

## Ex post evaluation

# Water Supply of Greater Amman III / Amman IV, Jordan

<b>Title</b>	Water Supply of Greater Amman III / Amman IV (component of the Water Resources Management Programme I)		
<b>Sector and CRS code</b>	Drinking water, water management, waste water/waste, CRS 14		
<b>Project number</b>	2006 65 711 / 2008 66 251 (sub-component)		
<b>Commissioned by</b>	Federal Ministry for Economic Cooperation and Development (BMZ)		
<b>Recipient/Project-executing agency</b>	HASHEMITE KINGDOM OF JORDAN / WATER AUTHORITY OF JORDAN (delegated to the MIYAHUNA water utility)		
<b>Project volume/ Financing instrument</b>	EUR 10.7 million (budget loan); EUR 12.6 million (reduced interest rate loan)		
<b>Project duration</b>	December 2006 – December 2014 / December 2009 – March 2020		
<b>Year of report</b>	2022	<b>Year of random sample</b>	2022

## Objectives and project outline

At outcome level, the objective was to supply the population in the project areas with drinking water in a cost-effective manner. At impact level, the aim was to manage Jordan's scarce water resources efficiently and sustainably.

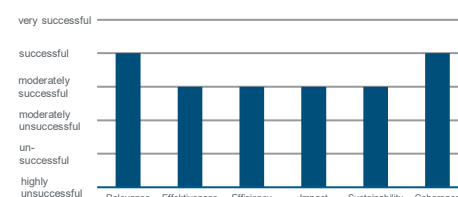
The approach of the two projects was to achieve the objective by means of (partial) network rehabilitation measures. The design was not significantly altered during the course of the projects.

## Key findings

The developmental effectiveness and its sustainability are limited. For the following reasons, the two projects are rated as "moderately successful":

- The relevance is rated as successful because the efficient and sustainable management of water resources is a high political priority for Jordan and is part of the water strategy of the BMZ.
- Coherence is considered to be successful, as the projects were designed to complement other water projects and coordinated closely with the German implementing organisation. In addition, the projects were subsidiary to Jordan's own efforts.
- Since the objective of cost-efficient water supply was achieved from the perspective of the target group but not the project-executing agency, the effectiveness is rated as moderately successful.
- The efficiency of the projects is judged to be moderately successful due to significant delays in the delivery of outputs while specific costs remained low.
- Even though a more sustainable use of Jordan's water resources overall cannot be observed, at least a mitigating or cushioning contribution can still be attributed to the projects. The overarching developmental impact is therefore rated as moderately successful.
- It can be assumed the effects have (limited) durability. These were positively influenced by the quality of the material and implementation.

Overall rating:  
**moderately successful**



## Conclusions

- In a context of (increasingly) scarce water resources and a high level of unaccounted for water, water loss reduction measures are cost-effective and preferable to other measures such as water transfer/desalination.
- Clarifying the measurability of target indicators at an early stage is essential for assessing target achievement.
- A complementary measure would help to raise the operator's awareness of the issue of unaccounted for water and encourage more sustainable management of unaccounted for water.

## Ex post evaluation – rating according to OECD DAC criteria

### General conditions and classification of the project

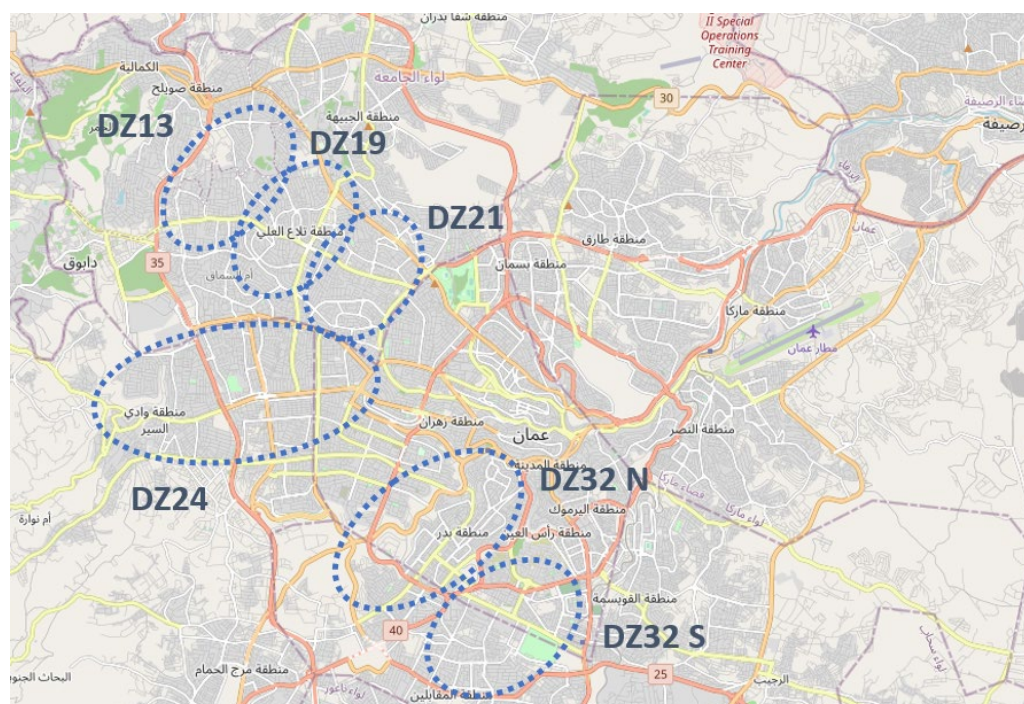
The aim was to evaluate the Water Supply of Greater Amman III project as part of the 2022 random sample. This project is closely related to the Water Supply of Amman IV component of the Water Resource Management Programme I project (Federal Ministry for Economic Cooperation and Development (BMZ) no. 2008 66 251<sup>1</sup>). Firstly, the same type of measures had been implemented in other areas of Amman and secondly, a construction contract funded through the Water Supply of Greater Amman III project had been implemented within the scope of Water Supply of Amman IV. Therefore, it was decided to examine this component within the same ex post evaluation (EPE).

### Brief description of the project

To improve the water supply in Amman, parts of the tertiary pipeline system, including house connections, were rehabilitated in selected areas of the city. The target group was the population of the areas where the measures had been implemented.

### Map/satellite image of the project country including project areas/locations

Water Supply of Greater Amman III/IV<sup>2</sup>:



Source: openstreetmap.org

<sup>1</sup> The project was in the 2021 evaluation population but not part of the random sample.

