

Ex-post evaluation

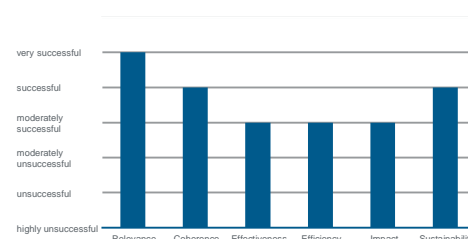
Sector Programme Water Supply, Morocco

Title	Sector Programme Water Supply I + IV		
Sector and CRS code	Water supply and sanitation – large systems, 14020		
Project number	2000 65 532 and 2006 65 984		
Commissioned by	Federal Ministry for Economic Cooperation and Development (BMZ)		
Recipient/Project-executing agency	Kingdom of Morocco / Office National de l'Electricité et de l'Eau Potable (ONEE)		
Project volume/ Financing instrument	EUR 40.2 million, loan under Financial Cooperation		
Project duration	2004–2021 or 2009–2021		
Year of report	2023	Year of random sample	2023

Objectives and project outline

The aim at the outcome level was to ensure the continuous supply of safe water to the population in a technically and financially efficient manner and to reduce unaccounted for water in the selected centres. At impact level, the aim was to contribute to protecting scarce water resources and reducing health risks for the population caused by water-related diseases. This was to be achieved by building production, transport and distribution capacities, as well as installing remote control systems, optimising installed facilities and replacing legacy facilities and water meters.

Overall rating:
successful



Key findings

The project demonstrated development effectiveness, the sustainability of which is guaranteed in the long term thanks to the good maintenance of the systems and the continuation of efforts for technical water loss reduction. The project has been rated “successful” for the following reasons:

- Against the backdrop of advancing climate change, the protection of scarce water resources is very current and the project is also very relevant from today’s perspective.
- The project concept was used by the executing agency for measures at other project locations and therefore had a pilot character.
- Due to outdated, non-renovated network sections and the increased pressure in the pipelines (due to the rehabilitation, but also due to the increasing demand for water), unaccounted for water has increased again in the meantime at some project locations.
- The sustainability of the project can be described as successful, as the built infrastructure is still in very good condition and is sustainably operated by the project-executing agency.
- The project-executing agency is independently and successfully continuing its efforts to reduce technical unaccounted for water on the basis of result-based contracts for leak detection, elimination and repairs with private companies.

Conclusions

- At the start of the project, clear (economic and social) selection criteria should be defined to ensure a transparent and objective selection of locations. This also helps ensure that funds are allocated where they have the greatest impact.
- It is important to consider the entire supply system and possibly technical measures (separation of supply zones) to reduce negative effects in non-renovated parts of the network, as well as to improve economic efficiency.

Ex post evaluation – rating according to OECD-DAC criteria

Overview of sub-ratings:

Relevance	1
Coherence	2
Effectiveness	3
Efficiency	3
Overarching developmental impact	3
Sustainability	2
Overall rating:	2

General conditions and classification of the project

The “Water Supply Sectoral Programme” project is part of German FC’s extensive involvement in the Moroccan water sector and comprised several phases. As part of the first phase of the open project, targeted investments were made to increase the operational performance of the Office National de l’Electricité et de l’Eau potable (ONEE) in the areas of water supply and water loss reduction. Due to cost increases, the funds from the Phase IV loan of the open sector programme were increased. Phase IV was also taken into account in this ex post evaluation.

The loan provided for Phase IV also financed measures from the “Sector Programme Water Supply II + III” (BMZ 2002 66 163) and the “Water Supply in Northern Morocco” project (BMZ no. 1999 66 425) (supplementary financing). These measures were not included in the ex post evaluation, as their content must be considered separately. The “Water Supply in Northern Morocco” project was already evaluated in 2016 with an overall rating of 2.

Brief description of the project

In order to contribute to protecting scarce water resources and reducing the health risks caused by waterborne diseases for the population in the served regions in Morocco, measures were implemented to improve the provision of water and reduce water losses in programme locations. The target group was the urban population of the programme locations served and amounts to approx. 1.7 million inhabitants for the provision component and approximately 1.2 million inhabitants for the distribution component. The locations were selected based on the frequency of interruptions, water availability to the consumer, the susceptibility to repairs and the expected return on investment. Specifically, telecommunications technology was used in seven water supply systems and a distribution network (provision component) and lines were replaced and renovated in 15 supply centres, water meters were replaced, water storage capacities were renovated or increased and pump stations were expanded (water loss reduction).

Breakdown of total costs

The total expenditure for the programme was EUR 54.3 million, of which EUR 48.1 million was for Phase I and EUR 6.2 million for Phase IV. To finance these costs, FC used a compound loan amounting to EUR 35.79 million, supplemented with funds from Phase IV amounting to EUR 4.4 million. Morocco’s own contribution amounted to MAD 157.8 million (approx. EUR 14.1 million), which corresponds to approx. 30% of construction and delivery costs.

In EUR million	Inv. Phases I + IV (planned)	Inv. (Actual) Phase I + IV
Investment costs (total)	51.1	54.3
Counterpart contribution	15.3	14.1
Debt financing	35.8	40.2*
<i>of which BMZ budget funds</i>	35.8	40.2 ¹

* Includes: EUR 35.8 million from Phase I and EUR 4.4 million from Phase IV funds.

Map of the project country incl. project locations



Source: own representation, Open Street Maps

Rating according to OECD-DAC criteria

Relevance

1. Policy and priority focus

The objectives of the programme are aligned with the global, regional and country-specific policies and priorities, in particular those of the (development policy) partners involved and affected and the Federal Ministry for Economic Cooperation and Development (BMZ). The programme aims to manage scarce water resources efficiently and sustainably and to improve the water supply of the population in the project areas. The project thus contributes to achieving *Millennium Development Goal* No. 7 “Ensure environmental sustainability” and No. 10 “sub-objective: Halve the proportion of people without access to improved water sources and basic sanitation.” The project also contributes to achieving *Sustainable Development Goals* No. 6 “Clean water and sanitation” and No. 13 “Climate action”.

At the time of the project appraisal, the project was assessed as developmentally relevant from both a Moroccan and a German perspective and is in line with the German Federal Ministry for Economic Cooperation and Development’s (BMZ) sector concept of “residential water management” at the time. The Federal Ministry for Economic Cooperation and Development’s (BMZ) water sector concept (2008) highlighted the relevance of integrated water resource management (IWRM) as one of the core objectives of German DC in the water sector and thus confirmed the relevance of the project during the implementation period as well. By making more efficient use of existing water resources, the project indirectly contributes to improved management of water resources in Morocco. At the same time, the “management” of the resource water appears to be strongly influenced by the agricultural sector, which consumes a large part of the available resources. The project cannot resolve the conflict of objectives between the areas of water supply and agriculture. Even from today’s perspective, the project fits with the Federal Ministry for Economic Cooperation and Development’s (BMZ) strategic direction: Action area 3 “Sustainable Urban Development” of the Federal Ministry for Economic Cooperation and Development’s (BMZ) Core Area Strategy “Responsibility for Our Planet – Climate and Energy” (BMZ Paper 6/2021) pursues the approach of integrated urban development with the aim of contributing to climate change adaptation. This also includes efficient residential water management in response to water scarcity.

The above-mentioned objectives were and continue to be relevant within the framework of Moroccan water strategies. Ensuring the supply of water to the population and increasing the level of supply are central issues of water policy in Morocco. The national water strategy (Stratégie Nationale de l’Eau) introduced in 2009 was based on six pillars: Management of water demand and improvement of water use; management and development of water supply; conservation and protection of water resources, nature and sensitive areas; reduction of vulnerability to water-related risks and adaptation to climate change; continuation of legislative and institutional reforms; modernisation of information systems and improvement of funds and skills. The up-to-dateness of the targets is also reflected in the current Plan National de l’Eau 2020–2050 and in the National Water Supply Programme 2020–2027 (Programme National de l’Approvisionnement en Eau Potable et d’Irrigation). It continues to give high priority to the efficient management of scarce water resources and the security of supply of the population with clean water.

2. Focus on needs and capacities of participants and stakeholders

Against the background of uncertain resources, capacity bottlenecks of system components (e.g. storage capacities), outdated control programmes, inadequate measurement and control technology and high unaccounted for water during water distribution, at the time of the project appraisal, the water needs of the population in many places could not be covered, especially during peak demand periods. The appraisal report identifies the inefficient management of scarce water resources as a core problem.

