

Ex-post evaluation

Kunene Transboundary Water Supply, SADC, Angola, and Namibia

Title	Kunene Transboundary Water Supply Project		
Sector and CRS code	Water, 14010 Water sector policy and administrative management		
Project number	2006 65 638		
Commissioned by	Federal Ministry for Economic Cooperation and Development (BMZ)		
Recipient/Project-executing agency	Southern African Development Community (SADC), Permanent Joint Technical Commission on the Cunene River Basin (PJTC)		
Project volume/ Financing instrument	EUR 12 million, budget funds grant		
Project duration	12/2004–02/2021		
Year of report	2023	Year of random sample	2023

Objectives and project outline

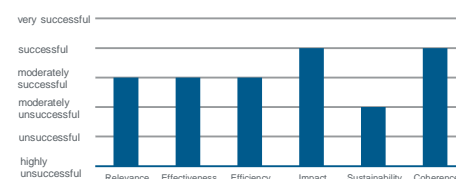
The objective at outcome level was to improve the access of the population of the project region in southern Angola to safe, sustainably available and affordable water. At impact level, the practice of transboundary water management aimed to contribute to the achievement of the Millennium Development Goals. Investment measures for water abstraction and long-distance transport via the Kunene Oshakati Canal and the network expansion in the project communities were intended to improve the water supply, but these were significantly adapted during implementation and financed in particular with local contributions.

Key findings

The project has positive effects in terms of impact and coherence, but is rated as moderately unsuccessful due to the inadequate assessment of sustainability.

- The project is fundamentally relevant, but was too ambitious due to the complex project structure in a difficult environment and the extensive investment measures with comparatively low funds available.
- It demonstrates good coherence, which is manifested in the interaction of TC, FC and other donors as well as the counterpart contributions of Angola and Namibia.
- The effectiveness of the project is rated as moderately successful, as the project indicators for achieving the project's module objective, in particular uninterrupted water availability and economic indicators, were only partially met.
- Implementation of the project was also significantly delayed due to coordination problems and, due to a significant increase in costs, only a small part of the originally planned network expansion and connection could be achieved with FC funds. The planned outputs were exceeded using local funds, so that overall efficiency can still be assessed as successful when considering the overall project.
- Sustainability is rated as moderately unsuccessful, as current maintenance practices, frequent power outages and the lack of operating cost coverage lead to significant technical and economic risks for sustainable operation.

Overall rating: moderately unsuccessful



Conclusions

- Water supply projects should also take into account opportunities (irrigation of further regions and increase in climate resilience) as well as negative effects (restriction of a previously informal, free supply of service water) for agricultural use.
- If the link between Financial Cooperation and Technical Cooperation is too close when strengthening the operator, it can lead to implementation risks in the event of delays in investments.
- Transnational cooperation in the water sector requires long-term support measures and should be limited to central elements of water supply, where appropriate, in order to reduce complexity.

Ex post evaluation – rating according to OECD-DAC criteria

General conditions and classification of the project

The project was implemented through the Southern African Development Community (SADC) and jointly by the countries of Angola and Namibia.

Brief description of the project

The “Kunene Transboundary Water Supply” project included investment measures to improve the water supply in the Kunene region in the border area between Angola and Namibia. This was intended to improve the water supply to the population, particularly in the Angolan part of the project region, while at the same time contributing to ensuring the water supply in northern Namibia. The project was implemented via the Southern African Development Community (SADC) and the countries of Angola and Namibia as partners. The project-executing agency was the “Permanent Joint Technical Commission on the Cunene River Basin (PJTC)”, consisting of representatives of both countries. This was a TC/FC cooperation project in which, in addition to strengthening the PJTC, GIZ aimed to support the establishment and development of a water utility in Angola in particular. The total costs of the FC project amount to around EUR 17.9 million, of which EUR 12.0 million was financed from FC funds. Angola in particular made significant additional investments for water supply in the project region.

Breakdown of total costs

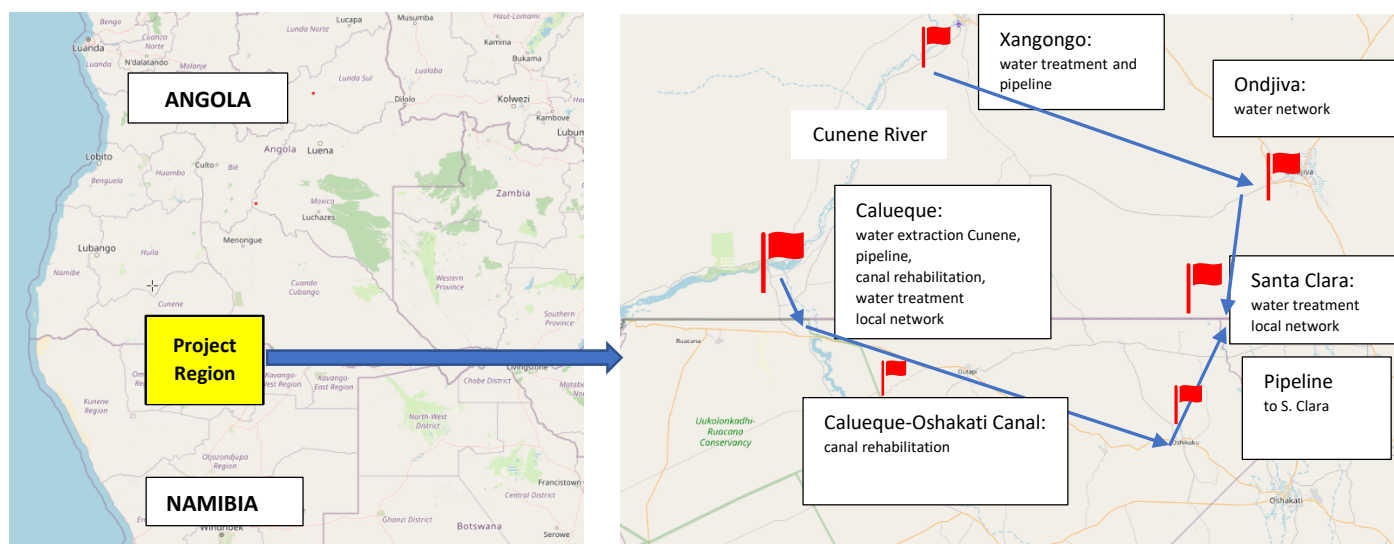
The table shows the total costs of the project. An explanation can be found in the appendix.

In EUR million	Inv. (planned)	Inv. ¹ (actual)
Investment costs (total)	17.9	>17.9
Counterpart contribution, Angola ²	4.8	approximately 150
Counterpart contribution, Namibia ³	1.1	> 1.1
Debt financing	12.0	11.9
<i>of which BMZ budget funds</i>	12.0	11.9

- 1) This is a cooperation project with GIZ in which there was no FC complementary measure. TC support was provided as a component of the overarching programme “Transboundary Water Management in the SADC Region”.
- 2) In the context of a modified project design, Angola made substantial local contributions that can be attributed to the project. This includes the water treatment plant, pipelines and networks with a total scope of around EUR 150 million.
- 3) Namibia’s counterpart contribution was at least of the agreed size. A total amount cannot be specified.

Map of the project country including project areas/sites

Figure 1: Overview of the project region and site visits conducted during the EPE (source: open street maps)



A comparative representation of the originally planned and finally implemented measures can be found in the appendix.

Rating according to OECD-DAC criteria

Relevance

Policy and priority focus

The project aims to improve the population's access to safe, readily available and affordable water in the project region and thus contributes in particular to achieving the (former) Millennium Development Goals (MDGs) 6 (reducing waterborne diseases) and 7 (access to safe water) and the current Sustainable Development Goals (SDGs) 3 (reducing waterborne diseases), 6 (clean water and sanitation) and 13 (climate action).

The project supports the sector objectives of the two countries at the time of the project appraisal, which are defined in a master plan of the Angolan government for the project region from 2002 and the "Memorandum of Understanding on the Availability of Bulk Water" signed by both governments in 2003. Access to a safe, affordable and adequate water supply for all people in southern Angola and northern Namibia remains a strategic goal of both governments. In addition to the cooperation between the two countries in the PJTC as executing agency, this is also manifested in the signing of the agreement on the establishment of a joint Cuvelai Watercourse Commission in 2014 and the interim preparation of an IWRM plan for the project area (2021). The development of water management infrastructure and investments are part of the SADC Regional Strategic Action Plan 2005–2010 on Integrated Water Resources Development and Management. The project is in line with the development policy priorities of the German Federal Government (including water strategy).

The climate and environmental relevance of the objective of improved water supply has increased significantly in the regional and global context of climate change and, in particular, the increasing water scarcity in the project region with a simultaneous increase in the number of heavy rainfall events and floods. According to a World Bank report from 2022, 76–94% of the population in the southern part of Angola was affected by droughts in 2013–2016. In this respect, the measures planned and implemented in the project continue to meet the goals of adapting to the impacts of climate change and lead to an increase in the target group's resilience. An independent and

comprehensive assessment of environmental and social compatibility as well as a climate appraisal were not carried out in the preparation and would be a necessary part of the project design from today's perspective.

The objective of alleviating poverty through the provision of water for agriculture added by the ex post evaluation was not explicitly addressed in the programme preparation.

Focus on needs and capacities of participants and stakeholders

According to the module proposal, the project target group was 101,000 inhabitants of the southern Kunene province in Angola, in particular in the provincial capital of Ondjiva (approx. 53,000 inhabitants) and the towns of Namacunde (29,000), Santa Clara (11,000) and Omupanda (8,000). This is the (semi-)urban part of the predominantly rural region with around 1.2 million inhabitants. At the start of the project, the available daily quantity of water, which is often not hygienic, was less than 10 l/person in the project region, which was significantly below the minimum quantity of 50 l recommended by the WHO. A reduction in the time required daily for water procurement and the provision of a sufficient quantity of clean water to reduce waterborne diseases are therefore very relevant for the target group and should be achieved through the investment measures for water supply. When establishing the water supply systems, the focus was initially on supplying the more densely populated project communities for reasons of efficiency, and rural areas were accessed mainly along the main pipelines.

The population in northern Namibia, which benefits from the improved provision of water via the Calueque-Oshakati canal through the use of irrigation or drinking water, was not explicitly identified as a target group as part of the module proposal. This area was regarded as an extended project region and the population implicitly and without numerical identification also benefited from the measures envisaged in the project for improved raw water supply and the rehabilitation of the long-distance water pipeline and the Calueque-Oshakati Canal.

As part of the target group analysis, a socioeconomic study was carried out during project preparation with the survey of households in the project region. The status quo of the inadequate water supply and the resulting problems were identified and an attempt was made to take the needs of the target group into account when designing the investment measures. During the implementation of the investment-related FC measures, the needs and capacities of particularly disadvantaged or vulnerable parts of the population or gender-related or inclusive aspects were no longer monitored or followed up by specific FC studies and only partially explicitly addressed as part of TC support. According to a gender mainstreaming study conducted by GIZ on transboundary water management in the SADC region, opportunities for greater consideration of gender-specific needs have remained untapped. During the evaluation mission, however, it was noted that there had been focus groups and that the plans, for example, aimed at a balanced distribution of standpipes and thus minimising travel times for the predominantly female water collectors. In addition, in contrast to the original concept, the number of individual house connections was significantly increased during implementation. This has a significant positive effect on the living conditions for women and girls, who typically took on the task of collecting water. During the rehabilitation of the Calueque Oshakati Canal, water abstraction points were set up on the Angolan side at which water can be safely taken by the target group for agricultural use, for example, or automatically discharged for irrigation. For newer canal sections rehabilitated by Namibia, specific access to the canal will be provided at regular intervals to facilitate the use of this infrastructure for collecting water and doing laundry.

