WANA INSTITUTE

iied International Institute for Environment and Development

Challenges in the WASH Sector in Dahiyet Al Malek Abdallah in Light of the Syrian Refugee Influx

West Asia-North Africa Institute, November 2023

This policy brief is part of the project entitled "The Urban Refugee Dividend - Rethinking Humanitarian Aid as Urban WASH Investment - JURD", a collaboration between engineers and researchers from the WANA Institute, The International Institute for Environment and Development (IIED), Jordan University of Science and Technology JUST, and UCL.

The project reflects the views of the authors and not necessarily that of the West Asia-North Africa Institute.

Author: Eng.Samer Fakhoury, Eng.Reem AlHaddadin
Design: The WANA Institute
Editing: Dr Majd Al Naber, Dr Deena Dajani
Photo Credit: The WANA Institute

Printed in Amman, Jordan

Manufactured in Jordan

Table of Contents

1 Challenges in the WASH sector in Dahiyet Al Malek Abdallah in light of the Syrian refugee influx

1.1 Introduction

As Syrian refugees arrived in Jordan at the start of 2011, they resided in both refugee camps and host communities, exerting immense pressure on the already limited water resources and burdening water and sanitation networks due to the sudden increase in population.[1] Consequently, the water demand has increased by 40 per cent, and the sanitation vulnerability* rose in the northern governorates for both Jordanians and Syrians living in host communities.[2] This policy brief presents challenges in the WASH sector in urban refugee-hosting areas and suggests policy recommendations to accommodate for the influx of Syrian refugees in Jordan, based on a research study conducted in Dahiyet Al Malek Abdallah in Al Mafraq Governorate.

1.2 WASH Policy Gaps in light of Syrian Refugees influx in Jordan

Jordan is deemed as one of the most water-scarce countries in the world.[3] As of 2021, the freshwater resources per capita were declared to be 61m^3, way below the absolute international water scarcity line recognized at 500 m^3 per capita.[4] Freshwater resources only cover two-thirds of the country's population demands, exerting pressure on groundwater resources that are being exploited at twice the safe yield.[5] In addition, water losses in the network are unacceptably high, reaching around 50 per cent, creating a huge amount of water deficits of the water supplied.[6]

In recent years, Jordan has seen a 21 per cent increase in annual water demand, due to the influx of refugees, and more specifically a 40 per cent increase in the northern governorates, where Syrian refugees are mainly residing.[7] This has led to the decrease of regular water supply to households in the north especially in the summer season, reaching a share of 30 litres per person compared to a minimum of 80 litres required to satisfy the basic needs.[8] Consequently, this has forced people to resort to other unsustainable and expensive coping mechanisms such as purchasing water from tankers.[9]

The gap in supplying sufficient water remains unresolved hindering the efforts to achieve the national water priorities. The national water strategy (2016- 2025) and the most recent national

[1] Ministry of Planning and International Development. "Jordan Response Plan for the Syrian Crisis 2020 - 2022," 2020.

* Sanitation vulnerability criteria are dependent on poverty, coverage, wastewater treatment plant condition, network age and Syrian vs Jordanian population. (MoPIC 2019)

2 Breulmann, M., R.A Müller, A. Al-Subeh, and M. van Afferden. "Influx of Syrian Refugees in Jordan - Effects on the Water Sector." Amman - Leipzig: Helmholtz Centre for Environmental Research - UFZ with support from the Ministry of Water and Irrigation, 2021.

[3] Ministry of Water and Irrigation, "National Water Strategy (2023-2040)," 2023·

[4] Ibid

[5] UNICEF Jordan and Economist Impact, "Tapped out the Costs of Water Stress in Jordan," 2022, https://www.unicef.org/jordan/media/11356/file/water%20stress%20in%20Jordan%20report.pdf.

[6] Ministry of Water and Irrigation, "National Water Strategy (2023-2040)," 2023

[7] Ministry of Planning and International Development. "Jordan Response Plan for the Syrian Crisis 2020 - 2022," 2020.

[8] Alexandra Francis , "Jordan's Refugee Crisis" (Carnegie Endowment for International Peace, 2015).

