

## Ex-post evaluation

# UNICEF WASH Za'atari, Jordan

<b>Title</b>	Middle East, Stabilising neighbouring countries in the Syrian crisis		
<b>Sector and CRS code</b>	1403000 Basic drinking water supply and basic sanitation; 7201000 Material relief assistance and services		
<b>Project number</b>	2014 68 297, 2015 68 906 and 2017 68 258		
<b>Commissioned by</b>	Federal Ministry for Economic Cooperation and Development (BMZ)		
<b>Recipient/Project-executing agency</b>	United Nations Children's Fund, UNICEF		
<b>Project volume/Financing instrument</b>	Phase 1: grant EUR 15 million; phase 2: grant EUR 10 million; phase 3: grant EUR 9.955 million		
<b>Project duration</b>	Phase 1: 2014–2016; phase 2: 2015–2020; phase III: 2017–2020		
<b>Year of report</b>	2022	<b>Year of random sample</b>	2021

## Objectives and project outline

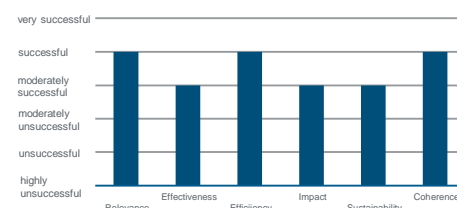
The aim of the project was to sustainably improve water supply and wastewater disposal in the Za'atari refugee camp in Jordan for up to 100,000 people. A reliable, distribution-oriented and conflict-free supply of clean drinking water and hygienic disposal of wastewater should be provided. In addition to improving the living conditions of the people in the camp, the project was intended to help protect one of the country's most important groundwater aquifers by providing regulated wastewater disposal in the refugee camp's wastewater treatment plant.

## Key findings

Despite the limiting factors due to the context, the project was effective in terms of development effectiveness. Although it is dependent on international donors to finance the operation and maintenance of the network, the project can be rated as successful.

- The living conditions of the target group have improved significantly. The construction of a mains-connected water supply and wastewater disposal network with sanitary facilities and water connections at household level has returned some normality to the people in the camp and contributed to their resilience against the backdrop of stabilising camp structures (Impact).
- Regulated and daily wastewater disposal of up to 2.1 million litres contributes to the protection of groundwater aquifers, which are important for the region's water supply (Impact).
- The project only addressed the host community indirectly by drastically reducing tank truck transports and protecting groundwater aquifers. Due to the fact that only indirect support was provided to the host community, feelings of neglect and favouritism of refugees in the camp could not be avoided.
- The availability of water at household level has contributed to increased water consumption among residents. However, this is still below the Jordanian average (Effectiveness).

Overall rating:  
**successful**



## Conclusions

- In the context of sustained camp structures and to avert potential distribution conflicts as well as threats to the environment, sustainable investments can also make sense in fragile and volatile contexts.
- Innovative technologies to save water were to be examined as part of similar projects and, in some cases, implemented despite higher costs.
- The local population was insufficiently taken into account. Specifically for this project, information campaigns to illustrate the relevance of the activities would also have been advisable for the local population.

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

### General conditions and classification of the project

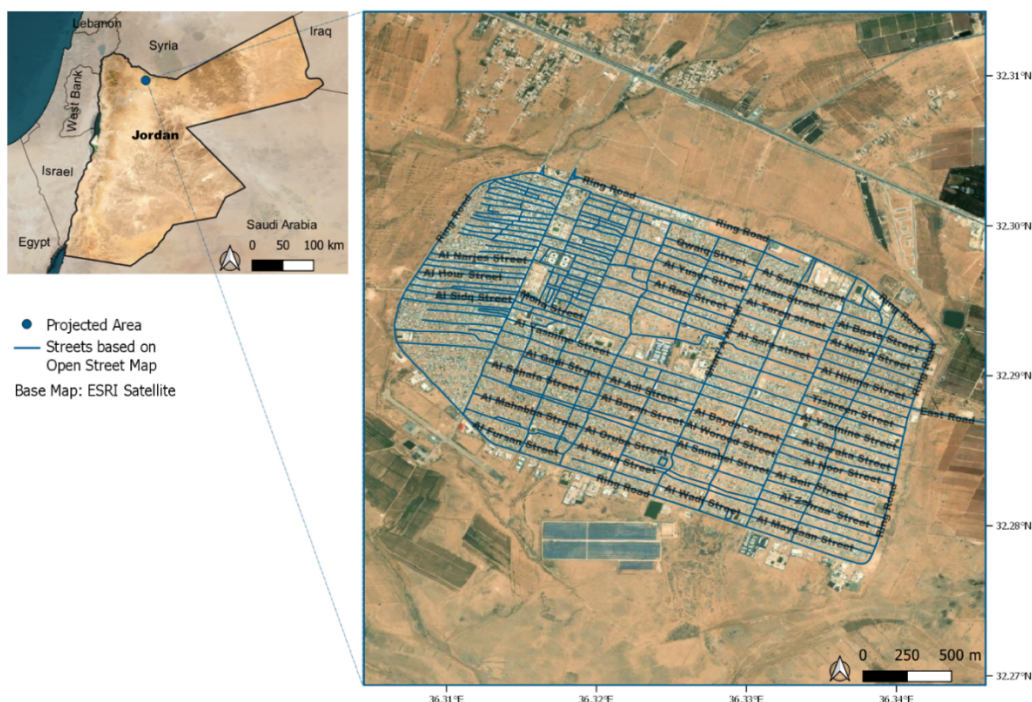
The Za'atari refugee camp was established in 2012 by the Jordanian government and operated by UNHCR in the course of the massive movements of refugees from the Dar'ā region in Syria. In the first half of 2013 alone, more than 380,000 new refugees were registered in Jordan. By June 2014, the figure had risen to around 600,000 people. The sharp increase in Syrian refugees put additional pressure on the limited capacities and the functionality of water and wastewater disposal in northern Jordan. In addition, one of Jordan's most important groundwater aquifers was threatened by the unhindered disposal of wastewater. Against this background, the project was subjected to a limited appraisal on the basis of "Emergency procedure for natural catastrophes, crises and conflicts" in accordance with note 47 in the FC-TC Guideline. This includes abandoning a target group and stakeholder analysis, an environmental and social impact assessment (ESIA), as well as an executing agency analysis and a limited requirement with regard to the project's long-term impacts.

Evaluation of the projects "Stabilising neighbouring countries in the Syrian crisis (phase I)", BMZ no. 2014 68 297; "Strengthening the resilience of water/wastewater Za'atari (phase II)", BMZ No. 2015 68 906; "Water/wastewater Za'atari (phase III)", BMZ No. 2017 68 258 is being carried out together. This is justified by the fact that all projects were mainly implemented in the same period. In addition, all projects took place in the same intervention context, meaning that there are no conceptual differences that would enable a differentiated impact assessment along the three projects.

### Brief description of the project

The aim of the FC measure was to sustainably improve water supply and wastewater disposal in the Za'atari refugee camp in Jordan for up to 100,000 people (capacity design; currently around 77,000 people in the camp). The projects financed the construction of a water supply and wastewater disposal network as well as the operation and maintenance of the plant in the period from December 2014 to March 2020. The projects enabled a dependable, distribution-oriented and conflict-free supply of clean drinking water as well as the hygienic disposal of wastewater, which reduced the risks of disease transmission and odour problems. The projects are therefore of great importance for the living conditions of the people in the camp and for Jordan as a whole. Za'atari is located on one of the country's most important groundwater aquifers, which is protected by regulated wastewater disposal in the camp. The collected wastewater is treated in the wastewater treatment plant of the Za'atari refugee camp. The executing agency was the United Nations Children's Fund, UNICEF, which implemented and monitored the measures with the support of an international consultant and in close cooperation with the Jordanian Ministry of Water, Water Authority of Jordan (WAJ) and Yarmouk Water Company. The measures were implemented within the framework of three financings.