However, based on the results of a new survey, it can be assumed that, through the measures described above, particularly vulnerable population groups, who, for example, do not have their own water supply due to the lack of funds to create a private house connection, will also benefit from the provision of hygienic water (e.g. through the provision at public standpipes or the joint use of a house connection in the neighbourhood).

The lack of capacity to operate a water supply infrastructure was identified in the design as a central risk for ensuring sustainable operation. Accordingly, the establishment and strengthening of a water supply company in the Angolan project region was to be covered by German TC. Furthermore, the start of investments was made dependent on the establishment of the operator to ensure that no infrastructure would be built without sufficient operation. However, due to the late establishment of the operator "Empresa de Água e Saneamento do Cunene" (EASC), its strengthening could only be provided to a limited extent as part of the TC measure. A further strengthening of EASC following the GIZ intervention took place as part of technical assistance financed by the ADB and was still in the final phase at the time of the evaluation. The reports and interviews show that the operator was only partially capable of sustainable operation at the end of TC support.

The promotion of cross-border cooperation between Angola and Namibia was of great importance in the project design. This is also reflected in the implementation of the measure by means of the joint commission PJTC, consisting of representatives from both countries, or the Task Force Calueque established within the PJTC, which was in principle intended for the joint operational management and coordination of the existing and shared system components. In practice, however, the lack of experience of the PJTC task force in coordinating the implementation of infrastructure measures and, in particular, of small-scale water supply infrastructure, proved to be a weakness in this concept. In particular, there was a lack of experience with rapid joint decision-making processes involving the wishes of Angolan and Namibian government stakeholders. The involvement of SADC as a partner in the financing also promoted cross-border cooperation, but was also associated with an additional coordination effort, which in some cases seemed to overwhelm the capacities of the parties involved.

Appropriateness of design

In principle, the design of the measure was suitable for contributing to solving the core problem and, at the same time, strengthening cross-border cooperation through the project sponsorship with representatives from both countries. However, the implementation of the rather small investments in both countries required a large number of internal and external coordination processes. Due to the low level of development of the water supply in the project region, the considerable need for support to establish and strengthen the water company in Angola was not, from today's perspective, sufficiently taken into account in the design. Against this background and in view of the size of the project region and the large number of measures, the financing volume was low, the project approach was very ambitious overall and at the same time vulnerable to time delays due to a high need for coordination on both sides and in the task force.

Central outputs described in the results chain were completely defined in the design as local contributions of the respective countries and were excluded from the joint implementation and thus also direct follow-up and quality assurance by the PJTC and the implementation consultant. At the same time, the investments to be financed by FC were dependent on the completion of the measures to be financed from own contributions. In addition, the establishment of the Angolan operator was a prerequisite for the activation of FC funds. Alternatively, FC funds could have been used for the sensible improvement of the regional main water supply system, for which a competent operator was available on the Namibian side and for which the corresponding local measures could have been carried out using own funds if the Angolan water company had been successfully established or if operation had been carried out by the Namibian side.

The target system of the measure, the underlying impact mechanisms and the corresponding results chain are generally comprehensible. The results chain includes technical measures for the rehabilitation of raw water extraction in Calueque, the rehabilitation and expansion along the entire transport route (pipe, canal, pipe and interim storage) and the distribution of the water to the actual users in the project communities. It also contains elements of technical and institutional support for the operation of transport and water supply systems in the project communities.

However, during implementation there was a substantial adjustment to the design and results chain due to the relocation of water supply from the northern project region (abstraction and treatment in Xangongo) with Angolan investments. As a result, the cross-border supply of the project region via Namibia was less important than originally planned. The modified results chain in the annex describes the measures implemented, identifies the discontinuation of original measures as well as the inclusion of additional measures and the respective financing.

An analysis of the original and modified results chain shows that due to the long supply chain with a large number of individual steps, starting with the abstraction and treatment as well as the transport of the water through to distribution to households, there is a significant risk that the target cannot be achieved in the event of a malfunction or failure of a component. Redundancy and robustness of the system are limited, and the potential of supplying the project area from two sides is only used to a limited extent in the new design due to the elimination of the associated investments in the southern project area between Santa Clara and Oshakati.

Response to changes/adaptability

The project was heavily adapted during implementation. The focus of water provision for the project region around Ondjiva in Angola was on the water supply from the north with water abstraction and treatment in Xangongo, instead of water transfer from the south via the Kunene Oshakati Canal and a long-distance water pipeline with transfer in St. Clara. FC investments in the original project area were reduced to the municipality of Santa Clara, while investments to improve water supply in the original project region were financed exclusively by the Angolan side. At the same time, the sanitation measures originally envisaged to a limited extent have been discontinued. Instead, a supply system was built in the municipality of Calueque at the water abstraction point for the Calueque Oshakati Canal as an additional FC-financed measure.

Summary of the rating

The relevance of the project is generally high. The project supported the objectives formulated by the partners SADC, Angola and Namibia at the time of the project appraisal, which are also in line with the strategies and objectives of the German Federal Government. The project design envisages an improvement of the water infrastructure (abstraction, transport, treatment and distribution) and the supply of the population with hygienically safe water, thereby contributing to the fulfilment of the water- and health-related MDG and SDG targets. Due to climate change, the relevance of the project, which in retrospect is de facto a project for climate change adaptation, has increased. From both the perspective at the time of the appraisal and from today's perspective, the measure addressed the core problem of an inadequate water supply. However, the project was also too ambitious due to the complex project structure focused on cooperation in a difficult environment and the extensive investment measures with comparatively low funds available. As a result, it could only be implemented in a significantly modified design with significantly reduced investment measures and with a long delay, which negatively influenced the assessment of relevance.

Relevance: 3

Coherence

Internal coherence

The project was designed and audited as a TC/FC cooperation project in close cooperation with GIZ. It included a clear allocation of the investment measures, including technical design, tendering and construction support, to FC and did not provide for a complementary measure. The institutional tasks of strengthening the executing agency PJTC and preparing the establishment of the future operator of the water supply systems in Angola were assigned to TC. This made a significant contribution to strengthening and supporting the PJTC, especially in the first half of the project implementation, and also contributed to structuring and strengthening cooperation between the two countries as well as informing and raising general public awareness of water supply and hygiene in the project region with additional funds from DFID¹ and AusAid, for example as part of the creation of the "Kunene River Awareness Kit".

With the support of GIZ, the operator EASC was founded in 2013 after considerable delay. As a result of the delays in the establishment of the operator and the link to the investment-related project implementation, however, it was not possible, in the context of the SADC involvement of GIZ, to comprehensively strengthen the operator in order to prepare and, in particular, support the operation of the systems due to the expiry of the corresponding project component. The further and current TC involvement in the water sector with the SADC includes more overarching strategic support for the partners in the project region, for example in the preparation of integrated water resource management plans for the Kunene and Cuvelai rivers.

In principle, the close TC/FC integration in a cooperation project makes sense and was rated as very good, complementary and expedient by all interviewed actors at the executing agency, SADC, GIZ and FC. The instruments of the German development cooperation dovetail in a conceptually meaningful way as part of the programme. However, there are also risks associated with this close integration. Due to the delays, the operator's TC support

¹ UK development cooperation now FCDO – Foreign, Commonwealth & Development Office

was no longer synchronised with the technical implementation, and the corresponding TC component had already been completed long before the commissioning of the FC-financed plants. It was not possible to strengthen the operator in the context of German Technical Cooperation. Another interface within the framework of German Development Cooperation is with the BGR. This study examines the potential of deep groundwater reservoirs in the expanded project region in Angola and Namibia, but the project evaluated here did not yet cover the reclamation of agricultural land. Regular direct sector dialogue between the German Federal Ministry for Economic Cooperation and Development (BMZ) and the Embassy with Angola is not planned due to the lack of Angola's status as a partner country; coordination is taking place with the SADC and the partner country Namibia.

The programme is generally consistent with international norms and standards acknowledged by German DC. However, given the very long project duration since the appraisal in 2006, it should be taken into account that, from today's perspective, some aspects of the project design would be examined and taken into account according to current standards and therefore more comprehensively (including climate change adaptation and resilience of the project, implementation of the ESIA and creation and maintenance of corresponding management plans and gender impacts).

External coherence

The strengthening of the operator required for the sustainable operation of the water supply system was made possible from 2019 onwards without the active involvement of German DC in the context of an ADB-financed project.² As a sub-component of the nationwide project to strengthen the public water sector, a consultant with operational experience provides comprehensive long-term support to the operator, which was carried out by mid-2023.

Other donors, in particular ADB, the World Bank (WB) and AFD, are active with large-volume projects in the area of rural water supply and climate change adaptation. In 2022/2023, the WB assessed a major project for improved water supply and climate change adaptation in Angola with the AFD. In addition, a wastewater collection and sewage treatment plant for up to 1,000 households in a new residential settlement in the regional capital of the Ondjiva project region was built with Chinese financing and put into operation in 2023. A Cunene-Cuvelai irrigation canal similar to the Calueque-Oshakati Canal was also financed with Chinese funds. This is primarily used for agricultural irrigation, but is also equipped with decentralised small water treatment plants for the water supply of people living near the canal. These projects are complementary to the evaluated project.

An important aspect in the evaluation of external complementarity is the partners' involvement in Angola and Namibia. In connection with the future parallel supply of the Angolan project region from the north already announced at the time of the appraisal, the completion of a river water catchment and treatment facility in Xangongo and a long-distance water pipeline to Ondjiva took place in 2014 with Angolan financing. Parallel to the establishment of the operator EASC, local funds were used to invest in network rehabilitation and expansion in the project region, in particular in the provincial capital of Ondjiva. These locally financed investments compensate for the significant reduction in the measures implemented with FC funds for network expansion and the creation of water connections in the project region, so that more than the originally announced number of people could be reached. There was no separate documentation and tracking of these Angolan investments during the implementation of the FC project.

The rehabilitation measures envisaged by Namibia in accordance with the project design of the Calueque-Oshakati Canal (BMZ no.1990 66 341) originally financed in parts with German FC funds were implemented by the Namibian side with local funds. These will be supplemented by rehabilitation measures for other canal sections, which will be financed with AFD funds. In addition, local funds were used to construct or upgrade reservoirs and agricultural irrigation systems in northern Namibia. In an FC project agreed with the Namibian partners in 2022 (Water Sector Programme 1), further measures to improve access to water and increase resilience for the population in northern Namibia are agreed, which also include the rehabilitation of a further section of the Calueque-Oshakati Canal. In this respect, the project is comprehensively integrated into the strategies supported by national and other donors as well as German FC. However, the rehabilitation measures for the water supply line

² [Angola – Institutional and Sustainability Support to Urban Water Supply and Sanitation Service Delivery – IPR February 2023 | African Development Bank – Building today, a better Africa tomorrow \(afdb.org\)](#)

from the end of the canal to the Angolan border to be carried out in accordance with Namibia's project design were probably not realised in connection with the now implemented reclamation of agricultural land in the Angolan project region from the north. However, according to the Namibian side, extensive rehabilitation and expansion of the water treatment plant in Oshakati is planned, which represents an important building block for the provision of a sufficient volume of water in the supply area in Namibia and Santa Clara.

Summary of the rating:

The coherence is rated as good. The project was designed in close cooperation with GIZ and implemented jointly until the end of direct TC support. This cooperation was rated as useful and successful by all partners. The important task of strengthening the operator of the Angolan water supply system that remained after the end of the TC programme component was comprehensively supported by a consulting service as part of an ADB project. In Angola in particular, important network rehabilitation and expansion measures, which could not be financed with FC funds for cost reasons, were implemented from local funds and meaningfully supplemented by investments from other donors. In Namibia, too, the agreed local services for the rehabilitation of the Calueque Oshakati Canal were provided and sensibly combined with other measures, some of which were also donor-financed. However, the measures required in accordance with the project design for the rehabilitation and expansion of the long-distance water pipeline to Angola have not yet been carried out.

