Ex post evaluation – Zambia

›››

Sector: Basic drinking water supply and basic sanitation (14030)
Programme: Devolution Trust Fund, phases I–IV, BMZ numbers: 2005 65 903*, 2007 66 188, 2008 66 798*; 2011 65 851 (sub-components)
Implementing agency: Devolution Trust Fund

Ex post evaluation report: 2020

All figures in EUR million	Phases 1–4 (Planned)	Phases 1–4 (Actual)
Investment costs (total)	14.70	14.58
Counterpart contribution	0.70	0.58
Funding	14.00	14.00
of which BMZ budget funds	14.00	14.00

*) Random sample 2017

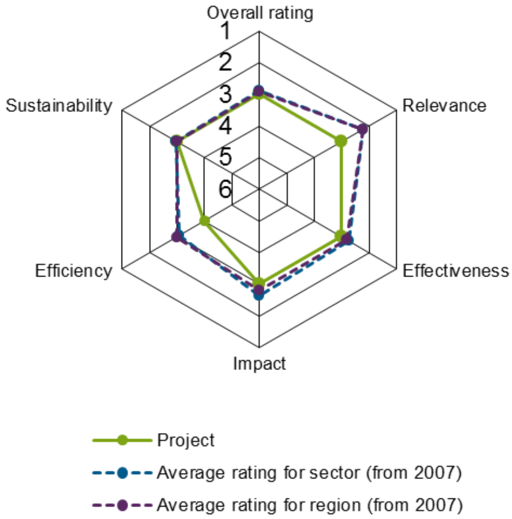
Summary: As part of a fund, the Devolution Trust Fund (DTF), funds were made available for improving the water supply and sanitation in urban peripheral areas across the whole of Zambia on the basis of transparent criteria. The promoted infrastructure is operated by private urban water companies (commercial utilities, CUs). Financing was used for water kiosks and also water supply networks with household connections, as well as a small number of decentralised wastewater disposal measures. On a smaller scale, efficiency measures for existing water supply systems were also financed. Management of the DTF was supported by a social and an implementation consultant. The social consultant mainly executed hygiene-related measures for the target group.

Development objectives: The objective at outcome level was to improve the target population's sustainable access to the drinking water supply and sanitation in Zambia's urban peripheral areas. The impact-level objective (which was adjusted during the ex post evaluation) was to contribute to improving the health situation and living conditions in the project areas.

Target group: The target group was the predominantly poor population in the urban peripheral areas of Zambia.

Overall rating: 3

Rationale: The DTF failed to receive the necessary support on either the Zambian side or from the donor community in order to mobilise sufficient donor funds. As a result, the administrative costs rose to 32% and project implementation fell short of expectations. A lack of quality control during the planning and implementation of the individual projects led to some of the water supply systems in the project areas being unused or ineffective. Maintenance of the infrastructure is inadequate, but at least rudimentary operation of the systems can be assumed to continue until the end of the design schedule. Despite all of the shortcomings, access to a drinking water supply and sanitation and, as a result, the health and living standards of 1.2 million people have improved.



Highlights: All of the water kiosks visited either exhibited major issues or had become obsolete. This reveals the importance of realistic planning for the operating life of the water kiosks, which are designed to be a transitional solution from wells to central water networks with household connections.

Rating according to DAC criteria

Overall rating: 3

Ratings:

Relevance	3
Effectiveness	3
Efficiency	4
Impact	3
Sustainability	3

Breakdown of total costs

EUR million	Phase 1 (Planned)	Phase 1 (Actual)	Phase 2 (Planned)	Phase 2 (Actual)	Phase 3 (Planned)	Phase 3 (Actual)	Phase 4 (Planned)	Phase 4 (Actual)
Investment costs	3.15	3.11	3.15	3.11	3.15	3.11	5.25	5.25
Counterpart contribution	0.15	0.11	0.15	0.11	0.15	0.11	0.25	0.25
Funding	3.00	3.00	3.00	3.00	3.00	3.00	5.00	5.00
of which BMZ budget funds	3.00	3.00	3.00	3.00	3.00	3.00	5.00	5.00

Relevance

The programme focused on improving the peri-urban water supply and sanitation in various cities in Zambia. At the time of the project appraisal in 2005, 45% of the Zambian population lived in cities, of which 85% lived in urban peripheral areas (and the trend is rising). A total of 50% of the people in these areas, the majority of whom were poor, did not have a secure supply of drinking water and 40% had no access to adequate sanitation facilities (core problems). The explicit focus on urban peripheral areas is therefore understandable due to their poor supply situation, the high incidence of poverty and the increasing importance of these districts.