<sup>2</sup> Amman III: DZ 13, 24 and 32; Amman IV: DZ 19 and 21

## Breakdown of total costs

Water Supply of Greater Amman III

		Inv. (planned)	Inv. (actual)
<b>Investment costs (total)</b>	<b>EUR million</b>	<b>17.1</b>	<b>16.2</b>
Counterpart contribution	EUR million	6.0	5.5
Debt financing	EUR million	11.1	10.7
<i>of which BMZ funds</i>	<i>EUR million</i>	11.1	10.7

Water Supply of Amman IV

		Inv. (planned)	Inv. (actual)
<b>Investment costs (total)</b>	<b>EUR million</b>	<b>20.0</b>	<b>15.5</b>
Counterpart contribution	EUR million	4.0	2.9
Debt financing	EUR million	16.0	12.6
<i>of which BMZ funds</i>	<i>EUR million</i>	16.0	12.6

## Rating according to OECD DAC criteria

### Relevance

#### *Policy and priority focus*

Jordan is one of the world's most water-scarce countries. Not least because of its growing population, supplying water for the city of Amman entails ever greater effort and associated costs, including a connection to the Disi aquifer in 2013. In the future, there are also plans to transport desalinated seawater from Aqaba via another long-distance water pipeline. For this reason, the efficient and sustainable management of water resources is a high political priority for Jordan and this is reflected in the National Water Strategy 2016–2025 and the new National Water Strategy 2022–2040, among other things. On the German side, the sustainable management of water resources is part of the BMZ's 2017 water strategy and water loss reduction is one of the action areas in the 2006 priority area strategy paper on Jordan's water. The 2016 Jordan Water programme proposal (Part A) mentions a reduction in unaccounted for water as part of the "residential water management/water and wastewater management" action area and reducing unaccounted for water is one of the programme target indicators in the current "Management of Unaccounted For Water" development cooperation (DC) programme in Jordan.

#### *Focus on needs and capacities of participants and stakeholders*

The residents of Amman have only ever received an intermittent supply of water. Reducing the unaccounted for water means that a higher volume of water is effectively available to the public and supply times can be increased. This also reduces the need for households to purchase water from water tankers (usually) from private water sellers. This is particularly relevant for poorer households, which generally have relatively low water storage capacities. The cost-efficient supply of drinking water to the target group (project objective at outcome level) therefore corresponds to their needs.

When selecting the urban areas (supply zones) where the projects had been implemented, the aim was to pay particular attention to the areas with the poorer households. Due to the measures implemented, differentiation by age and gender was not relevant. Ethnicity does not play a significant role in the geographical distribution of the population of Amman. Since sufficient data on household income was not available, population density was set as a proxy for (low) income. However, in addition to this and in consultation with the project-executing agency,

further selection criteria (including the condition and age of the networks) were defined. Ultimately, the criterion of “poverty” or “population density” was weighted at only 20% (Water Supply of Greater Amman III) and 30% (Water Supply of Amman IV), which means that only three of the five areas selected have a relatively low income or are densely populated. One of these areas was financed through Water Supply of Greater Amman III and two through Water Supply of Amman IV.

A gender impact assessment was not carried out in the module proposal for Water Supply of Greater Amman III, whereas it was carried out as part of the target group analysis in the module proposal for Water Resource Management Programme I. However, this assessment did not result in specific measures. On the other hand, it was concluded that women benefit disproportionately from the measures due to their role. In addition, there was no noticeable evidence that designing the concept differently could create the potential for other significant gender-related impacts in the given context (water loss reduction in an urban context).

### ***Appropriateness of design***

The core problem addressed by the projects is the inefficient and unsustainable management of water resources and the increasing water poverty in Jordan. Against the background of the generally high levels of unaccounted for water in the water supply systems (in Jordan in general and Amman in particular), measures to reduce unaccounted for water seem suitable for solving the problem: the reduction in unaccounted for water in Amman through network rehabilitation and the correct recording of consumption will not only lead to improvements in the availability (and quality) of water but also more accurate billing for water consumption. This will reduce the costs of water provision while revenues (and thus cost coverage) will increase and result in more efficient and sustainable water use.

While the design of the two projects is generally transparent, verifiability of the target system is only possible to a very limited extent. This is due to the practical impossibility of measuring the (physical and administrative) unaccounted for water or its changes. The reasons for this are that the individual supply areas were/are not physically (fully) separated from each other and there are no water meters measuring the amount of water flowing into the respective supply zone. In addition, no baseline studies were carried out to determine the baseline situation before the measures were implemented.

The design of the project was or is based on an integrated approach to sustainable development. The target group primarily comprised poorer sections of the population; improving cost efficiency is part of the objective in terms of outcome and the sustainable use of resources is the objective with regard to impact. However, the selection criteria for the project areas actually diminished the poverty relevance<sup>3</sup>. From today’s perspective, the situation concerning refugees (especially from Iraq as a result of the Iraq war) as part of the target group and the implications for the project can be specifically taken into account.

The two projects were subsequently included in the 2009 DC water programme. In terms of their design, they were (or are) suitable for achieving the DC programme objective (develop integrated water resource management) as at impact level, the objectives of the projects were a component of the programme objective (see above for limitations on verifiability). This means that the impact of the projects is meaningfully linked to the DC programme.

### ***Response to changes/adaptability***

There were significant changes, which were largely due to increased costs as a result of the international financial crisis. Since the specific individual measures were only defined at the start of implementation, the scope of the measures could be adjusted accordingly. This resulted in a smaller target group, especially for the Water Supply of Greater Amman III project (final inspection: 226,000 instead of module proposal: 326,000 people, equivalent to -31%).

### ***Summary of the rating:***

In summary, it has been determined that the two projects are very well aligned with the policies and priorities as well as with the needs and capacities of those involved and affected. The design of the projects appears to be

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<sup>3</sup> See Focus on needs and capacities of participants and stakeholders

appropriate in principle and the adaptability was high. Despite the (very) limited verifiability of the target system, the relevance is rated as successful.

**Relevance: successful**

## Coherence

### *Internal coherence*

According to the information provided, the Water Supply of Greater Amman III project was designed to complement the water-related projects of the other German implementation organisations (especially the Technical Cooperation (TC) project Management of Water Resources). During implementation, there was also a close cooperation in terms of the division of labour and coordination with the other German implementing organisations, especially GIZ and the German Federal Institute for Geosciences and Natural Resources (BGR). The project was also subsequently integrated into Jordan's (first) water programme (2009). The second project, Water Supply of Amman IV, was also part of this water programme.

The instruments of the German DC were closely and effectively coordinated with each other as part of the water programme. The two projects were part of Strategy Area 1, which dealt with "economic efficiency" and "social justice". GIZ supported the project-executing agency and operator, Miyahuna, through measures to strengthen the institutions.

There are no discernible inconsistencies between the projects and international norms and standards. They contributed to Millennium Development Goal 7 (ensure environmental sustainability) and to the implementation of Sustainable Development Goals (SDGs) 6 (availability and sustainable management of water and sanitation) and 13 (combat climate change and its impacts – in this case, adaptation to climate change by improving water efficiency).

### *External coherence*

The projects supported the efforts of the Jordanian government and the project-executing agency/operator Miyahuna in rehabilitating the water supply infrastructure and consequently improving the water supply in the project areas by providing a large part of the required financing. Jordan's own contribution comprised the pro rata financing of the measures and the invitation to tender for the work to be carried out (the latter with the support of an implementation consultant). The projects therefore had a subsidiary effect.

Within the donor group, the water sector projects were coordinated via the Water Sub-Committee of the Donor-Lender Consultative Group. They were designed to complement the projects of other donors as the projects supported by these donors (especially the EIB, World Bank, USAID and Italy) initially mainly concentrated on the renewal of primary and secondary networks and less on their rehabilitation (USAID in particular later also financed the rehabilitation of networks as a complementary measure and in doing so, built on the experience gained in the two projects).

The design of the two projects was based on the structures of the executing agency (Water Authority of Jordan, WAJ) and the operator Lyonnaise des Eaux, Montgomery Watson and Arabtech Jardaneh (LEMA, a private joint venture) and (from 2007) Miyahuna; these were also used. There is no evidence that common systems were used for follow-up, evaluation, learning and reporting.