Coherence: 2

Effectiveness

Achievement of (intended) targets

The objective defined during the appraisal and still valid was to improve the access of the population of the project region in southern Angola to safe, readily available and affordable water. This was to be achieved through rehabilitation measures for water supply via the Calueque-Oshakati Canal to the project area and measures for network expansion in the project area. The project was intended to have its impact mainly in Angola. However, the measures required to rehabilitate the Calueque-Oshakati Canal also have a significant impact on the water supply in northern Namibia.

During the implementation of the project, the technical measures for providing the water were changed. The Angolan side has now focused on the supply via a water treatment plant in Xangongo in the northern part of the project region and a water pipeline into the project area. The supply via the Calueque-Oshakati Canal with a bridge via a water pipeline from the south has become less important. At the same time, due to the significantly increased consulting costs, only a small part of the original investments for the rehabilitation and expansion of networks and connections in the project region could be made with FC funds, and a significant part was financed with funds from Angola.

Ultimately, the measures financed from FC funds in Calueque and St. Clara only achieved access to clean water for 39,000 people (final inspection) compared to the original number of 101,000 people. However, it must be taken into account that in Angola in particular, parts of the original plans for rehabilitating and expanding the networks in the project region were implemented with local investment funds. Based on the comprehensible documentation of EASC, around 175,000 people are currently being reached by the water supply, which is more than originally planned. In addition, it must be taken into account that a strong focus was placed on house connection during implementation and only a small number of standpipes were built.

Since the project's objectives remain unchanged, and only technical measures for achieving the objectives and their financing have been changed, the indicators from the project design can continue to be used. In order to define a reference point for the indicators, an additional indicator "Target group reached" was added, which results from the target group defined during the appraisal and the people supplied by the operator in the meantime. The target achievement at outcome level is summarised in the table below:

Indicator	Status during PA	Target value PA/EPE	Actual value at EPE
(0) Target group (auxiliary indicator)	(new)	101,000	175,000 (taking into account locally financed measures) -> Indicator fulfilled
(1) Water consumption of target group per capita	1 l/day	with > 80% of the target group > 10 l/day	Average invoiced water quantity: 26 l/day per person (according to operator) 61–77% of the target group have > 10 l/day on average 29 litres per day (according to survey) -> Conditionally achieved
(2) Water quality complies with WHO standard Modified (EPE): sterility only	not achieved	Achieved	-> Sterility achieved
(3) Availability of water supply in hours/day	0	> 22 h/day Modified EPE: min. 60% of the target group > 22 h/day	>23 h/day (operator) Only 35–59% of connections >22 h/day (survey) Modified (EPE): Not achieved 35% of target group > 22 h/day -> Not achieved
(4) Time required (travel and waiting time) for water procurement by women	> 75% of the target group at > 2 hours/day	< 75% of target group at < 1 hour/day Modified (EPE): 75% of the target group at < 15 minutes	> 96% of target group at < 1 hour Modified (EPE): Achieved 75% of the target group at < 15 minutes -> Achieved
(5) Share of non-revenue water	not specified	< 20% Adjustment (EPE): < 40%	59% -> Not achieved
(6) Cost recovery ratio	not specified	>90% full costs Modified (EPE): 80% of operating costs	63% -> Not achieved
(7) Collection rate	not specified	>90% Modified (EPE): 80%	83% -> Achieved
(8) Water supply capacity at the Calueque-Oshakati Canal	not specified	Supply capacity in the Calueque Oshakati Canal on the border with Namibia has been increased by 20% and there is pump redundancy	> 20% increase -> Achieved

(9) Water supply capacity in Angola in Xangongo (new EPE)	0	The supply capacity in Xangongo provides >50 l per person per day in the supply area	60 l/cap*d (according to operator) -> Achieved
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Contribution to achieving targets

The project was implemented with a considerable delay and after an adjustment of the project design with modified measures. The indicators are only partially met even after an adjustment in the context of the ex post evaluation.

The following factors affected the achievement of the project indicators:

Indicator 1

- The determination of water consumption during the EPE was based on the operator's annual balance sheet reports (quantities billed per user) in conjunction with a new survey of the target group. As part of the EPE, an auxiliary indicator was added due to the change in the size of the target group.
- The information relates to the entire project area supplied and not only to the area in which FC-financed measures were implemented. Valuation as part of the EPE took place on the one hand on the basis of the operator's annual report. The actual users of the water supply in the extended project area and the average quantity of water billed were taken into account. This results in a value of 26 l/person/day and indicates that the indicator is achieved.
- However, a further survey of the target group cannot confirm this value. According to this, only 61–77% of the target group consumes at least 10 litres of water per day. Based on the survey, the average daily amount of water is 29 l/person. However, based on the original target group size of 101,000 people, more than the number of users announced at the time was reached.

Indicator 2:

- As part of the EPE, the assessment of water quality is limited to sterility. Due to a lack of measurements by the operator or authority, rapid germ tests were carried out on a random basis. The positive result was verified by the surveys conducted, according to which 95% of users rated the water supplied as very good or acceptable.

Indicator 3:

- The water availability of 23 h/day stated in the operator's annual report could not be confirmed in the user surveys. Only 35–59% of users indicated a permanent water supply. This assessment was confirmed by the impressions during the EPE, particularly in Santa Clara. The target of >22 h per day water supply at the time of the appraisal is considered unrealistic in the present context and starting point in Angola. The original concept mainly included public standpipes, which are normally not operated for longer than 10 h/day. After the switch to house connections, the evaluators estimated that a proportion of 60% of the 22 h/day target would have been appropriate. However, this value is not achieved.

Indicator 4:

- The time required for water procurement was determined on the basis of a new survey of the target group. The results show that more than 96% of the target group need less than an hour/day to procure water, and for 78% it is even less than 15 minutes.

Indicator 5:

- The calculation of unaccounted for water was based on the operator's information. This shows that even the more appropriate target value is not achieved. Significant losses due to leaks in the supply lines or illegal abstraction of water were also observed during the EPE.

Indicator 6:

- The cost recovery ratio adjusted from full to operating costs was determined on the basis of the operator information. However, with 63% coverage of operating costs, the modified value of 80% was also not achieved.
- However, it must be taken into account that the state subsidises the operator through investment grants and the provision of material resources such as treatment chemicals.

Indicator 7:

- The collection rate was determined on the basis of the operator's current balance sheet reporting and at 83% meets the adjusted target of 80%.

Indicator 8:

- The newly introduced indicator for water supply capacity at the Calueque-Oshakati Canal will be assessed on the basis of observations and information on the construction work carried out at the pumping station in Calueque, the associated pipeline and the canal. Supply capacity increased by more than 20%.

Indicator 9:

- The newly introduced indicator for water supply capacity in Xangongo is assessed on the basis of the operator's information.

Based on the discussions and site visits carried out, it can be stated that the outputs and capacities provided are largely used. This applies in particular to water abstraction and transport via the Calueque-Oshakati Canal, but also to water treatment and distribution via house connections. However, the water kiosks set up as part of the project are only partially operated; some facilities were closed or without a water connection. In the discussions, the reasons mentioned were a lack of attractiveness for the population, who can also supply themselves (more cheaply) via neighbours' house connections, or difficult and unattractive conditions for staff

The results of the additional user survey show that the use of the created capacities is generally non-discriminatory. The responsible authorities and the population prioritised the supply via house connections over the water kiosks, even though this required additional investment from households.

Quality of implementation

The implementation of the project was associated with significant coordination problems at the executing agency PJTC, particularly in the first phase, which led to a significant delay and a temporary standstill in the project. During the course of the project, two implementation consultants supported the project one after the other. In addition, intensive TC support was provided in the first phase, and an additional FC-funded consultant supported project management and coordination. In the second phase, the establishment of an operator was carried out by an ADB-financed consultant.

The technical quality of the measures implemented as part of FC financing is generally to be assessed as satisfactory to adequate. For example, the water treatment plant in Calueque had a good standard of execution and was operated properly. The associated distribution network as well as the rehabilitation measures at the pumping station, long-distance water pipeline and Calueque-Oshakati Canal were also of satisfactory quality. This also applies to a limited extent to the rehabilitation and expansion measures carried out in Santa Clara, where repair work on the water reservoir is already necessary. The distribution network is also damaged in some places or the water meters have been removed for the purpose of illegal water abstraction. This is presumably related to the difficult economic and social situation of the population of this municipality directly on the border with Namibia, which was therefore particularly affected by the consequences of the border closure during the COVID pandemic.

The quality of the rehabilitation and expansion measures carried out by the partners was also satisfactory to adequate. This applies, for example, to the network expansions in Ondjiva and to the central water treatment plant in Xangongo. In Xangongo, however, insufficient proactive maintenance can be identified, so that sustainable operation cannot be guaranteed without carrying out maintenance measures. The long-distance water pipeline from

Xangongo to Ondjiva also suffered some damage with significant unaccounted for water, presumably in connection with the illegal water abstraction. This can also lead to water scarcity at the end of the supply area. The Angolan government is currently building an additional transport pipeline from Ondjiva to Santa Clara. The construction work visited was acceptable.

Unintended consequences (positive or negative)

As part of the EPE, both positive and negative unintended consequences of the project were identified. The project was primarily aimed at improving the target group's water supply, taking into account the impacts on agricultural water use only with regard to the formalisation of water abstraction from the Calueque-Oshakati Canal.

In the community of Calueque, the establishment of the water supply prevented informal abstraction from the raw water pipeline leading to the canal, which was previously used as drinking and irrigation water and was available in large quantities and without further effort. With the commissioning of the water treatment plant and the new network, volume-dependent billing took place after a transitional phase. According to local residents, trees and plants are dying due to the drinking water, and the yields of subsistence farming are decreasing. Since the water quality is sufficient, the death of plants is presumably due to the limited use of drinking water for cost reasons compared to previously free raw water. Looking back, this problem could possibly have been avoided in the design of an alternative provision of service water. In addition, extensive use of treated drinking water for irrigation purposes is not efficient.

As a result of the rehabilitation measures carried out on the pumping station, raw water pipeline and canal, the supply capacity has been increased and the water volume transferred at the border with Namibia is increasing or supply is more consistent. Exact quantification as part of the evaluation is not possible. Overall, increasing water volumes enable both better interim storage of water volumes in the Olushandja Reservoir and better agricultural irrigation. More local residents living near the canal are currently taking water from the canal in an unregulated manner and therefore have higher yields or are more resilient to the effects of drought. The planned doubling of the water treatment capacity in Oshakati also depends on the increase in the supply capacity.

At the same time, anecdotally it is reported that migration to (semi-)urban areas with an existing water supply is increasing. On the one hand, this can have positive effects in the context of the increasing economic output in these towns and cities, and at the same time, in some areas, the negative sides of unstructured and unplanned development can also be seen.

Summary of the rating

We rate the effectiveness of the project as moderately successful, as the project indicators for achieving the project's module objective were only partially achieved. This applies to both the uninterrupted availability of water and the economic indicators for invoicing, covering of the costs and collection rate.

Effectiveness: 3

Efficiency

Production efficiency

The implementation period of the project has increased significantly from the originally planned three to 13 years. One reason for the delays was a series of flood years at the start of the project, which prevented the field work for design. Another significant cause was the frequent change of decision-makers on the Angolan side and the long and complicated decision-making processes within the PJTC, which still had to be coordinated in the two countries. After the design documents for the implementation of the original concept of the investment measures in the municipalities of the project region had been completed by 2012, the project came to a major standstill over a period of three years, in particular due to a lack of institutional conditions for the establishment of the Angolan water supply company. In 2015, the project concept was substantially adapted due to the water supply now mainly coming from the north. Accordingly, a time-consuming re-tendering of the planning services and

construction supervision of the construction measures was required. The award of contracts for construction work took place in 2016 and 2018, so that the construction work was able to be concluded in 2019.