The project’s target group is the population of the 15 supply centres of the project and can be estimated to be around 1.2 million inhabitants.

The objective at outcome level is to provide the population of the programme regions with a sufficient and continuous supply of safe water and to reduce unaccounted for water at selected ONEE locations. The project design is geared towards the needs and capacities of those involved and those affected by the reduction of physical and administrative unaccounted for water. The measures to achieve this should include improving storage capacities for the secure supply of water for the population, even during peak demand periods, as well as improved

management of the individual elements of the water supply systems (remote control technology). On the one hand, the selected measures are intended to improve the covering of the costs of the water supplier and to achieve a quantitatively and qualitatively improved water supply for the population in the programme locations. Reducing unaccounted for water also aims to conserve scarce water resources.

The selected measures are therefore fundamentally an adequate means of achieving the goal of improving the supply of clean water to the population in the programme locations.

The impacts of the individual measures are indirectly geared towards the development policy needs and capacities of the target group and were appropriately taken into account by the project measures designed. Essentially, the measures are aimed at improving the technical-economic and thus also more efficient water distribution by ONEE. The selection criteria for the communities to be included in the open programme included, among other things, the expected profitability (return on investment < 14 years, internal rate of return min. 5% p.a.). As an operator, ONEE thus represents the direct target group of the programme. The population in the programme locations benefits from a secure, higher-quality and continuous water supply, which is achieved through improved management of the systems, less unaccounted for water and thus also improved service quality for the supplier.

The programme did not take into account the needs and capacities of particularly disadvantaged or vulnerable sections of the population through targeted measures. In principle, the set economic and financial selection criteria for the programme locations are sensible and comprehensible, as the greatest possible impact could be achieved with the available funds.

Given that Morocco is one of the countries most at risk of water shortages in the world and that the measures were aimed at protecting scarce water resources, the technical and organisational design of the project can be assessed as appropriate and realistic under the given implementation conditions. Taking into account the above-mentioned core problem, measures were implemented to reduce technical and administrative unaccounted for water – in particular rehabilitation of the distribution network, replacement of water meters, rehabilitation and expansion of water storage capacities – as well as improvement of water distribution management (remote control technology). Through more efficient/optimised distribution of water and increasing storage capacities, the aim is to improve the water supply, especially during peak demand periods. The improvement in water quality should be achieved by rehabilitating the distribution network (fewer sediment deposits in pipelines).

In most programme locations, it was only possible to rehabilitate parts of the distribution network (allocation of funds per location limited). As a result, the increased operating pressure in the pipeline system due to the rehabilitation measures has significantly increased the unaccounted for water in the old network sections that still require rehabilitation. Under certain circumstances, a higher allocation of funds per location (in the case of fewer locations) would have enabled a more comprehensive rehabilitation of the pipeline network and thus resulted in lower rates of physical unaccounted for water overall.

The design of the programme is fundamentally based on a holistic approach to sustainable development and accordingly targets the social, environmental and economic dimensions of sustainability, which are also included in the impact chain. However, social sustainability is defined as the improvement and reliability of the water supply and could exceed this from the perspective of the evaluation (e.g. effects on improving general living conditions).

3. Response to changes/adaptability

The project was designed as an open programme, i.e. the selection of programme locations took place during the implementation of the project, depending on the defined selection criteria in coordination between ONEE and KfW. The open approach enabled flexibility and also the subsequent inclusion of locations according to the priorities and acute needs of the project-executing agency. At the same time, additional funds from the “Sector Programme Water Supply IV” increase were used to absorb cost increases.

Summary of the rating

The relevance of the project remains high and is rated as “very successful”. The project supports the sector objectives formulated in Moroccan sector policy at the time of the project appraisal, which fit both into the German Federal Ministry for Economic Cooperation and Development (BMZ) strategy and the context of German-Moroccan DC. The development and strengthening of residential water infrastructure as well as investments to reduce physical and administrative unaccounted for water and measures to improve the cost recovery ratio of the water

supplier are also being pursued by Morocco's current sector policy. From both the perspective of the time of the appraisal and from today's perspective, the project addressed the core problem. Access to a secure and continuous water supply for the population of Morocco and the sustainable management of scarce water resources was and remains a strategic goal of the Moroccan government and of German-Moroccan development cooperation.

Relevance: 1

Coherence

4. Internal coherence

The German Technical Cooperation projects only affected the project indirectly, as GIZ was involved in complementary activities with the "Protection of water catchment areas" project, but did not cooperate with ONEE and was mainly concerned with compliance with water protection zones. There was therefore no direct complementarity in the sense of division of labour within German DC. Instead, targeted training measures enabled ONEE staff to better operate the water infrastructure as part of the project.

The project is a pilot project for ONEE. The project concept and the tender documents prepared were adapted and used in the context of other FC-financed and donor-financed programmes. In this sense, the project laid the foundation for ONEE's long-standing commitment to water loss reduction, remote control of water supply systems and the increase in production capacities, thus supporting the Moroccan government's own efforts.

5. External coherence

In addition to FC, important donors in the sector include the World Bank, the Banque Africaine de Développement (BAD), Japan (JICA) and Agence française de Développement (AFD). There is coordination among the donors, in particular between the AFD, the European Union (EU) and KfW, which is also reflected in co-financing. Furthermore, in particular at the time of the project appraisal, there was extensive exchange with the European Investment Bank (EIB) on measures to support the financial sustainability of ONEE.

The European donors in the water sector in Morocco coordinated on the concrete implementation of the project, as both the French Development Bank and the World Bank, as well as Japanese, Belgian and Spanish Development Cooperation financed projects in the area of rural water supply. The French AFD and German FC are also involved in the rehabilitation of small-town water supply systems and are implementing projects in the wastewater sector under the Mutual Reliance Initiative (MRI). In addition to coordinating the concrete project implementation, the European donors developed a joint strategy paper for the water sector as part of a working party.

Summary of the rating:

Coherence is successful due to the regular exchange and coordination on the division of labour of international donors active in the sector, the pilot character for the further development of measures to increase the financial sustainability of ONEE and despite the low coherence with regard to German DC.

Coherence: 2

Effectiveness

6. Achievement of (intended) targets

The project objective (outcome level) defined during the project appraisal was to more efficiently ensure sufficient production to continuously supply the population of the regions supplied by ONEE with safe water. As part of the EPE, the project objective was adjusted as follows, as no measures for production were implemented and the measures for water loss reduction were not sufficiently reflected: *The aim of the project is to ensure the adequate and continuous supply of the population of the programme locations with safe water, as well as to reduce unaccounted for water in the selected ONEE centres.*

The target achievement at outcome level is summarised in the table below:

Table: Target achievement outcome

Indicator	Status during PA	Target value PA/EPE	Actual value at final inspection (optional)	Actual value at EPE
Indicator 1a (PA) Reduction of unaccounted for water in transport pipelines, one year after commissioning	Target value already met in nine locations; not met in all other locations	< 5%	achieved	Partially fulfilled (eight locations fulfilled, deterioration detected in four locations)
Indicator 1b (PP) Reduction of unaccounted for water in distribution networks, one year after commissioning	Target values already met at PA in four locations, not met in all other locations	< 20%	partially achieved	Partially achieved (in four locations <20%, in six locations <30%; all other water supplies >30%); deterioration in four locations; no data available for one location
Indicator 2a (PA) Use of rehabilitated capacities (peak load), three years after commissioning	Omitted, as no measures for water production were carried out			
Indicator 2b (PA) Use of newly built capacities (peak load), three years after commissioning				
Indicator 3 (PA): quality of the supplied water corresponds to Moroccan standards (samples at end points of the distribution network), three years after commissioning	no baseline data available	always achieved	achieved	achieved
Indicator (4) (Separate Agreement PAP I) Maximum recovery of investment costs after 14 years	n/a	achieved	achieved	achieved
Indicator 5 (AV PAP IV): Coverage of peak daily demand even in critical dry years (measured on the Aid-El-Kebir holiday)	No data available.	always achieved	partially achieved	partially achieved

7. Contribution to achieving targets

The measures made a significant contribution to protecting scarce water resources. According to the final inspection report, a total of approx. 7.7 million m³ of treated water is saved annually, covering the needs of around 210,000 inhabitants (with an average consumption of 100 l/day), without the need to develop additional groundwater or surface water resources. In addition, operating costs of approx. MAD 38 million (approx. EUR 3.5 million) per year are saved by reducing unaccounted for water.