### Summary of the rating:

In summary, it has been concluded that the projects demonstrate a very high level of internal coherence and a high level of external coherence. The only thing that does not seem to have taken place is the use of common systems by executing agencies or operators.

**Coherence: successful**

## Effectiveness

### Achievement of (intended) targets

The objective adjusted as part of the final evaluation was the cost-effective supply of drinking water to the residents in the project areas. The target achievement at outcome level is summarised as follows:<sup>4</sup>

#### 1) Water Supply of Greater Amman III

Indicator	Status during PA	Target value acc. to PA/EPE	Actual value at final inspection (optional)	Actual value at EPE
(1) Reduction in non-revenue water in the supply zones rehabilitated under the project	Unknown	-12 percentage points	Unknown	Unknown (the necessary data was not collected)
(2) Reduction in the number of repairs (p.a.) in the supply zones rehabilitated under the project	6,748	-25%	4,085 (-40%)	3,322 (-51%) Value achieved

It was found that Indicator 1 could not be determined due to a lack of technical prerequisites (supply zones could not be separated from one another). Data on water loss reduction are only available at the level of Amman overall. Data on water quality at household level were not collected.

#### 2) Water Supply of Amman IV

Indicator	Status during PA	Target value acc. to PA/EPE	Actual value at final inspection (optional)	Actual value at EPE
(1) The physical and administrative losses of unaccounted for water have both been reduced by 20%	Unknown	-20%	Unknown	For three of the five supply zones, unaccounted for water was between 34% and 41% <sup>5</sup>
(2 – adjusted) The water in the household water tanks is of good quality	The residual chlorine content of all tested household water	Residual chlorine content > 0.2mg/l for at least 60% of the household water containers	The residual chlorine content of 99% of the tested household	Only data for the time of the final inspection (2020) are available.

<sup>4</sup> Here, the construction section, which was funded through the Water Supply of Greater Amman III project but carried out under the Water Supply of Amman IV project, is attributed to the Water Supply of Greater Amman III project.

<sup>5</sup> For the other two supply zones, the requirements for measuring unaccounted for water (including isolation of supply zones) had not yet been met.

	tanks is above 0.2mg/l (2011)	previously identified as contaminated	water tanks is higher than in 2011	At that time, the value was achieved.
(3 – new) Reduction in the number of repairs (p.a.) in the supply zones rehabilitated under the project	4,018	-25%	3,706 (-8%)	4,256 (-23%) Value almost achieved

Indicator (3) was added as it was used in the Water Supply of Greater Amman III project and the corresponding data are available. Indicator (2) was adjusted because the data was not determined according to the original definition.

### **Contribution to achieving targets**

The outputs were adapted to the development of the situation in the project areas. There were sometimes significant differences in the figures as the project-executing agency used other sources of finance for a portion of the measures to be financed under the projects. This was largely because of delays in awarding contracts for consultancy services and preparing invitations to tender as well as increased costs owing to poorer exchange rates. Due to cost increases, it was not possible to finance the purchase of the mobile workshops planned as part of the Water Supply of Greater Amman III project. The outputs delivered and capacities created will continue to be used.

Equal access to the outputs provided and the capacities created is generally guaranteed for all residents in the project areas. The rehabilitation of networks and house connections has benefited all households in the project area. The existing tariff system makes access to the water supply financially affordable for all households.

Due to the lack of data in relation to the indicators, only a limited statement can be made with regard to target achievement. The observed reduction in the number of repairs per year in the project areas (Indicator 2) does not appear to be very significant, as this does not solely depend on the number of leaks in the lines, but can be deliberately influenced by the operator (for example, for cost or staffing capacity reasons). Nevertheless, due to the nature and quality of the work carried out, it can be assumed that the measures have contributed to a relative reduction in unaccounted for water in the project areas to date (this is also indicated by the measurement results for the unaccounted for water in other supply zones in Amman where comparable measures were carried out<sup>6</sup>). On the other hand, it was observed that for Amman overall, unaccounted for water increased due to an increase in water volumes (related to the connection to the Disi long-distance water pipeline) and the associated longer supply times<sup>7</sup>, which probably also led to an increase in absolute unaccounted for water in the project areas. One positive aspect worth highlighting is that the supply situation has improved for the residents due to the longer supply times although the volume of water consumed per capita per day is declining, largely because of Amman's growth in population. In the project areas, the volume of 70l/c/d defined by the WHO as the "medium-term minimum quantity" has so far been exceeded, while for Amman as a whole, average consumption in 2021 was below this, at around 60l/c/d.

The projects were to be carried out in supply zones in Amman where the population groups are comparatively poor. Since no precise data on the household income were available, population density was to be used as a proxy when selecting the project areas. In fact, a variety of criteria (including the age and condition of the networks and the frequency of repairs) were ultimately used to select the project areas. The relative poverty of the population in the supply areas was ultimately only weighted at 20% (Amman III) and 30% (Amman IV) for the selection. This significantly diminished poverty relevance in the project.

Gender aspects were identified, but not specifically monitored.

<sup>6</sup> Non-Revenue Water Project funded by USAID

<sup>7</sup> After unaccounted for water in Amman fell from 41.9% to 32.1% between 2006 and 2011, it had increased again to 40.6% by 2020.

### **Quality of implementation**

With the support of the implementation consultant, the implementation quality achieved by the project-executing agency was satisfactory to good although it did not solve the problem of reviewing target achievement (particularly with regard to target Indicator 1 – reduction in unaccounted for water). Due to the transfer of executing agency responsibility from a consortium of operators (LEMA) to a public utilities services provider (Miyahuna) on 1 January 2007 and the necessary organisational development of the latter, Miyahuna was initially only able to manage the Water Supply of Greater Amman III project to a limited extent, which led to considerable delays in the implementation of this project. The risks associated with the transfer have been identified and monitored. Risk-mitigating measures were implemented through the projects of other donors (particularly USAID). As part of the follow-up project Water Supply of Amman IV, management by the executing agency was correspondingly better, which led to fewer delays in this project.

### **Unintended consequences (positive or negative)**

Due to the fact that the project areas were not systematically selected according to income (or population density), fewer low-income households benefited from an improved water supply than would have been possible in principle. However, this did not result in any particular risks, as Miyahuna is committed to improving the water supply in Amman overall and the lower-income areas will also benefit from this sooner or later. Other than this, no unintended effects could be identified.

### **Summary of the rating:**

The objective of cost-efficient water supply has been achieved from the point of view of the target group, as the water supply has improved overall (increased duration of supply and water prices that are affordable for poorer households as well). Even though the lack of physical demarcation of the supply areas means it is not possible to make accurate statements about progress in terms of unaccounted for water at project level, according to Miyahuna, the water supplier, the increase in unaccounted for water is a result of the increased water supply (connection to the Disi water pipeline). The project areas probably also experienced this effect, which counteracted the longer-term reduction in pipeline leaks (presumably) achieved by the projects. It can therefore be assumed that the project-executing agency did not achieve the objective of a cost-efficient supply of drinking water.

