



# SCENARIOS FOR THE WATER AND SANITATION SECTOR IN DUHOK GOVERNORATE

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## 1. Executive summary and key messages

The knowledge base for the elaboration of scenarios was developed through structured research, which included an extensive participative process. Water-related needs, priorities and uncertainties were identified from diverse perspectives through engagement with various stakeholder groups. From the data analyzed and views expressed, the main concluding point that had impacted the scenario planning was that: around 50% of IDPs and refugees indicated a wish to return to places of origin only if all conditions like security, services and livelihood are guaranteed. The other 50% would definitely stay in Duhok Governorate or relocate to other places. Basing on the above mentioned and assumption of population growth by 2.9% by 2023 two scenarios have been developed:

- ✓ Scenario 1: all IDPs and refugees will stay,
- ✓ Scenario 2: 50% of the IDPs and refugees will return to their places of origin.

Taking into consideration above mentioned scenarios main recommendations for water and sanitation sectors can be formulated as follows:

- ✓ existing water and sanitation infrastructure need to be rehabilitated and extended, including network, wells, septic tanks, etc.,
- ✓ master plans need to be updated and developed further in a holistic manner to include issues of governance, public participation and modernization,
- ✓ network and supply management need to be improved, e.g. pressure management,
- ✓ new sources of water need to be explored, including reuse of grey water,
- ✓ water resources management need to be improved, which includes decentralization, institutional restructuring of the sector, empowering local water and sewerage departments,
- ✓ water consumption needs to be controlled:
  - water metering introduced,
  - laws & regulations implemented (including tariffs and protection of water resources) and executed,
  - awareness among population should be built,
- ✓ waste water treatment plants/stabilization ponds/wetlands etc. should be constructed, especially for camps (can serve several camps located nearby e.g. Domiz 1&2 and Kabarto 1&2 and nearby villages),
- ✓ de-sludging needs to be controlled, including period (emptying septic tanks), location of de-sludging sites,
- ✓ public private partnership should be promoted,
- ✓ coordination among stakeholders including donors, NGOs and local government needs to be improved,
- ✓ continuation of funding and support to Duhok IDPs/refugees by the international community and local government.

## 2. Introduction

Duhok Governorate's population of 1,557,021 persons is hosting over 600,000 IDPs and refugees (28% of the total inhabitants of the governorate). The IDPs and refugees in Duhok governorate are spread around the main four districts of the governorate: Duhok, Zakho, Summel and Amadiye. 35% of them live in 21 camps and dependent on camp water and sanitation facilities. The remaining 65% live within the hosting community (HC) sharing the HC facilities.

Many district centers, subdistrict centers and villages suffer from low networks coverage, poor continuity of supply, low pressure, and/or poor water quality. It is estimated that up to 60% of water supplied remains unaccounted due to leakages and illegal uses.

None of the human settlements in Duhok have a functioning wastewater treatment facility, which causes risk of infiltration of wastewater into the drinking water resources and network. In most cases neither black water nor grey water are treated and are discharged directly to the environment at distances ranged from 3 to 15 kilometers from the cities and IDPs and refugee camps. The exemption is Shariya and Kabarto camps: in Shariya black and greywater are treated before discharge, whereas in Kabarto greywater and some additional blackwater from Domiz are treated. Chamashko IDP camp and Domiz Refugee camp have the highest grey water production and they are the camps with the highest populations.

Regarding IDPs and refugees' intention to return to their places of origin (PoO), it was generally expressed, that even with security situation stabilization large number of IDPs and refugees are not willing to return because of economical chances that they are provided in Duhok. Good social relationships with the hosting community and sense of welcome and hospitality by the hosting community is another factor discouraging IDPs/refugees to return to their places of origin, considering that no improvements to security or efforts toward political stability and reconstruction is seen at the PoO. This has been also confirmed by many other reports and studies.