The following objectives were defined at output level:

- The respective ONEE production and transport or distribution facilities are fully functional three years after the start of the corresponding work;
- The systems for remote control/optimisation of installed capacities are functional;
- Old systems/meters have been (partially) replaced.

These output targets were all achieved. In principle, it can also be established that water loss reduction measures are “no-regret” measures.

With regard to the water loss reduction in the water supply (tank and transport pipeline system) through remote monitoring and remote control technology, it was found that the otherwise widespread overflow in water tanks could be greatly reduced through the improved control of the water tanks and the slide valves connected to the remote control system. The constant real-time information on water pressure makes it possible to immediately identify large leaks or pipe ruptures and react immediately using the slide valves connected to the remote control system, thus greatly reducing the duration of the water leaks and thus the unaccounted for water in these areas. Nevertheless, unaccounted for water rates have increased at some locations in the transport pipelines. This could be due, on the one hand, to the increasing age of the transport pipelines, which were not replaced or rehabilitated as part of the project. On the other hand, the flows and thus the operating pressure may also have increased due to the increased demand. This could lead to higher losses (similar to the distribution networks).

In principle, the direct positive effect of equipping the water supply systems with remote monitoring/remote control technology on the indicators is difficult to measure, as other measures and factors also have an influence. Nevertheless, the impact of such a project on operational quality and quality assurance is undisputed. Remote monitoring of chlorine content and turbidity, in addition to improved operational efficiency in the storage and transport system, enables faster feedback and adjustment of the corresponding systems and contributes to continuously safe water quality.

With regard to water loss reduction in water distribution, the target indicator for the reduction of water losses in the distribution networks of the supply areas was only partially achieved. In principle, instead of the unaccounted for water rate, the network capacity (share of water output to water input) was measured and used by the project-executing agency. At the time of the evaluation, four of the 15 supply areas had achieved a network capacity of over 80% (less than 20% unaccounted for water) and six supply areas had a network capacity of between 70 and 80%. The other systems remained below 70%. It should be pointed out that network capacity deteriorated in two places between the time of the final inspection (2019) and evaluation (2023). This is probably due to the non-rehabilitated parts of the network. In principle, capacities of over 70% are already good for distribution networks that still have a high proportion of older asbestos cement pipes, as is the case here. In some cases, the performance level at the start of the measure was below 60%.

Even though the percentage targets for water loss reduction were only partially achieved and the situation in some places has worsened again in recent years: In absolute terms, it can be seen that (at the time of the final inspection) the programme’s contribution to protecting scarce water resources is clearly achieved with savings of more than 7.7 million m³ of water per year by reducing water losses in the 15 supply areas. This means that around 210,000 additional people can be supplied with water without using up additional water resources. The positive effect on operating costs is also significant, as described above.

The coverage of daily peak demand can be measured on the day of the Aid El Kebir holiday. Traditionally, this is the day with the greatest demand for water in the Moroccan supply context. Prior to the measures, most of the 15 supply areas had problems meeting peak demand. At the time of the final inspection, the supply in the project centres was also ensured on the day of peak demand. At the time of the evaluation, this indicator could only be partially achieved. This is mainly due to population growth and the resulting increase in demand/consumption. According to ONEE, it also does not aim to fully cover peak day demand on public holidays, as this is not economical and would require an enormously high storage capacity, which is only required on a few days a year. Nevertheless, significant improvements with regard to unaccounted for water rates and supply were identified through the measures.

The water quality meets the Moroccan standard at all locations, so this indicator is fully achieved. It is therefore also to be expected that a contribution has been made to the impact objective (improvement of the health of the population), although this is not measurable.

8. Quality of implementation

The project-executing agency achieved good implementation quality with the support of an international implementation consultant. At the time of the evaluation, the built and rehabilitated infrastructure was in good condition and, in particular, the remote monitoring technology was in very good condition. The infrastructure is regularly serviced and maintained.

The installed remote control technology is fully functional and in use by trained personnel.

9. Unintended consequences (positive or negative)

The selection of locations did not focus on low-income households/neighbourhoods. As a result, fewer low-income households benefited from an improved water supply than would have been possible in principle. However, this did not result in any particular risks, as ONEE has achieved an overall improvement in the water supply in the selected centres and thus lower-income population groups also benefit from this.

No new leaks were registered in the areas where the piping was replaced. As a result of the upgrade, a higher water pressure in the supply systems was achieved as intended. However, this also puts greater strain on network areas that have not yet been rehabilitated, so that more leakages have been recorded there (temporarily). As a result, unaccounted for water has increased in absolute terms in some project centres.

In addition, a deterioration in network performance has been observed in some centres over the years, so that unaccounted for water increased again in some centres between the final inspection and ex post evaluation. This is the result of the strong growth of rural and urban centres, which is due to continued high population growth, dynamic socio-economic development and a high tendency towards agglomeration and urbanisation. These effects lead to regular overloading of the water supply systems. In addition, it results in the respective investment horizons and thus the degree of utilisation of these systems being reached more quickly. As a result, reinvestments and the rehabilitation of existing infrastructure as well as expansion investments can often become necessary more quickly than originally planned. This also shows that a constant effort is required to carry out network rehabilitation to counteract this.

Summary of the rating

Although not all outcome indicators were fully met, the measures were moderately successful in terms of effectiveness. In principle, almost all indicators were met at the time of the final inspection. In particular, the deterioration in terms of unaccounted for water rates is to be explained by the age of the pipelines and the increase in pressure in the non-rehabilitated parts of the network, as well as the time of the evaluation. In addition, the negative developments regarding unaccounted for water between the final inspection and ex post evaluation show that the situation without the project would have been much worse than the initial period at the project appraisal.

Effectiveness: 3

Efficiency

10. Production efficiency

As part of the project, a total of 633km of water pipes were laid/renovated, 62,271 house connections were laid, 11 reservoirs with a capacity of 10,850m³ were created, 36 pump stations were renovated or newly built and ten vehicles were equipped and procured for leak detection.

The calculated specific costs vary per location between EUR 26 per inhabitant (with an estimated 1,000,000 people in the programme locations) and EUR 75 per inhabitant. The total average for all programme locations is approx. EUR 40 per inhabitant. These are relatively low figures for the rehabilitation of water networks, although it must be taken into account that only part of the network was rehabilitated. At the same time, it must be taken into account that the figures are only of limited significance, since they only concern the costs for distribution, and the population information comes from 2003 (before the project was implemented). The costs for planning and construction monitoring services (consulting) are only partially taken into account. The background is the open nature of the programme, due to which parts of the consulting costs were financed from other phases.

There were major delays in the implementation of the project. The implementation of the overall project took 12 years for the provisioning component and 15 years for the distribution component instead of the planned six years. The reasons for the delays were a late start of the programme due to significantly longer study periods (feasibility study), a very ambitious time schedule for the project, which introduced relatively new procedures at ONEE (systemic leak detection and adjustment of the networks for a better search result) and in which construction measures were carried out during ongoing operation. In addition, there were long deadlines for permits from other authorities (e.g. municipalities), blockades of the construction site by the population, insolvency of construction companies and, as a result, new contracts being tendered. At the same time, it should be pointed out that some of the construction work had already been completed 5–10 years before the evaluation, meaning that this infrastructure has already been in operation for a few years.

One consultant was deployed for programme management and three consultants for technical design, the preparation of tender documents, support for the award of contracts, supervision of works and training. The share of consulting services in the overall project was relatively high at 19.4% (EUR 7.8 million) and is partly explained by the significant delay during project implementation.

11. Allocation efficiency

Continuous, technically and financially efficient supply of safe water (outcome) as well as efficient and sustainable protection of scarce water resources (impact) could also have been achieved by the following measures:

- Improved operations management (reduced administrative losses, improved collection rate, improved maintenance);
- Optimising the tariff system (demand management).