**Effectiveness: moderately successful**

## **Efficiency**

### **Production efficiency**

Under the Water Supply of Greater Amman III project, 151km of water pipelines and 4,585 house connections were replaced; under the Water Supply of Amman IV project, 130km of pipes and 5,355 house connections were replaced. The specific costs for Amman III amount to around EUR 48 per resident (with an estimated 337,000 people in the project areas at the start of the measures) and for Amman IV they amount to around EUR 46 per resident<sup>8</sup> (with an estimated 338,000 people in the project areas). These are relatively low figures for the rehabilitation of drinking water networks, although it must be taken into account that only part of the networks was rehabilitated.

Both projects experienced significant delays: for Amman III, implementation took 62 instead of 42 months and the project was actually completed 42 months later than originally planned (June 2014 instead of December 2010). In Amman IV, the implementation period was 72 instead of 60 months and the project completion date was around 26 months later than originally planned (August 2016 instead of June 2014). The reasons for the delays were delayed commissioning of the consultants, difficulties in the basic evaluation<sup>9</sup>, complex national tendering and approval procedures and (for Amman III) the separation of building and supply contracts. The particularly long delays involved in the Water Supply of Amman III project can be attributed to the fact that the (de facto) project-

<sup>8</sup> The partial final inspection report dated 5 March 2020 stated EUR 119 per person. This only took into account the people of those households where the house connections were replaced. However, everyone in the project areas benefited from the network rehabilitation measures.

<sup>9</sup> Most importantly, there was a lack of GIS data to accurately locate the water pipelines.



executing agency Miyahuna was still a new company with correspondingly little institutional experience at the start of implementation. The experience gained with the implementation of Amman III was also used to improve various procedures for the Water Supply of Amman IV project (including tendering procedures), which explains the fewer delays.

The share of the costs for the implementation consultants amounted to around 21% (Amman III) and 14% (Amman IV). The lower percentage in the case of Amman IV can be explained by the fact that the project was able to build on the experiences gained in the previous project and so selection procedures, for example, could continue to be used. Since the share of costs lies within the usual scope for financial contribution (FC) projects, the coordination and management costs can be considered appropriate.

### **Allocation efficiency**

The efficient supply of drinking water (outcome) and efficient and sustainable water resource management (impact) could also have been achieved in principle by the following measures:

- Improve operations management (reduce administrative losses/improve collection rate, improve maintenance);
- Optimise the tariff system (demand management).

However, in contrast to network rehabilitation, it is not possible to achieve a short-term improvement in physical unaccounted for water, as the necessary changes take time. Improving operational management will result in maintaining<sup>10</sup> the water loss reduction in the long term and an optimised tariff system will reduce demand. The costs for both measures are extremely variable and distinctly dependent on the input required for study and consultancy services. Nevertheless, repairs to the networks are still necessary regardless of the other measures. To achieve the best long-term impacts, all three areas of action (network rehabilitation, operations management and tariff system optimisation) are ideally dealt with together. In fact, the TC and other donors (especially USAID) facilitated the improvement in operations management simultaneously with the FC projects, and improvements in the tariff system was a long-standing requirement by the German DC, among others<sup>11</sup>.

Miyahuna does not cover its costs due to the overall very low prices for drinking water set by the Ministry of Water. In 2021, however, the operating cost recovery rate of 94% was already quite close to covering the costs. To date, liquidity has been secured by government grants. Since providing the citizens with a sufficient supply of drinking water is of major socio-political importance for the Jordanian state, it can be assumed that the subsidies are secured on a long-term basis.

### **Summary of the rating:**

The specific costs appear low and the consultancy costs seem reasonable. However, there were significant delays in the delivery of outputs. It is difficult to assess whether the impacts achieved could have been attained more cost-effectively. However, the simultaneous measures to improve operations management (by the TC and other donors) have increased the impact of the projects.

**Efficiency: moderately successful**

## **Overarching developmental impact**

### **Overarching (intended) developmental changes**

The objective confirmed during the final evaluation was the efficient and sustainable management of Jordan's scarce water resources. No (separate) indicators were set for the objective at impact level as it was assumed that this objective was achieved when the objective at output level was achieved.

<sup>10</sup> And a further long-term reduction in unaccounted for water.

<sup>11</sup> A significant improvement in the tariff system has not yet been approved due to political resistance from the Jordanian government.

The overexploitation of groundwater resources has increased overall since the start of the projects, so the resources are becoming increasingly scarce. The current DC programme Management of Water Resources in Jordan<sup>12</sup> identifies the “absence of sustainable and efficient management of water resources, which are progressively depleting as a result of climate change and overexploitation”. However, in terms of the intended beneficiaries (the residents of Amman), the supply situation has improved overall: 97% of Jordan’s population has access to the public water supply and the availability of water in Amman has increased from one day to two days a week. Given the high population growth in Amman, this is an impressive output. However, the poorer sections of the population are most affected by the increasing scarcity of water resources. This is accompanied by the fact that the poor often have to purchase water from private providers at higher prices (compared to water supplied by public utilities).

### ***Contribution to overarching (intended) developmental changes***

The programme objective of “developing integrated, i.e. economically efficient, socially equitable and ecological water resource management (IWRM), through the appropriate use of renewable water resources” defined in Part A of the 2009 programme proposal was not achieved. Any progress made in the area of water loss reduction was outweighed by other adverse developments (increased demand for drinking water due to population growth, which was exacerbated by the migration of refugees from Iraq and Syria). Moreover, the effects of the project are not evident at impact level. In addition to the aforementioned problem of indicator measurement (see Effectiveness), there were overlapping effects, in particular due to the connection of Amman to the Disi long-distance water pipeline (2013), which on the one hand significantly increased the water supply in Amman and on the other hand led to an increase in unaccounted for water in Amman as a whole while the consumption of water resources in Jordan increased<sup>13</sup>.

In terms of intended beneficiaries, it was possible to improve access to a supply of hygienic drinking water. This was mainly reflected in the increase in water availability from one day to two days a week, although this can largely be attributed to the increased water supply resulting from the aforementioned connection of Amman to the Disi water pipeline, and less so to the project measures. Based on population growth, water consumption per capita per day has nevertheless decreased compared to the situation before the start of the measures but can still be regarded as sufficient with values ranging between 71 and 85l/c/d. Public water tariffs are designed in such a way that inability to pay is not a hindrance for poorer households. Nonetheless, poor households benefit to a lesser extent from the central water supply, as they generally have lower storage capacities and therefore have to rely on more expensive water from private water sellers more often than wealthier households in order to meet their needs. Due to their traditional responsibility for the water supply in the household, women benefit disproportionately from the improvement in access.

Factors that are external to the project and have had a negative impact on achieving the intended development policy objectives of the projects are the insufficient prioritisation of efficient water use at a political level and tariffs that do not cover costs, resulting in the inadequate maintenance and repair of the water supply infrastructure in Amman.

The projects did not bring about any noticeable structural or institutional changes. However, the projects were exemplary in that they were used to systematically finance the rehabilitation of the secondary and tertiary networks in Amman for the first time. This concept was adopted by other donors (particularly USAID), as this approach was considered to be cost-effective. The measures can be replicated.

Under the (plausible but not measurable) assumption that the projects have led to a reduction in leaks in the project areas, although they still exist to this day, it can be concluded that without the projects, unaccounted for water would have increased to a greater extent in the project areas. In terms of developmental impacts, the project has tended to contribute to a more economical consumption of water resources.

