

Ex post evaluation – Eritrea

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Sector: Basic water supply and sanitation (CRS code 14030)
Project: A) Massawa water supply (emergency measure) - BMZ no. 1994 65 394*, B) Massawa water supply - BMZ no. 1997 65 272, C) WASCO organisational development (training) - BMZ no. 1930 01 831
Programme/Implementing agency: Water Resources Department



Ex post evaluation report: 2019

		Project A (Planned)	Project A (Actual)	Project B+C (Inv. + training) (Planned)	Project B+C (Inv. + train- ing) (Actual)
Investment costs (total)	EUR million	1.32	1.33	10.68	1.55
Counterpart contribution	EUR million	0.04	0.05	1.99	0.00
Funding	EUR million	1.28	1.28	8.70	1.55
of which BMZ budget funds	EUR million	1.28	1.28	8.70	1.55

*) Random sample 2009

Summary: Emergency measure (A) aimed to improve the drinking water supply of the city of Massawa in the most urgently needed areas (increasing the storage capacity of the existing Dogali well field, repairing the raw water extraction system, repairing water reservoirs and the disinfection plant). In the first phase of the main measure that was planned to follow (B), the aim was to carry out more far-reaching measures such as the development of a new well field, the construction of new transport lines, the expansion of the distribution network and the construction of seepage pits. In addition to the structural measures, the training measure (C) aimed to transform the publicly owned municipal water supply department into an autonomous municipal utility (Water and Sanitation Company/WASCO).

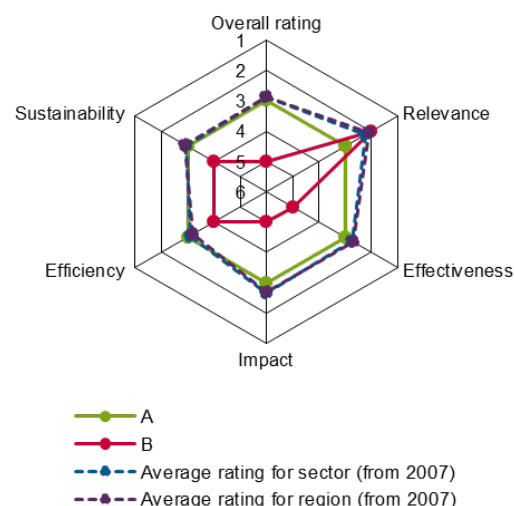
Objectives: The module objective (outcome) of the emergency measure and the main measure aimed to make a contribution to ensuring a safe, continuous water supply for the city of Massawa. The main measure also had another module objective: to improve the sewage situation on the islands off the coast of Massawa. The development objectives (impact) aimed to improve living conditions and the health situation. The protection of water resources was added ex-post.

Target group: The projects targeted the inhabitants of Massawa and commercial water users (ports, ice, salt, electricity and cement production companies). The main measure also targeted the residents of the Hirgigo suburb (along the Hideli - Forte Vittorio transmission main).

Overall rating: 3 (A), 5 (B)

Rationale: Two of three indicators were achieved for Project A. The facilities are maintained and serviced to a minimal degree and were still functional at the last inspection in 2016. The project is rated as satisfactory. The company WASCO, which was founded under Project B, suffers from a severe shortage of personnel. However, progress has been made with its autonomy. Project B is rated as inadequate because the measures could not be implemented.

Highlights: ./.



Rating according to DAC criteria

Overall rating: 3 (A), 5 (B)

Ratings:

Relevance	3 (A), 2 (B)
Effectiveness	3 (A), 5 (B)
Efficiency	3 (A), 4 (B)
Impact	3 (A), 5 (B)
Sustainability	3 (A), 4 (B)