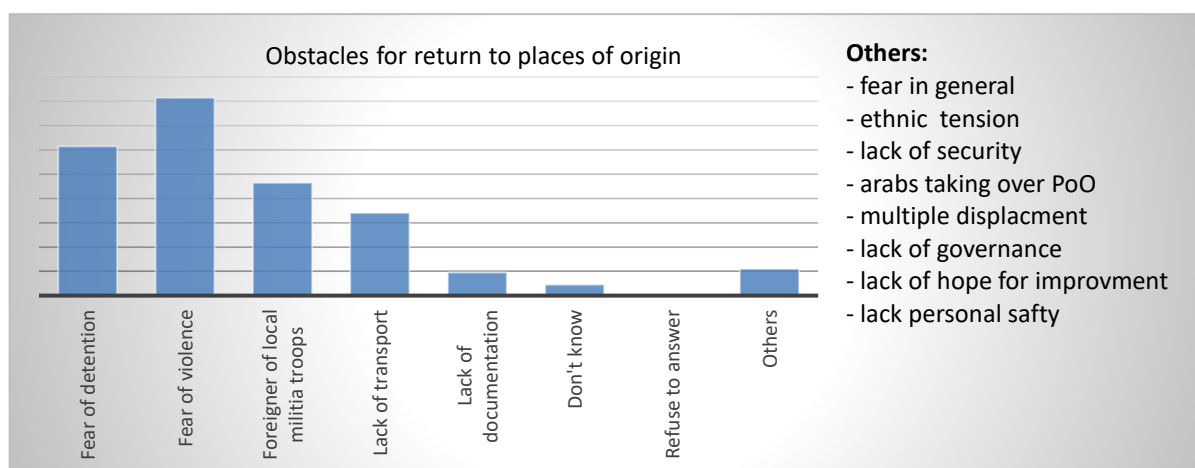


Figure 1: Obstacles to Return

Throughout the survey, a majority of IDP households expressed desire for more information on basic services, security in their area of origin, personal property, and potential sources of livelihoods before deciding to return. Below figure shows IDPs/refugees camps, which population indicated they prefer to remain at their current location, who already feel settled, and who will settle in their present location.

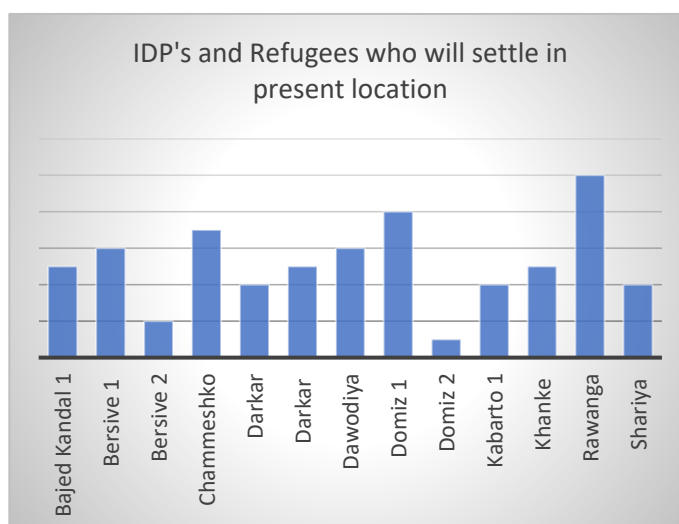
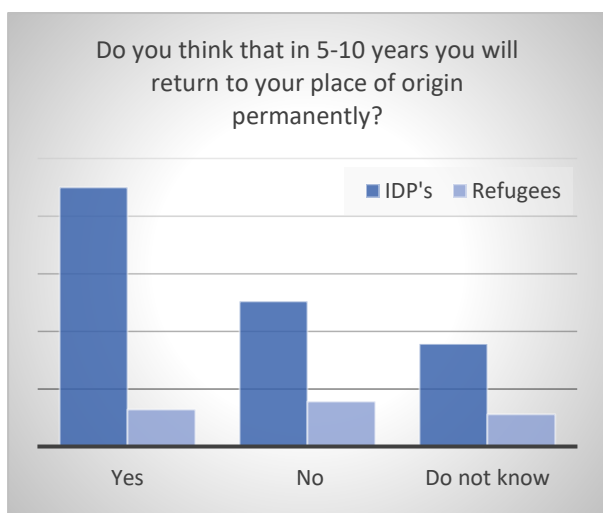


Figure 2: Locations where IDPs/Refugees will remain



Timeframes for return varied greatly depending on respondents' areas of origin. 49% of in-camp IDP households reportedly planned on returning in the next 5 to 10 years provided their areas were safe, secure, stable politically, with services and economically thriving. 30% would not return after 5-10 years, and 21% of IDP households did not know when they were going to return. For the refugees, 32% said they will return, 40% said no and 28% did not know. This means the majority of refugees would not return.