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



## Breakdown of total costs

UNICEF, Jordan, Stabilising neighbouring countries in the Syrian crisis (phase I);  
 UNICEF, Jordan, Strengthening the resilience of water/wastewater Za'atari (phase II);  
 UNICEF, Jordan, Water/wastewater Za'atari (phase III)

	2014 68 297	2014 68 297	2015 68 906	2015 68 906	2017 68 258	2017 68 258
	Phase I* (planned)	Phase I* (actual)	Phase II** (planned)	Phase II** (actual)	Phase III** (planned)	Phase III** (actual)
Investment cost EUR million	15	15	10	10	9.955	9.955
Counterpart contribution EUR million	0	0	0	0	0	0
Financing EUR million	15	15	10	10	9.955	9.955
of which BMZ budget funds EUR million	15	15	10	10	9.955	9.955

\*) Random sample 2022    \*\*) Phase II and III added **Rating according to OECD-DAC criteria**

## Relevance

### Policy and priority focus

The FC projects were geared towards the development policy priorities of the German Federal Government with the aim of reducing resource competition and improving the supply to cover basic needs of refugee and host communities in the host countries in the context of the Syrian crisis. The improvement in water supply and wastewater disposal at the Za'atari refugee camp is also in line with the Jordanian government's National Water

Strategy 2016–2025 (NWS). The priority objective of the NWS is to supply the population as a whole with a sufficient quantity and high quality of drinking water. In the NWS, the government recognises the additional pressure exerted by refugees on existing basic service systems. It also identifies the risks to groundwater reservoirs arising from the unregulated disposal of wastewater. As a result, the expansion of the water and wastewater network in Za'atari was rated as a priority in the Jordan Response Plan (JRP) 2017–2019.

In addition, the project was in line with the international plans for dealing with the Syrian crisis, such as the Regional Refugee and Resilience Plan in Response to the Syria Crisis (3RP), drawn up by the United Nations in 2014. The development strategies, which were jointly defined and used as a basis for the project, also reflect the Millennium Development Goals introduced at the time of the project appraisal, in particular Goal 6 (Clean water and sanitation for all) and Goal 7 (Ensure environmental sustainability).

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

According to UNHCR, more than 5.7 million people have primarily fled to neighbouring countries such as Turkey, Iraq, Jordan, Egypt and Lebanon as a result of the conflict in Syria, which continues to this day. At the time of the ex post evaluation, more than 674,000 registered refugees (630,000 at the time of the PA) lived in Jordan alone, primarily in the north of the country. It is expected that there is also an equal number of unregistered refugees in the country. In the Al-Mafraq governorate, where the Za'atari refugee camp is located, the population has almost doubled compared to 2011 (according to the Ministry of the Interior, MoI, today 549,948 people).<sup>1</sup> The enormous influx puts pressure on the already scarce resources and limited capacities of the existing infrastructure in the region. Among other things, this affected private water demand and the proper disposal of wastewater.

To counteract this, two fresh water wells were already drilled in the camp at the time of the PA, which were to cover up to 70% of the water demand. A third well was completed later on, but not within the scope of the project. A wastewater treatment plant was also erected by the end of 2014 to ensure the proper disposal of wastewater from decentralised public shower and toilet facilities. The distribution of the water to decentralised standpipes and the disposal of the wastewater was organised by tank trucks with great efforts. The decentralised public shower and toilet facilities were avoided by the refugees, mostly due to sociocultural values, and instead private temporary facilities were built in the accommodations. This caused wastewater to uncontrollably seep into the soil, increasing the risk of contamination of the aquifer beneath the camp and of infection. In addition, using tank trucks for the supply was a significant cost factor and impaired the quality of life of the local population due to noise, exhaust gases and a much higher traffic volume. A secure, conflict-free and fair supply of clean fresh water and regulated, hygienic wastewater disposal could not be achieved for all residents of the camp in this manner.

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

The project pursues a dual objective. Improving the water supply and wastewater disposal infrastructure was intended to improve the situation of refugees at the Za'atari camp (Outcome level). The impact logic was presented differently in KfW's project proposals to the Federal Ministry for Economic Cooperation and Development (BMZ), while UNICEF completely forewent formulating impacts. The module proposal of the first phase formulates the claim to contribution to stabilising the neighbouring countries of Syria (here: Jordan) by quickly improving basic infrastructure and refugees' access to sustainable water and sanitation. The formulation of objectives underlying the second phase, on the other hand, relates to strengthening the resilience of refugees and host communities in the ongoing crises and to improving their development prospects. No impact objective was formulated for the third phase.

All three phases are subject to the plausible assumption that the crisis-related competition for limited resources can have a destabilising effect and have an adverse impact on the target group. However, the extent to which the measure contributed to Jordan's stabilisation cannot be assessed due to the high level of ambition and against the backdrop of a regionally very limited individual measure. With regard to strengthening the resilience of refugees and host communities, the interdependencies are somewhat clearer, although this cannot, in fact, be assessed. For this reason, the target formulation is specified for this EPE (see Effectiveness).

The common use of generic impact indicators for the WASH sector, such as the reduction of diseases through improved water supply and wastewater disposal or the avoidance of significant outbreaks of water-borne diseases in camps and communities, should not be applied here, as there are no baseline or target values. The on-

<sup>1</sup> [https://moi.gov.jo/EN/ListDetails/Governorates\\_and\\_Sectors/57/7](https://moi.gov.jo/EN/ListDetails/Governorates_and_Sectors/57/7)

site discussions also did not provide any indication of an existing problem. This type of impact hypothesis would not be significant. On the other hand, the discussions highlighted the improvement in the living situation of both refugees and host communities. Potential factors that would have led to tensions within the camp as well as among local residents, were reduced.

The design and the underlying results chain, according to which the target group's resilience (i.e. mental resilience and ability to adapt to new conditions) is improved by improving (equal) access to a secure water supply and adequate sanitary facilities, seems plausible and comprehensible.

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

Implementation of the measure was delayed by seven months. This was due to the need to clear 150 mines. The project responded with a planning adjustment, which resulted in the postponement of individual measures between phases I and II. According to the executing agency, this prevented longer delays.

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

The core problem was correctly identified against the background of the stabilisation of the conflict in Syria and the camp structures. Accordingly, the project measures are also highly relevant from today's perspective. They contribute to the goals of the JRP and the National Water Strategy as well as to the Sustainable Development Goals. Furthermore, these contribute to improving the living conditions of the residents of the camp.

**Relevance: 2 (all projects)**

## Coherence

### *Internal coherence*

The three phases considered here are complementary to each other. With regard to internal coherence, in Jordan, humanitarian aid from the Federal Foreign Office and structural measures under transitional aid, as well as the special initiative “Tackling the root causes of displacement, reintegrating refugees” and “Stabilisation and development of North Africa, Middle East” are being financed with funds from the German government to mitigate the worst effects of the Syrian crisis.

The project also completes the bilateral projects in the priority area of water in Jordan to improve the situation of refugees and host communities (drinking water supply I to III and Aqib pipeline) and the REPAC Regional Programme for the Improvement of Living Conditions of Palestinian Refugee Camps in cooperation with UNRWA (United Nations Relief and Works Agency). Within the JRP and the Regional Refugee and Resilience Plan, the projects are embedded in a comprehensive framework that coordinates donor contributions in terms of design and content.

### *External coherence*

With regard to external coherence, the measure supports the Jordanian government’s National Water Strategy and the JRP to support refugees and their host communities. In addition, coordination of the measures within the UN system is ensured by embedding them in the 3RP.

The measures are based on the WASH structures established by other organisations. These were included in the design and implementation, and their expert opinions were still in use (e.g. OXFAM in the community mobilisation report). Both the construction and operation of the plant will be and has been coordinated with the relevant sector organisation in the camp. To ensure a coherent approach, regular meetings and coordination rounds took place between UNICEF, the Jordanian Ministry of Water, the Yamouk Water Company and the executing companies.

### *Summary of the rating:*

Even if the plant is currently operated largely autonomously, integration into the public systems is possible without major effort. The design of the plants complies with Jordanian standards, and plans are already in place to connect the public sewage network in Za’atari City to the camp’s wastewater treatment plant. Furthermore, plans to address refugee movements and supply refugee and host communities were addressed through coherent plans.

**Coherence: 2 (all projects)**

## Effectiveness

### *Achievement of (intended) targets*

The outcome-level objective underlying this EPE was to improve the water supply and wastewater disposal infrastructure at the Za’atari camp.

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

Indicator	Status during PA	Target value PA/EPE	Actual value at EPE
(1) Number of girls, boys, women and men who have safe and equal access to water for drinking and domestic use.	0	PA target value: 100,000 people (capacity of plants)	Value achieved All households are connected to the water supply system. 80,976 people live in the camp at the time of the EPE.
(2) Number of girls, boys, women and men who have access to improved and adequate sanitation facilities.	0	PA target value: 100,000 people (capacity of plants)	Value achieved All households are connected to the wastewater disposal system and are equipped with sanitary facilities. 80,976 people live in the camp at the time of the EPE.