[9] Ibid

water strategy (2023- 2040) both envision the delivery of water to all people with adequate quantity and quality. Also, the objectives of the Jordan Response to Syrian Refugee Crisis Plan (JRP) 2020-2022 aim to provide water services in host communities in a sustainable and equitable manner while the Water Sector in the Green Growth Plan aims to increase the resilience of displaced persons and host communities against water and climate change challenges.

As for sanitation services, 66 per cent of households in Jordan are connected to the sewer network, and according to UNICEF, 77 out of 88 subdistricts** in Jordan are considered high to severely vulnerable in terms of sanitation vulnerability, with evidence that districts with Syrian refugees being worse.[10] Given that most Syrian refugees reside in the northern governorates, sanitation services there are being heavily affected, where the sanitation network and wastewater treatment plants are getting pressured trying to cope with the increased population.[11] The sewerage network connectivity is a major challenge that needs to be answered as asserted by both the JRP and the national water strategy in which they both aim to expand and improve sanitation services for the affected population by the Syrian crisis as well as providing adequate sanitation services to vulnerable households.

Zooming into Al Mafraq governorate in the north, the percentage of households connected to the water network is around 98 per cent.[12] However, given the current number of Syrian refugees remains the same with the anticipated population growth in the governorate, the water demand is expected to increase by 68 per cent by the year 2045 and therefore, upgrading the water network is a necessity to accommodate for this forecasted increase.[13] As for sanitation services, three wastewater treatment plants are currently operating in the governorate, with a daily flow of 7968 m^3 of treated wastewater, against a designed 13000 m^3 daily capacity.[14] This seemingly indicates that wastewater treatment plants are coping with the refugees' influx, whereas in reality, only 17 per cent of the Al Mafraq are connected to sanitation services, which means wastewater treatment plants are running at a 61 per cent capacity serving less than one-fifth of the population.[15] Therefore, as more areas will eventually be connected to the sanitation network, this will be accompanied by an increased inflow of wastewater treatment plants, which will be overburdened if not upgraded and optimized accordingly.

1.3 Methodology

The policy brief is developed through conducting desk research, literature review, semi-structured key informant interviews, semi-structured qualitative interviews, a quantitative survey followed by three focus group discussions in Dahiyet al Malek Abdallah. The area of study was chosen through the following approach; a set of criteria were assessed for Jordanian districts in different governorates such as the percentage of Syrians compared to the number of Jordanians, water and

** Districts are part of the governorates and subdistricts are parts of the districts.

[10] UNICEF, "Geographic Multidimensional Vulnerability Analysis," 2020.

[11] Ibid

[12] Yarmouk Water Utility Company. "Annual Report," 2018.

[13] Breulmann, M., R.A Müller, A. Al-Subeh, and M. van Afferden. "Influx of Syrian Refugees in Jordan - Effects on the Water Sector." Amman - Leipzig: Helmholtz Centre for Environmental Research - UFZ with support from the Ministry of Water and Irrigation, 2021.

[14] Ministry of Water and Irrigation, "Jordan Water Sector Facts and Figures," 2020.

[15] Ministry of Water and Irrigation, "National Water Strategy (2023-2040)," 2023

sanitation access, and capital expenditure (Capex) required to serve targeted population. Accordingly, the choices were narrowed down to Mafraq Qasabah and Ramtha as they both have a combination of a high number of Syrian refugees (38,021 and 28,891 respectively)[16], low accessibility to the water network measured by the percentage of households not connected to the public water network (28 per cent and 64 per cent respectively) and high public sanitation network needs percentage compared to other districts (92 per cent and 85 per cent respectively).[17] Other districts such as Irbid Qasabah were considered since it has a higher number of refugees compared to the two chosen cities (73,523), but households not connected to a water network were low (25 per cent) and the sanitation needs were way lower than the two mentioned districts (25 per cent). Moreover, for a similar capital cost of approximately USD 59 million, the amount is set to serve a larger population in Mafraq Qasabah covering 4 subdistricts compared to only one subdistrict in Ramtha.[18] Consequently, taking all the criteria into account, Mafraq Qasabah district was chosen as the area of research. The next step was to determine the neighbourhood that needed to be selected for the study where three areas with the most Syrian refugees in Mafraq Qasabah were identified: Dahiyet Al Malek Abdallah, Al Fudiyan, and Al Hay al Janoubi. Finally, a combination of two transect walks and a consultation with a community-based organisation in al Mafraq has led to the selection of Dahiyet al Malek Abdallah. The area has a high number of Syrian refugees and a relatively high WASH vulnerability compared to the other neighbourhoods which suits the purpose of the research and was consequently chosen. Afterwards, semi-structured qualitative interviews were conducted followed by a quantitative survey and three focus group discussions, to have a collective understanding of the WASH challenges faced by the host communities in the study area. The survey consisted of 165 participants from Dahiyet al Malek Abdallah with one third being Syrians, and the other two-thirds being Jordanians while the focus group discussion had 36 participants, divided into 3 groups of 12, with the vast majority being Jordanians.