Figure 3: Intended timeframe for return

For the purpose of this document it was assumed, basing on the above results and other studies, that on average 50% of IDPs and refugees would not return to their places of origin.

The below figure shows the camps with the highest intention of not returning and instead staying in the area of displacement.

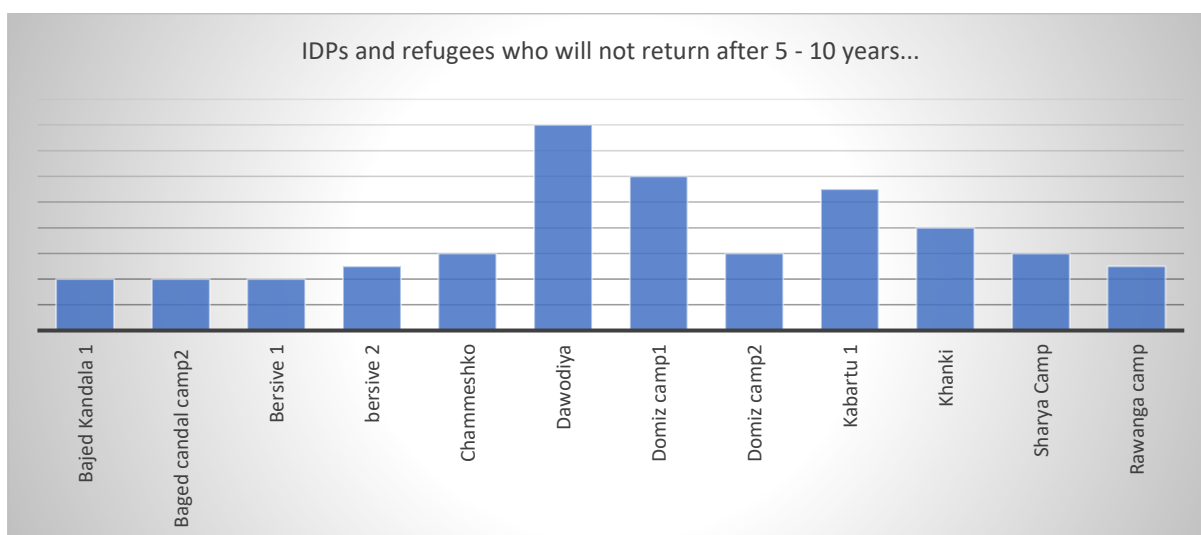


Figure 4: Locations of camps indicating no return after 5-10 years

Those currently living in IDP and refugees' camps in Duhok Governorate reported the lowest rate of households with intentions to return. Even among IDP and refugee households who expressed intentions to return, more than half did not know when they intended to move, furthering the uncertainty of movements for this population.