### **Contribution to achieving targets**

The objectives to ensure secure and equal access to adequate water for drinking and domestic use, as well as sanitary facilities for all around 81,000 people living in the camp (of which around 43,740 children) were reached with the measures at the time of the EPE. All households in the camp are connected to the mains-based water supply and wastewater network. The quality of drinking water is rated as good overall; according to UNHCR and UNICEF, there are no known cases of illness due to contaminated drinking water.

The measure was able to ensure the regular supply of fresh water to all residents. In mathematical terms, with the three wells located in the camp, a current production capacity of 3,100 m<sup>3</sup> makes around 38 litres of clean water available to each person per day. Nevertheless, unaccounted for water also poses major challenges in the regular supply of water to the target group due to increasing water consumption. At the time of the EPE, it was not possible to carry out refilling every four to six days as planned. Based on an average household size of 4.16 people, the 1,000 litre tanks must be filled every 6.3 days in order to provide the calculated available quantity of 38 litres per person per day. However, at the time of the EPE it was only possible to ensure refilling every 8–13 days: refilling after 13 days results in a calculated water quantity of only 18.5 litres per person per day and thus below the minimum quantity of 20 litres per person per day defined by UNHCR in a post-emergency situation in a camp setting.<sup>2</sup> Against this background, the goal of connecting all households to a mains-based water supply system and thus improving the fair and gender-sensitive distribution of water has been achieved on the one hand. At the time of the EPE, however, it was only possible to ensure reliable supply to the target group to a limited extent and using a few tank trucks.

The tense supply situation is due to the increased water consumption, which exceeds the production capacities of the three wells. UNICEF indicates a water consumption of approx. 55 litres per person per day in the summer months. However, the additional hygiene requirements to contain the COVID-19 pandemic and a change in user behaviour, which can be associated with the direct availability of water at the household level, are also considered to be the cause. Nevertheless, it can be assumed that supply bottlenecks would also have arisen with a central solution, e.g. via water kiosks, but without simultaneously fundamentally improving access to water for women and vulnerable groups.

The expansion of the wastewater disposal system with the installation of sanitary facilities at the household level has contributed to a significant improvement in hygiene conditions. The wastewater in the refugee camp (an average 2.1 million litres of wastewater per day) is discharged directly from the sanitary facilities in the households into over 3,000 collection tanks; from there, it is pumped via the network to the wastewater treatment plant in Za'atari and then treated. The risk of outbreaks of epidemics has therefore been reduced and the contamination

<sup>2</sup> [Emergency water standard – UNHCR | Emergency Handbook](#)

of the groundwater aquifer located below the camp has been significantly minimised. Women in particular also reported a significant improvement in their living conditions by setting up private sanitary facilities at the household level.

In addition, tank truck deployments were greatly reduced by switching to a mains-based system. Previously, up to 65 tank trucks were required for the water supply; today there are still four that are used for manually filling tanks, for private companies and institutions such as hospitals and for external delivery during peak periods. To further reduce the use of tank trucks, the camp was connected to the water supply network of the city of Za'atari in October 2019. Up to 500m<sup>3</sup> of water per day can be supplied via this connection. On average, however, the Water Authority of Jordan provides around 350m<sup>3</sup>. Accordingly, additional quantities, which are mainly required in the summer months, must be fed into the network via tank trucks. Tank trucks are only used for wastewater disposal in isolated cases or in emergencies. Before the wastewater network was put into operation, 45 tank trucks were required to transport the wastewater to the wastewater treatment plant.

By reducing the number of tank truck deployments, the operating costs of the network have been considerably reduced. Operating and maintenance costs were reduced from USD 12.3 million annually to around USD 6.8 million today. In addition, the quality of life of the residents of the camp and the surrounding communities was improved. Tank truck operation was described by both groups as a significant source of danger and an everyday disruptive factor.

### ***Quality of implementation***

The deficiencies identified during the final inspection, which are mainly due to the design of the system, continued to be present at the EPE. Due to the hydraulic design, some households receive water earlier and fill their tanks faster. In addition, some behaviours of the camp residents intensify the situation. To a large extent, the float valves of the tanks were removed; these valves automatically stop the filling process when the maximum fill level is reached. Removing them allows users to fill their tanks to higher levels. At the same time, however, this also leads to overflowing of the tanks closest to the pumping station, while tanks that are further away are not filled or are filled insufficiently. These users are still “re-supplied” with tank trucks, which reduces the efficiency of the system but does not impair fair access to water. Discussions are underway as to how to counteract the described problem with the use of electronic valves. However, this is offset by high acquisition and operating costs. Illegal connections and additional tanks also increase water consumption. UNICEF is attempting to counteract this behaviour with information campaigns involving the camp administration.

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

Due to a lack of data, the reasons for the increased water consumption in the camp cannot be unequivocally proven. However, there is a possibility that the availability of water in the form of house connections has contributed to the increased water consumption. Other reasons are the increased water requirements during the hot spring and summer months and due to additional hygiene measures during the COVID-19 pandemic. It is important to note that, according to the executing agency, water consumption is still far below the Jordanian average<sup>3</sup> but exceeds the production capacities of the camp's own wells. Furthermore, income losses for the local population could not be confirmed due to a lower tank truck operation, as the tank truck operators were generally not based in the region.

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

Although there are limitations in the water supply, there is no question that the target group will benefit from improved water supply and sanitation. The target values were achieved for all indicators. Due to the problems with the regular supply of fresh water to the population, the effectiveness must be rated as satisfactory.

### **Effectiveness: 3 (all projects)**

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<sup>3</sup> Mohammad A.S. Tabieh and Ala'a Al-Horani, 2010. *An Economic Analysis of Water Status in Jordan*. *Journal of Applied Sciences*, 10: 1695–1704.



## Efficiency

### *Production efficiency*

A positive picture emerges with regard to the production efficiency. In addition to the direct project costs of around EUR 30.8 million, proportionate implementation costs were estimated that can be indirectly attributed to the project, totalling EUR 1.6 million (5% of direct costs), and UNICEF standard administration costs totalling close to EUR 2.6 million (8% HQ margin). Compared to the distribution over direct and indirect costs estimated at the time of the project appraisal, the implementation costs indirectly attributable to the project were around EUR 0.34 million lower at project completion. UNICEF ultimately allocated this amount to the direct project cost budget.

Although the project was implemented in a densely populated refugee camp, the completion of all measures was only delayed by seven months. Implementation in this type of context is challenging in view of the technical aspects (ongoing operation) and ensuring the safety of the target group. The delay can be attributed to the time-consuming removal of mines and other explosive remnants. In addition, time-consuming changes were required for adaptations to the design and implementation structure; no sufficient time buffer was taken into account for this during planning. The conversion of INGO's executing agency model to direct implementation by UNICEF with the support of a professional engineering consultant proved to be reasonable. UNICEF was thus able to award the construction measures to specialised construction companies via international competitive bidding. The implementation was described as efficient by UNICEF, GITEC, as well as one of the implementing companies. Independent implementation by UNICEF did not appear expedient due to the lack of expertise and would have led to higher costs and longer implementation periods. Another factor that contributed to the effective implementation of the measures is the geographically narrow scope of implementation. The government side did not take any responsibility for this, thus removing the need for coordination and approval of the measures in the long term.

By reducing the number of tank truck transports, operating costs were reduced by 45% from EUR 12.3 million to EUR 6.8 million per year. Including the total costs for the water and wastewater infrastructure in Za'atari (EUR 56 million), this results in a payback period of five to eight years. Based on the completion of phase III (spring 2019), the investment would already pay off in 2027. Even if the camp structures were to dissolve before the end of 2027, which does not seem likely, the pipeline network could still be used.

### *Allocation efficiency*

With regard to the allocation efficiency of the system, it can be argued that a lack of water tariffs leads to increased costs. With the free availability of water, there is no incentive to save water, which contributes to the aforementioned problem of increased water consumption. Nevertheless, the target group is destitute, meaning that a payment system would not be an adequate solution. Alternative incentive systems that would reward water savings are conceivable. Against the background of the vulnerable target group, it would be of particular importance to adequately ensure their design and the need for do-no-harm aspects.

