Ex post evaluation – Morocco

Sector: Water, sanitation and sewage management (1402000)
Project: Rural Centres Water Supply, Phase II (1998 65 940*)
Executing agency: Office National de l'Electricité et de l'Eau Potable (ONEE)

Ex-post evaluation report: 2017

		WS, rural centres II* (Planned)	WS, rural centres II (Actual)
Investment costs (total)	Mil. EUR	19.35	14.66
Counterpart contribution	Mil. EUR	5.80	4.62
Funding	Mil. EUR	13.55	10.04**
of which BMZ budget funds	Mil. EUR	13.55	10.04**

*) Project in the 2016 random sample)** €0.04 million was used for the evaluated project and €2.13 million for the "Rehabilitation of water supply, rural centres II" project (BMZ no. 1997 65 603), which is not included in the evaluation. Residual funds of €1.38 million remain

Summary: Water supply systems were built, extended and rehabilitated in 15 small towns and rural settlements (rural centres) within the scope of this open programme's second phase. Furthermore, the water resources were protected with limited measures in the sewage sector to prevent negative future effects on the water supply in terms of community hygiene. The population in small Moroccan towns and rural areas is relatively heavily afflicted by waterborne diseases due to the overwhelmingly poor water supply (WS) and inadequate community hygiene.

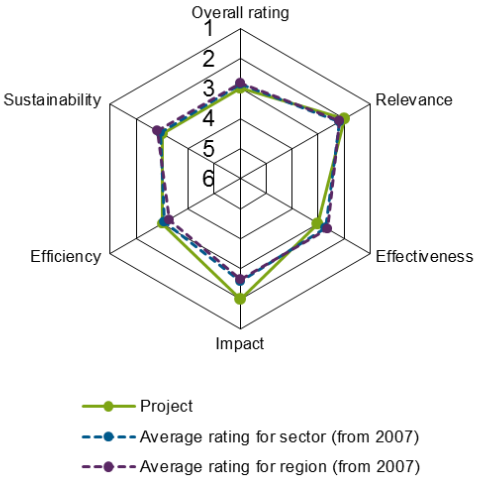
Development objectives: The ultimate objective was to contribute to reducing the population's health risk from waterborne diseases in the programme locations; from today's perspective, this should be extended to include improving general living conditions for the target group. The programme's goals were to efficiently guarantee a sufficient, year-round supply of safe drinking water for the population in the programme locations, while eliminating potential risks of sewage contaminating the WS systems in the process, increasing the efficiency of water provision and ensuring the population's use of the water.

Target group: The target group was the population of the rural centres (approx. 220,000 people). The programme was not directly targeted at the poorer population groups in the programme locations. However, they are intended to benefit particularly from the project, as the per capita income in the settlements is significantly below the national average and the new connections are often in the outskirts of towns where the poorer population resides.

Overall rating: Rating 3

Rationale: The project is highly relevant as a method of addressing the challenges in Morocco's water sector in a targeted manner. It contributes to a quantitative and qualitative improvement in the rural water supply, even though a few centres did not achieve all the target values (collection rate, unaccounted for water and contamination sources). The facilities are in a satisfactory to good condition, despite some shortcomings in structure (well heads) and maintenance. Nevertheless, there are increased contamination risks with water pumping and storage due to the systematically inadequate maintenance. We assume that the executing agency will eliminate these in the medium term. In light of the typically disproportionately high costs for rural supply facilities, financial sustainability is a challenge. However, the executing agency is addressing this on a national level via a subsidy system and recently raised rates, meaning that the financial sustainability appears acceptable from today's perspective.

Highlights: Most of the centres visited were completed in 2007 and were in good operational condition approx. 10 years after being put into operation.



Rating according to DAC criteria

Overall rating: 3

General conditions and classification of the project

Water supply systems were built, extended and rehabilitated in 15 small towns and rural settlements within the scope of the open programme's second phase. Later in the process, limited construction work was undertaken in the sewage sector, seeking to preclude negative effects on the operation of the water supply facilities.

In particular, the following component tasks were undertaken within the scope of the project:

(a) Safeguarding water production and protecting drinking water sources in 5 locations

(b) Installing 330 km of new transport and distribution pipelines

(c) Newly constructing/rehabilitating 5 pressure boosting stations (including machinery)

(d) Newly constructing 12 water storage units (5,000 m^3), rehabilitating 6 existing water storage units (1,600 m^3)

(e) Construction of 13,880 new service connections, repairing 670 existing service connections

(f) Construction of 8 km of new sewers to protect the water supply systems.