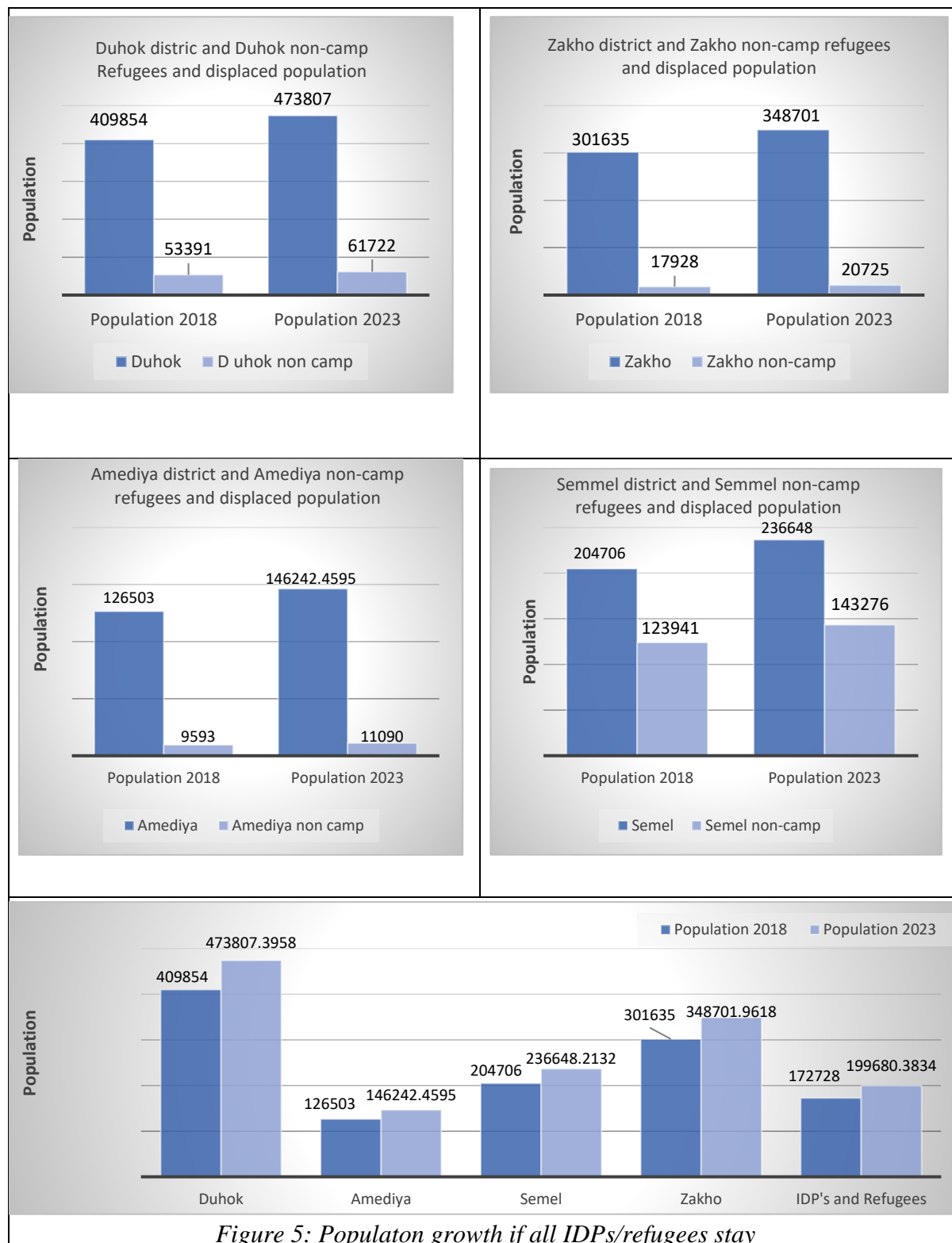
The assessment also indicated some key geographic differences between IDP/refugees populations, as the lowest proportions of in-camp IDP/refugees households reporting an intention to return were found in the larger camps who are closer to big cities like Domiz 1 (a refugee camp), Khanki, Sharya, Bersivi 1, Chamashko, Kabartu and Dawodiya IDPs camps indicating a trend of settlement in those camps or integration within the closer cities.