### ***Contribution to overarching (unintended) developmental changes***

Jordan has hosted a large number of Syrian refugees since 2011. The figure is estimated at 1.3 million people in 2020 (corresponding to around 13% of the total population). A total of around 425,000 refugees (mainly from Syria and Iraq) were living in Amman in 2015, which corresponds to around 11% of the population of Amman.

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<sup>12</sup> Programme proposal Part A dated December 2021

<sup>13</sup> Moreover, the Disi aquifer is a non-renewable groundwater resource.

This has led to a (further) increase in demand for drinking water. Assuming that the projects reduced the increase in unaccounted for water in the project areas, they have helped to reduce/slow the scarcity of water resources and so ensure that the refugees could be adequately supplied with drinking water.

***Summary of the rating:***

Although it is not possible to identify a more efficient or sustainable use of Jordan's water resources, the projects have contributed to alleviating a worsening of the situation. It seems plausible that the projects made a positive contribution to both intended and unintended developmental changes. However, this cannot be proven in a measurable manner.

**Overarching developmental impact: moderately successful**

**Sustainability**

***Capacities of participants and stakeholders***

Maintaining the (positive) impacts of the projects requires a sufficient level of maintenance and repair of the water supply infrastructure. Reference has already been made to staffing and financial bottlenecks as well as Miyahuna's insufficient prioritisation of maintenance and servicing. However, in the context of a current results-based project funded by USAID, there are indications that the executing agency's motivation can be significantly increased by appropriate financial incentives. The target group is interested in maintaining the impacts due to the associated benefits but has no direct influence in this regard (apart from the possibility of making a complaint when there are problems with the water supply – an option that is increasingly being used).

Miyahuna generally has sufficient political support to avoid financial bottlenecks, which would lead to significant supply disruptions (the Jordanian government regularly compensates for Miyahuna's deficits, as maintaining an adequate supply of drinking water for the population is strategically important for the Jordanian state).

***Contribution to supporting sustainable capacities***

The projects made a specific contribution to sustainable infrastructure through the urban renewal measures. The resulting (qualitative and quantitative) improvement in the water supply contributes to improving Miyahuna's cost situation and consequently improves its financial sustainability. On the other hand, the projects make no specific, discernible contribution to supporting staffing capacities. This would have required a measure to support staffing in particular. However, measures to strengthen the executing agency were carried out through parallel projects carried out by GIZ, among others.

The procurement of mobile workshops originally planned within the scope of the Water Supply of Amman III project would have made an additional contribution to improving capacities in terms of preserving the impacts. However, this did not materialise due to cost increases in the construction and supply contracts.

At target group level, there were no project activities that would have increased their resilience to risks that could jeopardise the impacts of the measures.

***Durability of impacts over time***

Due in particular to population development (as well as economic development), the (absolute) water consumption in Amman and Jordan as a whole is continuously increasing. At the same time, climate change is causing the available water resources in Jordan to decrease. This, combined with the high levels of unaccounted for water, results in an increasing overuse of water resources. For Amman, this means that water must be transported from remote areas, which entails increasing technical and financial effort. This makes the water loss reduction measures more attractive financially, in addition to their positive impact on the environment.

The quality of the construction measures financed under the projects was assessed as satisfactory to good. As the network components that were the oldest or had the most leaks were replaced in the project areas, it can be assumed that the condition of the secondary and tertiary networks has improved significantly (i.e. fewer leaks). The rehabilitated sections of pipeline usually have a service life of 30 years. In this respect, it can be assumed

there has been a longer-term improvement in the condition of the network. Due to the role-specific division of labour in the handling of water as a resource in a domestic context, women benefited disproportionately from the improvement in the water supply.

**Summary of the rating:**

The two projects have contributed to supporting sustainable financial capacities. A (limited) durability of the effects can be assumed; this is largely due to the quality of the material and implementation.

**Sustainability: moderately successful**

**Overall rating: moderately successful (level 3)**

The two projects are highly relevant and highly coherent. However, since the effectiveness, efficiency, overarching effectiveness and sustainability of the projects are limited, the projects can only be rated as moderately successful overall. Even if the two projects were carried out separately from one another in terms of space, time and organisation, there would be no difference in the results of the assessment.

**Contributions to the 2030 Agenda**

The projects contribute to achieving SDG 6 (ensure availability and sustainable management of water and sanitation for all), specifically SDG 6.1 (universal and equitable access to safe and affordable drinking water for all) and SDG 6.4 (substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity). The design of the projects is largely based on the use of existing systems and structures and these were also used. Implementation of the projects involved a great deal of collaboration with other donors. Common systems for follow-up, learning and reporting were not used.

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

The project had the following strengths and weaknesses in particular:

Strengths:

- The water loss reduction approach used as a cost-effective measure to improve the water supply
- Prioritisation of sections of pipeline to be rehabilitated and house connections based on their condition

Weaknesses:

- The measurability of target indicators was not guaranteed, which makes it impossible to determine the level of target achievement.
- The programme proposals referred to prioritising the supply areas where the population was comparatively poor. However, this prioritisation was relaxed when the supply areas were selected.

Conclusions and lessons learned:

- In a context of (increasingly) scarce water resources and a large amount of unaccounted for water, water loss reduction measures are cost-effective and preferable to other measures such as water transfer/desalination.
- Early clarification of the measurability of target indicators (before project appraisal) while involving the project-executing agency is essential for assessing target achievement. If necessary, an alternative indicator should be selected at an early stage.
- In a similar context, a complementary measure would help to raise the operator’s awareness about the problem of “unaccounted for water” and encourage more sustainable management of unaccounted for water.

## 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:

- 1) Internal project documents
  - Programme proposal, Part A, Water Programme in Jordan (8 July 2009)
  - Project appraisal report on the Water Supply of Greater Amman III project (9 November 2006)
  - Final Project Report on Amman III (Dec 2013)
  - Final inspection of the Water Supply of Greater Amman III project (8 December 2014)
  - FC module, Part B, Water Resources Management Programme (22 December 2008)
  - Water Supply of Greater Amman IV, Final Executive Report (25 July 2017)
  - Partial final inspection of the WRMP I component of Amman IV (5 March 2020)
  - Programme proposal Part A, Management of Water Resources in Jordan (June 2016)
  - DC programme proposal Part A, Management of Water Resources in Jordan (Dec 2021)
- 2) Secondary literature
  - Modelling Residential Water Consumption in Amman: The Role of Intermittency, Storage, and Pricing for Piped and Tanker Water (Christian Klassert et al., July 2015)
  - Master's thesis "Analysis and evaluation of the general conditions and various activities to reduce unaccounted for water in the drinking water networks in Jordan" (Johannes Martin, 11 December 2018)
- 3) Strategy papers
  - National Water Strategy 2016–2025 (Ministry of Water and Irrigation)
  - National Water Strategy 2022–2040 (Draft; Ministry of Water and Irrigation)
- 4) Other documents
  - Jordan Water Utilities Monitoring Report (Ministry of Water and Irrigation, 2020)
  - Miyahuna Annual Reports, 2020 and 2021
  - USAID project documents (Non-Revenue Water Phase I and II Activity, Management Engineering Services Contract Phase II, Project Summary)

Data sources and analysis tools: on-site data collection, project-executing agency monitoring data, national statistics, target group surveys

Interview partners: project-executing agency Miyahuna, representatives of the target group, representatives of other donors (USAID, AFD), representatives of the implementation consultant

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:

Insufficient data; the long period between the end of the construction phases and the ex post evaluation combined with the overlapping of the impacts of other projects.