1.4 Research results on the WASH challenges in Dahiyet Al Malek Abdallah

Dahiyet Al Malek Abdallah is located in Al Mafraq governorate, hosting a significant number of Syrian refugees in its communities. Through our data collection, the majority of Syrians residents have preferred Dahiyet Al Malek Abdallah since it is offered cheap house rentals compared with other parts of the city with others mentioning the remoteness away from the city's noises as well as closeness with family members. Despite having affordable rent rates in Al Dahiyeh, it is disconnected from services such as schools, health care facilities and markets and most notably some areas being outside of the administrative zone of the Mafraq municipality, with no or little WASH connection.

According to the survey conducted, 90.3 per cent of households were connected to the water network, with around 50 per cent of households receiving water only once a week, resulting in insufficient water supply, especially in the summer season, where water demand is high. Despite the high connectivity to the water network, the majority of the households stated that municipal

[16] UNHCR, "Syrian Refugees in Jordan - District Level (by End of May 2020)," UNHCR Data, 2020, https://data2.unhcr.org/en/documents/details/77390.
[17] UNICEF, "Geographic Multidimensional Vulnerability Analysis," 2020
[18] UNICEF and Ministry of Water and Irrigation, "Roadmap to Achieving the Sanitation Sustainable Development Goal 6.2 in Jordan," 2020.

water is not sufficiently covering their needs. As a result, people in the host communities rely on alternative water resources, mainly buying water through water trucks and water bottles, as 65 per cent of the participants have stated. As for other solutions, such as rainwater harvesting, the survey revealed that the majority of people living in Dahiyet al Malek Abdallah did not think of installing rainwater harvesting tanks to collect water in their households, mainly due to financial constraints. In addition, the insufficient water supply challenge is exacerbated by the fact that Al Mafraq governorate has one of the highest percentages of water losses, with 61.6 per cent [19], attributed to both technical losses[***] and administrative losses[****].

Both the semi-structured qualitative interviews and the three focus group discussion results have presented the issue of connecting multiple apartments to a single water meter rather than having water submetering, where each individual apartment has its own water meter. In the case of shared water meters, water bills are split evenly between households, despite the number of family members in each. This has caused households with a low number of family members to pay higher water bills, and households with large family members to pay lower water bills, thus not reflecting the actual amounts of water consumed and paid for in each household. Furthermore, given current water tariffs are based on levels of consumption per household, with households consuming more water and paying more per cubic meter of water than households whose use is more economical, joint water meters that group together several housing units might lead to paying water at higher tariffs because the collective use of water is treated as a single household with high water usage. Also, not having dedicated water meters for each individual apartment will not provide apartments with water consumption data, which would be indicative of any consumption pattern change, denying the opportunity to identify water conservation possibilities to accommodate for this change. Pinpointing water leaks or losses will also be more difficult in a whole building rather than in single apartments which exacerbates the already existing issue of high-water water loss in Mafraq.

Multiple connections to a single water meter directly violate the seventh article of the "Drinking Water Sharing System Regulations of 1994" which prohibits any tampering with water meters after being installed, which includes joint water metering. Also, this impedes the national efforts of the Ministry of Water and Irrigation in reducing water losses in half by the year 2040 as committed in the National Water Strategy (2023-2040) as well as hindering the planned efforts of increasing metering to reduce water losses by the Yarmouk Water Utility Company, which is responsible for water provision in Mafraq, stated in their 2018 annual report.