### 3. Proposed scenarios

#### 3.1 Scenario 1: all IDPs and refugees will stay

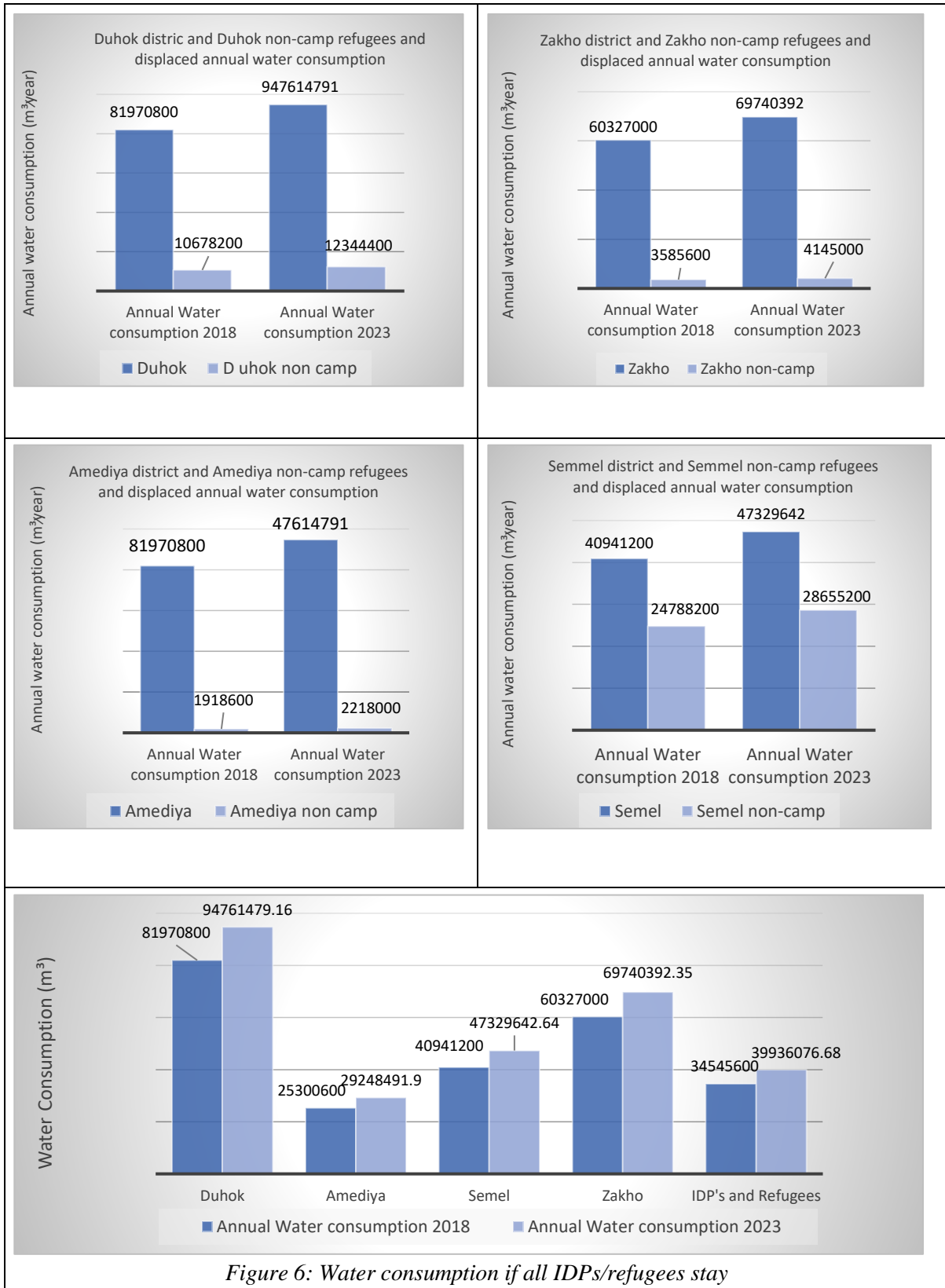
##### 3.1.1 Context

The scenario foresees that all IDPs and refugees stay in Duhok Governorate. The population is estimated to be 1,999,655 persons by 2023 (increased by 28%).





Increase in population will result in increased water consumption and at the same time increased supply demand. On average water consumption is estimated to increase by 15.8% in districts by 2023. In 2023, to provide clean water for all Duhok governorate inhabitants (including IDPs/refugees) (2,285,500 persons), Duhok will need to supply a total amount of 457,100,000 m<sup>3</sup> per year, whereas the current total supply is 399,931,156 m<sup>3</sup> per year resulting on a shortage of 57,168,844 m<sup>3</sup> per year.



Increased number of population will also cause increased production of greywater as well as blackwater.

### 3.1.2 Implications

The main implication expected in this scenario is the increased demand of water and sanitation services. Existing infrastructure will require rehabilitation and extension to meet population needs. If water supply quantity is to be increased for all remaining IDPs and refugee camps from their current level (40 to 100 l/c/p) to 120 l/c/d, 59 new wells will need to be developed or alternative ways to meet the needs will need to be found.