However, in contrast to network rehabilitation and the expansion of storage capacities, a short-term improvement in physical unaccounted for water cannot be achieved because the necessary changes in management and demand require time as well as financial resources for structural investments. Improving operational management will result in maintaining the water loss reduction in the long term and an optimised tariff system will reduce demand. The costs for both measures are extremely variable and distinctly dependent on the input required for study and consultancy services. Nevertheless, repairs to the networks are still necessary regardless of the other measures. To achieve the best long-term impacts, all three areas of action (network rehabilitation, operations management and tariff system optimisation) are ideally dealt with together. The loan agreement included a stipulation to raise the tariffs annually.

In order to improve ONEE's operating cost coverage or to prevent it from deteriorating further as part of the project, the profitability of the investments was included as a selection criterion. At the time of the project appraisal, the operating cost coverage of ONEE was approx. 61% (at the time, the water division was still a separate company). The current company (water and energy sector) achieved a positive result in the ordinary course of business in 2020 and 2021, i.e. fully covered operating and financing costs. In 2022, ONEE was unable to cover operating costs due to the energy crisis.

It is conceivable that a higher target achievement (i.e. lower water loss rates) could have been achieved for the individual locations if the available funds had been distributed to fewer locations. This would have enabled a more comprehensive rehabilitation of the networks at the individual locations.

However, the increase in network capacity from 70% to 80%, which is often necessary, would have been very costly. This would also be accompanied by a sharp increase in specific costs. In principle, it must be noted that the network pressure was increased with the rehabilitation of the distribution networks. On the one hand, this led to an adequate quality of service, and on the other hand to more water leaks in network areas (sectors) that have not yet been rehabilitated. Due to the allocation to a total of 15 locations, the available funds were not sufficient to rehabilitate these still critical sectors in the supply areas. This applies in particular to the three supply areas with very low target achievement (in particular: Al Hoceima and Oued Zem). Taking into account the high costs for higher target achievement, it is questionable whether the procedure described above would have led to better allocation efficiency.

Summary of the rating

With regard to efficiency, more cost-effective alternatives are generally not identifiable. The project measures were appropriately aimed at reducing physical losses and thus also reducing the financial burden on the

executing agency. Given the high profitability (return on investment significantly below the expected 14 years), the approach applied, targeting physical unaccounted for water where it is most technically and economically urgent, was appropriate and efficient. In principle, it would also be desirable to implement measures to reduce administrative unaccounted for water, which would further reduce ONEE's financial burden. For political reasons, water tariffs were raised less frequently than planned at the time of the appraisal. Together with the energy sector, the company ONEE achieves more than operating cost coverage (exception 2022). Due to the very large delays within the programme, which also led to relatively high consulting costs, the efficiency can be assessed as moderately successful overall.

Efficiency: 3

Impact

12. Overarching developmental changes (intended)

The overarching development objective of the project was to contribute to the protection of scarce water resources and to reducing the health risks caused by waterborne diseases for the population in the regions where the water is supplied. Indicators at impact level were neither defined during the project appraisal nor during the evaluation. This no longer corresponds to the state-of-the-art, according to which indicators are also to be defined at impact level. However, measuring the quality and quantity of water resources is also very costly. It is therefore plausible to assume, from the perspective at the time and also from today's perspective, that the impact objective has been achieved if the programme objective has been achieved.

13. Contribution to overarching developmental changes (intended)

It can be assumed that water savings were achieved by reducing physical unaccounted for water, and water resources are therefore also conserved. These could even be quantified by ONEE, although the measuring systems for recognition of unaccounted for water / network capacity are often flawed.

Against the background of continued overuse of groundwater and the inadequate management of water resources overall, which is reflected in a deteriorated water inventory, the overall contribution of the project is only marginal. In principle, the Moroccan water sector faces the following challenges with regard to the IWRM: At political level, the interests of various water user categories (e.g. for agriculture) will continue to be satisfied in the short term. An integrated controlled use of the resource has not yet been implemented. The reasons for this include insufficient coordination between the various actors and institutions, intransparent decision-making processes, insufficient demand management for more conscious and responsible use of the valuable resource and only a low use of treated waste water as service water (e.g. in agriculture).

With regard to the positive impact of the project on the health of the population, it can be assumed that the improved, continuous supply has reduced the health risks for the population. This was measured via a proxy at outcome level (quality of water for the ultimate buyer). This outcome indicator was met for all project locations. It can therefore be concluded that the provision of high-quality water improved the health of the population, although this is not directly measurable or no health data were collected as part of the project.

14. Contribution to (unintended) overarching developmental changes

According to the current state of knowledge, no overarching, unintended developmental changes can be identified.

Summary of the rating

From an evaluation perspective, the project's assumption that the reduction of unaccounted for water through improved management by means of remote control technology, the expansion of storage capacities and the rehabilitation of the transport and distribution network contributes to protecting scarce water resources is plausible. However, since unaccounted for water has not been reduced to the same extent, or the situation has worsened overall for some project locations, the effects at the impact level are less than intended. The project is classified as moderately successful.

The project has a pilot character, as further programmes (financed with FC funds but also by other donors) will be set up based on the project's approach and implemented with appropriate adjustments and improvements.

The measures would have a significantly higher potential to make an overarching contribution if a consistent approach to the IWRM were implemented.

Impact: 3

Sustainability

15. Capacities of participants and stakeholders

Maintenance and operation of the supply infrastructure are well organised at ONEE. The operation of the systems is ensured by ONEE's own personnel. Maintenance work and repairs are carried out by commissioned companies and monitored by ONEE. As part of further improvements in unaccounted for water, ONEE has also entered into result-based contracts with private companies. The companies are therefore only paid after successfully reducing unaccounted for water and are responsible for regular repairs, leak detection and elimination, as well as the replacement of tertiary pipelines. Occasionally, there is a significant reduction in leaks in the processed network sections, which means that the physical unaccounted for water can be further reduced. The systems visited were all in good or very good condition and fully functional.

16. Contribution to supporting sustainable capacities

The procured mobile units for leak detection are still in use. Although some vehicles have been replaced, the equipment will continue to be used in new vehicles in the locations where ONEE independently takes care of the operation and maintenance of the tertiary networks.

The above-mentioned privatisation of leak detection and repairs shows ONEE's sustained commitment to reducing physical unaccounted for water, although little attention is still paid to reducing administrative losses. The evaluation mission is not aware of any official ONEE strategy with regard to reducing administrative unaccounted for water.

17. Durability of impacts over time

ONEE can be described as a professional and competent partner. However, there are medium- to long-term risks with regard to financial sustainability, as operating costs are not covered in all centres. However, cross-subsidisation is possible and the operating cost coverage of the water business area was positive in the past (current figures are not yet available). In principle, the measures were designed to improve the operating cost situation (savings). Since ONEE remains dependent on government subsidies, the reduction in operating costs can fundamentally increase independence from government subsidies. In the long term, this would also create greater scope for investments by ONEE.

Summary of the rating

Although the project did not implement any concrete measures on the demand side, the measures contributed sustainably to reducing operating costs in the water supply sector. The effects of the measures were long-lasting and continue to have an impact thanks to ONEE's strong institutional and organisational position. In addition, measures for water loss reduction are being independently implemented and continued by ONEE. The systems are well maintained and operated sustainably. For this reason, the sustainability of the measure can be assessed as successful.

Sustainability: 2

Overall rating: successful (level 2)

The project has a very high level of relevance, coherence and sustainability. Although a comparatively poorer evaluation of the criteria of effectiveness, efficiency and development effectiveness had to be determined, the

measures generally contributed to reducing unaccounted for water and improving the efficiency of ONEE. The fact that unaccounted for water has now partly increased again is due to the long implementation period of the project, the time of the evaluation and the associated age of the service networks (especially of non-renovated sections). Some works had already been in operation for five to ten years at the time of the evaluation. Independent operation by ONEE is sustainably ensured, although covering of the costs is not guaranteed due to the state-defined tariffs. The latter could not be influenced by the project. The pilot nature of the project, on the basis of which the ONEE measures were implemented at other project locations, demonstrates the success of the project concept. We rate the project as successful overall.

Contributions to the 2030 Agenda

The project contributes to achieving Sustainable Development Goal (SDG) no. 6 “Ensure availability and sustainable management of water and sanitation for all”. Specifically, it contributes to sub-objectives 6.1 “Achieve universal and equitable access to safe and affordable water for all” and 6.4 “Substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity”. In particular, the project contributes to addressing water scarcity by reducing unaccounted for water. At the same time, this also improves the water supply for the population and makes the water supply more cost-efficient. Against the backdrop of increasing water scarcity in Morocco, the project is particularly relevant here in order to reduce the number of people suffering from water scarcity.