If the number of directly reached target groups is used as a basis for assessing allocation efficiency, the use of funds per capita amounted to EUR 385. This does not take into account the avoided damage that would have resulted from lowering the groundwater level and damage to the infrastructure of the surrounding communities that would have resulted from the tank truck transports.

Alternative project designs, such as the increased decentralisation of water kiosks and sanitary facilities, were examined and discarded because they probably would not have solved the problem to be addressed or would have solved it inadequately – especially with regard to wastewater disposal. Against the background of the stabilisation of the camp structures already emerging at the time of the PA, the selected design appeared sensible at the time of the PA and the EPE. In addition, it can be assumed that the structures can also be used in the future.

The implementation of the approach at the Za'atari camp also seems relevant from today's perspective, as the organisation of water supply and wastewater disposal was the most complex and expensive due to the high number of inhabitants and population density. Alternative concepts, such as the installation of further water kiosks and sanitary facilities, would not have adequately addressed the underlying problem or the dangers for groundwater aquifers in the Za'atari camp.

The development of a mains-based network in the Azraq and Berm camps was also examined but not further pursued, as safe and gender-appropriate access can be guaranteed there via central water kiosks and sanitary facilities.

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

As a result, the selected approach enables a fair distribution of water to the vulnerable population, but it does not provide incentives to save water. As a result, additional water volumes must be purchased by tank truck. With regard to implementation, it can be stated that measures were carried out cost-effectively. **Efficiency: 2 (all projects)**

## **Impact**

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

The developmental objective of the FC measures underlying this EPE was to contribute to stabilisation in Jordan by rapidly improving basic infrastructure and refugees' access to sustainable water and sanitation. The aim was to improve the resilience of refugees and host communities and their development prospects. For this EPE, this focus is maintained, but more specifically targeted at the Za'atari region (see Relevance).

The measure contributed to a significantly improved hygiene situation in the camp, minimised the adverse effects to the surrounding communities due to supplying residents and prevented the risk of contamination of the ground-water reservoir, which is important for the region. The latter is fundamental for the water supply of both the camp and the surrounding communities. Contamination would have significantly reduced the water resources available in the region.

Infrastructure projects can develop positive structural impacts if they address specific grievances.<sup>4</sup> Inadequate water and hygiene conditions led to significant frustration in a context of ever-present uncertainty. It therefore appears plausible to assume that the improvement of WASH facilities in the camp has made a positive contribution to stabilisation in the Za'atari camp. With the establishment of water sanitation facilities at the household level, people have regained some normality.<sup>5</sup> Especially if one takes into account that the target group comes from a region of Syria, where water scarcity is not a problem.

With regard to the host community, the connection is less direct, as it does not directly benefit from the infrastructure. However, it can be argued that the establishment of the wastewater network averted direct danger to the local water supply and thus prevented further pressure on basic services. Furthermore, interviews mentioned hazards, especially for children in road traffic, which originated from tank truck activities. At the same time, local companies did not benefit from transport orders, as they were not used as part of a regular tendering process. It can therefore be argued that the living conditions of the local population have improved by reducing tank truck movements, thus preventing potential conflicts between refugees and the host community.

It can be stated that the project was tolerated by the Jordanian government. However, the government continues to refuse to assume responsibility for the operation and maintenance of the infrastructure at the time of the EPE. Against this background, it cannot currently be assumed that the system will be integrated into the local networks. The exploitation of additional potential, such as the operation of the sewage treatment plant for the city of Za'atari, remains largely unused, although the capacities are available. At the time of the EPE, there were no indications that the Jordanian government would assume responsibility for the operation and maintenance of the network in a timely manner.

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

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<sup>4</sup> Bachmann, J., & Schouten, P. (2018): *Concrete approaches to peace: infrastructure as peacebuilding*. *International Affairs*, 94(2), 381–398.

<sup>5</sup> Mansour, R. (2018): *Rebuilding the Iraqi State: Stabilisation, Governance, and Reconciliation*. European Union, European Parliament's Committee on Foreign Affairs.

The extent to which the project contributed to the overarching objectives of the FC programmes “Increasing the resilience of host communities in neighbouring countries during the Syrian refugee crisis” and “Resilience for refugees, IDPs, returnees and host communities in response to the protracted Syrian and Iraqi crises” cannot be assessed due to the attribution problem. These programmes were set up with a very broad focus due to the extensive crisis and the resulting needs, some of which changed significantly over time. This approach is understandable, especially in light of the emergency situation at the time and the need to be able to provide targeted help quickly.

However, it can be argued that the target group’s improved supply situation and the reduction of potential adverse effects on the local population counteracted factors that exacerbate conflict and thus made a contribution to stabilising the region.

***Contribution to impact (unintended)***

Based on statements from the target group, all residents were given back a little bit of normality with the creation of equal access to water and sanitary facilities as well as the improvement of the situation for women. At the same time, potential conflict factors within the camp were reduced.

Another positive aspect is that women, who are mainly responsible for raising children and taking care of the household, spend less time on the arduous procurement of water for drinking and domestic tasks, and can pursue other activities such as raising children. This factor was emphasised positively throughout the interviews with the target group.

With regard to comprehensive implementation, no rigorous support from the host community can be seen. As described above, the local population benefits from indirect positive effects. However, securing ground water is not very visible and does not address acute challenges in people’s everyday lives. This means that feelings of neglect and the preference of refugees in the camp cannot be avoided and peaceful coexistence is at risk.

A side effect of the direct availability of water at the household level also leads to increased water consumption, which cannot be entirely covered by the production capacity of the wells available at the camp. Although per capita water consumption is still comparatively low, measures that have a potentially adverse effect on the future availability of water should be reviewed and readjusted if necessary. This is particularly true given that the growing population and declining availability of water resources will place even greater strain on Jordan’s water system in the future.

The increased water consumption is, however, also related to the COVID-19 pandemic. Water consumption in the camp has increased significantly as a result of the hygiene measures that have become necessary. The pipeline capacities did not impede the increase in water supply and wastewater disposal. Only the production capacities of the camp’s own wells have limited the expansion of the offering. Thanks to increased cooperation between UNICEF and the local water supplier, external water resources were also secured and made available to the residents of the camp via the external transmission. The project thus also contributed to meeting the increased hygiene requirements.

***Summary of the rating:***

Overall, the beneficial effects on the resilience of the target group and the potentially conflict-reducing effects can only be attributed to the project on the basis of statements from individual residents. In addition, due to the context, the system continues to be an individual measure which is not integrated into government systems.

**Impact: 3 (all projects)**

## Sustainability

At the time of the EPE, the plants visited were in very good condition and functional without restrictions. Operation and maintenance are guaranteed by an experienced service provider who takes part in the design and implementation. As outlined above, the Jordanian Government refers to the responsibility of the international community to finance the operation and maintenance of the infrastructure. Accordingly, the Jordanian budget does not currently provide the necessary funds or specialist staff required for sustainable operation of the plant. Since its commissioning, the necessary funds have been made available by various international donors and UNICEF itself. Alternative financing options, e.g. via fees, are not applicable due to the vulnerability of the target group and the beneficiaries' associated lack of means.

### *Contribution to supporting sustainable capacities*

As part of the measure's design and implementation, representatives of the Jordanian government and the local bodies responsible for water supply and wastewater disposal were closely involved. The layout and technical equipment of the plant correspond to the standard designs used in Jordan and the region. Local companies specialised in the sector as well as the Jordanian authorities are therefore familiar with the repair and maintenance of the system.

In addition, during the construction phase and after completion of the facilities, a larger number of residents of the camp were trained in operation and simple maintenance tasks. They are employed by the company responsible for maintenance over a period of three to four months on a rotational basis. On the one hand, this safeguards and strengthens the retention of knowledge and skills for operating the plant with the target group and, on the other hand, gives the target group an earning opportunity of up to USD 250 per month.

### *Durability of impacts over time*

The Jordanian government's restrictive attitude towards assuming responsibility for the operation and maintenance of the network fundamentally leads to a high degree of uncertainty with regard to sustainable use. Integrating the network into the Jordanian local network with the necessary budget for operation and maintenance would be necessary to guarantee the secure permanent operation of the plant and the supply of residents of the camp.

With the construction of the wastewater network and the camp's population, which has been stable for years, it was possible to avert the dangers of immediate and permanent contamination of the groundwater aquifer. The capacity of the water treatment plant was already designed in the planning stage to be able to absorb fluctuating population figures and to incorporate the city of Za'atari into the disposal network.