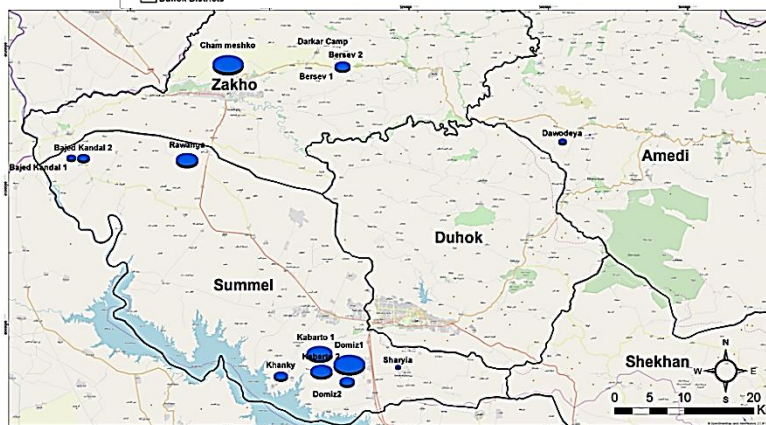
**Water Shortage of IDPs/Refugee Camps after 5 years**  
If all IDPs/Refugees stay in PoD with current water supply level

If current supply rate is maintained for the next five years, the shortage in water supply would be 2,337,344 l/c/d taking into consideration only the population growth.

*Figure 7: Water shortage if all IDPs/refugees stay with current supply level*

If IDPs/refugees stay, their living conditions would need to be improved and they should be supplied with enough water (estimated 120 l/c/d), which would lead to a total shortage of 8,849,783 l/c/d in five years.

*Figure 8: Water shortage if all IDPs/refugees stay with increased supply level*



**Water Shortage of IDPs/Refugee Camps after 5 years**  
If all IDPs/Refugees stay but water supply increases to 120 l/d/ip

On the side of sanitation, major hazards to the soil, surface water and groundwater quality, and serious health impacts are expected.

### 3.1.3 Recommendations

In order to meet needs of growing population following recommendations are proposed:

- ✓ existing water and sanitation infrastructure need to be rehabilitated and extended, including network, wells, septic tanks, etc.,
- ✓ master plans need to be updated and developed further in a holistic manner to include issues of governance, public participation and modernization,
- ✓ network and supply management need to be improved, e.g. pressure management,
- ✓ new sources of water need to be explored, including reuse of grey water,
- ✓ water resources management need to be improved, which includes decentralization,



institutional restructuring of the sector, empowering local water and sewerage departments,

- ✓ water consumption needs to be controlled:
  - water metering introduced,
  - laws & regulations implemented (including tariffs and protection of water resources) and executed,
  - awareness among population should be built,
- ✓ waste water treatment plants/stabilization ponds/wetlands etc. should be constructed, especially for camps (can serve several camps located nearby e.g. Domiz 1&2 and Kabarto 1&2 and nearby villages),
- ✓ de-sludging needs to be controlled, including period (emptying septic tanks), location of de-sludging sites
- ✓ public private partnership should be promoted,
- ✓ coordination among stakeholders including donors, NGOs and local government needs to be improved,
- ✓ continuation of funding and support to Duhok IDPs/refugees by the international community and local government.

## 3.2 Scenario 2: 50% of the IDPs and refugees will return to their places of origin

### 3.2.1 Context

The findings of the research show that if all preferable conditions such as security, services and livelihood are established in areas of origin, around 50% of IDPs and refugees would return back within the next 5 years. The remaining 50% expressed that they will never return. The scenario presents a 50% stay of the IDPs and refugees including population growth.