General conditions and classification of the project

In 1994 FC planned a larger commitment in the Eritrean water sector for the city of Massawa. An emergency measure was initially carried out to address the most urgent supply bottlenecks. The measure was carried out, funds fully disbursed and the final appraisal performed on 29 April 1998. The first phase of the main measure (Massawa water supply and sewage disposal, BMZ no. 1997 65 272) was appraised on 4 August 1997 and the second phase (Massawa water supply and sewage disposal, BMZ no. 2001 66 041) on 23 April 2003. As a result of the growing politicisation and militarisation of Eritrea and generally difficult and deteriorating working conditions for foreign organisations, cooperation with Eritrea initially came to a standstill until it finally had to be discontinued, as it was no longer possible to achieve the objectives (let alone achieve them cost-effectively). Subsequent attempts over many years to resume cooperation with a revised concept ultimately failed. The first and second phases of the main measure were therefore no longer implemented. Since the first phase of the main measure still included payments for consulting services as well as residual payments of around EUR 700,000 for follow-up work to the emergency measure, it is also included as part of the evaluation. The second phase of the main measure was completely cancelled and will therefore not be subject to an ex post evaluation.

Eritrea is one of the poorest countries in the world (2011: GDP/capita: USD 1,180, PPP¹). Income is mainly generated from gold, copper, silver and zinc mining. The country is very isolated and hardly any information about the domestic political situation reaches the outside world. According to Transparency International's Corruption Index, Eritrea is ranked close to the bottom (157 out of 180 countries)² and the UN and Human Rights Watch repeatedly report serious human rights violations³. Eritrea is also a very water-poor country with 1,470 m³ of renewable resources per capita and year and is classified as a country with a water crisis (water stress) according to the UN definition.⁴

An evaluation trip was not possible or advisable due to the political situation. As already mentioned, the main measure was not implemented. Financing was only provided for several urgent supplementary measures for the emergency measure and consulting services. As the Eritrean side is no longer interested in the project, the main measure and the associated training measure were scaled back accordingly. This evaluation report is condensed due to limited information.

¹ World Bank (2014). World Development Indicators database. Washington, D.C. <http://data.worldbank.org>. Viewed on 12 February 2019. Data is from 2011. Due to the information ban, no more recent data is available.

² Transparency International (no year indicated): <https://www.transparency.org/country/ERI>

³ UN Human Rights Office of the High Commissioner: <https://www.ohchr.org/en/NewsEvents/Pages/DisplayNews.aspx?NewsID=23769&LangID=E> and Human Rights Watch (2018), World Report 2018, Eritrea: <https://www.hrw.org/world-report/2018/country-chapters/eritrea>

⁴ UN Water (no year specified): <http://www.unwater.org/water-facts/scarcity/>. Viewed on 4 April 2019. UN Water defines water scarcity as follows: less than 1,700 m³/c/a is referred to as "water stress", less than 1,000 m³/c/a as "water scarcity" and less than 500 m³/c/a as "severe water stress". This definition accounts for the fact that not only people but also the environment consume water.

Breakdown of total costs

		Project A (Planned)	Project A (Actual)	Project B (Planned)	Project B (Actual)	Project C (Planned)	Project C (Actual)
Investment costs	EUR million	1.32	1.33	9.40	0.76	1.28	0.79
Counterpart contribution	EUR million	0.04	0.05	1.99	0.00	0.00	0.00
Funding	EUR million	1.28	1.28	7.41	0.76	1.28	0.79
of which BMZ budget funds	EUR million	1.28	1.28	7.41	0.76	1.28	0.79

Relevance

Water is also scarce in the port city of Massawa. In addition, large parts of the city were destroyed due to its strategic importance during the Eritrean War of Independence in 1961-1993. Before the project appraisal, the drinking water system was in a catastrophic state. Typical characteristics were high unaccounted for water (40-50% up to the distribution network alone), inadequate disinfection and thus poor drinking water quality, insufficient raw water sources and an extremely weak implementing agency. The implementing agency had both insufficient financial resources (budget allocated by the city administration was too low) and too few and insufficiently qualified personnel. As a result, the population's water supply was threatened, a large part had to be supplied by tank trucks and the local industry suffered frequent production losses.

Sewage on the mainland was mainly disposed of via latrines. On the two islands belonging to the city, many households had septic tanks which, however, were often defective and the sewage was discharged untreated into the sea.