In 2004, it was agreed to use part of the project funds for measures of the "Rehabilitation of Rural Water Supply Centres II" programme (Federal Ministry for Economic Cooperation and Development (BMZ) no. 1997 65 603), due to a shortfall. To this end, €2.13 million were earmarked for the rehabilitation measure from the evaluated project. The use of these funds was not subject to the present ex-post evaluation.

The project-executing agency is the fully state-owned ONEE, which is under the control of the MEMEE (Ministère de l'Energie, des Mines, de l'Eau et de l'Environnement). Since 1975, ONEE has been politically assigned to take on production and distribution of drinking water under operating agreements at the request of the local authorities. ONEE is the country's largest operator of water supply facilities with its department for drinking water and sewage (ONEE Branche Eau).

Relevance

Morocco is a country with limited water resources suitable for supplying drinking water; as such, managing these resources effectively and efficiently is highly important. The supply situation, especially in rural areas, was quantitatively und qualitatively inadequate at the time of the programme appraisal. The connection rate at that time was above 80% in urban areas. On the other hand, around 80% of all private households in rural areas did not have their own service connection, such that they relied on alternatives sometimes at risk of contamination which were therefore a health hazard. A lack of financial resources and specialist expertise among the local authorities responsible for the water supply have often led to severe deficiencies in rural areas' water production and treatment, along with clean water storage and distribution. Furthermore, rural sewage disposal has been and remains inadequate in large part (collection systems absent or rudimentary only, generally no treatment of sewage), which presents a risk to the safe operation of the water supply systems.

As a matter of priority, the project focused on improving the water supply in rural areas and addressed selective aspects of sewage disposal later in the process. In this way, viewed from the present, it also attended to core water supply problems in rural areas. The project was in line with the Moroccan priorities and the bilateral cooperation's areas of focus. However, from the outset, the capital expenditures planned and made in the sewage sector were too selective and restricted to actually be able to remove all the potential sources of contamination. On the other hand, this selective approach should not be categorically deemed negative in terms of cost structure for the project and operation. The fact that ONEE can only work in the sewage sector at the request of the local authority impedes the expansion of measures in this sector.

From today's point of view, the operating logic that underpins the project (i.e. to contribute to the population's health and development via investments in the water supply) remains valid. Improving the population's supply with good-quality drinking water is the foundation for reducing the prevalence of waterborne diseases, as well as increasing quality of life. Standpipes were not provided as originally planned, and the number of household service connections was increased as an alternative, a decision that reflects the needs of the target group and is reasonable.

Given this state of affairs, the project seems generally suitable in terms of alleviating the water sector's development bottleneck; in terms of relevance, it is rated "good".

Relevance sub-rating: 2

Effectiveness

The programme's goals were defined as (1) efficiently ensuring a sufficient, year-round supply of safe drinking water to the population in the programme locations, (2) eliminating potential risks of sewage contaminating the water supply systems and (3) increasing the efficiency of water provision. For the goals to be achieved, the population must utilise the capacities that have been created.

The indicators below are used to summarise attainment of the goals set out in the programme appraisal (the actual values are based on the representative random sample of the seven centres visited. It is no longer possible in hindsight to reliably distinguish between the project measures and further subsequent measures).

Indicator	Target value	Ex-post evaluation
(1) Consumption per person a) for service connections b) for standpipes	a) 40 L/person/day b) 10 L/person/day	a) approx. 50 L/person/day, acc. to ONEE figures b) no standpipes provided (see "Relevance").
(2) Connection rate	65% in Year 1, 75% in Year 3 following completion	Achieved. Between 92% (Tigrigra) and 99% (Sebaa Ayoune and Ain Aouda).
(3) Unaccounted for water (UfW), technical and non-technical	X < 30% for production and distribution	Partially achieved. 4 of the 7 centres visited (Ain Aouda, Had Bradia, Gouigou and Ain Chaggag) have less than 30% UfW, while 3 exceed the target value (Moussaoua, Sebaâ Ayoune, Tigrigra).
(4) Quality of water delivered meets the Moroccan standards*	Yes	Achieved.
(5) Collection rate	>90%	Achieved on average (91% across all centres visited). 5 of 7 centres meet or exceed this value (e.g. Tigrigra: 100%). Had Bradia (73%) and Guigou (81%) are below it.
(6) Availability of drinking water	24 hours/day	Achieved.
(7) Absence of immediate sources of danger for water supply resources	Yes	Partially achieved

* The Moroccan drinking water standards meet the minimum WHO requirements

While an adequate supply of safe drinking water (1) and an increase in the efficiency of drinking water provision (3) could be achieved through the project, there are noticeable deficiencies with regard to the remaining programme goal (eliminating potential risks of sewage contaminating water supply systems).