## 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 clearly exceeds expectations
- Level 2** successful: result is fully in line with expectations and has no significant shortcomings
- Level 3** moderately successful: 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 worsened

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).

## 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

### Water Supply of Greater Amman III

Project objective at outcome level		Rating of appropriateness (former and current view)			
During project appraisal: Ensuring a minimum cost-effective supply of drinking water within the project area		Generally appropriate, but the term “minimum supply” is not clearly defined (and a corresponding indicator is missing)			
During EPE (if target modified): The cost-effective supply of drinking water to the residents in the project areas					
Indicator	Rating of appropriateness (for example, regarding impact level, accuracy of fit, target level, smart criteria)	Optional PA target level: EPE target level	PA status (2006)	Status at final inspection (2014)	Optional: Status at EPE (2021)
<b>Indicator 1 (PA)</b> Reduction in non-revenue water in the supply zones rehabilitated under the project	Generally appropriate (infers cost efficiency), but here there is a problem of measurability	-12 percentage points	Unknown	Unknown	Unknown
<b>Indicator 2 (PA)</b> Reduction in the number of repairs in the supply zones rehabilitated under the project <sup>1</sup>	Does not seem to make much sense, as the number of repairs says little about the need for repair (it would have made more sense to use “decrease in complaints about inadequate water supply”)	-25%	6,748	4,085 (-40%)	3,322 (-51%)

<sup>1</sup> The data were provided by the project-executing agency as part of the evaluation mission. They do not match 100% with the data available for the PA / project completion report (the same applies to Water Supply of Amman IV).



## Water Supply of Amman IV

Project objective at outcome level		Rating of appropriateness (former and current view)			
During project appraisal: Cost-efficient supply of high-quality drinking water to the population in the programme areas		Generally appropriate			
During EPE (if target modified): -					
Indicator	Rating of appropriateness (for example, regarding impact level, accuracy of fit, target level, smart criteria)	PA target level  Optional: EPE target level	PA status (2008)	Status at final inspection (2020)	Optional: Status at EPE (2021)
<b>Indicator 1 (PA)</b> The physical and administrative losses of unaccounted for water have both been reduced by 20%	Generally appropriate (infers cost efficiency), but here there is a problem of measurability	-12 percentage points	Unknown	Unknown	Unknown
<b>Indicator 2 (PA)</b> The water in 60% of the contaminated household water tanks is of good water quality (E.coli per 100ml: 0)	Appropriate, but no corresponding investigations have been conducted	E.coli per 100ml: 0 (for 60% of the household water tanks contaminated at PA)	Unknown	Unknown	Unknown
<b>Indicator 2 (PA, adjusted)</b> The water in the household water tanks is of good quality		Residual chlorine content > 0.2mg/l for at least 60% of the household water containers previously identified as contaminated	The residual chlorine content of all tested household water tanks is above 0.2mg/l (2011)	The residual chlorine content of 99% of the tested household water tanks is higher than in 2011	Only data for the time of the final inspection (2020) are available. At that time, the value was achieved.
<b>NEW: Indicator 3</b> Reduction in the number of repairs in the supply zones	Corresponds to indicator 2 of Water Supply of Greater Amman III	- 25% d	4,018	3,706 (-8%)	4,256 (-23%)

rehabilitated under the project					
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### Water supply of Greater Amman III and Amman IV

Project objective at impact level		Rating of appropriateness (former and current view)			
During project appraisal: Efficient and sustainable management of Jordan's scarce water resources		Appears generally appropriate, although the specific contribution of the project is very low (proportion of project area in total 2020 consumption: approx. 1.5%). Indicators were not defined.			
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 (year)	Status at final inspection (year)	Status EPE (year)
Indicator 1 (PA)	-	-			
Indicator 2 (PA)	-	-			

## Risk analysis annex

### 1. Water Supply of Greater Amman III

Risk	Relevant OECD-DAC criterion
The new water company is able to ensure the sustainable operation and maintenance of the systems.	Sustainability

### 2. Water Supply of Amman IV

Risk	Relevant OECD-DAC criterion
Lack of willingness on the part of the state to implement necessary sector reforms.	Relevance
In the long term, Miyahuna is not able to maintain and service the water infrastructure from a professional and technical perspective.	Sustainability

## Project measures and their results annex

### 1. Water Supply of Greater Amman III

#### Project measures<sup>1</sup>:

Measure	Planned	Implemented	Deviation (implemented/planned)
Replace lines (length)	194.8 km	151.1 km	78%
Replace house connections and water meters (number)	7,408	4,585	62%

#### Result achieved:

- Use of the improved tertiary network including house connections

#### Explanation of significant deviations:

- The reduced line lengths and house connections compared to the design and the foregoing of the procurement of mobile workshops were mainly due to cost increases.

### 2. Water Supply of Amman IV

#### Project measures<sup>2</sup>:

Measure	Planned	Implemented	Deviation (implemented/planned)
Replace lines (length)	163.9 km	133.7 km	82%
Replace house connections and water meters (number)	9,513	5,285	56%

#### Result achieved:

- Use of the improved tertiary network including house connections

#### Explanation of significant deviations:

- The reduced line lengths and house connections compared to the design were mainly due to cost increases.

<sup>1</sup> For details, see project completion report dated 8 December 2014. The quantity deviations can be explained by the fact that quantities of Lot 4 were financed by Water Supply of Amman IV (supply zone 13) from funds from Water Supply of Greater Amman III. The quantities were therefore allocated to the Water Supply of Greater Amman III project

<sup>2</sup> For details, see project completion report dated 27 February 2020

## **Recommendations for operation annex**

The continual and systematic recording of flows at all relevant points in the supply system was advised in both project completion reports. This is a prerequisite for determining and consistently mitigating unaccounted for water, and thus continues to be relevant. A few years ago, operator Miyahuna started to implement the recommendation and separate the individual supply zones.

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 / + )	Reason for weighting
Evaluation dimension: Policy and priority focus			1	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?		Project appraisal report or priority area strategy paper Water Jordan (proposal!) from 2006 and Jord. Water Action Plan (commented version from March 2004; less relevant) and PP A from 2009 Current: DC programme 2021 (including programme objective indicator 4)			
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.)?)		Project appraisal report 2006 (2.1), PP Part A 2009 (A 2.1/2.2) DC programme 2021 (2.2)			
Evaluation dimension: Focus on needs and capacities of participants and stakeholders			1	o	
Are the programme objectives focused on the developmental needs and capacities of the target group? Was the core problem identified correctly?	What is the specific core problem (discuss with Sector Team if necessary)? How was the term “minimum supply” defined (e.g. alignment with WHO standards)? (Note: was changed during WRMP I: “Supply of high-quality drinking water”) The intended meaning was presumably that there is an adequate supply, which	Project appraisal report 2006 and PP Part B (2008 66 251) DC programme 2021 (3.2)			

	makes it unnecessary to purchase water from private water sellers.			
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?	Which selection criteria were specifically applied?	Project appraisal report, project completion report and (probably) conceptual report (not available in the document management system); check change of selection criteria. Consultant's final report on Amman IV (2)		
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)				
Evaluation dimension: Appropriateness of design			3	o
Was the design of the programme appropriate and realistic (technically, organisationally and financially) and in principle suitable for contributing to solving the core problem?	Were the effects of the Disi aquifer connection (increase in water volumes) predictable? Would an adjustment of the design have made sense?	Project completion report, 4.02		
Is the programme design sufficiently precise and plausible (transparency and verifiability of the target system and the underlying impact assumptions)?	Could the non-existent possibility of recording flow measurements in the supply zones have been detected at an early stage (and an alternative for Indicator 1 – Reduction of NRW – developed)? Is there a “proxy” for indicator 1 (e.g. larger area, see 2010 progress review)? Is it possible to approximate the overlapping effect from increasing the water volumes?	Project completion report 4.02 / Annex 6 2010 progress review, 7.3.1		