In view of this very dire situation, it seems appropriate from an ex post point of view to address the most urgent problems in an emergency measure and then to follow up with more extensive measures. From an ex post perspective, given the extreme shortage of water in the region and the high unaccounted for water in the emergency measure, one criticism is that investments in water production were planned and that not all the funds were used to reduce the losses in the transport main. At that time, it was probably assumed that selective repairs to the transport main would improve the situation to such an extent that the water could be transported for several years with lower losses until the line was completely replaced in the main measure. Another shortcoming in the design was the inadequate precautionary measures for the facility components located in a dry river. In Africa's dry rivers, flash floods occur during heavy rains and can cause significant destruction. However, dry rivers also meander a lot, which makes precautionary measures more difficult. This aspect therefore does not invalidate the evaluation of the project's relevance.

The reform of the implementing agency was supported by a training measure and corresponding implementation agreements. This was very practical in light of the implementing agency's weakness.

From today's point of view, the project's underlying impact logic continues to apply. Investments in water supply and quality were intended to contribute to people's health and improve their living conditions. Improving the population's supply with good-quality drinking water is the foundation for reducing the prevalence of water-induced diseases, as well as increasing quality of life.

At the same time, Italian cooperation financed the rehabilitation of part of the inner-city supply network. Donor coordination was not part of the project and was not common at the time, but was necessary from today's perspective. Donor coordination was also systematically prevented by the Eritrean government throughout the duration of the project.

The project was in line with the priorities of the Eritrean government and also with the BMZ's sectoral concept for water.

From today's perspective, the relevance of Project A is rated as satisfactory and Project B as good.

Relevance rating: 3 (A), 2 (B)

Effectiveness

The aim of Project A was to improve the use of safe, continuously supplied drinking water in the city of Massawa (outcome).

Under the scope of Project A, the filling up of the sediment storage reservoir was secured and the facilities for raw water extraction repaired. The facilities for water storage and disinfection were also repaired. In addition, house connections were supplied and minor rehabilitation measures carried out on the inner-city network. Some of the facilities of the well field were destroyed by a flood at the turn of the year 1997/98. The remaining funds were used after the 1998-2000 war to shift supply from the old supply network to the new and existing supply network financed by Italian cooperation. This included replacing the old house connections and connecting many new houses. In addition, financing was also provided to repair one of the main lines in the city built under the scope of Italian cooperation.

The funds for the training measure were fully disbursed. The measures actually implemented included a review of the existing organisational structure and the technical and financial implementation of the ongoing FC projects. Building on these efforts, WASCO was founded with the aim of working autonomously both in economic and technical terms. WASCO was also supplied with staff. However, no one had been hired for the position of technical director by the end of 2004. There was frequent and erratic turnover of personnel. There is also still an acute shortage of skilled workers. The WASCO statutes were not officially adopted before FC withdrew. Although progress has been made, operation is still not autonomous.

In addition, further training of WASCO personnel in operational matters was to be carried out as part of the training measure. In addition to the fact that the search for new water resources was the top priority at the time training took place and tied up most of the implementing agency's capacities, by the end of 2004 WASCO's entire staff had been replaced and all the knowledge transferred had been lost.

The repair of sections of the Dogali line, which was also planned as part of the emergency measure, could not be carried out due to the very poor condition of the line and was to be shifted to the main measure. For the reasons outlined above, this work was no longer carried out.

The following indicators were defined to accomplish the module objective of Project A, which were achieved as follows:

Indicator	Status PA	Ex post evaluation
(1) Continuous supply of at least 3,200 m ³ /d drinking water at the network entry point in Forte Vittorio.	Not relevant	Status at final review (1998): with sufficient water supply approx. 4,500 m ³ /d drinking water in Dogali or 3,200 m ³ /d at the network entry point (approx. 30% losses). -> Indicator achieved at the time of the final review.
(2) Supply of sufficient drinking water (45 l/c/d) by 1997.	No data.	Status at final review (1998): with sufficient water supply roughly 60 l/c/d. -> Indicator achieved.
(3) 70% of all samples taken contain no coliform germs.	No data.	Status at final review (1998): the disinfection facility was not yet in operation. Training consultant report (2004): residual chlorine levels are measured daily. No data

		about the results. -> Cannot be verified whether indicator is achieved.
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The indicators for Project A have largely been achieved, even if the values were unusually far back in the past. It is very likely that the facilities will be used, and utilised to their full capacity. The continuous supply of water correctly involved its provision at the reservoir. It was not possible to achieve more with the project. The facilities were in poor condition during the last trip in 2016, but still functioning. In particular, the facility components in the well field are endangered by frequent flash floods in the wadi. The project effectiveness is assessed as satisfactory overall.