The “Devolution Trust Fund” was selected as an instrument for implementing the programme; this fund was to be used to allocate funds in accordance with transparent, development policy criteria. While this approach may have circumvented the Water Ministry’s legitimate structures, it had its benefits: transparent decision-making, use of DTF expertise, and leaner approval and decision-making processes. On the negative side, however, it must be noted that when the project was designed, it was assumed that other donors would participate more strongly in the long term, but this was not ensured at that time and ultimately fell significantly short of expectations. Apart from the excessively high administrative costs, this also led to relatively fragmented individual projects.

The impact logic (improvement of the target population’s sustainable access to the drinking water supply and sanitation leads to a reduction in poverty and health risks) is largely plausible. The goal of improving the drinking water supply was to avoid contaminated water sources. As a result of this and the improved sanitation, the number of water-induced diseases was expected to decrease. It is doubtful, however, whether the concept was able to achieve a significant impact on poverty. The assumed causality between time savings in water procurement and the productive use of this time is questionable, especially since a large proportion of the target group was unemployed and the water procurers were mostly women and children who would not be involved in paid employment in any case. However, a positive link between living standards and an improvement of the health situation seems plausible.

The programme was in line with Zambia's national strategy for the sector and the Federal Ministry for Economic Cooperation and Development's (BMZ) sectoral concept for water.

From today's perspective, the programme's relevance is rated as satisfactory.

Relevance rating: 3

Effectiveness

The project objective was to improve the target population's sustainable access to the drinking water supply and sanitation in Zambia's urban peripheral areas. From today's perspective, the objective must be expanded to include the use of the supply facilities.

The achievement of the objective should be measured using several criteria, some of which were adjusted during the project implementation phase and some of which differ between the various project phases.

The indicators were adjusted for the purposes of the ex post evaluation. The achievement of the project's objectives was measured using the following indicators:

Indicator	Status PA, target PA	Ex post evaluation
(1) Number of people in urban peripheral areas with additional access to drinking water supply or sanitation	Status PA: – Target value: 2.85 million	At the time of the ex post evaluation, the number of people was 1.2 million. This is mainly due to the fact that the funds disbursed were significantly below expectations. While the absolute target of 2.85 million may not have been reached, the number of beneficiaries is still acceptable in view of the lower amount of funds available, not least because the specific investment costs are adequate (see Efficiency). -> Indicator achieved appropriately
(2) Drinking water quality in line with national standards	Status PA: – A total of 95% of the samples tested meet the minimum national standards.	According to the 2018 annual report by Zambia's National Water Supply and Sanitation Council (NWASCO), >95% of the samples tested in the project region meet the minimum national standards for drinking water quality. Only the Kabwe and Chingola regions failed to fully meet requirements concerning turbidity and residual chlorine. However, all of the water samples taken during the trip contained detectable residual chlorine, which means that the indicator here can be assumed to be achieved. -> Indicator achieved
(3) Collection rate	Status PA: n.a. Target value: 85%	NWASCO 2018: 85.4% (average value of the commercial utilities (CUs) weighted by investment amount) -> Indicator achieved
(4) Non-revenue water (NRW)	Status PA: n.a. Target value: <40%	NWASCO 2018: 50.5% (weighted) Though the value also includes the older, non-DTF-financed systems, the observations during the evaluation trip were still able to

		confirm this high figure for non-revenue water. Visible water losses from water meters, shut-off valves and supply pipes were observed in the supply area of all CUs. Furthermore, the commercial utilities companies (CUs) assumed constantly running household connections without water meters to be losses. This high value is therefore easy to understand. -> Indicator not achieved

The infrastructure in operation was basically functional and apparently sufficient to supply the target groups in the project locations visited with clean drinking water or hygienic sanitary facilities.The average per-capita consumption was 55 l/c/d. However, wear and a lack of maintenance was detected in much of the infrastructure, which means that the full supply capacity cannot be achieved. For example, large crowds of people formed in front of water kiosks where most of the taps were unusable. A frequently observed low water pressure further extended the filling times of the canisters brought along. The situation was similar at the washing stations, only a few of which were equipped with a functioning water supply (insufficient water pressure, blocked pipes). In these cases, increased use of nearby dug wells as a water source was observed, as well as increased use of makeshift toilets, which consisted solely of visual protection and were located in direct proximity to the dug wells, thus creating significant health risks. A survey of individuals in the user group revealed a lack of knowledge of these risks. Even the kiosk operators surveyed were unable to name any difference between water from the wells and water from the kiosks.