### *Summary of the rating:*

The consideration of structural sustainability and the integration of the target group in the design and operation of the plant can be rated positively. However, linking operation and maintenance to sufficient donor involvement has an adverse effect on sustainable developments and securing the long-term positive impact of the network. However, it can be argued that the programme objectives focused on stabilising the region and improving the resilience of the target group. In addition, in crisis contexts, the high sustainability risk with low influenceability is accepted, so that the measures appear to be fundamentally beneficial to the objective as listed above.

### **Sustainability: 3 (all projects)**

## **Overall rating: 2 (all projects)**

Against the backdrop of stabilising camp structures and averting potential distribution conflicts as well as threats to groundwater aquifers due to unregulated drainage of wastewater, the construction of a mains-based water and wastewater network was the correct answer to pressing problems. Overall, the objectives of the measure at outcome level – ensuring adequate and mains-based water supply and wastewater disposal for refugees at the Za'atari camp – were achieved. The project contributed to a significant improvement in hygienic conditions. All wastewater in the refugee camp (an average 2.1 million litres of wastewater per day) is routed via the network to the wastewater treatment plant in Za'atari and then treated. Unhindered infiltration of wastewater was prevented. The connection at household level returned a piece of normality to the residents of the camp, ensuring stability in

an otherwise uncertain overall situation and thus positively contributing to peaceful coexistence both inside and outside the camp. The switch to a mains-based system has led to a significant reduction in tank truck deployments. On the one hand, the costs for supplying the target group were considerably reduced and, on the other hand, a direct annoyance for the host community was eliminated.

The risk of a lack of long-term financing for the operation and maintenance of the infrastructure already identified at the PA could not be resolved by the time of the EPE. The Jordanian government, as in the case of the Azraq and Berm refugee camps, does not consider itself liable for the refugees themselves and the relevant infrastructure for political reasons. UNICEF is still in discussion with the responsible ministries. A solution was not apparent at the time of the EPE.

Today it has already become apparent that the wells available in the camp cannot secure the camp's needs in the long term. During the summer, their production capacities will be put under pressure. In order to ensure the long-term supply of fresh water to the camp, it would be necessary to connect it to other sources. The Jordanian government is also opposed to this because they do not want to further underpin the permanent status of the camp.

Even though there are starting points for improvements, the objectives targeted by the project were achieved, as was basic security of supply for the target group. Creating normality for people in an emergency situation can be seen as stabilising and creates structure for the positive development of people.

Overall, the project is rated as successful.

## Contributions to the 2030 Agenda

The project contributes to improving the lives of refugees, especially refugee children and women. They can use protected sanitary facilities at the household level. Since women are responsible for completing domestic work in this context, they are relieved of the burden thanks to simpler and direct access to water for household tasks. The project thus makes a significant contribution to SDG 6 "Clean Water and Sanitation". With the regulated disposal of wastewater once again achieved by the measure and the associated protection of the groundwater aquifer, the project contributes to SDG 7 "Affordable and Clean Energy".

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

The project had the following strengths and weaknesses in particular:

- Impact measurement was weakened by the formulation of indicators solely at output level. Missing baseline data only allows anecdotal conclusions to be drawn about what has been achieved.
- The residents in the camp were integrated into the implementation of the measure.

Conclusions and lessons learned:

- The project correctly identified and addressed the problem. The living conditions of the target group have improved significantly.
- Despite the close involvement of the Jordanian authorities in the design and implementation of the measure, the long-term organisational and financial operation of the infrastructure is not ensured.
- Reducing competition for resources in the Jordanian water sector and strengthening the resilience of Syrian refugees are still relevant from today's perspective; due to the political situation in Syria, it is unlikely that Syrian refugees will be returning home in the near future.
- The protection of the groundwater aquifer under the camp is relevant against the background of declining water resources in Jordan.
- Incentives and innovative approaches to saving water should be examined as part of similar projects and, in some cases, also implemented at higher costs.
- Even in the context of acute urgency, feasible exit strategies should be considered and implemented during the project appraisal.

## 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:

internal project documents, reports, secondary specialist literature, impact evaluations, comparable evaluations

#### Data sources and analysis tools:

Satellite images

#### Interview partners:

Project-executing agency, target group, internal project managers

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:

One challenge for the evaluation is to measure the impact at the respective outcome levels. With regard to the outcome level, the outcomes formulated by UNICEF are closer to the output level. There was no impact formulation, meaning that statements on the impact of the projects had to be reformulated.

## 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).

## Publication details

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Annex 2: Risk analysis

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## Annex 1: Target system and indicators

Project objective at outcome level		Rating of appropriateness (former and current view)			
<p>During project appraisal:</p> <p>Phase I+II: Sustainable and gender-neutral access to safe water is guaranteed for the target population in sufficient quantities for drinking, cooking and personal and domestic hygiene. Indicator: Proportion of girls, boys, women and men who have access to safe and adequate water for drinking and domestic use</p> <p>Phase III: Completion of Phase II of the water and wastewater network in order to effectively meet the medium- and long-term needs for water and sanitation facilities through sustainable investments in the Za'atari camp.</p> <p>Specific objective 1: sustainable and gender-neutral access to safe water for the target population in sufficient quantities for drinking, cooking and personal and domestic hygiene is guaranteed.</p> <p>Specific objective 2: increased number of girls, boys, women and men who have access to improved and adequate sanitation facilities.</p>		<p>The impact level traditionally describes the output level with the formulation. Nevertheless, it still seems appropriate from today's perspective.</p>			
At EPE (if target modified): ensuring adequate and mains-connected water supply and wastewater disposal for residents in Za'atari.					
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 (year)	Status at final inspection (year)	Optional: EPE status (year)
Indicator 1 (PA), Phase I+II +III: proportion of targeted girls, boys, women and men with access to safe and equitable water for	Output-oriented indicator. Appears appropriate. Allows conclusions to be drawn about outcome objectives (i.e. reaching vulnerable groups)	100% (2014, 2015, 2017)		100% (2020)	100% (2022)

drinking and domestic use.					
Indicator 2 (PA), Ph.III Proportion of targeted girls, boys, women and men with access to improved and appropriate sanitation.	Output-oriented indicator. Appears appropriate. Allows conclusions to be drawn about outcome objectives (i.e. reaching vulnerable groups)	100% (2017)		100% (2020)	100% (2022)
NEW: Indicator 3					
NEW: Indicator 4					

Project objective at impact level		Rating of appropriateness (former and current view)			
During project appraisal: The FC measure's objective is to contribute to stabilising Syria's neighbouring countries by quickly improving basic infrastructure, refugees' access to education and sustainable water and sanitation, child aid measures, basic healthcare and food security.		The level of ambition appears unrealistic for the evaluation of an individual measure. In addition, it is difficult to derive impact indicators on the basis of this formulation.			
During EPE (if target modified): The project contributes to improving the resilience of refugees in the Zaatari camp					
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)	Not listed				
Indicator 2 (PA)	Not listed				
NEW: Indicator 3					
NEW: Indicator 4					

## Annex 2: Risk analysis

All risks should be included in the following table as described above:

Risk	Relevant OECD-DAC criterion
Lack of exit strategy: The Jordanian government's negative position regarding support for Syrian refugees prevents a sustainable operator concept for the infrastructure.	Sustainability, impact, effectiveness
Unstable supply situation with sufficient fresh water in the summer months due to the limited production capacities of the camp's own wells.	Effectiveness, sustainability, impact
Users' negative, exacerbating behaviour lead to increased water consumption.	Effectiveness, sustainability, impact
Hazards during the construction phase in a densely populated camp.	Impact
Tensions between host communities and the refugee population.	Impact
Increased water consumption due to better availability with little opportunity to create savings incentives.	Impact, sustainability

### Annex 3: Project measures and their results

After UNICEF Phases I and II:

