, since the marginal costs approach zero thanks to the gravitational water supply systems. Invoicing (100%) and collection efficiency (99-100%) are very high and debt recovery is very rapid (1.43-2.39 outstanding monthly payments). Two trusts record static full-cost recovery (accounting for depreciation on fixed assets with up to 10 years operating life expectancy as required by law). One trust falls short of static full-cost recovery by a very small margin (99%). All three systems record dynamic operating cost recovery, but they do not recoup full dynamic costs. As full dynamic cost recovery is an ambitious objective in rural water supply and the trusts have made considerable extensions to the system with their own economic resources and future target

group contributions (which do not appear in the balance sheets of the water supply systems), overall **efficiency** is judged as **very good (Subrating 1)**.

Significant anticipated impacts at overall objective level have taken effect. Besides illnesses directly associated with water consumption (diarrhoea, amoeboids, worms), those due to water contact (eye and skin ailments) have also been reduced considerably as well as miscarriages. The conditions of life have been primarily improved by the economic upswing and higher income that are partly due to water supply. However, a number of substantial unintended benefits have also been achieved, such as increased school attendance by children, an image gain for the semi-nomadic population, a reduction in family conflicts, etc. The **impact** is therefore assessed as **very good** altogether (**Subrating 1**).

In financial (static full-cost recovery, dynamic operating cost recovery), technical (trouble-free operation, ongoing autonomous expansion of the system) and institutional (good cooperation amongst public tap attendants, village water committees, management of trusts, Board of Trustees) terms, the programme is assessed as largely sustainable. The beneficial impacts can also be expected to continue or will even be enhanced through the planned establishment of an Inter Trust Facility to perform superordinate tasks and relieve the current management. We assess **sustainability** as **very good (Subrating 1)**.

Altogether, we judge developmental efficacy as **very good (Rating 1)**.

General Conclusions

Successful programme or project approaches always depend on the general conditions as well. These should be examined carefully during the feasibility study, so as to modify successful approaches to fit in with the setting of future projects if necessary. To successfully implement measures in other rural (gridded) water supply systems, aspects of the following conditions (of decisive importance for the success of the present programme) could be examined for their relevance:

- Geographical conditions, which have a decisive influence on water production and distribution costs
- Location of water offtake points remote from human settlements
- Experience of the population with democratic practices (elections of village chairmen, village committees), which facilitated the appointment of the VWCs and Board of Trustees
- Tradition of 'community work days', when the villagers perform unpaid work for the community
- Institutional allocation of responsibilities in the water supply system, including the water users, and the good interaction amongst these (VWCs, public tap attendants, Board of Trustees and management of the trusts), which has been conducive to close customer proximity, the appraisal of customer applications by representatives of the villagers and to short decision-making channels
- Full autonomy of the trusts as to personnel, tariffs, budgeting and investments, which facilitates the requisite operational measures
- Cautious accounting, which has generated provisions and reserve funds and obliges new customers or village communities to make advance payments or contributions prior to service connection or system extensions
- Awarding prize money for the best public tap by the trusts amounting to a monthly salary of a public tap attendant
- Assignment of a consultant over several phases, who has been consistently able to

provide advice on the systems from previous phases and to support the trusts with advice if necessary (making for a much higher share of consulting costs in total costs, however, 33% in the present case)

Crucial for the long-term success of a gridded water supply system is the size, i.e. a necessary minimum number of people supplied per km². Due to the geographical conditions, extending the system radius can impair operation and make it more costly (long travel distances, higher personnel and petrol costs and less scope for the supervision of operatives and public tap attendants by the management). This is why break even and economies of scale must be subjected to detailed scrutiny when appraising a gridded water supply system.

Public tap operation has proved uneconomical wherever the clientele is too small for a public tap due to a high density of household connections. This can tempt the public tap operators concerned to raise water charges so much that they are no longer affordable for the - frequently poorer - population. Drinking water demand by this part of the target group then declines as a consequence. In this kind of situation, safeguards should be provided for both consumers (through functional control mechanisms by user groups, for example, which is what happened in this case) and for public tap operators (through compensation for low income via cross-subsidies from household connection revenue).