Project-specific strengths and weaknesses as well as cross-project conclusions and lessons learned

The project had the following strengths and weaknesses in particular Strengths:

- Due to water scarcity in Morocco, the project is still very relevant from today’s perspective and is highly up-to-date in view of climate change.
- The project has a pilot character and was groundbreaking for the implementation of further programmes based on the project concept.
- The project-executing agency ONEE demonstrates a great deal of ownership for the project, prepared the measures independently and continues the water loss reduction efforts beyond the project (with private companies that are paid on the basis of results).

Weaknesses:

- The project has implemented numerous individual measures at many different locations. As a result, the investment requirements in almost all locations could only be partially met.

Conclusions and lessons learned:

- The selection criteria for the project locations should be clearly defined at the start of the project to ensure that the selection is transparent and based on objective criteria. In addition to economic criteria, the selection can also be made on the basis of social criteria, so that, for example, poorer sections of the population are also targeted. Transparent decision-making based on objective criteria also helps to allocate funds where they have the greatest impact.
- At the time of project design, it should be considered whether to carry out complete network rehabilitation at fewer locations or partially rehabilitate more locations with fewer funds. A key consideration of the technical and economic influencing factors as well as planning and implementation is required for each location (for details, see the next conclusion).
- For the individual project locations, it is of great importance to consider the entire supply system, even if the funds are not sufficient to rehabilitate the entire system. From a cost-benefit perspective, the best approach was chosen, despite the negative effects on the non-rehabilitated network sections. However, the negative consequences for the non-rehabilitated network sections could be taken into account in advance, and corresponding technical countermeasures could be taken (e.g. pressure zones; separation of network sections, etc.).

- The reduction of administrative unaccounted for water should be given as much attention as the reduction of technical losses, although they cannot be achieved with technical measures (such as the project measures selected here). However, they also make a significant contribution to improved business efficiency and a better understanding of the scarce resource “water” in the population. Implementation can also take place in cooperation with other donors or German TC.
- When designing the project, the overall strategy (here with regard to water loss reduction) of the executing agency / water supplier should be taken into account. This contributes to the replicability of the concept, as it was successfully implemented in this case.

Evaluation approach and methods

Methodology of the ex post evaluation

The ex post evaluation follows the methodology of a rapid appraisal, which is a data-supported qualitative contribution analysis and constitutes an expert judgement. This approach ascribes impacts to the project through plausibility considerations which are based on a careful analysis of documents, data, facts and impressions. This also includes – when possible – the use of digital data sources and the use of modern technologies (e.g. satellite data, online surveys, geocoding). The reasons for any contradicting information are investigated and attempts are made to clarify such issues and base the evaluation on statements that can be confirmed by several sources of information wherever possible (triangulation).

Documents:

Final inspection report dated 2 March 2021, project appraisal report dated 18 December 2000, proposal to increase funds dated 26 November 2007, progress reports of the project-executing agency, DC programme proposal dated 29 September 2008, draft for the DC programme Water Morocco dated 03 January 2020, BMZ core topic strategy “Responsibility for our planet – climate and energy” (BMZ paper 6/2021), Plan National de l’Eau du Maroc (PNE 2020–2050), Programme National de l’Approvisionnement en Eau Potable et d’Irrigation du Maroc (2020–2027)

Data sources and analysis tools:

on-site data collection, partner monitoring data

Interview partners:

Direction Financière l’ONEE, Direction de la Planification des Investissement de l’ONEE, Direction Régionale du Centre Nord (Fès), équipe opérationnelle d’Al Hoceima, de Taounate et de Sidi Kacem, Personnel responsable du système SCADA al Hoceima et du système SCADA à Sidi Kacem

The analysis of impacts is based on assumed causal relationships, documented in the results matrix developed during the project appraisal and, if necessary, updated during the ex post evaluation. The evaluation report sets out arguments as to why the influencing factors in question were identified for the experienced effects and why the project under investigation was likely to make the contribution that it did (contribution analysis). The context of the development measure and its influence on results is taken into account. The conclusions are reported in relation to the availability and quality of the data. An evaluation concept is the frame of reference for the evaluation.

On average, the methods offer a balanced cost-benefit ratio for project evaluations that maintains a balance between the knowledge gained and the evaluation costs, and allows an assessment of the effectiveness of FC projects across all project evaluations. The individual ex post evaluation therefore does not meet the requirements of a scientific assessment in line with a clear causal analysis.

The following aspects limit the evaluation:

Availability and reliability of data, in particular on unaccounted for water.

Methods used to evaluate project success

A six-point scale is used to evaluate the project according to OECD DAC criteria. The scale is as follows:

- Level 1** very successful: result that clearly exceeds expectations
- Level 2** successful: fully in line with expectations and without any significant shortcomings
- Level 3** moderately successful: project falls short of expectations but the positive results dominate
- Level 4** moderately unsuccessful: significantly below expectations, with negative results dominating despite discernible positive results
- Level 5** unsuccessful: despite some positive partial results, the negative results clearly dominate

Level 6 highly unsuccessful: the project has no impact or the situation has actually deteriorated

The overall rating on the six-point scale is compiled from a weighting of all six 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 (“impact”) and the sustainability are rated at least “moderately successful” (level 3).

List of abbreviations:

AFD	Agence française de développement
FI	Final inspection
BAD	Banque Africaine de Développement
GBP	Gross domestic product
BMZ	Federal Ministry for Economic Cooperation and Development
DAC	Development Assistance Committee
MAD	Moroccan dirham
EIB	European Investment Bank
EU	European Union
EUR	Euro
DC	Development cooperation
FC	Financial cooperation
FC E	FC evaluation
GIZ	Gesellschaft für Internationale Zusammenarbeit (German development agency for international cooperation)
HDI	Human Development Index
IWRM	Integrated Water Resource Management
JICA	Japanese Development Bank
ONEE	Office National de l'Electricité et de l'Eau potable
p.a.	per annum
PA	Project appraisal
PAR	Project appraisal report
PP	Project proposal
TC	Technical cooperation
USD	US dollar

Publication details

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FC E
 Evaluation department of KfW Development Bank
 FZ-Evaluierung@kfw.de

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KfW Group
 Palmengartenstrasse 5–9
 60325 Frankfurt am Main, Germany

List of annexes:

Target system and indicators annex

Risk analysis annex

Recommendations for operation annex

Evaluation questions in line with OECD DAC criteria/ex post evaluation matrix annex

Target system and indicators annex

Project objective at outcome level		Rating of appropriateness (former and current view)				
During project appraisal: Provision of the population of the programme regions with a sufficient and continuous supply of safe water and reduction of unaccounted for water in selected centres of the ONEP.		Corresponds to the measures implemented: (1) Measures to reduce physical and (to a lesser extent) administrative unaccounted for water and to ensure the quality of water (replacement of tertiary pipelines, house connections, testing of water quality at household level); (2) Replacement of transport pipelines, remote control to improve continuous supply				
During EPE (if target modified): n/a						
Indicator	Rating of appropriateness (appropriate; partially appropriate; not appropriate)	Rationale of appropriateness (for example, regarding impact level, accuracy of fit, target level, smart criteria)	PA target level Optional: EPE target level	PA status (year)	Status at final inspection (year)	Optional: EPE status (year)
Indicator 1a (PA): Reduction of unaccounted for water in transport pipelines; 1 year after commissioning	Partially appropriate	According to the final inspection report, the network output was measured and not the unaccounted for water; the reduction in unaccounted for water due to the remote control technology used in the transport system can only be determined quantitatively on a case-by-case basis with great effort. Due to the implemented measures, a positive effect can be assumed.	5%	< 5% in nine locations	achieved	< 5% in eight locations; deterioration observed in four locations.
Indicator 1b (PA): Reduction of unaccounted for water in distribution	appropriate	Generally appropriate for assessing the impact for the entire supply area; Generally measurable;	20%	< 20% in four locations	Partially achieved	< 20% in four locations, < 30% in six locations, all others > 30% in four locations

networks, one year after commissioning		Restrictions with regard to the impact for the rehabilitated part of the network if there has been no division into zones				(Deterioration detected in four locations) No data available for one location
Indicator 2a (PA): Use of rehabilitated capacities (peak load), three years after commissioning	Not applicable	No measures have been taken to increase/rehabilitate water production				
Indicator 2b (PA): Use of newly built capacities (peak load), three years after commissioning	Not applicable	No measures have been taken to increase/rehabilitate water production				
Indicator 3 (PA): quality of the supplied water corresponds to Moroccan standards (samples at end points of the distribution network), three years after commissioning	appropriate	Is checked regularly by ONEE anyway, which means no additional effort is required.	100%	100%	100%	100%
Indicator (4) (Separate Agreement PAP I) Maximum recovery of investment costs after 14 years	Partially appropriate	Not clear how the achievement should be measured (savings in operating costs vs investment costs?) Indicator deleted for the EPE				
Indicator 5 (AV PAP IV): Coverage of peak daily demand even in critical dry years (measured on the Aid-EI-Kebir holiday)	appropriate	Measured on the Aid-EI-Kebir holiday	100%	N/A	100%	Partially achieved