Phase I	Phase II
<p><u>Drinking water network:</u></p> <ul style="list-style-type: none"> <li>- Construction of three concrete reservoirs (1,500, 400 and 300m<sup>3</sup>) in districts 4, 11 and 10 and in each case (so-called T-95) Oxfams tanks (95m<sup>3</sup> each; 20 tanks) in districts 5, 6, 7, 8 and 9; total volume 4,100m<sup>3</sup>,</li> <li>- Laying of 7km (ductile cast) main line (DN 200/150) to connect the three existing wells to the two main pumping stations, delivery and installation of the pumps to supply the districts (direct feed into the network).</li> <li>- Adjustment of the design and further sub-division into sub-zones (eight per district), which extended the distribution network from 240km to 421km.</li> </ul> <p><u>Wastewater network:</u></p> <ul style="list-style-type: none"> <li>- -13,320 household connections</li> <li>- Installation of 1,913 concrete tanks</li> <li>- Renovation/building of 5,085 latrines</li> <li>- Filling 11,996 septic tanks</li> <li>- -Installation of 1,795 wastewater tanks (volumes: 8m<sup>3</sup>, 4m<sup>3</sup> and 2m<sup>3</sup>) and deinstallation of 366 shower areas.</li> </ul>	<p><u>Drinking water network:</u></p> <ul style="list-style-type: none"> <li>- 300km HDPE lines</li> <li>- 101 electromagnetic flowmeters: DN 50 to DN 200</li> <li>- 160 water meters for main consumers</li> <li>- 235 gate valves</li> <li>- 13,591 house connections (no water meters)</li> <li>- 8,765 domestic water storage tanks (PE)</li> <li>- Pumping stations including pumps and fittings, etc. (six new, three machines with electromechanical equipment)</li> <li>- 346 concrete water tanks</li> <li>- 1 SCADA system</li> </ul> <p><u>Wastewater network:</u></p> <ul style="list-style-type: none"> <li>- 123 km HDPE lines</li> <li>- 1,579 manholes</li> <li>- 2,960 connections to septic tanks</li> <li>- Two waste water pumping stations (incl. waste water containers, pumps, generators, etc.)</li> <li>- 1 SCADA system</li> </ul>

All phases:

<u>Geplante Maßnahmen</u>	<u>Durchgeführte Maßnahmen</u>
BMZ-Nr. 2014.6829.7; FZ: <b>15 Mio. EUR</b> ; UNICEF Referenz: SM140600	
<p><u>Aufbau Frischwasserleitungen:</u></p> <ul style="list-style-type: none"> <li>- Leitungssystem (Kapazität ca. 100.000 Nutzer, in der Endstufe ca. 270 km Wasserleitungen)</li> <li>- Wasseranschlüsse/Zapfstellen für je 20 Haushalte, regelmäßige Wasserversorgung drei Stunden täglich</li> </ul> <p><u>Aufbau Abwassersystem</u></p> <ul style="list-style-type: none"> <li>- Phase I: Klärgruben auf Haushaltsebene/Familie</li> <li>- Phase II: Bau von Latrinen auf Haushaltsebene</li> <li>- Phase III: Abwassersammelleitungen und Kanäle, Kanaldeckel, Rohrnetze</li> </ul> <p><u>Zeitraum</u></p> 10.12.2014 - 30.06.2016 (18 Monate)	<p>Wasserleitungen nicht umgesetzt, erst in der Folgephase</p> <p>Maßnahmen für Phase I und II umgesetzt. Phase III erst in Folgephasen umgesetzt</p>
BMZ-Nr. 2015.6890.6; FZ: <b>10 Mio. EUR</b> ; UNICEF Referenz: SM150576	
<p><u>Aufbau Frischwassersystem</u></p> Phase I: <ul style="list-style-type: none"> <li>- Bau von acht Hauptwassertanks mit einer Gesamtkapazität von 4.100 m<sup>3</sup> (bereits im Bau; Finanzierung vollständig aus vorheriger Zusage);</li> <li>- Bau von 7km Hauptverteilerleitungen zwischen den Wassertanks im Lager (bereits im Bau; Teilfinanzierung aus vorheriger Zusage).</li> </ul>	<p>Maßnahmen umgesetzt</p>

<u>Geplante Maßnahmen</u>	<u>Durchgeführte Maßnahmen</u>
<p>Phase II;            - Bau der sekundären und tertiären Verteilerleitungen und zugehöriger Anschlüsse an die Hauptverteilerleitung; Anschlüsse auf Haushaltsebene (Detailplanung erfolgt, Baubeginn im März 2016; Finanzierung vollständig aus aktueller Zusage).</p> <p><u>Aufbau Abwasserentsorgungssystem</u></p> <p>Phase I:            a. Bau von Abwassersammelbehältern mit Kapazitäten zwischen 2m<sup>3</sup> und 8m<sup>3</sup> samt Anschlussleitungen an die Haushalte (bereits im Bau; Teilfinanzierung aus vorheriger Zusage);            b. Installation von Latrinen auf Haushaltsebene (bereits im Bau; Teilfinanzierung aus vorheriger Zusage).</p> <p>Phase II:            - Bau der Hauptsammelleitung zwischen Sammelbehältern und zentraler Kläranlage (Detailplanung in Endabstimmung mit WAJ, Baubeginn im April 2016; Finanzierung vollständig aus aktueller Zusage)</p> <p><u>Zeitraum</u></p> <p>Die Projektlaufzeit beträgt 24 Monate (Beginn Dezember 2015) mit Fertigstellung des Wasserversorgungssystems im Dezember 2016 und der Abwasserentsorgung im Oktober 2017 (24 Monate)</p>	<p>Maßnahmen umgesetzt</p> <p>Maßnahme Phase I umgesetzt</p> <p>Phase II nicht umgesetzt, erst in Folgephase</p>
<p>BMZ-Nr. 2017.6825.8; FZ: <b>9,96 Mio. EUR</b>;            UNICEF Referenz: SM 170613</p>	
<p><u>Wasserversorgung:</u></p> <ul style="list-style-type: none"> <li>- 248 km direkte Versorgungsleitungen (Tertiärnetz) und Hausanschlussleitungen;</li> <li>- Sechs Druckerhöhungsanlagen im Trinkwassernetz;</li> </ul>	<p>Maßnahmen umgesetzt            299 km Wasserleitungen</p>

<u>Geplante Maßnahmen</u>	<u>Durchgeführte Maßnahmen</u>
<ul style="list-style-type: none"> <li>- Mess- und Steuerungssystem (Einrichtungen zur Durchflussmessung, Kontroll- und Steuerungssystem - SCADA-System, inklusive bauliche Maßnahmen für den Kontrollraum);</li> <li>- Ergänzende kleinteiligere Maßnahmen.</li> </ul> <p><u>Abwasserentsorgung</u></p> <ul style="list-style-type: none"> <li>- Zwei größere Pumpstationen samt Anschlüssen an die bestehende Kläranlage</li> <li>- Errichtung des Kanalnetzes über 55 km (von Kanälen mit geringen Durchmessern bis hin zu Hauptsammlern);</li> <li>- Mess- und Steuerungssystem (Kontroll- und Steuerungssystem - SCADA-System, inklusive bauliche Maßnahmen für den Kontrollraum);</li> <li>- Ergänzende kleinteiligere Maßnahmen.</li> </ul> <p><u>Zeitraum</u></p> <p>01.08.2017 - 30.07.2018</p>	<p>Maßnahmen umgesetzt, 166 km Abwasserleitungen</p>

## Annex 4: Recommendations for operation

The project completion report dated 15 May 2020 noted the following recommendations:

*In view of the falling water level, it is anticipated that the yield of the wells will continue to fall. The drilling of new wells can only counteract this to a limited extent. A longer-term solution could be to connect to the Aqeb Well Field. A main line already leads past the camp and supplies the nearby towns of Mafraq and Irbid. However, this is currently strictly rejected by the Ministry of Water, as it would further underpin the status of the camp's "permanence".*

*From a technical point of view, the following learning experiences must also be recorded and communicated to UNICEF:*

- *A "master plan" should be designed for the camp, which assesses existing resources and personnel capacities in the camp and identifies optimisation potential for the entire infrastructure (water, waste water, dewatering, roads, electricity, solid waste).*
- *During the final inspection, weaknesses were identified at the network operator GAMA with regard to the understanding of the SCADA electronic control system. For this reason, refresher training should be offered that focuses particularly on deriving instructions from data collection and analysis.*

As outlined in the EPE, the decreasing production capacities of the wells pose a problem for the long-term and sustainable water supply. UNICEF responded by connecting the camp to the city of Za'atari via an external supply line. These can be used to address peak consumption. The solution described in the project completion report is still rejected by the Jordanian government for the above reasons.