The originally set implementation period was already challenging because of the minimum time required for the individual implementation steps even if implemented without any complications. In view of the complex project constellation and the executing agency's lack of experience, this is assessed in retrospect as unrealistic. Project duration that differs significantly from the design influences the evaluation and has a negative effect on efficiency.

The establishment of the water utility, which was defined in the project appraisal as a condition for the start of the tenders for the construction measures, was also significantly delayed. It was planned for 2007, but was delayed until the end of 2013 due to the lack of a legal framework for registration and capital resources. The establishment of the company and the provision of personnel took place with further delay. TC was therefore only able to provide support to the executing agency to prepare for the operation of the supply system to a very limited extent.

The original strategy envisaged investment measures amounting to a total of EUR 17.9 million and included consulting services for design, competitive bidding and supervision of works amounting to around EUR 1.2 million (around 7% of the total investment). However, the consulting services in the first phase of project implementation (until the temporary project stop) significantly exceeded this budget by EUR 2.9 million. It became clear that the available funds could not achieve the original scope of the investment measure. In the second phase, consulting services were provided for the now significantly reduced construction work, which at around EUR 2.2 million was again significantly above the budget of the original total consulting costs. A total of around EUR 5 million was spent on consulting services, which, with a share of around 40% of the total costs, is in an unfavourable ratio to the investment budget of around EUR 7 million used as part of the FC measure. A common indicator for the share of consulting costs in the investment costs is 10–20%, whereby a slightly higher value at the upper limit of the indicator would have been appropriate in this project due to the complex project structure, the relatively low investment amount, the remote location and bilingual implementation.

Since the designs of the first phase were not implemented, there is significant inefficiency due to the need for re-planning. It was not possible to determine whether the measures financed from the additional counterpart contributions in Ondjiva were based on the designs of the first phase or whether new designs also had to be financed from the increased counterpart contribution.

When considering the total costs, a distinction must be made between the formally documented contributions of the project implementation up to the final inspection and the significant locally financed contributions of both countries in connection with project implementation. If the costs documented as part of the final inspection (excluding consulting services) for the measures financed exclusively from FC funds in Calueque and Santa Clara are taken as a basis, this results in comparatively high specific costs of around EUR 1,100 per person.

However, with the additional local funds, a water supply system was built that supplies a significantly higher number of people than originally planned. In addition to the construction of a new water treatment plant and a long transport pipeline, more individual house connections were built than planned. A specific cost analysis for the overall system is not possible due to the inaccurate or missing local cost information. Therefore, taking into account the time delay and the additional consulting services, the production efficiency is still to be assessed as successful.

Allocation efficiency

The main reasons for the assessment of the allocation efficiency are the long implementation period, associated with replanning and rescheduling and the ultimately small-scale measures carried out. However, in the evaluation, reduced efficiency must inevitably be expected given the constellation of executing agencies and the desired intergovernmental cooperation in water supply and the resulting political and administrative complications.

An alternative project implementation with separate executing agencies and initially a concentration on ensuring water supply capacity and creating the connections in a second phase could have been more efficient.

Overall, with additional consideration of local funds, the investment measure leads to water availability that meets the WHO's minimum requirements of 50 l/capita per day. As a result, more people are supplied with clean water than originally planned, and women spend much less time fetching water. No FC funds were used to achieve Outcomes 5 to 7. From the discussions and the survey, it is clear that users also attribute the improved health situation to the water supply. Overall, the FC investment as an initial investment achieved more than the planned outcomes and at least achieved the impact objectives with the available funds.

Summary of the rating

In summary, it can be concluded that the implementation of the project was significantly delayed for various reasons, but in particular due to difficulties in the coordination and decision-making of the project-executing agency and the establishment of the water utility in Angola. Due to a significant increase in costs, only a small part of the originally planned network expansion and connection could be achieved with FC funds. The consulting costs for the design and implementation of the measure were exceptionally high. At the same time, the planned outputs, outcomes and impacts were exceeded through counterpart contributions, so that overall efficiency can still be assessed as successful when looking at the overall project.

Efficiency: 3

Impact

Overarching developmental changes (intended)

The overarching development objective (impact) defined during the project appraisal was to contribute to the achievement of MDG 6 (combat waterborne diseases) and MDG 7 (access to safe water) by practising trans-boundary water management. This objective was supplemented in the EPE by an impact with regard to adaptability to climate change through access to irrigation and service water. The impact assumption in connection with the measures at outcome level and the assigned indicators are still assessed as plausible.

Target achievement at the impact level can be summarised as follows.

Indicator	Status PA	Target value at PA	Actual value at EPE
(1) Functioning of trans-boundary water resource management	N/A	modified as part of the EPE: <ul style="list-style-type: none"> - Practice practical cooperation, e.g. in the preparation of an integrated water resource management (IWRM) plan. - Regular meetings of the PJTC and joint implementation of projects. - Cooperation in water extraction and transfer of the agreed water quantities in Calueque. 	Achieved <ul style="list-style-type: none"> - Cuvelai IWRM Plan jointly developed, Cunene IWRM Plan in progress. - PJTC meets regularly and a constructive exchange also took place during the EPE trip, for example. - Cooperation on water abstraction and delivery of the agreed water quantities (Calueque Task Force still exists)
(2) Regular payment for water taken at the border EPE: Indicator cancelled	N/A	Regular payment	Due to the changed project design and the small quantities transferred in Santa Clara, this indicator is not of great relevance for the success of the project and has been omitted.
(3) Waterborne diseases in children under 16 years of		Downturn by >20	Achieved, downturn >20%

age in the project area [downturn in % related to diarrhoea]			
(4) Improvement of the target group's climate resilience in northern Namibia through increased and secured supply capacity and access to irrigation and service water	N/A	Inserted in the EPE	Increased (accurate quantification is not possible due to a lack of continuous water quantity measurement)

Contribution to overarching developmental changes (intended)

The project was implemented in a former conflict area and the water supply affects a public good that is becoming increasingly scarce in the region. This partly explains the lengthy coordination and resulting delays. Accordingly, it is particularly worthy of appreciation from a development policy perspective that cross-border cooperation between Angola and Namibia in the area of water supply has been strengthened and that the Calueque Task Force has been established as a permanent mechanism with the prospect of long-term continuation and, if necessary, expansion. This applies despite the restriction that, in addition to securing and expanding the water abstraction and transfer in Calueque, increased transfer in Santa Clara was originally planned, but was not implemented in the context of the new supply concept.

The downturn in waterborne diseases among the target group, especially among children, in the project region was confirmed by the statements of the health authorities in Angola and in particular by the new target group survey in the project region and appears plausible due to the increased use of clean water. However, an explicit link between improved water supply and health improvement cannot be established on the basis of the information from the project and comparison group in the household survey.

Contribution to (unintended) overarching developmental changes

A contribution to improving the target group's climate resilience, including the population connected to the Calueque-Oshakati Canal in northern Namibia through increased and secured water supply, was not included in the original design and was only introduced in the EPE. The reason for this is as follows: The rehabilitation of the pumping station and the construction of a new parallel extraction structure with pumping station as well as canal rehabilitation can provide more water, reduce losses and enable seasonal interim storage of water. This plausibly leads to a larger volume of water that can be fed into the various uses, including agriculture, and can thus contribute to increasing resilience and mitigating the effects of climate change.

The measures carried out in the project implementation to ensure and increase the water supply from Kunene and the onward transfer via the Calueque-Oshakati Canal have a positive impact, in particular on northern Namibia, and potentially also contribute to alleviating poverty. Potential negative effects of water supply with the discontinuation of the use of raw water for agricultural irrigation and resulting conflicts were not taken into account in the design (see section on Effectiveness). In this respect, greater inclusion of water use for irrigation could have reinforced the positive effects on alleviating poverty and mitigated the unintended negative effects.

Summary of the rating

The permanent establishment of cross-border cooperation between Angola and Namibia, combined with the positive health effects on the target group connected to the water supply in Angola and the plausible effects of the increased supply capacity of the population in northern Namibia supplied via the Calueque Oshakati Canal, lead to an overall positive assessment of the overarching developmental impact of the project.

Impact: 2

Sustainability

Capacities of participants and stakeholders

In the implementation of the project, the PJTC and the Calueque Task Force made significant developments in terms of cooperation and technical expertise according to the experts' opinions on the Angolan and Namibian sides. The preparation and support of the mission was very good, and discussions revealed the technical competence of those involved and those liable.

The water supplier EASC is generally able to operate the systems, taking into account central government subsidies and an institutional and technical complementary measure of the ADB that was still active at the time of the EPE. Water users benefit in particular from the shorter water procurement times. However, there is also evidence that the sustainability of the supply is limited by vandalism or illegal water extraction due to poverty.

Contribution to supporting sustainable capacities

By preparing the establishment of EASC with the support of TC, but in particular the multi-year support from an ADB-financed TA, the company was substantially qualified for the operation and further development of the water supply system. This includes both the technical operation of the systems and their maintenance as well as the administrative tasks of accounting, customer management and invoicing. As part of the evaluation mission, it was possible to confirm, e.g. by means of discussions with the operational staff of the plants and the administration, that substantial technical and economic competence could be built up at the operator through this support. Accordingly, a positive prognosis can also be given for the time after completion of the TA with regard to the knowledge of the employees.

Against the background of the current operating cost coverage ratio and the social and economic framework conditions in the project region, however, it was determined that operation and maintenance cannot be carried out adequately by the operator in some cases, particularly due to a lack of financing for spare parts. Despite a positive development of various technical and financial key figures, the company is currently not able to cover its operating costs through tariff revenues and is reliant on subsidies mainly in the form of benefits in kind. Expansion and replacement investment must also be financed by the government. To date, such support measures have been provided by the Government of Angola, which is currently financing, for example, the building of a further pipeline from Xangongo to increase the redundancy and capacity of the system. However, there is a significant risk that due to the lack of EASC's own budget, not all urgently required funds, e.g. for repairs and replacement investments, will be provided in particular cases, leading to a risk for sustainable operation.

Durability of impacts over time

The durability of the positive consequences is strongly influenced by the difficult local general conditions, particularly in Angola. According to EASC, the long drought in 2022 was responsible for numerous cases of illegal water extraction and vandalism, which jeopardised security of supply and led to high consequential costs. This makes climate change adaptation measures all the more important. The COVID pandemic also had a negative impact on economic performance and stability, as trade and job opportunities in the border region (especially in the border municipality of Santa Clara) fell drastically as a result of the border closures. At present, it is not yet possible to make a conclusive assessment of whether a sustainable recovery will occur.

The unstable electricity supply in the project region may also have a negative impact on the long-term effects, as fluctuations in the water supply lead to premature wear of the systems. Inadequate proactive maintenance of the plants, such as the Xangongo water treatment system, indicates a significant risk to sustainable operation. As part of the survey, users raised the problem of frequent interruptions in the water supply, thereby confirming this assessment.

Summary of the rating

In summary, it can be concluded that there are significant risks to the sustainable operation of the overall system and that sustainability must therefore be assessed as moderately unsuccessful.

Sustainability: 4

Overall rating

Despite the partially positive or acceptable evaluation of the project, in particular with regard to impact and coherence or, to a limited extent, outcome and relevance, the project must be assessed as moderately unsuccessful due to the evaluation as moderately unsuccessful for the sustainability criterion.

Contributions to the 2030 Agenda

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 BMZ. The project aims to manage scarce water resources efficiently and sustainably and thus contributes to achieving SDG 3 (Good Health and Well-Being), SDG 6 (Clean Water and Sanitation) and SDG 13 (Climate Action). It is also in line with the development policy priorities of the German Federal Government (including the water strategy) and the strategies and plans of the higher-level partner SADC. It addresses the needs of particularly vulnerable people in the project region.