	<p>Indicator 2 (repairs): has a longer-term observation taken place? If yes, what were the results?</p>	
<p>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)</p>		<p>2010 progress review, 7.3.6 (as well as PP A 2009, p. 19/20)</p>
<p>To what extent is the design of the programme based on a holistic approach to sustainable development (interplay of the social, environmental and economic dimensions of sustainability)?</p>		<p>Project appraisal report 2.04, PP A 2009 3.4 (p. 16) DC programme 2021 (3.6)</p>
<p>For projects within the scope of DC programmes: is the programme, based on its design, suitable for achieving the objectives of the DC programme? To what extent is the impact level of the FC module meaningfully linked to the DC programme (e.g. outcome impact or output outcome)? (FC-E-specific question)</p>		<p>PP A 2009 (DC programme 2021)</p>



Evaluation dimension: Response to changes/adaptability			2	o	
Has the programme been adapted in the course of its implementation due to changed framework conditions (risks and potential)?	Adjustment to refugee migration? Adjustment to Disi connection?				

## Coherence

Evaluation question	Specification of the question for the present project	Data source (or rationale if the question is not relevant/applicable)	Rating	Weighting ( - / o / + )	Reason for weighting
Evaluation dimension: Internal coherence (division of tasks and synergies within German development cooperation):			1	o	
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)?		PP A 2009 (3.4)			
Do the instruments of the German development cooperation dovetail in a conceptually meaningful way, and are synergies put to use?		PP A 2009 (3.4) PP B 200866251 (3.4.4)			
Is the programme consistent with international norms and standards to which the German development cooperation is committed (e.g. human rights, Paris Climate Agreement, etc.)?		DC programme 2021 (3.4)			

<p>Evaluation dimension: External coherence (complementarity and coordination with actors external to German DC):</p>			2	o	
<p>To what extent does the programme complement and support the partner's own efforts (subsidiarity principle)?</p>		<p>Financing agreement / Separate Agreement 2006 65 711 (in particular implementing agreements) PP A 2009, 2.1/2.2</p>			
<p>Is the design of the programme and its implementation coordinated with the activities of other donors?</p>		<p>Project appraisal report 200665711, 2.1/6.3 PP B 200866251 (3.4.4) PP A 2009, 2.3</p>			
<p>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?</p>		<p>Project appraisal report 200665711, 3.3/3.4/4.2 PP A 2009, 3.3 PP B 200866251, 3.4.2, 3.4.3 Project completion report 200665711 (2014), 1./2. Project completion report 2008 66 251 (2020), 1./2.</p>			
<p>Are common systems (of partners/other donors/international organisations) used for monitoring/evaluation, learning and accountability?</p>	<p>If yes, to what extent and which?</p>	<p>DC programme 2021 (2.3)</p>			

## Effectiveness

Evaluation question	Specification of the question for the present project	Data source (or rationale if the question is not relevant/applicable)	Rating	Weighting ( - / o / + )	Reason for weighting
<p>Evaluation dimension: Achievement of (intended) targets</p>			4	o	<p>Indicator selection (or recording) is a major weakness of the projects</p>

<p>Were the (if necessary, adjusted) objectives of the programme (incl. capacity development measures) achieved? Table of indicators: Comparison of actual/target</p>	<p>--</p>	<p>Project appraisal report 2006 2.2 Final Project Report 2013 Project completion report 2014 4.1 / Annex 6 Project completion report 2020 4.1</p>			
<p>Evaluation dimension: Contribution to achieving objectives:</p>			<p>3</p>	<p>o</p>	
<p>To what extent were the outputs of the programme delivered as planned (or adapted to new developments)? (<i>Learning/help question</i>)</p>	<p>To some extent, the quantities provided were significantly reduced in comparison to what was planned. Rationale? What influence did cost increases have?</p>	<p>Final Project Report 2013 (2) Project completion report 2014 2 / Annex 2 Project completion report 2020 2 (/Annex 2)</p>			
<p>Are the outputs provided and the capacities created used?</p>		<p>Final Project Report 2013 (2) Project completion report 2014 2 / Annex 2 Project completion report 2020 2 (/Annex 2)</p>			
<p>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)?</p>	<p>Have there been significant changes since the project completion report?</p>	<p>Project appraisal report 2006 2.2 Project completion report 2014 4 Project completion report 2020 4</p>			
<p>To what extent did the programme contribute to achieving the objectives?</p>	<p>To what extent did the financed measures contribute to the achievement of the objectives (minimum cost-effective water supply)? Is there a way to estimate the level of target achievement (comparison area or similar)? How did the repair frequency develop after the measures were completed?</p>				

<p>To what extent did the programme contribute to achieving the objectives at the level of the intended beneficiaries?</p>		
<p>Did the programme contribute to the achievement of objectives at the level of the particularly disadvantaged or vulnerable groups involved and affected (potential differentiation according to age, income, gender, ethnicity, etc.)?</p>	<p>How large was/is the proportion of poor people in the population provided for in the project areas? What role did the proportion of poor members of the population play in the selection of the project areas?</p>	
<p>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)</p>		
<p>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>)</p>		
<p>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>)</p>	<p>Why were the consequences for the project caused by the connection to the Disi long-distance water pipeline not anticipated? What specific changes have occurred with regard to supplying the target group?</p>	<p>Project completion report 2014 4.1</p>

<p>Evaluation dimension: Quality of implementation</p>			3	o	
<p>How is the quality of the management and implementation of the programme (e.g. project-executing agency, consultant, taking into account ethnicity and gender in decision-making committees) evaluated with regard to the achievement of objectives?</p>		<p>Project completion report 2014 2. Project completion report 2020 2.</p>			
<p>How is the quality of the management, implementation and participation in the programme by the partners/sponsors evaluated?</p>	<p>What was the division of labour between WAJ, Miyahuna and the implementation consultant with regard to the management and implementation of the project measures?</p>	<p>Project completion report 2014 1./2. Project completion report 2020 1./2.</p>			
<p>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)</p>					
<p>Evaluation dimension: Unintended consequences (positive or negative)</p>			3	-	<p>The data situation only made it possible to deduce a few findings.</p>
<p>Can unintended positive/negative direct impacts (social, economic, ecological and, where applicable, those affecting vulnerable groups) be seen (or are they foreseeable)?</p>	<p>What unintended effects may have occurred? From today's perspective, what would the ESIA classification be?</p>				

What potential/risks arise from the positive/negative unintended effects and how should they be evaluated?		
How did the programme respond to the potential/risks of the positive/negative unintended effects?		