There is no master plan that assesses existing resources and personnel capacities in the camp and identifies optimisation potential for all of the infrastructure elements (water, waste water, dewatering, roads, electricity, solid waste). Against the background of sustainable and long-term financing of the camp, the identification of optimisation potential remains relevant.

According to UNICEF, refresher training has been provided for the operation and use of the SCADA system. During the EPE, there were no indications of problems with the operation and use of the system.



## Annex 5: Evaluation questions in line with OECD-DAC criteria / ex post evaluation matrix

### 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
<b>Evaluation dimension: Policy and priority focus</b>			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?	Was improving the water and waste water situation in the camp a priority for the Jordanian government, the Federal Ministry for Economic Cooperation and Development (BMZ), UNICEF (and other UN actors), camp residents and the local population?	Analysis of the refugee situation, Jordanian strategy for dealing with refugees/camps, BMZ country strategy / Syrian crisis strategy, analysis of UNICEF strategy in the country (and the other UN actors)			
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.))?	Was the improvement of water supply and waste water disposal subject to legislative requirements or a political strategy with regard to the accommodation of refugees and/or environmental requirements?  To what extent has UNICEF taken Jordanian water conditions into account in the design and construction of the system	Jordanian government (MoPIC), UNICEF, UNHCR, strategy papers (such as JRP)			
<b>Evaluation dimension: Focus on needs and capacities of participants and stakeholders</b>			2	o	
Are the programme objectives focused on the developmental needs and capacities of the target group?	What significance does water supply and waste water disposal have for the residents in the camp compared	Interviews with UNICEF, UNHCR, the target group, host community, implementation consultant			

<p>Was the core problem identified correctly?</p>	<p>to other basic needs at the time of the appraisal and today</p> <p>Was there a maintenance concept that adequately prepared the target groups to take over responsibility for the maintenance work on their own?</p> <p>Is the target group involved in the maintenance and operation of the systems? If so, did they receive appropriate training and are they thus able to carry out maintenance?</p>	
<p>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?</p>	<p>Does everyone have equal access to the services?</p> <p>Were the needs of women, people with disabilities, children, etc. taken into account in the design of water tapping points / sanitation facilities?</p> <p>Were disadvantaged and vulnerable groups involved in the design?</p> <p>Were user committees considered during the design?</p> <p>Are disadvantaged groups and user committees also organised?</p> <p>What were the reasons for choosing this camp?</p> <p>To what extent were existing lines of conflict sufficiently taken into account when selecting the target groups in order to avoid further conflict drivers</p>	<p>Interviews with UNICEF, UNHCR, the target group, host community, implementation consultant</p>

<p>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)</p>	<p>/</p>		2	o	
<p>Evaluation dimension: Appropriateness of design</p>					
<p>Was the design of the programme appropriate and realistic (technically, organisationally and financially) and in principle suitable for contributing to solving the core problem?</p>	<p>For how many beneficiaries was the system designed?</p> <p>What basic assumptions were made regarding the development of the number of beneficiaries?</p> <p>To what extent was the availability of water taken into account for the camp residents and the surrounding communities?</p> <p>Does the target group have uniform and sufficient access to the water supply and waste water disposal?</p>	<p>Interviews with UNICEF, UNHCR, the target group, host community, implementation consultant, Jordanian government</p>			
<p>Is the programme design sufficiently precise and plausible (transparency and verifiability of the target system and the underlying impact assumptions)?</p>	<p>/</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</p>	<p>Refer to the report</p>				

(adjusted) target system can also be displayed graphically. (FC-E-specific question)				
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>How does the measure fit into other measures implemented in the camp?</p> <p>To what extent does the measure fit into a larger strategic approach?</p> <p>To what extent were the maintenance and operation measures taken into account?</p>	Interviews with UNICEF, UNHCR, the target group, host community, implementation consultant		
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)	n/a			
Evaluation dimension: Response to changes/adaptability			2	0
Has the programme been adapted in the course of its implementation due to changed framework conditions (risks and potential)?	Was the concept/design (substantially) adapted during project implementation? Across phases?			

## 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 / +)	Reason for weighting
<p>Evaluation dimension: Internal coherence (division of tasks and synergies within German development cooperation):</p>			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)?	To what extent was the project complementary to other DC interventions by the German Federal Government as part of the special refugee initiative, transitional aid and bilateral cooperation?	Analysis of strategy documents, reports			
Do the instruments of the German development cooperation dovetail in a conceptually meaningful way, and are synergies put to use?	See above Are complementarities known with regard to TC projects and other FC projects?	UNHCR, UNICEF, SDGs			
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.)?	To what extent does the project contribute to the fulfilment of measures to meet international norms and standards with regard to refugees, such as SDGs				
<p>Evaluation dimension: External coherence (complementarity and coordination with actors external to German DC):</p>			2	0	
To what extent does the programme complement and support the partner's own efforts (subsidiarity principle)?	What role did the project play in efforts by the Jordanian government and UNICEF to ensure the basic needs of refugees?	MoPIC UNICEF UNHCR Country Manager			

	Does the measure complement other projects implemented in the camp?	
Is the design of the programme and its implementation coordinated with the activities of other donors?	How did the project complement the measures of other DC actors, donors, NGOs and the UN (as well as within UNICEF)? Was there coordination between the donors and NGOs and UN?  Both within the country, region and camp?	UNICEF UNHCR PM Cluster (if available)
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?	Is there a reference to existing water supply and waste water disposal structures of the Jordanian government? Or is it an autonomous system?	Government of Jordan Water/wastewater suppliers UNICEF UNHCR Design office / commercial developer
Are common systems (of partners/other donors/international organisations) used for monitoring/evaluation, learning and accountability?	How is the cooperation and coordination between UNICEF, UNHCR, other UN organisations and NGOs as well as the Jordanian government designed?  Is there a joint monitoring and target system that has been agreed on, e.g. MEAL, complaint management, O&M	UNICEF UNHCR

## 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 / + )	Reason for weighting
Evaluation dimension: Achievement of (intended) targets			2	0	
Were the (if necessary, adjusted) objectives of the programme (incl. capacity development measures) achieved? Table of indicators: Comparison of actual/target	--				
Evaluation dimension: Contribution to achieving objectives:			3	0	
To what extent were the outputs of the programme delivered as planned (or adapted to new developments)? ( <i>Learning/help question</i> )	/	UNICEF, reporting			
Are the outputs provided and the capacities created used?	What capacity is the system designed for? How high is the water consumption and disposal?  To what extent has the number of camp residents changed?  How has the water consumption and disposal of camp residents developed compared to the host community?	Interviews with the Jordanian government, water/wastewater supplier, UNICEF, UNHCR Design office / commercial developer			
To what extent is equal access to the outputs provided and the capacities created guaranteed (e.g. non-discriminatory, physically)	See Relevance above What measures have been taken to ensure equal access to the water	Interviews with UNICEF, UNHCR, the target group			

accessible, financially affordable, qualitatively, socially and culturally acceptable)?	supply and waste water disposal for all?  Were they successful?	
To what extent did the programme contribute to achieving the objectives?	How has the supply situation changed in comparison?	Interviews with UNICEF, UNHCR, the target group
To what extent did the programme contribute to achieving the objectives at the level of the intended beneficiaries?	Is water regularly available in sufficient quantities and quality?  Is waste water disposed of reliably and in treated form?	Interviews with UNICEF, UNHCR, the target group
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.)?	Children, women and ethnic religious minorities	Interviews with UNICEF, UNHCR, the target group
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)	/	
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> )	To what extent did the project's management structure contribute to the implementation of the measures?	Interviews with UNICEF, the design office / commercial developer



<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>How was the Jordanian government and the local population convinced of the necessity of the measure?</p> <p>What role did ongoing refugee dynamics play in achieving the goals (over- or underestimation of needs, etc.)?</p>	<p>Interview with UNHCR, target group, UNICEF Design office / commercial developer Government of Jordan Water/wastewater suppliers Host community</p>			
<p>Evaluation dimension: Quality of implementation</p>			2	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>Did the parties involved in the implementation have the same target system?</p> <p>How was the progress of the project monitored between the participants?</p>	<p>Interviews with UNICEF, the design office / commercial developer, water/wastewater supplier</p>			
<p>How is the quality of the management, implementation and participation in the programme by the partners/sponsors evaluated?</p>	<p>How were Jordanian partners, other stakeholders in the camp and the surrounding communities involved?</p> <p>What coordination and cooperation structures were available?</p> <p>Were there different opinions among the project participants when it came to implementation?</p>	<p>Interviews with UNICEF, the design office/property developer, water/wastewater supplier, Host community</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</p>					