Detailed planning and the tender documents were completed in Project B and then the project was cancelled as mentioned. In 2016, the Eritreans also announced that they were planning to build the Gahtelay Dam 40 km from Massawa. It was also intended to supply parts of the city with drinking water. Dam construction was completed in 2018. Whether a transport line to Massawa has already been built is not known. The achievement of the module objective of Project B is as follows:

Indicator	Status PA	Ex post evaluation
(1) Sufficient drinking water is available to the target group (average 65 l/c/d).	Average 45 l/c/d (house connections: 65 l/c/d, yard connections and standpipes: 32 l/c/d), significantly lower in dry years	The measures were not carried out. Due to its cancellation, the project could not contribute to achieving the indicator. Particularly in view of the fact that much of the population is supplied by tank trucks, it is unlikely that per capita consumption has risen. -> Indicator not achieved.
(2) The water quality at the withdrawal points complies with WHO standards	Water not disinfected, contaminated groundwater penetrates the pipe system.	The measures were not carried out. Due to its cancellation, the project could not contribute to achieving the indicator. Since leaks and water rationing continue to contaminate the pipes, it is unlikely that the WHO standards will be met. -> Indicator not achieved.
(3) The collection rate is at least 80% of the invoiced consumption.	85%	The measures were not carried out. Due to its cancellation, the project could not contribute to achieving the indicator. No information is available on the current situation. The data is probably not meaningful either, since 60% of the water meters are not read or are defective (information from the training consultant). -> Indicator not achieved.
(4) The income from the sale of water and from sewage dis-	Sale of water: covered Sewage disposal: not	The measures were not carried out. Due to its cancellation, the project

posal covers at least the operating and maintenance costs.	covered	could not contribute to achieving the indicator. No information is available on WASCO's financial situation. Since operating costs in the drinking water sector had already been covered before the appraisal, it can be assumed that this will continue to be the case. Due to the poor data, however, it cannot be assessed whether adequate operation and maintenance are actually carried out. Due to the measures that have not yet been implemented, the cost of sewage disposal is most likely not yet covered. -> Indicator partially achieved.
(5) The new and repaired disposal systems are functional and operated properly.	./.	As the construction measures were not implemented, there are no new disposal systems. -> Indicator not achieved.
(6) WASCO performs its work according to its defined statutes. (training)	./.	See below. -> Indicator partially achieved.
(7) Remuneration of WASCO personnel is appropriate and performance-based, taking local conditions into account. (training)	./.	Remuneration of WASCO personnel was increased in nominal terms, but not as much as required by FC (private sector level). This requirement may also have been unrealistic when compared with experiences in other countries. A number of employees are on military secondment and thus also receive military salaries that are significantly lower (information from the training consultant from 2003). -> Indicator partially achieved.

With regard to Indicator 1 (per capita consumption), this is probably not achieved. Most consumers are supplied with water, but usually via tank trucks. The proportion of the population supplied by tank trucks increased dramatically between 2002 and 2004 from 13% to 60-70%, according to the training consultant. However, the costs for the consumers of the tank truck supply are significantly higher than those for the supply via house/yard connections or standpipes. The significant increase can be attributed both to the strong population growth of the city and to the increasing fragility of the pipes due to age and lack of maintenance.

In addition, with regard to Indicator 1, it is not known whether the repairs agreed during the final review of facility components destroyed in the well field in the flash flood of 1997/98 were completely carried out. The border war between 1998 and 2000 brought the flow of information to a standstill.

The indicators of the main measure were adopted for the training measure (C). The operating company WASCO has been set up and enjoys considerably more autonomy than before the implementation of the project. Thus WASCO can at least partially hire and dismiss personnel autonomously. However, decisions about salaries remain with the municipality. There is also more autonomy in the area of finances. However, the budget and decisions on tariffs are still the city's responsibility.

The effectiveness of Project B must be rated as inadequate because it was not implemented. In this case it can only be said that the training measure achieved certain success to improve the situation of the implementing agency.