As for sanitation, only 53 percent of the households who participated in the survey are connected to the sewerage network primarily as a result of various areas being outside the administrative zones. This makes the connection of buildings to the sanitation network outside the zone an option but not an obligation, entirely decided by landlords and most often overlooked, due to financial limitations. The rest of the households were connected to septic tanks and cesspits, discharged on an average of 1.7 times a year. Statements from household during the qualitative interviews have expressed the issue of buildup and clogging of waste in cesspits resulting in the

[19] Yarmouk Water Utility Company. "Annual Report," 2018.

[***] Technical losses: Attributed to break or leakage in the water network

[****] Administrative losses: Attributed to broken water meters, human errors, illegal water use and incorrect installation of water meter

production of unpleasant odours and increased insects' presence which poses a health concern mainly towards children often playing around these cesspits. In addition, irregular discharge poses a threat of contamination of groundwater resources beneath, as the possibility of leakage is high, given the poor sanitation infrastructure in the area.[20] This directly hinders the efforts of the groundwater sustainability policy developed by the Ministry of Water and Irrigation which calls for the protection of groundwater resources from any pollution.

1.5 Recommendations

Improvements and upgrades to the WASH services in urban host communities need to be prioritized since the influx of Syrian refugees has exhausted the current water supply and water and sanitation networks, as seen in the case of Dahiyet Al Malek Abdallah. This can be achieved through the following recommendations on both governmental and technical levels:

1.5.1 Governmental Level

- Enhance the collaboration between the municipalities, the concerned water utilities companies in each area and the Supreme Organising Council of the Ministry of Local Administration in implementing the plans of expanding the administrative zones to include more households in the sanitation network. In case of no existing plans, encourage municipalities to develop a plan by identifying vulnerable areas that are not connected to the sanitation network due to being outside the administrative zones and work collectively with the aforementioned entities to include them in the administrative zone expansion plans.
- Encourage municipalities to include cross-sectoral urban planning in their strategies, as a way to ensure that the city's development plans are able to address the requirements and needs of various sectors such as WASH. This could be achieved through identifying humanitarian priorities and development needs intersections in each municipality and working on integrating them into strategies to build the city's capacity and resilience that is able to adapt to various challenges.

- Formulate a comprehensive framework that prioritizes optimising and expanding the capacity of wastewater treatment plants near vulnerable areas of host communities, especially in the North of Jordan to accommodate for the potential increase in the expansion of the sanitation network in the unserved areas. The framework will also include collaboration between the Ministry of Water and Irrigation, The Yarmouk Water Company and the municipalities in order to identify the financial and technical requirements of either upgrading current wastewater treatment plants or even the need, if necessary, to establish new wastewater treatment plants.

- Ensure households, especially in vulnerable areas, are connected to separate water meters through the continuous monitoring and supervision campaigns conducted by the water utility company to reduce water meter tampering and ensure fair distribution of water bills

[20] This was mentioned during a key informant interview with the Mafraq Municipality on the 18th of October 2022

between households. A grace period will be allowed for landlords as an incentive to remove joint water meters and install sub-water metering before penalties are imposed.

1.5.2 Technical Level

- Encourage the installation and utilisation of water harvesting techniques in urban refugee-hosting areas, especially in the rainy season. This will help cover part of the water deficits between seasons as consumption increases in summer. A collaboration between the water utility company and the municipality to develop, facilitate and financially aid household-level water harvesting in which the local community are able to receive an extra source of water to cover their needs.

- Enhance and increase the awareness of the local communities especially in vulnerable host communities on the importance of water management and conservation, as well as training them on the implementation of water-saving techniques and grey water recycling methods that they can utilise at the household level. This can be achieved through continuous awareness campaigns targeted towards household heads in vulnerable host communities aiming to increase their knowledge as well as demonstrating these techniques firsthand to showcase their functionality and effectiveness.

1.6 Acknowledgement

This policy brief is an output of the project titled Rethinking Humanitarian Aid as Urban WASH Investment – The Jordan Urban Refugee Dividend (JURD), conducted by the International Institute for Environment and Development, The West Asia North Africa Institute, University College London and the Jordan University for Science and Technology funded by the British Academy's Knowledge Frontiers grant

West Asia-North Africa Institute
Royal Scientific Society
70 Ahmad Al-Tarawneh St
Amman, Jordan

info@wana.jo
www.wanainstitute.org