Systematic contamination sources were noticed throughout the water supply system. Firstly, five well heads were at ground level instead of raised height (Sebaâ Ayoune, Guigou, Had Bradia). Water towers were inadequately maintained (with open roof doors and/or faulty window grilles), which has already led in three cases (Sebaa Ayoune, Had Bradia) to serious contamination directly above the exposed drinking water surfaces (bird faeces, bird eggs, presence of an owl in the clean water tank above the open drinking water surface). Meanwhile, three further sites are not yet severely contaminated, though their open accessibility to animals engenders increased risk of this (Ain Aouda, Had Bradia). Furthermore, transport pipelines (Tigrigra, Ain Aouda) were observed to be seriously contaminated, with surface water from road drainage systematically accumulating inside air inlets and vents; these can cause the water quality to deteriorate. Indeed, due to the drinking water being systematically chlorinated, there has not been any noticeable adverse effect on drinking water quality. This is guaranteed with regular checks; the ONEE laboratory in Had Bradia, visited in a random sample, provided a good impression in this regard. Nonetheless, should there be a chlorination failure, we must assume substantial potential for risk. Although the operation of the centres' supply facilities can be positively rated in general, the risks observed could have been reduced via slightly modified building work (around the well heads), or could still be minimised via more systematic maintenance (instances of water storage contamination).

In order to reduce UfW, ONEE has created mobile units on a regional office level to identify and eliminate sources of water loss as part of efficiency programmes ("Programme d´amélioration de la performance"; PAP I and II, cofinanced by German Financial Cooperation). According to ONEE information, various rehabilitation work to reduce UfW is being carried out or planned (e.g. in Tigrigra where there is enhanced damage due to calcification and related repairs). At the same time, it should be noted that UfW has been substantially decreased at 5 of the 7 centres in recent years.

In summary, we find the programme's goal attainment satisfactory. Limitations in achieving the project's goals result from the collection rate and unaccounted for water targets not being met by all centres, along with the contamination risks for the drinking water as mentioned above.

Effectiveness sub-rating: 3

Efficiency

The total costs at the time of evaluation are €14.66 million. The ability to do a meaningful target-performance comparison of the total costs is severely limited, as this is an open programme and may encompass other unplanned measures (see "Relevance"). Generally, the components envisaged in the individual measures' planning have been implemented. Occasionally during implementation, adjustments were made (e.g. to drinking water pipeline length, number of service connections, new construction and machinery of wells). The project-executing agency was able to reasonably account for these adjustments. On the other hand, some other building-related target values were (significantly) overshot, e.g. extending the connections that were planned and increasing water storage capacity. Construction was probably carried out at an appropriate cost, as a result of employing an international consultant who checked the appropriateness of the planned measures, and awarding public tenders for the construction work that was necessary as part of the project.

The various centres' basic conditions were very different, with contexts ranging from urban to rural areas and starkly different geological, geomorphologic, hydrogeological and climatic environments. In view of this situation, it was necessary to identify and implement a technical solution adapted to each individual context. The technical approaches that were consequently taken appear reasonable and mostly reflect the state of the art.

The programme's implementation period was significantly extended from the original plans. After a longer preliminary period, the programme started in May 2002; specific agreements were signed in 2000. Most facilities commenced operations in 2007, although the Guigou centre took until 2009. This resulted in an implementation period of 82 months instead of the 48 months originally planned. Primary reasons for the delays include time-consuming coordination efforts during the preliminary period and implementation, the sophisticated and decentralised approach, demanding geological conditions and the introduction of new technologies (PE pipes in Guigou).

Taking the particular importance of an improved water supply in Morocco's rural centres into consideration, the allocation efficiency is rated positively. The collection rate above the 90% target level also lends support to this rating.

Overall, the efficiency is categorised as satisfactory.