NEW: Indicator 4 (Replacement) Savings in operating costs	NEW	Replacement for Indicator 1 for measuring the efficiency of supply	n/a	n/a	EUR 3.5 million per year	No data available.
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Project objective at impact level						
During project appraisal: Contribute to the protection of scarce water resources as well as to the reduction of health risks from waterborne diseases for the population of the centres supplied by ONEE.						
During EPE (if target modified): n/a						
Indicator	Rating of appropriateness (appropriate; partially appropriate; not appropriate)	Rationale of appropriateness (for example, regarding impact level, accuracy of fit, target level, smart criteria)	Target level PA / EPE (new)	PA status (year)	Status at final inspection (year)	EPE status (year)
No indicators were defined at Impact level (cf. report text). It is plausible to assume that the overall objective will be achieved if the project objectives are achieved.			n/a	n/a	n/a	n/a

Risk analysis annex

Ex-ante expected risks

Risk	Relevant OECD-DAC criterion
Financial risks for ONEE due to lack of tariff increases.	Sustainability

Risks that occurred during the course of the project

Risk	Relevant OECD-DAC criterion
Delays in implementation (esp. with regard to tenders, awards of contracts and signing of supply and service contracts).	Efficiency
Financial risks for ONEE due to lack of tariff increases.	Sustainability
Increase in pressure in the renovated network sections, which has a negative effect on the non-renovated network sections.	Effectiveness/efficiency

Ex post identified risks

Risk	Relevant OECD-DAC criterion
Unreliable data or no reliable water inventory, which makes it impossible to adequately measure unaccounted for water (particularly in the case of transport pipelines).	Effectiveness/efficiency
Increase in water demand in the ONEE centres due to the trend towards urbanisation and population growth, which exerts ever-increasing pressure on the water sector in general as well as ONEE.	Effectiveness/efficiency
Competing interests and political prioritisation of different water users.	Impact

Recommendations for operation annex

- Recommendations for operation were made only to a very limited extent in the project completion report, as the infrastructure visited was of good quality and the operation of the distribution networks was significantly more efficient than before at the time of the final inspection. It was also estimated that the trained staff and good equipment would strengthen the sustainability of operational management. The recommendations given therefore relate to the future implementation of similar programmes.
- Existing, increasingly very old pipelines as well as those of poor quality should be replaced gradually. The old pipelines are becoming more and more susceptible to leaks. This means that renewal programmes for network areas are consistently (and increasingly) necessary. The improvement of the existing network capacity through repair/rehabilitation is therefore not comparable to a one-off new construction or expansion project and requires the utility provider to have a defined maintenance policy and implementation strategy, which is continuously backed up with financing programmes as long as the tariffs only cover the immediate operating costs.
- Based on the project, ONEE has carried out similar measures in other project locations and used the prepared documents (e.g. tender documents). Thanks to continued support from the donor community, the financing of these projects is also secured. At the same time, the need for renovation in the project locations in which the project was active has increased again, and follow-on investments are necessary.
- A substantial increase in tariffs that cover more than the direct operating costs has still not been implemented. However, this is also outside the decision-making power of ONEE.

Evaluation questions in line with OECD-DAC criteria/ex post evaluation matrix annex

Relevance

Evaluation question	Specification of the question for the present project	Data source (or rationale if the question is not relevant/applicable)	Rating	Weighting (- / o / +)	Rationale for weighting
Evaluation dimension 1: Policy and priority focus			1	o	
1.1 Are the objectives of the programme aligned with the (global, regional and country-specific) policies and priorities, in particular those of the (development policy) partners involved and affected and the German Federal Ministry for Economic Cooperation and Development (BMZ)?	Does the project fit with the objectives of the Moroccan water strategy / development strategy? Is the project aligned with the Federal Ministry for Economic Cooperation and Development (BMZ) priorities / sector guidelines for water?	Sector strategies Morocco, German Federal Ministry for Economic Cooperation and Development (BMZ) sector strategy papers			
1.2 Do the objectives of the programme take into account the relevant political and institutional framework conditions (e.g. legislation, administrative capacity, actual power structures (including those related to ethnicity, gender, etc.))?	Are there special framework conditions in Morocco (e.g. minorities or similar) that must be taken into account? How were the locations selected? Were there any additional criteria such as poverty, gender, ethnicity?	See above			
Evaluation dimension 2: Focus on needs and capacities of participants and stakeholders			1	o	
2.1 Are the programme objectives focused on the developmental needs and capacities of the target group? Was the core problem identified correctly?	What has been identified as a core problem, and are the objectives and measures suitable to contribute to solving the core problem?	PP			
2.2 Were the needs and capacities of particularly disadvantaged or vulnerable parts of the target group taken into account (possible differentiation	Have the needs of minorities (if relevant) and vulnerable population groups been taken into account in the design? How were the locations selected (criteria)?	See above			

according to age, income, gender, ethnicity, etc.)? How was the target group selected?				
2.3 Would the programme (from an ex post perspective) have had other significant gender impact potentials if the concept had been designed differently? (FC-E-specific question)	If the measure had been designed differently, would it have had greater gender impact potential?	Own assessment		
Evaluation dimension 3: Appropriateness of design			2	0
3.1 Was the design of the programme appropriate and realistic (technically, organisationally and financially) and in principle suitable for contributing to solving the core problem?	N/A			
3.2 Is the programme design sufficiently precise and plausible (transparency and verifiability of the target system and the underlying impact assumptions)?	Was the design sufficiently plausible and precise, e.g. with regard to the selection criteria?	PP, PCR		
3.3 Were the selected indicators and their value allocation appropriate in their entirety (select one of the following to answer: indicators and values were appropriate / partially appropriate / not appropriate)? The rationale is differentiated according to indicators in Appendix 1. (FC-E-specific question)	N/A	PP, PCR, data from evaluation questionnaire		
3.4 Please describe the results chain, incl. complementary measures, if necessary in the form of a graphical representation. Is this plausible? As well as specifying the original and, if necessary, adjusted target system, taking into account the impact levels (outcome and impact). The (adjusted) target system	N/A	See above		

<p>can also be displayed graphically. (FC-E-specific question)</p>					
<p>3.5 To what extent is the design of the programme based on a holistic approach to sustainable development (interplay of the social, environmental and economic dimensions of sustainability)?</p>	<p>Were the measures designed in such a way that they could have contributed to sustainable development?</p>				
<p>3.6 For projects within the scope of DC programmes: is the programme, based on its design, suitable for achieving the objectives of the DC programme? To what extent is the impact level of the FC module meaningfully linked to the DC programme (e.g. outcome impact or output outcome)? (FC-E-specific question)</p>	<p>What were the objectives of the DC programme and did the objectives of the project match the objectives of the DC programme?</p>	<p>DC programme from 2008 and 2020; no DC programme existed at the time of the project appraisal</p>			
<p>Evaluation dimension 4: Response to changes/adaptability</p>			<p>1</p>	<p>o</p>	
<p>4.1 Has the programme been adapted in the course of its implementation due to changed framework conditions (risks and potential)?</p>	<p>Were the measures adapted, e.g. in the second phase, based on findings from the first phase and/or changed framework conditions?</p>	<p>PP for phases 2+3; additional financing proposal Phase IV</p>			