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

- The intensive cooperation between the countries of Namibia and Angola via the joint executing agency required by the project design and the overarching implementation of the project via the SADC represent both a strength and a weakness. On the one hand, it leads to the desired strengthening of cooperation in the cross-border management of the scarce resource water (impact). At the same time, this cooperation significantly reduces the efficiency of the project due to the necessary coordination between the partners and the resulting time delays and cost increases. Accordingly, careful consideration of these aspects is required.
- In the project, unintended positive and negative effects occurred in the agricultural use of water in the project region. On the one hand, this includes the opportunities for agricultural irrigation arising from the improved supply of the expanded project region in Namibia and the resulting positive economic effects and the increase in the resilience of the expanded target group to climate change. On the other hand, the fee-based provision of water does lead to the desired effects on the target group's health, but at the same time limits the previously illegal use of (untreated) irrigation water. Accordingly, in the design of projects to improve the water supply, the possible effects on the use of water for economic purposes should always be examined, anticipated and negative effects mitigated.
- TC/FC cooperation in the project is necessary for achieving the desired developmental impacts in the project, in particular for the development and strengthening of EASC as a water utility. Due to various delays in institutional development and technical implementation, TC was decoupled from the FC component, and TC was no longer able to take the necessary steps to prepare the operator for operational management, as the operator was only founded after the end of the TC intervention. Accordingly, when preparing similar projects, excessive mutual dependency should be avoided, e.g. by integrating a complementary measure.
- Due to the long results chain and the insufficiently developed capacities of the various cooperation partners, which also came from different countries, the project was highly complex, while the financing FC

provided was rather moderate. Accordingly, these framework conditions should be taken into account more closely in comparable projects and more realistic expectations should be formulated.

- It is very welcome if there is (peaceful) supra-regional cooperation in the water sector in dealing with scarce resources and measures to increase climate change adaptability. However, it would be worth considering that in such cases the cooperation should concentrate more on the basic provision of water and not necessarily implement house connection projects or the establishment of a new water utility through such a project.

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:

- Annual report and accounting records of the water utility in Angola
- Executing agency's website
- Publicly accessible sector analyses, audit and progress reports of other donors in the project region (water sector, climate change, poverty, health)
- SADC: 2005–2010 Regional Strategic Action Plan on Integrated Water Resources Development and Management
- World Bank 2022: Water Security and Drought Resilience in the South of Angola
- GIZ project reports and evaluation documents
- Internal project documents

Data sources and analysis tools:

- On-site data collection / site visits of selected locations
- Results of a target group survey as part of the EPE by a local expert
- Semi-structured interviews with project participants

Interview partners:

- Executing agency PJTC
- Ministry of Water in Angola/Namibia
- SADC
- Water utility in Angola
- NamWater
- Municipal representative of St. Clara; Calueque, representative of the provincial government and health authority
- Users in the project region
- FC implementation consultant
- TA consultant of the water utility
- GIZ

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:

In principle, it is challenging to evaluate a project that started more than 15 years ago. Due to the change of many people involved in the project and the adjustment of the concept during this period, it is difficult to understand the problems and solutions that exist during project implementation. There is no overarching knowledge management for the project at PJTC.

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Further interventions (both from other donors and from the project-executing agencies' own funds) took place in the project area in parallel with implementation, which makes it difficult to attribute observed effects.

The original strategy provided for comprehensive support from German TC to the operator of the water supply system in Angola. FC only took an in-depth look at the operator as part of the EPE.

The quality of the data, in particular on the actual cross-border water quantities delivered and the water inventories in the supply networks, is also insufficient due to the lack of measuring equipment. Planned measuring devices have either not been implemented or have already been destroyed/removed, e.g. due to vandalism or in connection with unauthorised water abstraction.

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:

ADB	African Development Bank
AFD	Agence Française de Développement
FI	Final inspection
GBP	Gross domestic product
CM	Complementary measure
BMZ	Federal Ministry for Economic Cooperation and Development
DAC	Development Assistance Committee
EASC	Empresa de Agua e Sanamento Cunene EASC (water utility)
EPE	Ex post evaluation
EUR	Euro
DC	Development cooperation
FCDO	Foreign, Commonwealth & Development Office
FC	Financial cooperation
FC E	FC evaluation

GIZ cooperation)	Gesellschaft für Internationale Zusammenarbeit (German development agency for international cooperation)
HDI	Human Development Index
IWRM	Integrated Water Resource Management
MDG	Millennium Development Goal
MP	Module proposal
PJTC	Permanent Joint Technical Commission on the Cunene River Basin
PA	Project appraisal
PAR	Project appraisal report
PS	Power station
SADC	Southern African Development Community
SDG	Sustainable Development Goal
TA	Technical Assistance
TM	Transmission main
TC	Technical cooperation
USAID	United States Agency for Development
USD	US dollar
WB	World Bank
WHO	World Health Organization
WTP	Water Treatment Plant

Publication details

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List of annexes:

Target system and indicators annex

Risk analysis annex

Project measures and results 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)				
<p>During project appraisal: Improving access for the population of the project region in southern Angola to safe, readily available and affordable water</p>	<p>The project objective at outcome level is appropriate for a (rural) water supply project. At outcome level, the following (sub-)results are defined in the module proposal.</p> <ol style="list-style-type: none"> 1. Water abstraction and transfer can bring sufficient clean water to the Namibia/Angola transfer point <i>Evaluation:</i> Due to the adjustment of the project design, the transfer point at the border is no longer relevant, but above all the provision of water from the north. Indicators 1, 2 below cover this. 2. The water distribution in Santa Clara and Ondjiva, as well as in between, can supply safe water to consumers. <i>Evaluation:</i> The Calueque municipality is to be supplemented through the adjustment of the project design. Water distribution also includes locally financed measures in Angola. Indicators 1, 2 below cover this. 3. Basic sanitary facilities are set up and functioning <i>Evaluation:</i> The selective measures for waste water disposal originally envisaged in the module proposal were not implemented. Measure component 3 (improvement of basic sanitation) and the corresponding results chains should be adapted accordingly. Since there was no indicator for this area, no adjustment of the indicators is required. 4. A water utility has been established that is able to sustainably operate and maintain the system in Kunene province. <i>Evaluation:</i> No supportive FC measures were planned for these results in the context of TC cooperation. The indicators 2, 3, 5, 7 below cover this. 				
During EPE (if target modified)					
Indicator	Rating of appropriateness (for example, regarding impact level, accuracy of fit, target level, smart criteria)	PA target level or EPE target level	PA status (2007)	Status at final inspection (2022)	Status at EPE (2023)
<p>Auxiliary indicator (EPE): Target group</p>	<p>During the long implementation period of the project, the population in the semi-urban area of the Cunene region increased. The current connection and supply area of EASC is significantly larger than assumed at the time of the appraisal.</p>	101,000	–	-	175,000
<p>Indicator 1 (PA): Water consumption of the target group per capita</p>	<p>Is appropriate, as the provision and consumption of water are a direct measure of target achievement. Valuation at the time</p>	in > 80% of the target group > 10 l/day	1 l/day for entire target group	Achieved	Conditionally achieved

	<p>of the appraisal was based on an inventory of the system at the time and a survey of the population.</p> <p>Valuation as part of the EPE took place on the one hand on the basis of the operator's annual report. The actual users of the water supply (adapted target group in the extended project area) and the average invoiced water quantity were taken into account. The calculation leads to an average value of 26 l/person per day and indicates that the indicator is met.</p> <p>The re-surveying of the target group cannot confirm this value. According to this, only 61–77% of the target group consumes 10 litres of water per day (the average water consumption is 29 litres per person per day).</p> <p>In relation to the original size of the target group of 101,000 people, more people are reached in absolute terms than the number of people announced at the time.</p>				<p>Average invoiced water quantity: 26 l/day and person (according to operator)</p> <p>61–77% of the target group have > 10 l/day on average 29 litres per day (according to survey)</p>
<p>Indicator 2 (PA): The water quality complies with WHO standards Modified (EPE): sterility (water samples without germs above WHO limit value)</p>	<p>Is generally appropriate, but not very specific with the general reference to the WHO requirements. For example, WHO stipulates maximum values for the turbidity of the water, which according to the operator are not complied with, especially during the rainy season.</p> <p>The bioburden (lead bacteria E.coli) is assessed as a central requirement in the EPE. Since the bioburden is currently not checked by either the operator or a supervisory authority, the estimate was made on the basis of rapid tests carried out during the EPE mission.</p> <p>In the EPE, a number of water samples were therefore taken from both the waterworks and various points of the network and examined with test kits. Sterility was essentially confirmed. Only samples in which the water was temporarily stored in private containers or taken from unclean hoses showed microbial contamination. Accordingly, the indicator is deemed achieved.</p> <p>This is also in line with the EPE observations on the availability and use of treatment chemicals and chlorine as well as the results of the user survey, according to which 95% of respondents in the connected project communities assess the water</p>	<p>WHO achieved; Adjustment (EPE): Limitation of requirements for sterility</p>	<p>Not achieved</p>	<p>Conditionally achieved</p>	<p>Sterility achieved</p>

	quality as very good to acceptable, while it was only 53% outside of these communities.				
Indicator 3 (PA): Availability of water supply in h/day	<p>Under the original design with supply from standpipes, access >10 h (of the working time of the standpipe operator) was not plausible. For the implemented systems with house connections, however, the target was more appropriate, as the actual (largely) uninterrupted availability of the water is required for use. Frequent interruptions can also have a negative effect on the water quality and lead to premature wear of the equipment. In the context of the local socio-economic framework conditions and the system being developed, the original objective cannot be assessed as realistic and is therefore being adapted.</p> <p>Equipping as part of the EPE took place on the basis of the operator's annual balance sheet report in conjunction with a renewed survey of the target group.</p> <p>The availability of 23 h/day described in the operator's reporting could not be confirmed as part of the user survey, as only 35–59% of respondents indicated that there was an uninterrupted supply. Observations during the EPE confirm this assessment, especially for Santa Clara.</p>	<p>> 22 h/day</p> <p>Modified EPE: min. 60% of the target group > 22 h/day</p>	0	Conditionally achieved	<p>Not achieved <22 h/day</p> <p>Only 35–59% of connections >22 h/day</p> <p>Modified (EPE): Not achieved 35% of target group > 22 h/day</p>
Indicator 4 (PA): Time required (travel and waiting time) for water procurement by women in hours/day	<p>This is generally appropriate, as in addition to the quantity and quality of the water, the effort for its procurement must also be taken into account. Valuation at the time of the appraisal was based on an inventory of the system at the time and a survey of the population.</p> <p>Valuation as part of the EPE took place on the basis of a new survey of the target group. Water is still procured primarily by women or children. The results show that more than 96% of the target group need less than an hour/day to procure water, while 78% need less than 15 minutes. Outside the project region, the values are significantly lower at 73% (<1h) and 27% (<15min).</p>	<p>> 75% of target group at < 1 hour</p> <p>Modified (EPE): 75% of the target group at < 15 minutes</p>	> 75% of the target group at > 2 hours	Not specified	<p>Achieved: > 96% of target group at < 1 hour</p> <p>Modified (EPE): Achieved 75% of the target group at < 15 minutes</p>