It is difficult to make any statements regarding the functionality of the DTF-financed water supply networks. This part of the infrastructure is inaccessible. The shut-off valves inspected were in good condition. The CUs' explanations, which blamed problems in the existing infrastructure (e.g. burst asbestos cement pipes, clogged steel pipes, insufficient diameters) for the lack of functionality (insufficient water pressure, no water), seem plausible as similar findings were already noted at the time of the final inspection. The functional parts of the supply networks continue to enable the medium-term development of the districts supplied, e.g. from existing water kiosks to future household connections. The CUs visited report regular applications for new household connections in the supply districts, which clearly demonstrate the evolution from water kiosks to household connections.

Increased quality assurance from the DTF in the application and implementation phase (if necessary, stronger involvement of the consultant, review of studies) would have been desirable. This could have helped to avoid the poor planning and construction errors that occurred. For instance, the development of demand for household connections was frequently underestimated, with the result that water kiosks were no longer heavily frequented after only a short amount of time. More intensive promotion of hygiene campaigns would also have been desirable; in some cases, the sample surveys of water users revealed a lack of awareness about the risks of using untreated water from alternative water sources as drinking water.

While the quantitative conclusions from the results may be below expectations – since a significant part of the financed infrastructure is simply unusable – it can still be assumed, based on the observations and statements by the user groups, that individual requirements for drinking water supply and sanitation services are covered. Furthermore, the financed networks and pilot sewage treatment plants form a good foundation for the sustainable development of the supplied districts.

Effectiveness rating: 3

Efficiency

The projects to be funded were selected according to transparent criteria. Costs per user, sustainability, demand and potential for improving the health situation were used as a basis. The criteria appear conclusive and contributed to a positive allocation efficiency.

There were significant delays during the project implementation phase; in some cases, implementation took twice as long as proposed. This is due to a lack of implementation capacities at the CUs and the administratively burdensome national tendering procedures. The delays also resulted in a significant increase in costs. One unsatisfactory element is the excessively high administration costs for the DTF, which rose from 7.5% to an unacceptable 32% (not including consultancy services) during the project implementation phase. The reason for this was the consistent deterioration of the funds-cost ratio caused by the gradual withdrawal of the very few donors from the DTF, with the only deposit ultimately coming from the FC. It is to be seen as critical that FC, despite sharply rising administrative costs, did not seek an earlier exit from DTF financing. Correct use of the funds was checked in half-yearly audits, which did not result in any significant objections.

Even during the final checks, the specific investment costs per user were recorded at a very reasonable EUR 15 for the water supply infrastructure and the somewhat high EUR 140 for the sanitation infrastructure. For the water supply, existing water plants were generally selected as the source, which presumably explains the cheaper costs. In relation to the sanitation, the CUs often cited the programme's pilot status, whose costing framework definitely has room for improved efficiency (e.g. brickwork instead of reinforced concrete, PE pipes instead of sealed concrete profiles).

While the functional parts of the infrastructure appear to be working at capacity (as already described under the section on Effectiveness), the high proportion of defective infrastructure (defective taps at the kiosks, washing stations and flush toilets not supplied with water) results in a lack of water from taps, or the wash stands being fully occupied, during peaks in demand. However, the maintenance condition of a few locations and the high proportion of non-functional infrastructure within the random samples visited are clearly rated as insufficient. The possible causes of this cannot be fully identified due to a lack of any in-depth assessment. However, some deficiencies are obvious. For instance, following the approval of one built water supply system it was ascertained that the water quality of the surface water intended to be used as a source had a high nitrate content, which could not be counteracted with the planned chlorination. The system was never put into operation. A further example is the construction of water kiosks with connections to existing networks, the pressure of which was too low to commission the kiosks. This indicates that there may have been errors in planning or that the base data collected was not adequate.

During the random sample inspection, it was also noticeable that many of the generally functional water kiosks were no longer in operation, while the beneficiaries in the vicinity benefited from household connections. Some of these kiosks had only been in operation for a few months according to the surveys conducted. This indicates insufficient general planning, which should have taken the progress in the development of both nearby households and the supply infrastructure into account. The CUs surveyed stated that they envisaged the kiosks being in operation and profitable for 3–5 years, after which a changeover to household connections would take place.

The amount of non-revenue water within the water supply infrastructure (as already discussed under Effectiveness) is regarded as negative and indicates that the scarce resource of water is being used inefficiently. A recommendation to swiftly rectify any deficiencies identified had already been issued at the time of the final inspection. This had obviously not been implemented, or at least not to a sufficient degree. In addition, many of the user groups also cited the CUs' slow to non-existent response when it came to rectifying problems. Little had changed in this respect since the time of the final inspection.