Coherence

Evaluation question	Specification of the question for the present project	Data source (or rationale if the question is not relevant/applicable)	Rating	Weighting (- / 0 / +)	Rationale for weighting
Evaluation dimension 5: Internal coherence (division of tasks and synergies within German development cooperation)			3	0	
5.1 To what extent is the programme designed in a complementary and collaborative manner within German development cooperation (e.g. integration into DC programme, country/sector strategy)?	Were the measures embedded in the DC programme (water/Morocco), and what form did the division of tasks (FC/TC) take?	No DC programme at the time of project appraisal;			
5.2 Do the instruments of German development cooperation dovetail in a conceptually meaningful way, and are synergies put to use?	Were synergies between FC and TC used? How did the project relate to TC projects in the same department?	Annual reporting, PCR			
5.3 Is the programme consistent with international norms and standards to which German development cooperation is committed (e.g. human rights, Paris Climate Agreement, etc.)?					
Evaluation dimension 6: External coherence (complementarity and coordination with actors external to German DC)			2	0	
6.1 To what extent does the programme complement and support the partner's own efforts (subsidiarity principle)?	Would ONEE have implemented the project without FC support? Or has ONEE continued the strategy?	On-site interviews			

6.2 Is the design of the programme and its implementation coordinated with the activities of other donors?	To what extent was the project coordinated with other donors in the sector? Were there cooperation arrangements?	Annual reporting
6.3 Was the programme designed to use the existing systems and structures (of partners/other donors/international organisations) for the implementation of its activities and to what extent are these used?	Were the partner's systems used for implementation (ONEE)?	Project documents/studies on the project
6.4 Are common systems (of partners/other donors/international organisations) used for monitoring/evaluation, learning and accountability?		

Effectiveness

Evaluation question	Specification of the question for the present project	Data source (or rationale if the question is not relevant/applicable)	Rating	Weighting (- / 0 / +)	Rationale for weighting
Evaluation dimension 7: Achievement of (intended) targets			3	0	
7.1 Were the (if necessary, adjusted) objectives of the programme (incl. capacity development measures) achieved? Table of indicators: Comparison of actual/target	Were the objectives of the programme achieved (outcome and output level)?	PCR, data from questionnaires			
Evaluation dimension 8: Contribution to achieving targets			3	0	
8.1 To what extent were the outputs of the programme delivered as planned	Were the outputs of the programme achieved? Were measures taken to	PCR, field visits, data from evaluation questionnaire			

(or adapted to new developments)? (<i>Learning/help question</i>)	reduce administrative unaccounted for water?	
8.2 Are the outputs provided and the capacities created used?	Is the built infrastructure and installed technology used? Is it still intact? If not, why?	PCR, field visits
8.3 To what extent is equal access to the outputs provided and the capacities created guaranteed (e.g. non-discriminatory, physically accessible, financially affordable, qualitatively, socially and culturally acceptable)?	Is access to a safe water supply guaranteed for everyone? Are there any discernible differences in supply, for example to poorer households? Is the tariff system designed fairly to ensure that lower-income households also have a safe water supply? Were all neighbourhoods considered equally/without discrimination (or based on objective criteria)?	Field visits, current project-executing agency analysis
8.4 To what extent did the programme contribute to achieving the objectives?	Is there a causal link between the achievement of the objectives and the measures, or were there other factors that contributed to the achievement of the objectives?	N/A In principle, water loss reduction measures are “no regret” measures.
8.5 To what extent did the programme contribute to achieving the objectives at the level of the intended beneficiaries?	Has the water supply become safer? Were there previously a lot of interruptions or poorer water quality that has now improved?	Data from evaluation questionnaire, interviews ONEE, PCR
8.6 Did the programme contribute to the achievement of objectives at the level of the particularly disadvantaged or vulnerable groups involved and affected (potential differentiation according to age, income, gender, ethnicity, etc.)?	Have any groups (e.g. illegal users) been disadvantaged as a result of the measures to reduce administrative unaccounted for water? – Unintended consequences?	
8.7 Were there measures that specifically addressed gender impact potential (e.g. through the involvement of women in project committees, water	Are there water committees and if so, how are they appointed? Are there any other indications that gender impacts were specifically promoted?	Conversations with ONEE

committees, use of social workers for women, etc.)? (FC-E-specific question)				
8.8 Which project-internal factors (technical, organisational or financial) were decisive for the achievement or non-achievement of the intended objectives of the programme? (<i>Learning/help question</i>)	Target/actual comparison: Which objectives were not achieved and what led to objectives being achieved/not achieved?	PCR, field visit, interviews with ONEE		
8.9 Which external factors were decisive for the achievement or non-achievement of the intended objectives of the programme (also taking into account the risks anticipated beforehand)? (<i>Learning/help question</i>)	N/A	Interviews with ONEE		
Evaluation dimension 9: Quality of implementation			1	o
9.1 How is the quality of the management and implementation of the programme to be evaluated with regard to the achievement of objectives?	How well is/was ONEE able to carry out the project independently? Was the consultant's input appropriate?	Interviews with ONEE, project documentation (quarterly reports, etc.); interviews with responsible sector team		
9.2 How is the quality of the management, implementation and participation in the programme by the partners/sponsors evaluated?	How independently did ONEE carry out the project and in what quality?	See above		
9.3 Were gender results and relevant risks in/through the project (gender-based violence, e.g. in the context of infrastructure or empowerment projects) regularly monitored or otherwise taken into account during implementation? Have corresponding measures (e.g. as part of a CM) been implemented in a timely manner? (FC-E-specific question)	N/A	See above		

Evaluation dimension 10: Unintended consequences (positive or negative)	Note: if there are no unintended consequences: → No weighting → No evaluation		N/A	N/A	
10.1 Can unintended positive/negative direct impacts (social, economic, ecological and, where applicable, those affecting vulnerable groups) be seen (or are they foreseeable)?	For example, have illegal water users now been legally connected to the tariff-based network and now have to pay (at all/more) for water?	Interviews with ONEE; quarterly reports, PCR			
10.2 What potential/risks arise from the positive/negative unintended effects and how should they be evaluated?	N/A	See above			
10.3 How did the programme respond to the potential/risks of the positive/negative unintended effects?	N/A	See above			

Efficiency

Evaluation question	Specification of the question for the present project	Data source (or rationale if the question is not relevant/applicable)	Rating	Weighting (- / o / +)	Rationale for weighting
Evaluation dimension 11: Production efficiency			3		
11.1 How are the inputs (financial and material resources) of the programme distributed (e.g. by instruments, sectors, sub-measures, also taking into account the cost contributions of the partners/executing agency/other participants and affected parties, etc.)? (Learning and help question)	How high were the costs for the respective components: Water storage / water distribution / remote control technology? How high were the consulting costs? Were these appropriate to achieve the outputs?				
11.2 To what extent were the inputs of the programme used sparingly in relation to the outputs produced (products, capital goods and services) (if possible)	Were the specific costs (e.g. water supply per inhabitant) comparatively high / in line with usual market prices? Comparison with other programmes in	TE assessment; data from other (similar) projects in Morocco			

<p>in a comparison with data from other evaluations of a region, sector, etc.)? For example, comparison of specific costs.</p>	<p>Morocco or other comparable countries (Jordan/Tunisia)?</p>		
<p>11.3 If necessary, as a complementary perspective: To what extent could the outputs of the programme have been increased by an alternative use of inputs (if possible in a comparison with data from other evaluations of a region, sector, etc.)?</p>	<p>Could the outputs (reduction of unaccounted for water; improvement of water quality) also have been achieved with other measures (possibly more cost-effectively)?</p>	<p>TE assessment</p>	
<p>11.4 Were the outputs produced on time and within the planned period?</p>	<p>What delays have there been in implementation and to what extent? What were the factors that led to delays?</p>	<p>PP, PCR, quarterly reports, reporting</p>	
<p>11.5 Were the coordination and management costs reasonable (e.g. implementation consultant's cost component)? (FC-E-specific question)</p>	<p>What was the share of consultant costs? Comparison with similar programmes in the water sector in Morocco and/or Tunisia/Jordan.</p>	<p>PCR, comparison with other programmes in Morocco</p>	
<p>Evaluation dimension 12: Allocation efficiency</p>		<p>2</p>	<p>0</p>
<p>12.1 In what other ways and at what costs could the effects achieved (outcome/impact) have been attained? (<i>Learning/help question</i>)</p>	<p>Was there a sensible alternative to achieving the intended impacts? Would it have made sense to also implement measures to reduce administrative unaccounted for water at the same time or instead?</p>		
<p>12.2 To what extent could the effects achieved have been attained in a more cost-effective manner, compared with an alternatively designed programme?</p>	<p>See above</p>		
<p>12.3 If necessary, as a complementary perspective: To what extent could the positive effects have been increased with the resources available, compared</p>	<p>See above</p>		

to an alternatively designed programme?		
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Impact