<p>Indicator 5 (PA): Share of non-revenue water</p>	<p>Appropriate, as unaccounted for water is an important indicator of the functionality of the water supply. However, the target value of 20% defined in the appraisal is too ambitious in relation to the initial and general conditions, and a target value of 40% is considered appropriate in the context of the EPE.</p> <p>As part of the EPE, the determination was made on the basis of the operator's reporting. This shows that the new target value is also not achieved. The significant losses due to leaks in the supply lines or the illegal abstraction of water were also observed as part of the EPE.</p>	<p>< 20%</p> <p>Adjustment (EPE): < 40%</p>	<p>not specified</p>	<p>not achieved</p>	<p>Not achieved 59%</p>
<p>Indicator 6 (PA): Cost recovery ratio in % of full costs Modified (EPE): in % of operating costs</p>	<p>Consideration of the degree of coverage of the costs by the tariff income is generally sensible, as high cost coverage is also an important prerequisite for ensuring long-term sustainable operation. However, the target figure of 80% of full costs is unrealistic under the local socio-economic framework conditions and the system being developed. As part of the EPE, the indicator was therefore changed to achieving 80% of operating costs.</p> <p>However, based on the evaluation of the current balance sheet reporting, this will not be achieved either. Currently the deficits are being dealt with through investment subsidies and the provision of material resources, e.g. treatment chemicals, borne by the central government.</p>	<p>>90% of full costs</p> <p>Adjustment (EPE): > 80% of operating costs</p>	<p>not specified</p>	<p>not achieved</p>	<p>Not achieved 63%</p>
<p>Indicator 7 (PA): Collection rate in % of invoicing</p>	<p>Consideration of the collection rate makes sense, as only the actual revenues contribute to the covering of the costs and thus to ensuring sustainable operation. However, the target value >90% is unrealistic given the local socio-economic framework conditions and the system being developed.</p> <p>As part of the EPE, the indicator was therefore changed to achieving > 80% of invoicing. This is fulfilled in accordance with the current balance sheet reporting.</p>	<p>>90%</p> <p>Adjustment (EPE): > 80% of invoicing</p>	<p>not specified</p>	<p>not achieved</p>	<p>achieved 83%</p>
<p>Indicator (8) new EPE; water supply capacity at the Calueque-Oshakati Canal</p>	<p>Due to the impact on the water supply in northern Namibia, an additional indicator was added. This also provides information</p>	<p>Water supply capacity in the Calueque Oshakati Canal on the border</p>	<p>-</p>	<p>-</p>	<p>achieved</p>

	<p>on improving/securing the supply of service water for agricultural irrigation in the area</p> <p>As part of the EPE, it was determined that construction measures at the pump station in Calueque, the associated pipeline and the canal increased the supply capacity by more than 20%.</p>	with Namibia increased by 20% and there is pump redundancy			
Indicator (9) new EPE; water supply capacity in Angola in Xangongo	Due to the impact on the water supply in Angola, an additional indicator was added. This provides information on improving/securing the supply in the area, which was originally planned from Calueque through Namibia.	The supply capacity in Xangongo provides >50l per person and day in the supply area	- not specified	- not specified	Achieves 60 l/cap*d (according to operator)

Project objective at impact level		Rating of appropriateness (former and current view)			
<p>During project appraisal: The overall objective of the project is to contribute to achieving MDG 6 (combat waterborne diseases) and MDG 7 (access to safe water) by practising transboundary water management. New: and contribute to Climate Action (SDG 13)</p>		<p>The overall objective of the project with regard to the intended contributions to the achievement of the MDGs remains appropriate. The <u>climate relevance</u> of the objective has increased significantly in the regional and global context of increasing water scarcity in the project region with a simultaneous increase in the number of heavy rainfall events and floods. Accordingly, it is proposed to take into account climate change adaptation via SDG 13 (Take urgent action to combat climate change and its impacts) through <u>the</u> provision of irrigation and service water for agriculture in an extended project region including northern Namibia. With regard to the good cooperation between the two countries, it should be noted that, due to the changed project design, this does not affect the actual volumes of water transferred from Namibia to Angola. However, further cooperation, particularly in regional supply via water abstraction and the Calueque-Oshakati Canal, remains essential.</p>			
During EPE (if target modified):					
Indicator	Rating of appropriateness (for example, regarding impact level, accuracy of fit, target level, smart criteria)	Target level PA / EPE (new)	PA status (2007)	Status at final inspection (2022)	Status at EPE (2023)
<p>Indicator 1 (PA): Functioning of transboundary water resource management Adjustment as part of the EPE: - Practice practical cooperation, e.g. in the preparation of an integrated water resource management (IWRM) plan</p>	<p>The indicator is generally appropriate. Due to the transboundary water supply, cooperation between the two countries needs to be strengthened. This is becoming increasingly important, especially for the population in</p>	<p>achieved (PA) Evaluation based on MoM of PJTC meetings EPE specification:</p>	not specified	not specified	<p>Yes, in detail:</p> <ul style="list-style-type: none"> - IWRM Cuvelai jointly developed, IWRM Cunene in progress. - PJTC meets regularly and a constructive exchange took place, for example, during the joint EPE trip.

<ul style="list-style-type: none"> - Regular meetings of the PJTC and joint implementation of projects. - Cooperation in water abstraction and transfer of the agreed water quantities in Calueque 	<p>northern Namibia, which relies on the water from Kunene. The indicator was made more concrete and operational.</p>	<p>see fulfilment of the sub-indicators on the left</p>			<ul style="list-style-type: none"> - Cooperation on water abstraction and delivery of the agreed water quantities (Calueque Task Force still exists).
<p>Indicator 2 (PA) Regular payment for water taken at the border</p> <p>EPE: Indicator cancelled</p>	<p>What was meant here was the payment for water for the Namibia-Angola transfer in St. Clara. Due to the changed water supply for the project region, this indicator is not relevant for measuring the contribution to the target and will be deleted as part of the EPE.</p>	<p>Default in payment > 3 months</p> <p>EPE: Indicator cancelled</p>	<p>No payment</p>	<p>not specified</p>	<p>omitted</p>
<p>Indicator 3 (PA): Waterborne diseases in children under 16 years of age in the project area [downturn in % related to diarrhoea]</p>	<p>The indicator is generally appropriate. As part of the EPE, health authorities reported a downturn in diarrhoea in children of up to 90%.</p> <p>These values were checked for plausibility in the target group survey, which showed a downturn of 83% compared to the baseline in 2006.</p> <p>Overall, this is in line with the national trend, according to which the number of deaths due to waterborne diseases is declining (halved in 25 years). However, waterborne diseases are still the most common cause of death for children under the age of 5 (WB Diagnosing Angola's WASH Sector, WB, GWSP 2022).</p> <p>Ultimately, however, the results of the surveys cannot clearly prove that the improvement in</p>	<p>Downturn by >20%</p>		<p>not specified</p>	<p>Achieved, downturn >20%</p>

	the health situation can only be attributed to the improved water supply.				
Indicator 4 (EPE): Improvement of the target group's climate resilience in northern Namibia through increased and secured supply capacity and access to irrigation and service water	The measures implemented at the Calueque water abstraction point, the pumping station, the water pipeline and the canal sections up to the border and also in northern Namibia created additional water supply capacity, which is also used for interim storage in the Olushandja Reservoir and agricultural irrigation. This leads to an increase in the climate resilience of the population in northern Namibia.	new: Climate resilience of the population in northern Namibia	not specified	not specified	elevated

Risk analysis annex

Ex ante expected risks:

Risk	Relevant OECD-DAC criterion
Delays due to the PJTC's lack of experience in cross-border cooperation.	Effectiveness/efficiency
Inadequate maintenance of the systems by the operator leads to disruptions to operation	Sustainability
Insufficient revenue from water tariff collection	Sustainability
Inadequate framework conditions restrict the independent operation of the system by the water utility	Sustainability

Risks that occurred during the course of the project:

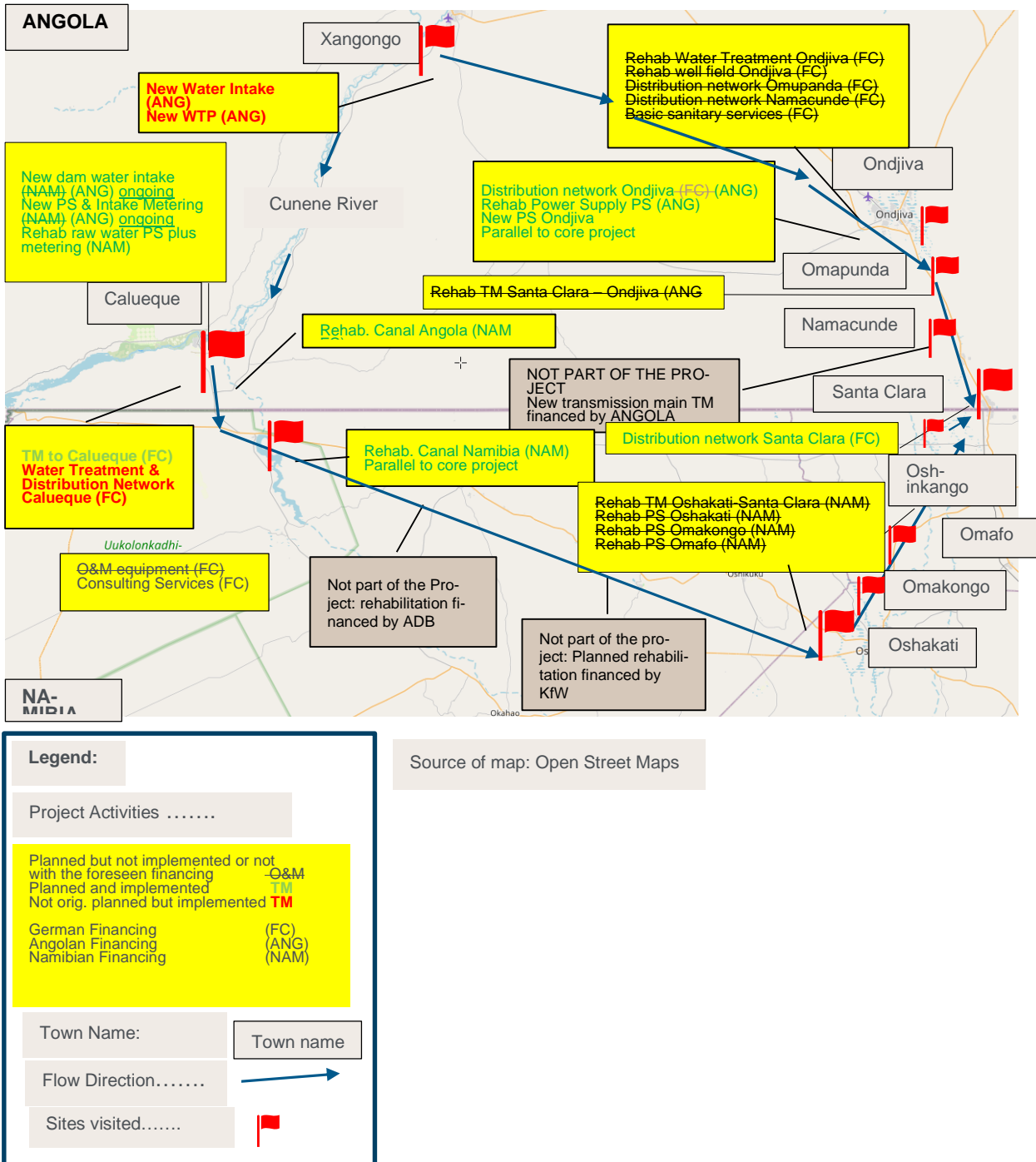
Risk	Relevant OECD-DAC criterion
Delays due to the PJTC's lack of experience in cross-border cooperation.	Effectiveness/efficiency
Significant cost increases due to time delays, changed project design and repeated consulting services and possibly insufficient cost estimates in the planning phase lead to only limited FC financing of the planned measures	Effectiveness/efficiency
Significant delay in the establishment of the water utility delays the implementation of the overall project and prevents the planned training and strengthening as part of the TC measure	Effectiveness/efficiency Sustainability
Insufficient supply of spare parts and maintenance of the systems by the operator leads to disruptions to operation	Sustainability
Insufficient revenue from the collection of water tariffs weakens the operator in terms of financing sustainable operations.	Sustainability
Economic and social situation of the population in the border region in the context of the COVID pandemic weakens the economic capacity of the population to finance the water supply	Sustainability