## 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 / + )	Reason for weighting
Evaluation dimension: Production efficiency			3	o	
How are the inputs (financial and material resources) of the programme distributed (e.g. by instruments, sectors, sub-measures, also taking into account the cost contributions of the partners/executing agency/other participants and affected parties, etc.)? (Learning and help question)					
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.	What are the specific costs for comparable projects/measures?	Project completion report 2014 2.01 Final Project Report on Amman III Project completion report 2020 2.04 Final Project Report on Amman IV			
If necessary, as a complementary perspective: To what extent could		PP A 2009 3.5			

<p>the outputs of the programme have been increased by an alternative use of inputs (if possible in a comparison with data from other evaluations of a region, sector, etc.)?</p>		<p>(Difficult to assess, as only “defective” lines/house connections were assessed)</p>			
<p>Were the outputs produced on time and within the planned period?</p>	<p>Were the observed delays foreseeable (or was the original schedule realistic based on the information available at the time)? Why did the commissioning of the implementation consultant (in each case) take much longer than planned?</p>	<p>Project completion report 2014 2.03 Project completion report 2020 2.06</p>			
<p>Were the coordination and management costs reasonable (e.g. implementation consultant’s cost component)? (FC-E-specific question)</p>		<p>Project completion report 2014 3.1 and current List of Goods and Services</p>			
<p>Evaluation dimension: Allocation efficiency</p>			2	o	
<p>In what other ways and at what costs could the effects achieved (outcome/impact) have been attained? (<i>Learning/help question</i>)</p>	<p>Were alternative measures considered to achieve the project/programme objectives? If so, which?</p>	<p>Also see PP A 2009, 3.1</p>			
<p>To what extent could the effects achieved have been attained in a more cost-effective manner, compared with an alternatively designed programme?</p>		<p>(PP A 2009, 3.5)</p>			
<p>If necessary, as a complementary perspective: To what extent could the positive effects have been increased with the resources</p>	<p>(to be clarified: operator has independently replaced lines/house connections at the same time → how was this coordinated?)</p>				

available, compared to an alternatively designed programme?	Could the connection to the Disi long-distance water pipeline have been better anticipated (what changes in the network might have been necessary)?	
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## Impact

Evaluation question	Specification of the question for the pre-project	Data source (or rationale if the question is not relevant/applicable)	Rating	Weighting ( - / o / + )	Reason for weighting
Evaluation dimension: Overarching developmental changes (intended)			4	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)	To what extent has water resource management improved in Jordan and Amman? How has the cost recovery ratio of Miyahuna and Amman changed?	PP A 2016 (2.1)			
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)		Reporting A/PP A from 2010 PP A 2016 2.1 Project completion report 2020			
To what extent can overarching developmental changes be identified at the level of particularly disadvantaged or vulnerable parts of the target group to which the programme should contribute (Or, if foreseeable, please be as specific as possible in terms of time)	Is the solvency of poor population groups still ensured? Has the burden on women with regard to water use in households improved? Do poor households have to buy additional water (if so, to what extent)?	Reporting A/PP A from 2010 PP A 2016 2.1			



<p>Evaluation dimension: Contribution to overarching developmental changes (intended)</p>		3	o	
<p>To what extent did the programme actually contribute to the identified or foreseeable overarching developmental changes (also taking into account the political stability) to which the programme should contribute?</p>		Project completion report		
<p>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 also at impact level? (E.g. drinking water supply/health effects)</p>		Project completion report		
<p>Did the programme contribute to achieving its (possibly adjusted) developmental objectives at the level of the intended beneficiaries?</p>	<p>see above: Was it possible to significantly reduce unaccounted for water (possibly throughout Amman)? Did the supply situation of the target group improve (in particular days or hours when water is available; average water consumption per capita and day)? Is the water quality (still) clean?</p>	Project completion report 2020		
<p>Has the programme contributed to overarching developmental changes or changes in life situations at the level of particularly disadvantaged or vulnerable parts of the target group (potential differentiation according to age, income, gender, ethnicity, etc.) to which the programme was intended to contribute?</p>	<p>see above: Is the solvency of poor population groups still ensured? Has the burden on women with regard to water use in households improved? Do poor households have to buy additional water (if so, to what extent)?</p>			

<p>Which project-internal factors (technical, organisational or financial) were decisive for the achievement or non-achievement of the intended developmental objectives of the programme? (<i>Learning/help question</i>)</p>		<p>Project completion report 2014 Project completion report 2020</p>			
<p>Which external factors were decisive for the achievement or non-achievement of the intended developmental objectives of the programme? (<i>Learning/help question</i>)</p>		<p>Project completion report 2014 Project completion report 2020</p>			
<p>Does the project have a broad-based impact?</p> <ul style="list-style-type: none"> <li>- To what extent has the programme led to structural or institutional changes (e.g. in organisations, systems and regulations)? (Structure formation)</li> <li>- Was the programme exemplary and/or broadly effective and is it reproducible? (Model character)</li> </ul>		<p>Project completion report 2014 (2)</p>			
<p>How would the development have gone without the programme? (<i>Learning and help question</i>)</p>		<p>Project completion report 2014 (2) Project completion report 2020 (2)</p>			
<p>Evaluation dimension: Contribution to (unintended) overarching developmental changes</p>			3	-	Hardly any overarching (unintended) changes
<p>To what extent can unintended overarching developmental changes (also taking into account</p>					

political stability) be identified (or, if foreseeable, please be as specific as possible in terms of time)?		
Did the programme noticeably or foreseeably contribute to unintended (positive and/or negative) overarching developmental impacts?	Did the project have unintended impacts at programme objective level? If so, which? Did the measure help to cushion the adverse effects (e.g. more scarce water supply) of the refugee waves?	
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))?	If the project had unintended impacts at programme objective level, to what extent did they affect poorer households or women (in particular)?	

## 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 / + )	Reason for weighting
<b>Evaluation dimension: Capacities of participants and stakeholders</b>			3	0	
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)?	Is it to be assumed that the project-executing agency (has) sufficiently invested in operation and maintenance to maintain the improved supply in the long term (or at least for the economic life of the financed measure)?				

<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>Does the project-executing agency have sufficient financial resources/political support to overcome financial bottlenecks without significant supply interruptions?"</p>	<p>PP A 2009/2016</p>			
<p>Evaluation dimension: Contribution to supporting sustainable capacities:</p>			<p>3</p>	<p>o</p>	
<p>Did the programme contribute to the target group, executing agencies and partners being institutionally, personally and financially able and willing (ownership) to maintain the positive effects of the programme over time and, where necessary, to curb negative effects?</p>					
<p>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?</p>					
<p>Did the programme contribute to strengthening the resilience of particularly disadvantaged groups to risks that could jeopardise the effects of the programme?</p>					
<p>Evaluation dimension: Durability of impacts over time</p>			<p>2</p>	<p>o</p>	
<p>How stable is the context of the programme (e.g. social justice, economic performance, political</p>		<p>PP A 2016</p>			

stability, environmental balance)? <i>(Learning/help question)</i>		
To what extent is the durability of the positive effects of the programme influenced by the context? <i>(Learning/help question)</i>		PP A 2016 Executing agency analysis of WAJ/Miyahuna 2021
To what extent are the positive and, where applicable, the negative effects of the programme likely to be long-lasting?		