However, in many cases, the DTF-financed infrastructure was not the cause of this issue. Some of the water losses and insufficient pressure within the pipes can be traced back to existing dilapidated infrastructure, to which the DTF-financed infrastructure was connected. The CUs do not have sufficient funds to refurbish these systems on their own. The evaluation team was unable to find out the extent to which these kinds of shortcomings already existed during the planning stage.

On the whole, the production efficiency – particularly in view of the high administration costs for the DTF – is inadequate.

Efficiency rating: 4

Impact

In addition to a reduction in water-borne illnesses, the objectives adapted for this evaluation include an improvement of the target group's living situation.

General data on the development of diarrhoeal diseases was available in one case. Here, a clear reduction in the incidence of disease was observed in recent years, which, according to the CU representatives, is in line with other project areas.

Furthermore, the hygiene behaviour of water users was surveyed by means of structured interviews prior to the evaluation. While the patterns concerning the transportation and storage of drinking water are largely adequate, there are still deficiencies in relation to the risk assessment of water from private wells, which continues to be used for washing and cooking purposes in some cases. At the very least, all of the users surveyed were aware that water from unsafe sources has to be boiled before being used for cooking and drinking purposes.

Despite these still existing slight health risks in the partly continued use of private wells, it can be assumed that, in view of the improved water supply with adequate drinking water quality and adequate storage of water in the household, a reduction of the risk of water-induced diseases has been achieved. Verbal and written confirmation of the decline in diarrhoea verifies this impression.

Through the construction of the water networks, house connections and kiosks, the time required by water users to obtain drinking water has been significantly reduced in some cases. Before the start of the project, users frequently had to rely on unsafe water sources/private wells, some of which were located furtheraway. In one of the project areas visited, water users had to cross a busy road, which led to accidents. On the whole – also due to the time saved – a general improvement to living standards can be assumed.

The use of particularly efficient technology is worth highlighting as a positive aspect. In Solwezi, the team visited a municipal sewage plant that uses anaerobic processing stages producing biogas, followed by a biological clarification stage and maturation ponds. The level of technology selected is exemplary and the CU in question is planning to apply the concept to various similar project sites.

Right from the start of the project, there was no broad ownership due to the power struggles within Zambia. As a result, donor commitment remained below expectations. In addition to administration costs that were too high, this also led to the individual projects being relatively low in volume, which limited their wide-scale impact. In this case it would have been desirable to secure broader donor support.

Overall, the positive developmental impacts are deemed plausible, though it must be noted these could have been even higher without the deficiencies in the area of effectiveness and efficiency described above.

Impact rating: 3

Sustainability

Formally, the CUs achieve an average operating cost recovery of 104%, but this value is not very meaningful due to the regulator's (NWASCO) requirements concerning the restriction of operating and maintenance costs. While a clear improvement to the CUs' cost recovery situation (including the collection rate) is documented over the long term, the deficiencies in the area of operation and maintenance cannot be overlooked and reveal that the funds used for operations and maintenance are too low. The tariffs are adjusted on a regular basis. Prior to this, water users' ability and willingness to pay is examined, and there is a general acceptance of the water tariffs.

However, incentives to rehabilitate infrastructure that has not yet been put into operation and make it operational do not appear to exist in view of the available resources within the CUs. Based on the random samples inspected, from a technical perspective there is a more or less uniform impression of dilapidated and unused infrastructure, barely operable sections and measures that are working exceptionally well. Although the expectations for the technical sustainability of the supply facilities are limited due to the restricted usage period (until the transition to household connections), they are fulfilled with some limitations. Nevertheless, it appears plausible that the functioning part of the DTF-financed infrastructure can be operated on at least a rudimentary basis until the individual design objective is reached.

On the whole, it can be assumed that the programme's positive development impact is very likely to decline but will remain just about positive.

Sustainability rating: 3

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 **impact**. The ratings are also used to arrive at a **final assessment** of a project's developmental effectiveness. 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 effectiveness of the project (positive to date) is very likely to continue undiminished or even increase.

Sustainability level 2 (good sustainability): The development effectiveness 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 effectiveness of the project (positive to date) is very likely to decline significantly but remain more or less 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 effectiveness.

Sustainability level 4 (inadequate sustainability): The developmental effectiveness 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 development objective ("impact") **and** the sustainability are rated at least "satisfactory" (level 3).