Evaluation question	Specification of the question for the present project	Data source (or rationale if the question is not relevant/applicable)	Rating	Weighting (- / o / +)	Rationale for weighting
Evaluation dimension 13: Overarching developmental changes (intended)			3	o	
13.1 Is it possible to identify overarching developmental changes to which the programme should contribute? (Or if foreseeable, please be as specific as possible in terms of time.)	<p>To what extent has the water inventory improved (overall in Morocco)? Can a causal link be established between the measures and the improved water inventory?</p> <p>Has the cost recovery ratio of ONEE-Branche Eau actually improved (output level)?</p> <p>How did the water inventory develop between 2000 and 2023?</p> <p>How did groundwater extraction/water production (in m³/year) increase between 2000 and 2023, in particular in the provinces of the project locations?</p>	<p>Morocco water inventory Data from ONEE on total operating costs</p> <p>Information on tariffs</p>			
13.2 Is it possible to identify overarching developmental changes (social, economic, environmental and their interactions) at the level of the intended beneficiaries? (Or if foreseeable, please be as specific as possible in terms of time)	<p>Has the health situation among the population improved? Is it comprehensible that the possible improvements can be attributed to the project (causality)?</p>	<p>No health data was collected. Causality difficult to prove.</p>			

<p>13.3 To what extent can overarching developmental changes be identified at the level of particularly disadvantaged or vulnerable parts of the target group to which the programme should contribute? (Or, if foreseeable, please be as specific as possible in terms of time)</p>	<p>How has the socio-economic situation of the particularly poor people in the project locations developed?</p>	<p>Poverty data not available at a meaningful level of aggregation.</p>					
<p>Evaluation dimension 14: Contribution to overarching developmental changes (intended)</p>					<p>3</p>	<p>0</p>	
<p>14.1 To what extent did the programme actually contribute to the identified or foreseeable overarching developmental changes (also taking into account the political stability) to which the programme should contribute?</p>	<p>N/A</p>	<p>PP, PCR, data from evaluation questionnaire</p>					
<p>14.2 To what extent did the programme achieve its intended (possibly adjusted) developmental objectives? In other words, are the project impacts sufficiently tangible not only at outcome level, but at impact level? (e.g. water supply/health effects)</p>	<p>How has the water inventory developed? Can the contribution of the project be measured?</p>						
<p>14.3 Did the programme contribute to achieving its (possibly adjusted) developmental objectives at the level of the intended beneficiaries?</p>	<p>Did the measures contribute to improving the health situation of the population?</p>	<p>No health data was collected. Causality difficult to prove.</p>					
<p>14.4 Has the programme contributed to overarching developmental changes or changes in life situations at the level of particularly disadvantaged or vulnerable parts of the target group (potential differentiation according to age, income, gender, ethnicity, etc.) to which the programme was intended to contribute?</p>	<p>Did the measures contribute to improving the health situation of the particularly poor population?</p>	<p>See above</p>					

<p>14.5 Which project-internal factors (technical, organisational or financial) were decisive for the achievement or non-achievement of the intended developmental objectives of the programme? <i>(Learning/help question)</i></p>					
<p>14.6 Which external factors were decisive for the achievement or non-achievement of the intended developmental objectives of the programme? <i>(Learning/help question)</i></p>					
<p>14.7 Does the project have a broad-based impact?</p> <ul style="list-style-type: none"> - To what extent has the programme led to structural or institutional changes (e.g.in organisations, systems and regulations)? (Structure formation) - Was the programme exemplary and/or broadly effective and is it reproducible? (Model character) 	<p>Have the same remote control technologies been installed at other locations and are they being used?</p> <p>How is the unaccounted for water measured? Are there any “learning effects” from the project for other locations?</p>	<p>Interviews with ONEE</p>			
<p>14.8 How would the development have gone without the programme (developmental additionality)?</p>	<p>Can assumptions be made as to how unaccounted for water would have developed if the project had not been implemented? What would be the impact on the population and the overall water inventory?</p>	<p>Interviews with ONEE, assessment of TE</p>			
<p>Evaluation dimension 15: Contribution to (unintended) overarching developmental changes</p>	<p>Note: if there are no unintended consequences:</p> <ul style="list-style-type: none"> → No weighting → No evaluation 		<p>N/A</p>	<p>N/A</p>	
<p>15. 1 To what extent can unintended overarching developmental changes (also taking into account political stability) be identified (or, if foreseeable,</p>					

please be as specific as possible in terms of time)?		
15.2 Did the programme noticeably or foreseeably contribute to unintended (positive and/or negative) overarching developmental impacts?		
15.3 Did the programme noticeably (or foreseeably) contribute to unintended (positive or negative) overarching developmental changes at the level of particularly disadvantaged or vulnerable groups (within or outside the target group) (do no harm, e.g. no strengthening of inequality (gender/ethnicity))?		

Sustainability

Evaluation question	Specification of the question for the present project	Data source (or rationale if the question is not relevant/applicable)	Rating	Weighting (- / 0 / +)	Rationale for weighting
Evaluation dimension 16: Capacities of participants and stakeholders			2	0	
16.1 Are the target group, executing agencies and partners institutionally, personally and financially able and willing (ownership) to maintain the positive effects of the programme over time (after the end of the promotion)?	<p>What is the staffing level for the maintenance of the water supply network (operating staff)? Is ONEE able to use remote control technology (knowledge of personnel)? Does it continue to use it?</p> <p>Is ONEE financially able to maintain the water supply network? Cost recovery ratio? Are sufficient funds available for maintenance work?</p>	PCR, interviews with ONEE and operating staff; visit to the systems;			

	If applicable, Amount of subsidies and reliability of payment of subsidies by the state?				
16.2 To what extent do the target group, executing agencies and partners demonstrate resilience to future risks that could jeopardise the impact of the programme?	Does ONEE have the financial resources and staffing levels to replace the technology if it breaks? Can repairs be carried out quickly? Is there a possibility for the population to lodge a complaint if the water supply is not guaranteed?	See above			
Evaluation dimension 17: Contribution to supporting sustainable capacities			2	o	
17.1 Did the programme contribute to the target group, executing agencies and partners being institutionally, personally and financially able and willing (ownership) to maintain the positive effects of the programme over time and, where necessary, to curb negative effects?	Are any necessary subsidies for ONEE also ensured in the future? Or what is the expected development of the cost recovery ratio and thus the financial sustainability of the measures?	Interviews + data from ONEE, current project-executing agency analysis			
17.2 Did the programme contribute to strengthening the resilience of the target group, executing agencies and partners to risks that could jeopardise the effects of the programme?	Is ONEE better able to ensure the water supply by implementing the measure? Security of supply? Is the maintenance work/management easier and/or improved by the remote control technology?	See above			
17.3 Did the programme contribute to strengthening the resilience of particularly disadvantaged groups to risks that could jeopardise the effects of the programme?	Is there a tariff for customers with lower incomes?	See above			
Evaluation dimension 18: Durability of impacts over time			2	o	

<p>18.1 How stable is the context of the programme (e.g. social justice, economic performance, political stability, environmental balance)? (<i>Learning/help question</i>)</p>	<p>Does the political situation jeopardise the impact of the project?</p>	<p>On-site interviews</p>
<p>18.2 To what extent is the durability of the positive effects of the programme influenced by the context? (<i>Learning/help question</i>)</p>		
<p>18.3 To what extent are the positive and, where applicable, the negative effects of the programme likely to be long-lasting?</p>	<p>Will the available water resources also be sufficient to supply the rapidly growing population in the future? To what extent must the efficiency of water distribution be further improved in order to secure a sustainable supply?</p>	<p>On-site interviews</p>
<p>18.4 To what extent can the gender results of the intervention be considered permanent (ownership, capacities, etc.)? (FC E-specific question)</p>		<p>Not relevant, as the investments benefit the entire population and no house connections were financed.</p>