Efficiency sub-rating: 3

Overarching development policy impacts

The project's overarching development policy objective was to contribute to reducing the population's health risk from waterborne diseases in the programme locations. In our current estimation, the goal must be expanded to include improving the target group's living conditions, even though ONEE notes the difficulty of evaluating the relevant particulars in this area (e.g. time and cost savings for the target group).

No indicators were defined at the overall development objective (or ultimate objective) level. During the programme appraisal, it was argued that achieving the programme objectives also makes it plausible for the ultimate objective to be achieved. Assessing to which degree the ultimate objective has been achieved is not presently possible, due to the lack of indicators/baseline data. Prior to the EPE and on site, it was not possible to receive health situation data specific to programme location ex-ante/ex-post. At the Moussaoua centre, there was anecdotal information that waterborne epidemics (diarrhoeal diseases) developed before the project started, and these were presumed to have been eliminated by means of the project. There were no indications of frequent of waterborne diseases among the other centres.

Proxy indicators must be used for an indirect method of stating whether the ultimate objective was fulfilled. This can be validated accordingly by (1.) the water quality and (2.) the continuous availability of drinking water (due to the risk, in the event of interruptions, of the target group resorting to alternative water supply channels of dubious quality. This is also possible when users deem rates too expensive). As noted in "Effectiveness", all centres met the drinking water consumption, quality and availability targets in full. We can therefore assume that the project has reduced the risk of waterborne diseases, thus achieving the ultimate objective. Since standpipes offer potential sources of contamination, the fact that (contrary to plans) no standpipes were provided within the project's scope is also a positive point to note. Furthermore, it is essential to promptly eliminate the contamination risks detailed in "Effectiveness", as endangerment of the drinking water quality must also call attainment of the ultimate objective into question.

The broad impact of the project, including improvement in general living conditions, is judged to be positive. It was planned to reach a total of 220,000 people at 15 centres. The 7 centres visited alone supply approx. 110,000 people (compared with 69,000 people in 2008).

Given the conditions described above, we can assume that the expected development policy impacts have materialised.

Overarching development policy impacts sub-rating: 2

Sustainability

ONEE is a proven, professional partner of various bilateral (including, alongside the FC, donors such as France (AFD), Japan (JICA), Belgium (CTB), Spain and Qatar) and multilateral donors (Banque Islamique de Développement (BID), Banque Africaine de Développement (BAD), European Union, Fonds Arabe pour le Développement Economique et Social (FADES), etc.)

In terms of financial sustainability, none of the centres visited were found to have sufficient coverage of operating costs; this can be attributed to the consumer-specific costs for water supply systems in rural areas, which are typically higher. On this point, ONEE may refer to the 2014-2017 Contrat Programme agreed with the Moroccan government, guaranteeing the political support required for costs to be covered across the centres. However, in August 2014, rates were adjusted and a subsidy system has been used to support the centres in deficit, which has resulted in medium to long term financial risks. However, we assume that the Moroccan government will provide sufficient subsidies for the water supply in the future, as in the past.

Although the project´s sustainability can be rated satisfactory at the time of evaluation, there are substantial concerns in this area, primarily regarding maintenance of the facilities visited. In addition to the maintenance deficiencies detailed in "Effectiveness", which could adversely affect sustainability, some occupational safety shortcomings resulting from inadequate maintenance were also detected, e.g. railings or barriers missing in certain cases, manhole covers left open.

Generally, the delegation finds that the water supply facilities with operating personnel available on an ongoing basis appear vastly better maintained than those evidently visited very rarely by operating personnel (e.g. water storage).

ONEE in-house personnel monitor operation of the facilities, while specialist companies subcontracted by ONEE carry out the actual operating and maintenance work. ONEE has a standardised training and continuing development programme for advancing its employees' skills. The employees of the contracted companies have the option to take part in relevant courses on an individual basis.

Alongside the partially insufficient maintenance work, the selective measures in the sewage sector are considered to be inadequate and pose a further risk to sustainability. The local authorities are responsible for maintaining the sewage disposal facilities implemented within the scope of the project, yet they appear to only perform a limited range of their duties – a fact which presents a particular challenge here. The chosen model – where the local authorities are responsible as operators for maintaining the sewage facilities established by ONEE – seems unsatisfactory with a view to the investment's sustained effect.

In summary, we classify the project's sustainability as satisfactory.

Sustainability sub-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 **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).