Effectiveness rating: 3 (A), 5 (B)

Efficiency

There is virtually no data available on efficiency. A per capita analysis would also make little sense for Project A since no comparative data is available for emergency measures of a similar scope. The emergency measure was delayed around 12-18 months. There were considerable cost increases in the individual items, which were offset by eliminating other measures (repair of the transport main, riverbank stabilisation of the Dogali). The original component of the Dogali riverbank stabilisation was significantly delayed because the partner did not provide the agreed services (support from the National Service (manpower)) on time. The component then also had to be moved to the follow-on phase. As early as Project A it became apparent that the Water Resources Department, the implementing agency, was overwhelmed by the large number of projects. This led to considerable delays in the agency's own contributions. The production efficiency is rated as only just satisfactory. Important measures were selected overall, but only part of them were implemented due to the high costs. We therefore also rate the allocation efficiency as satisfactory.

Efficiency cannot be determined for Project B because the measures were not implemented.

Although Project B was no longer implemented, cost increases were already apparent during the preparation phase. For example, the feasibility study estimated that the costs of repairing the transport main were too low. The BMZ was presented with a corresponding proposal to increase funds in 2003. The low resilience of agreements with the partners also became clear. Originally, an additional water source was to be developed in Hideli. Subsequently, there was talk of diverting two rivers near Massawa, and finally it was decided to use the dam near Massawa to supply the city. The fact that the decision to abandon the project came at a relatively late stage is because there was still hope of restructuring the project.

Funds were only spent on consulting services. For a variety of reasons, however, all the funds earmarked in the programme appraisal (PA) for Project B for consultant services were actually spent in full. One of the reasons for the high consultant costs was the implementation shortcomings in both the Water Resources Department and WASCO, which became apparent in the course of programme implementation and had to be compensated by more consulting input.

There were some positive results with the elaboration of the detailed planning and the tender documents. However, the main results (construction work) were not achieved for the above-mentioned reasons. As a result, both the production efficiency and the allocation efficiency in Project B are still unsatisfactory.

Efficiency rating: 3 (A), 4 (B)

Impact

The development objectives (impact) of both projects aimed to improve living conditions and the health situation. The development objective of protecting surface and underground water resources was added at the time of the ex post evaluation, and given the very scarce water resources, it is top priority.

Project A's contribution to improving the living conditions of the residents of Massawa is very likely due to the improvement of the water supply in the Dogali well field. No conclusion can be drawn about the health situation due to a lack of information. Project A was not able to protect the water resources because the selective repair of the transport main between Dogali and the city could not be implemented as a result of technical difficulties. Nothing is known about other impacts, for example on the situation of women or the

poor. We rate the overarching developmental impact of Project A as satisfactory due to its likely contribution to improving the water supply.

Project B did not produce any positive impacts due to the lack of implemented measures. We therefore rate the achievement of the development objective as unsatisfactory.

Impact rating: 3 (A), 5 (B)

Sustainability

Water and sewage charges averaged ERN 2.25 (Eritrean nakfa) per m³ until 2002 (around EUR 0.6 at 1998 exchange rates) and were then increased by 40% to ERN 3.15 per m³ (EUR 0.8). However, it needs to be kept in mind that annual inflation in the country averaged 15%. Although more detailed information on WASCO's financial situation is not available, anecdotal evidence from 2013 suggests that the operator WASCO generates sufficient income to cover operating costs, even though the facilities in the city as a whole are in a very poor state and it would seem unlikely that they would cover their costs as a result. Its good cost recovery is probably due to the fact that water resources are very scarce and hardly any alternative sources are available.

Anecdotal evidence suggests that the operation of the existing facilities is still just satisfactory, although the shortage of skilled labour continues to be a key problem. It can therefore be assumed that the measures under Project A will continue to function to a large extent twenty years after completion. It should be noted here that due to the already long service life of the facilities, sustainability does not extend as far as usual into the future, but rather evaluates the service life already reached.

Project B did not achieve the planned results. Sustainability must therefore be assessed as inadequate. (Some) positive sustainability effects would have to be taken into account if the project plans drawn up by the consultant had been adopted by other financiers. Based on the available documents, however, this question cannot be answered as no relevant information has been documented.

Sustainability rating: 3 (A), 4 (B)

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).