Ex post identified risks:

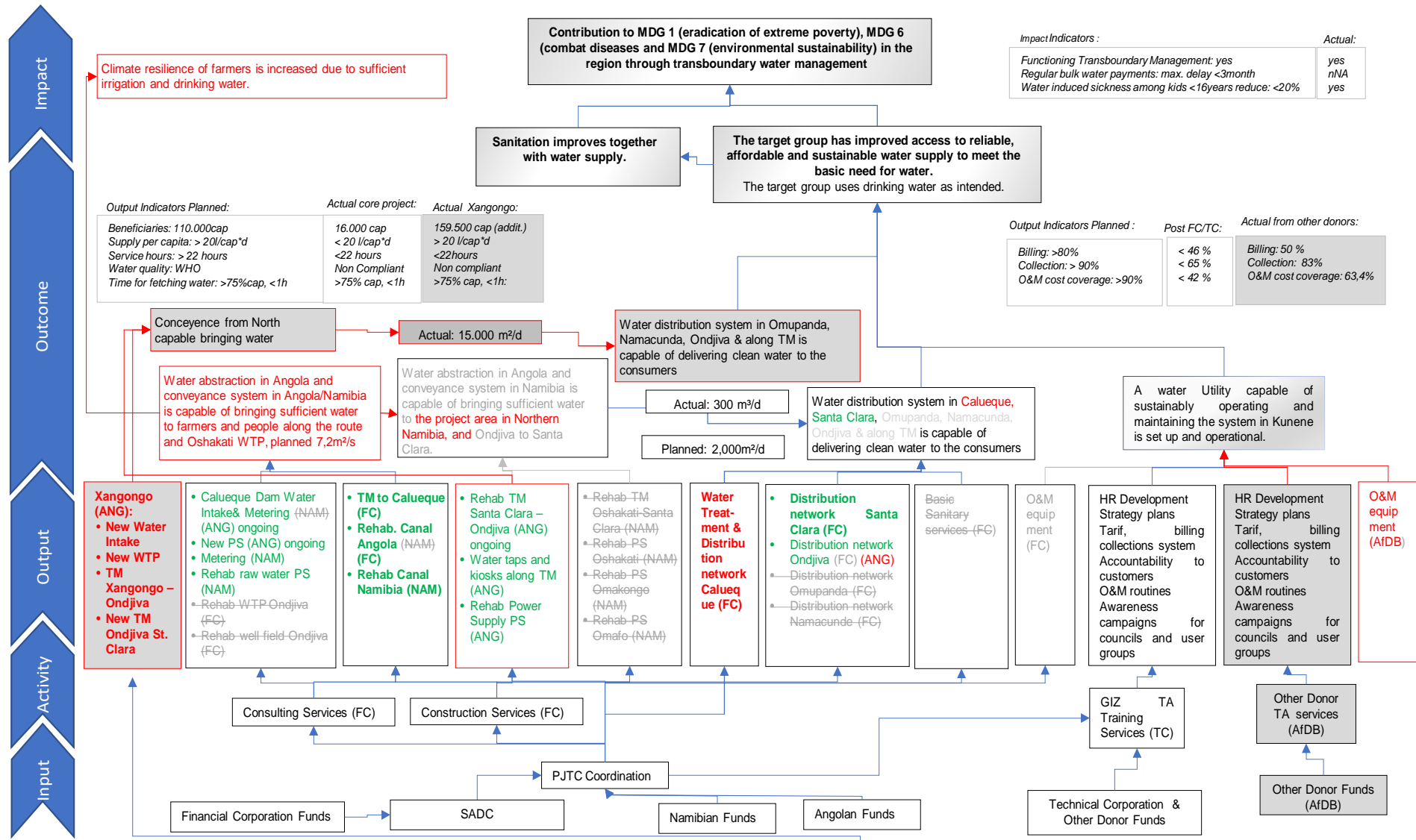
Risk	Relevant OECD-DAC criterion
Unreliable data situation (no water inventory at transfer points and in the network) prevents adequate measurement of consumption, losses and necessary optimisation	Effectiveness/efficiency
Water theft/damage to pipelines/connections increases unaccounted for water and may lead to supply bottlenecks and increased maintenance costs	Effectiveness/efficiency/sustainability
Increase in water demand due to climate change and the resulting increase in consumption, including for irrigation purposes, is leading to supply bottlenecks	Effectiveness/efficiency
Risk of improper operation and maintenance of facilities and the network due to the lack of financial resources.	Sustainability
The use of paid water while simultaneously restricting (illegal) water use for irrigation leads to economic effects for those affected.	Impact
The management concept and organisational form of the operation of the water kiosks are not fully accepted by staff and users.	Effectiveness/efficiency Sustainability

Project measures and their results annex

The following illustration visualises the project measures according to the original and the modified project design.



The following graphic visualises the inputs, outputs, and outcomes according to the original and modified project concept (results chain). The same explanatory notes apply as above.



Recommendations for operation annex

The recommendations made in the project completion report with regard to their implementation status are analysed below and associated notes and recommendations are derived.

In the project completion report, it was recommended to further strengthen the personnel and financial resources of the water utility and its capacity for technical and economic management. In the EPE, it was determined that important steps were implemented with the support of ADB-financed consulting services to strengthen the performance and competence of the operator and, for example, a GIS-based customer database was created as the basis for the management of the system and invoicing. In this context, the EPE recommended intensifying the supply of spare parts and proactive maintenance of the systems and taking further steps to improve the income situation through water sales or government subsidies as an essential prerequisite for sustainable operation. The need to strengthen proactive maintenance remains. According to statements from the Angolan partners, a fee collection for agricultural water use is currently being prepared, which can contribute to the financing of the overall system and also corresponds to a recommendation of the final inspection to restrict and formalise illegal and free water abstraction. The further expansion of the system and the establishment of house connections should take place in accordance with measures to ensure the primary water supply or increase redundancy in order to avoid water bottlenecks in the supply area.

The project completion report recommended improving the provision of working capital for the water treatment plants due to existing supply bottlenecks. The EPE found that the working capital was currently provided in sufficient quantity as benefits in kind by the government and used by the operator. At the same time, organisational and technical measures should be taken to ensure compliance with the necessary occupational safety and environmental standards when using chemicals and disposing of residues.

In the project completion report, it was recommended to intensify consumption-based invoicing based on water meters. In the EPE, it was found that the proportion of connections assessed according to actual consumption could be increased to 36% in recent years, but further efforts are required to install or replace damaged meters. In this context, it is also recommended to set up additional measuring points in the supply system in order to be able to operate the system better and to be able to detect faults and leaks.

The same applies to the measuring equipment on the Calueque-Oshakati Canal already recommended in the project completion report. Several measures have already been implemented by the partners here, but these cannot be operated sustainably as a result of damage caused by unauthorised persons. Accordingly, great importance should be placed on simplicity and robustness against vandalism when reinstalling measuring equipment, and the installation should be accompanied by intensive education and awareness-raising measures for the population.

In the project completion report, it was recommended to further strengthen the work of the PJTC and thereby enable the balancing of different user interests. In the EPE, it was determined that cooperation could be established in the PJTC. This was also evident in the joint implementation of the EPE, where representatives of both partners were able to get to know and discuss the implementation and experiences in the respective other country. Further intensification can take place through joint implementation of training courses, e.g. in the NamWater Training Centre or the special consideration of the interface in Santa Clara by the existing task force.

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: Policy and priority focus			2	o	
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 BMZ?	Special question: Is adjustment to climate change / climate resilience sufficiently taken into account in the evaluation of priorities? How is the project embedded in the cooperation with the SADC and what role can it play?	MP, strategy documents of partners SADC, Angola and Namibia, current sector-related documents and analyses of other donors, executing agency analysis, interviews with representatives of the partner countries			
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.))?	How is supra-regional cooperation organised in the PJTC? What are the coordination processes with both countries? How far has the capacity development of the water utility in Angola progressed, and what role can the operator play in the overall system?	MP, strategy documents of partners SADC, Angola and Namibia, current sector-related documents and analyses of other donors, executing agency analysis, interviews with representatives of the partner countries and other project participants (GIZ, SADC, consultants), annual reporting of the water utility.			
Evaluation dimension: Focus on needs and capacities of participants and stakeholders			3	o	
Are the programme objectives focused on the developmental needs and capacities of the target group? Was the core problem identified correctly?	Differentiation of the question - Target group: water users - Target group: operator staff	MP with target group analysis based on a survey, new target group survey, current sector-related documents and analyses of other donors, interviews with representatives of the target group, annual reporting of the water utility.			

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
Were the needs and capacities of particularly disadvantaged or vulnerable parts of the target group taken into account (possible differentiation according to age, income, gender, ethnicity, etc.)? How was the target group selected?	According to which criteria was the supply area/target group to be connected designed? Are there any indications of conflicts or discrimination in the implementation? Did the design also take into account aspects of alleviating poverty in the context of agricultural irrigation?	MP with target group analysis based on a survey, new target group survey, interviews with representatives of the target group, GIZ gender mainstreaming study			
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)	To what extent can gender-specific aspects be identified today and reassessed with regard to design?	MP with target group analysis based on a survey, new target group survey, interviews with representatives of the target group, GIZ gender mainstreaming study			
Evaluation dimension: Appropriateness of design			3	+	From an ex post perspective, the project appears risky, complex and very ambitious
Was the design of the programme appropriate and realistic (technically, organisationally and financially) and in principle suitable for contributing to solving the core problem?	Are the assumptions for timely and cost-effective implementation of the project realistic against the background of the development status as well as the structure, competence and experience of the executing agency and operator? Was the executing agency formed by representatives of both countries capable of acting? Was it able to sufficiently support the implementation of the investments and the establishment of operators, particularly on the Angolan side? With its limited funding amount, was the project generally suitable for promoting cross-border cooperation while implementing comprehensive investment measures?	MP, reports, current sector-related documents and analyses of other donors, executing agency analysis, interviews with representatives of the partner countries and project participants			

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
Is the programme design sufficiently precise and plausible (transparency and verifiability of the target system and the underlying impact assumptions)?		MP, reports, current sector-related documents and analyses of other donors, executing agency analysis, interviews with representatives of the partner countries and project participants			
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 can also be displayed graphically. (FC-E-specific question)	Is the results chain sufficiently redundant or robust to ensure that the desired objective is still achieved in the event of disruptions or other impacts?	MP, reports, interviews with representatives of the partner countries and project participants			
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)?	Were aspects of environmental and social compatibility as well as adjustment to climate change sufficiently taken into account in the design?	MP, interviews with representatives of the partner countries and project participants,			
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)	Was the full TC allocation of the tasks of operator development and strengthening appropriate given foreseeable project delays?	MP, reports, interviews with representatives of the partner countries and project participants, TC evaluation reports			
Evaluation dimension: Response to changes/adaptability		2	0		

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
Has the programme been adapted in the course of its implementation due to changed framework conditions (risks and potential)?	What was the context and process of the comprehensive project design adjustment? To what extent can the modified concept be understood?	MP, reports, interviews with representatives of the partner countries and project participants,			