<p>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>			2	0	
<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>How is access to everyone's services ensured in the operating phase?</p> <p>Is the waste water treated according to the prevailing standards?</p> <p>Is there contamination of the groundwater, the soils?</p> <p>Does the measure exacerbate conflict within the camp and between camp residents and the local population?</p> <p>Has dialogue and participation improved within the camp and between camp residents and the local population?</p> <p>Have camp residents taken advantage of the capacity-building measures?</p> <p>Are there any signs that waste water disposal is having a negative impact on camp residents and/or the surrounding communities?</p>	<p>Interviews with UNICEF, UNHCR, the Jordanian government, water/wastewater suppliers Target group, host community</p>			

	<p>Does the water supply have a potential adverse effect on the amount of water available in the neighbouring communities?</p> <p>Did the measure have an impact on local water supply and waste water disposal capacities?</p>	
What potential/risks arise from the positive/negative unintended effects and how should they be evaluated?	See above. It should be possible to answer this question based on the answers to the questions above. If applicable: formulate further follow-up questions based on the answers.	
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
<b>Evaluation dimension: Production efficiency</b>			2	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)	/				

<p>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.</p>	<p>Were competitive procurement processes used?</p> <p>How detailed and proven was the technical planning process?</p> <p>Were natural conditions put to use (hydraulic profile)?</p> <p>Did the specification of the materials take into account the local conditions (local production, availability, etc.)</p> <p>How many people are employed to ensure water supply and waste water disposal? How many people were employed to build the network?</p>	<p>Interviews with UNICEF</p>			
<p>If necessary, as a complementary perspective: To what extent could the outputs of the programme have been increased by an alternative use of inputs (if possible in a comparison with data from other evaluations of a region, sector, etc.)?</p>	<p>/</p>	<p>Interviews with UNICEF</p>			
<p>Were the outputs produced on time and within the planned period?</p>	<p>/</p>	<p>Interviews with UNICEF</p>			
<p>Were the coordination and management costs reasonable (e.g. implementation consultant's cost component)? (FC-E-specific question)</p>	<p>/</p>	<p>Interviews with UNICEF</p>			
<p>Evaluation dimension: Allocation efficiency</p>			<p>2</p>	<p>0</p>	

In what other ways and at what costs could the effects achieved (outcome/impact) have been attained? ( <i>Learning/help question</i> )	<p>Would another partner / executing agency structure have been possible? E.g. NGO, government?</p> <p>Why were planning and implementation not performed internally by UNICEF with its own staff?</p> <p>To what extent would another camp have been more suitable for the intervention for efficiency reasons?</p>	Interviews with UNICEF
To what extent could the effects achieved have been attained in a more cost-effective manner, compared with an alternatively designed programme?	Which alternative concepts for the provision of water supply and waste water disposal were examined?	Interviews with UNICEF, the design-office / commercial developer
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?		

## 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 / + )	Reason for weighting
<b>Evaluation dimension: Overarching developmental changes (intended)</b>			3	o	
Is it possible to identify overarching developmental changes to which the programme should contribute? (Or if foreseeable, please be as	SDGs	Jordanian Response Plan Interviews with UNICEF, UNHCR, Jordanian government, water/wastewater suppliers, the target group, host community			

specific as possible in terms of time)				
Is it possible to identify overarching developmental changes (social, economic, environmental and their interactions) at the level of the intended beneficiaries? (Or if foreseeable, please be as specific as possible in terms of time)	<p>Have there been or are there any conflicts regarding water as a resource between camp residents and the host community?</p> <p>Have any tensions that may have been present before the project was implemented been alleviated?</p>	<p>Interviews with UNICEF, UNHCR Water/wastewater suppliers Target group Host community</p>		
To what extent can overarching developmental changes be identified at the level of particularly disadvantaged or vulnerable parts of the target group to which the programme should contribute (Or, if foreseeable, please be as specific as possible in terms of time)	<p>Are there areas in the camp that have reduced water and waste water infrastructure? If yes, what is their state of health?</p> <p>Are there still women (other camp residents) who lived in Za'atari in 2012? How do they experience the change in water and wastewater infrastructure? Have their stress levels dropped?</p>			
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?				
To what extent did the programme achieve its intended (possibly adjusted) developmental objectives? In other words, are the project	Is the target group adequately covered with high-quality water?			

<p>impacts sufficiently tangible not only at outcome level, but also at impact level? (E.g. drinking water supply/health effects)</p>	<p>How has the prevalence of diarrhoeal diseases, for example, developed?</p> <p>Are there any signs that waste water disposal is having a negative impact on camp residents and/or the surrounding communities?</p> <p>Does the water supply have a potential adverse effect on the amount of water available in the neighbouring communities?</p>	
<p>Did the programme contribute to achieving its (possibly adjusted) developmental objectives at the level of the intended beneficiaries?</p>		
<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>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>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>What impact did the COVID-19 pandemic have on the drinking water supply and waste water disposal</p> <p>Was there a noticeable change in diarrhoeal diseases during the COVID crisis? E.g. severe reduction of diarrhoea due to social distancing, which is not related to water supply and waste water disposal</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>To what extent has the same approach been consistently implemented in all phases?</p>				
<p>How would the development have gone without the programme? (<i>Learning and help question</i>)</p>	<p>At the time of project planning, are there projections of what the consequences of non-implementation would have been?</p>				
<p>Evaluation dimension: Contribution to (unintended) overarching developmental changes</p>			2	0	
<p>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)?</p>	/				



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

## Sustainability

Evaluation question	Specification of the question for the present project	Data source (or rationale if the question is not relevant/applicable)	Rating	Weighting ( - / 0 / + )	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)?	<p>Is there an operating concept for the system?</p> <p>Who bears the costs for O&amp;M</p> <p>What is the perspective for Zaatari?</p> <p>What is the current maintenance status? Is there a backlog? How long does it take for repairs to be made?</p> <p>Are disadvantaged groups and user committees also organised?</p>	Interviews with UNICEF, UNHCR, the Jordanian government, water/wastewater suppliers			

<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>See above</p> <p>How secure is the UN anchored as an executing agency?</p> <p>How is the status of Syrian refugees secured?</p> <p>How vulnerable is the system to water scarcity?</p> <p>Does the target group have the skills and abilities to maintain supply in the absence of financing?</p>	<p>Interviews with UNICEF, UNHCR, Jordan government, water/wastewater suppliers, the target group, host community</p>			
<p>Evaluation dimension: Contribution to supporting sustainable capacities:</p>			3	0	
<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>See above</p> <p>Would the Jordanian state be willing to finance and support O&amp;M of the system?</p> <p>To what extent was an exit strategy considered?</p>	<p>Interviews with UNICEF, UNHCR, Jordan government, water/wastewater suppliers, the target group, host community</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>Which training courses and awareness-raising measures have been implemented?</p> <p>What activities were used to increase ownership?</p>	<p>Interviews with UNICEF, UNHCR, Jordan government, water/wastewater suppliers, the target group, host community</p>			
<p>Did the programme contribute to strengthening the resilience of particularly disadvantaged groups to</p>	<p>See above</p> <ul style="list-style-type: none"> <li>- included</li> <li>- taken into account in design</li> <li>- trained</li> </ul>	<p>Interviews with UNICEF, UNHCR, Jordan government, water/wastewater suppliers, the target group, host community</p>			

risks that could jeopardise the effects of the programme?				
Evaluation dimension: Durability of impacts over time			3	0
How stable is the context of the programme (e.g. social justice, economic performance, political stability, environmental balance)? (Learning/help question)	See above Status of refugees? Status of the camp?	Interviews with UNICEF, UNHCR, Jordan government, water/wastewater suppliers, the target group, host community		
To what extent is the durability of the positive effects of the programme influenced by the context? (Learning/help question)	See above Status of refugees? Status of the camp?	Interviews with UNICEF, UNHCR, Jordan government, water/wastewater suppliers, the target group, host community		
To what extent are the positive and, where applicable, the negative effects of the programme likely to be long-lasting?	See above Status of refugees? Status of the camp? Can it be used outside the refugee context?	Interviews with UNICEF, UNHCR, Jordan government, water/wastewater suppliers, the target group, host community		