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: Internal coherence (division of tasks and synergies within German development cooperation)			2	0	
To what extent is the programme designed in a complementary and collaborative manner within the German development cooperation (e.g. integration into DC programme, country/sector strategy)?	How was the division of labour defined as part of the DC project “Transboundary water management, SADC”, in particular with the involvement of TC? How are the results of the TC component to be evaluated?	MP, reports, interviews with representatives of the partner countries and project participants (especially TC), GIZ evaluation reports			
Do the instruments of the German development cooperation dovetail in a conceptually meaningful way, and are synergies put to use?	In addition to the clearly defined division of labour and allocation, was there also cooperation and support in terms of content?	MP, reports, interviews with representatives of the partner countries and project participants (especially TC), GIZ evaluation reports			
Is the programme consistent with international norms and standards to which German DC is committed (e.g. human rights, Paris Agreement, etc.)?		MP, reports, interviews with representatives of the partner countries and project participants (especially TC), GIZ evaluation reports			
Evaluation dimension: External coherence (complementarity)			2	0	

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
and coordination with actors external to German DC)					
To what extent does the programme complement and support the partner's own efforts (subsidiarity principle)?	To what extent have the two countries of Angola and Namibia made their own investments in parallel and are these compatible with the (adjusted) project design?	MP, reports, interviews with representatives of the partner countries and project participants, current sector-related documents and analyses of other donors,			
Is the design of the programme and its implementation coordinated with the activities of other donors?	Did the programmes conceived by other donors at a later date complement the project design in a meaningful way? Does the institution building financed by other donors fit with the project design?	MP, reports, interviews with representatives of the partner countries and project participants, current sector-related documents and analyses of other donors,			
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?	To what extent does implementation via the SADC have a positive or negative impact on implementation?	MP, reports, interviews with representatives of the partner countries and project participants			
Are common systems (of partners/other donors/international organisations) used for monitoring/evaluation, learning and accountability?	To what extent does implementation via the SADC have a positive or negative impact on implementation?	MP, reports, interviews with representatives of the partner countries and project participants, current sector-related documents and analyses of other donors,			

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: Achievement of (intended) targets			3	0	

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
Were the (if necessary, adjusted) objectives of the programme (incl. capacity development measures) achieved? Table of indicators: Comparison of actual/target	see main text				
Evaluation dimension: Contribution to achieving targets:			3	o	
To what extent were the outputs of the programme delivered as planned (or adapted to new developments)? <i>(Learning/help question)</i>	see main text				
Are the outputs provided and the capacities created used?	Do people use the locally funded services? Do these outputs contribute to achieving the outputs and objectives defined in the revised project design? What is their current use?	Target group analysis			
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)?	What communication and participation measures were taken during implementation, are there any indications of discrimination or conflicts?	MP with target group analysis, new target group survey, interviews with representatives of the target group, GIZ gender mainstreaming study, operator reports			
To what extent did the programme contribute to achieving the objectives?		MP with target group analysis, new target group survey, interviews with representatives of the target group, GIZ gender mainstreaming study, operator reports			
To what extent did the programme contribute to achieving the objectives at the level of the intended beneficiaries?		MP with target group analysis, new target group survey, interviews with representatives of the target group, GIZ gender mainstreaming study, operator reports			
Did the programme contribute to the achievement of objectives at the level		MP with target group analysis, new target group survey, interviews with			

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
of the particularly disadvantaged or vulnerable groups involved and affected (potential differentiation according to age, income, gender, ethnicity, etc.)?		representatives of the target group, GIZ gender mainstreaming study, operator reports			
Were there measures that specifically addressed gender impact potential (e.g. through the involvement of women in project committees, water committees, use of social workers for women, etc.)? (FC-E-specific question)		MP with target group analysis, new target group survey, interviews with representatives of the target group, GIZ gender mainstreaming study, operator reports			
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>)	How do the project-executing agency's complex structure and lack of experience affect project implementation?	MP and project reports, interviews with project participants and representatives of the target group, reports from the operator			
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>)	Did the COVID pandemic and the current economic situation in the project region affect the success of the project? What other factors have contributed to the reduction in the number of cases of illness?	EPE mission			
Evaluation dimension: Quality of implementation					
How is the quality of the management and implementation of the programme to be evaluated with regard to the achievement of objectives?		MP, reports, back-to-office reports, interviews with representatives of the partner countries and project participants			
How is the quality of the management, implementation and participation in the programme by the partners/sponsors evaluated?		MP, reports, back-to-office reports, interviews with representatives of the partner countries and project participants			

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
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)		MP, reports, back-to-office reports, interviews with representatives of the partner countries and project participants, results of the target group survey, GIZ gender mainstreaming report			
Evaluation dimension: Unintended consequences (positive or negative)			3	0	
Can unintended positive/negative direct impacts (social, economic, ecological and, where applicable, those affecting vulnerable groups) be seen (or are they foreseeable)?	What effects (positive and negative) does the project have on the agricultural use of water and economic development in the extended project region?	MP, reports, back-to-office reports, interviews with representatives of the partner countries and project participants and in particular water users, results of the target group survey,			
What potential/risks arise from the positive/negative unintended effects and how should they be evaluated?		MP, reports, back-to-office reports, interviews with representatives of the partner countries and project participants and in particular water users, results of the target group survey,			
How did the programme respond to the potential/risks of the positive/negative unintended effects?	Was there systematic monitoring of the effects?	MP, reports, back-to-office reports, interviews with representatives of the partner countries and project participants and in particular water users, results of the target group survey,			

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: Production efficiency			3	o	
To what extent were the inputs of the programme used sparingly in relation to the outputs produced (products, capital goods and services) (if possible in a comparison with data from other evaluations of a region, sector, etc.)? For example, comparison of specific costs.	Which locally financed water supply measures in the project region can be assigned to the project in accordance with the updated concept in terms of target achievement?	MP, reports, back-to-office reports, interviews with representatives of the partner countries and project participants, annual balance sheet reports of the operator.			
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.)?		MP, reports, back-to-office reports, interviews with representatives of the partner countries and project participants, annual balance sheet reports of the operator.			
Were the outputs produced on time and within the planned period?		MP, reports, back-to-office notes, interviews with representatives of the partner countries and project participants, consulting reports			
Were the coordination and management costs reasonable (e.g. implementation consultant's cost component)? (FC-E-specific question)	How high was the proportion of consulting costs and could some of the planning carried out be implemented with local funds?	MP, reports, back-to-office notes, interviews with representatives of the partner countries and project participants, consulting reports			
Evaluation dimension: Allocation efficiency			3	o	
In what other ways and at what costs could the effects achieved (outcome/impact) have been attained? (<i>Learning/help question</i>)		MP, feasibility studies, interviews with representatives of the partner countries and project participants, consulting reports			

To what extent could the effects achieved have been attained in a more cost-effective manner, compared with an alternatively designed programme?	Would a focus on securing the water supply (bulk supply) and separating the implementation in the two countries have been possible?	MP, feasibility studies, reports, back-to-office reports, interviews with representatives of the partner countries and project participants, consulting reports
If necessary, as a complementary perspective: To what extent could the positive effects have been increased with the resources available, compared to an alternatively designed programme?		MP, feasibility studies, reports, back-to-office reports, interviews with representatives of the partner countries and project participants, consulting reports

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: Overarching developmental changes (intended)			2	o	
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.)	How did the cooperation between the two countries develop during the course of the project?	MP, reports, back-to-office notes, interviews with representatives of the partner countries and project participants, consulting reports			
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)	What effects can be observed in the connected population and in the users of water for agriculture? What changes and effects can be observed in particular in northern Namibia?	Survey of the target group, MP, reports, back-to-office reports, interviews with representatives of the partner countries and project participants,			
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	Has the social situation changed due to the improved water supply?	Survey of target group, interviews with representatives of partner countries and project participants,			

contribute? (Or, if foreseeable, please be as specific as possible in terms of time)				
Evaluation dimension: Contribution to overarching developmental changes (intended)			2	0
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?		Survey of target group, interviews with representatives of partner countries and project participants,		
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)		Survey of target group, interviews with representatives of partner countries and project participants,		
Did the programme contribute to achieving its (possibly adjusted) developmental objectives at the level of the intended beneficiaries?	Has the health or economic situation of the (connected) population changed / is this causally related to the water supply?	Survey of target group, interviews with representatives of partner countries and project participants,		
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?	see previous row	Survey of target group, interviews with representatives of partner countries and project participants,		
Which project-internal factors (technical, organisational or financial) were decisive for the achievement or non-achievement of the intended	see previous row	Survey of target group, interviews with representatives of partner countries and project participants,		

developmental objectives of the programme? (<i>Learning/help question</i>)				
Which external factors were decisive for the achievement or non-achievement of the intended developmental objectives of the programme? (<i>Learning/help question</i>)	Does the post-situation and the economic impact of the border closure have an impact on the success of the project?	Survey of the target group, interviews with representatives of the partner countries and project participants		
Does the project have a broad-based impact? - 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)	Was the establishment of the water utility structure-forming? Does the cooperation in the PJTC have model character?	MP, reports, interviews with representatives of the partner countries and project participants		
How would the development have gone without the programme (developmental additionality)?		MP, reports, interviews with representatives of the partner countries and project participants		
Evaluation dimension: Contribution to (unintended) overarching developmental changes			2	0
To what extent can unintended overarching developmental changes (also taking into account political stability) be identified (or, if foreseeable, please be as specific as possible in terms of time)?		Survey of the target group, MP, reports, interviews with representatives of the partner countries and project participants		
Did the programme noticeably or foreseeably contribute to unintended (positive and/or negative) overarching developmental impacts?	Are there any effects on the agricultural use of water?	Survey of the target group, MP, reports, interviews with representatives of the partner countries and project participants		

<p>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))?</p>	<p>Are there any effects on the agricultural use of water?</p>	<p>Survey of the target group, MP, reports, interviews with representatives of the partner countries and project participants</p>
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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
<p>Evaluation dimension: Capacities of participants and stakeholders</p>			3	0	
<p>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>	<p>Has the PJTC improved its collaboration and implementation skills? Are the necessary operating personnel available at EASC and do they have sufficient knowledge? Is there sufficient appreciation of the supply system among the target group?</p>	<p>Survey of the target group, MP, reports, interviews with representatives of the partner countries and project participants</p>			
<p>To what extent do the target group, executing agencies and partners demonstrate resilience to future risks that could jeopardise the impact of the programme?</p>	<p>Has the project led to an increase in resilience, e.g. against the risks from climate change?</p>	<p>Survey of the target group, MP, reports, interviews with representatives of the partner countries and project participants</p>			
<p>Evaluation dimension: Contribution to supporting sustainable capacities</p>			4	0	
<p>Did the programme contribute to the target group, executing agencies and partners being institutionally, personally</p>	<p>Are sufficient funds available for the operation and maintenance of the system as</p>	<p>Survey of the target group, MP, reports, interviews with representatives of the partner countries and project participants</p>			

and financially able and willing (ownership) to maintain the positive effects of the programme over time and, where necessary, to curb negative effects?	well as for smaller replacement purchases? How are leaks, illegal connections, water theft, etc. handled? Are losses searched for, or found only by chance? Are users aware of losses? How has consumption developed? Does the PJTC have longer-term plans?			
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?		Survey of the target group, MP, reports, interviews with representatives of the partner countries and project participants		
Did the programme contribute to strengthening the resilience of particularly disadvantaged groups to risks that could jeopardise the effects of the programme?		Survey of the target group, MP, reports, interviews with representatives of the partner countries and project participants		
Evaluation dimension: Durability of impacts over time			4	0
How stable is the context of the programme (e.g. social justice, economic performance, political stability, environmental balance)? (<i>Learning/help question</i>)	What influence does the overarching economic and social situation in Angola have on sustainability?	Survey of the target group, MP, reports, interviews with representatives of the partner countries and project participants		
To what extent is the durability of the positive effects of the programme influenced by the context? (<i>Learning/help question</i>)		Survey of the target group, MP, reports, interviews with representatives of the partner countries and project participants		
To what extent are the positive and, where applicable, the negative effects of the programme likely to be long-lasting?		Survey of the target group, MP, reports, interviews with representatives of the partner countries and project participants		