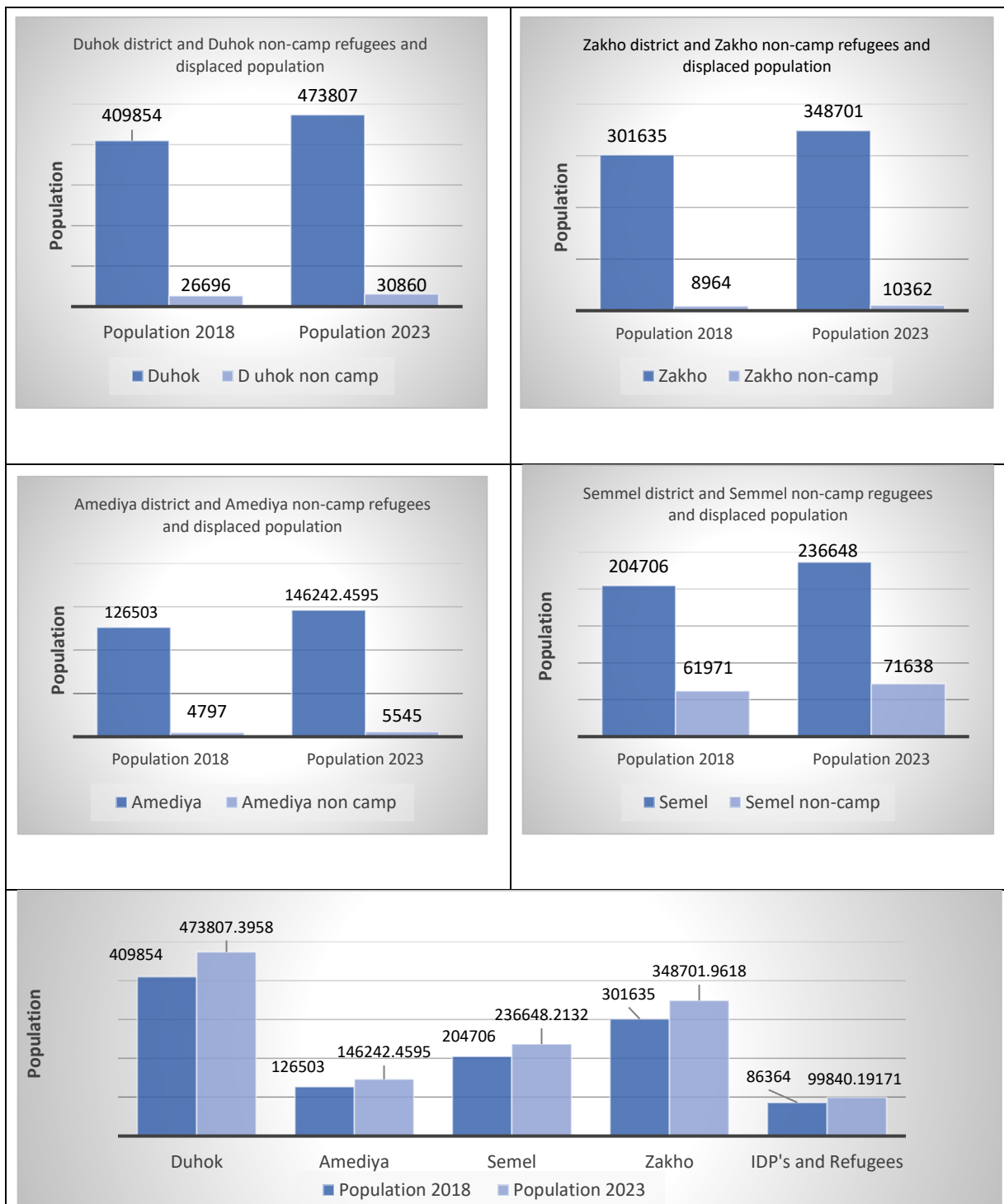


Figure 9: Population growth if 50% of IDPs and refugees return

Even if 50% of IDPs and refugees leave, the increase in population will result in increased water consumption and the same time increased supply demand. On average water consumption is estimated to increase by 14.8% in districts by 2023. In 2023, to provide clean water for all Duhok governorate inhabitants (including IDPs/refugees) (1,899,815 persons), Duhok will need to supply a total amount of 379,963,118 m<sup>3</sup> per year, whereas the current total supply is 328,676,600 m<sup>3</sup> per year, resulting in an expected new demand of 51,286,508 m<sup>3</sup> of water.

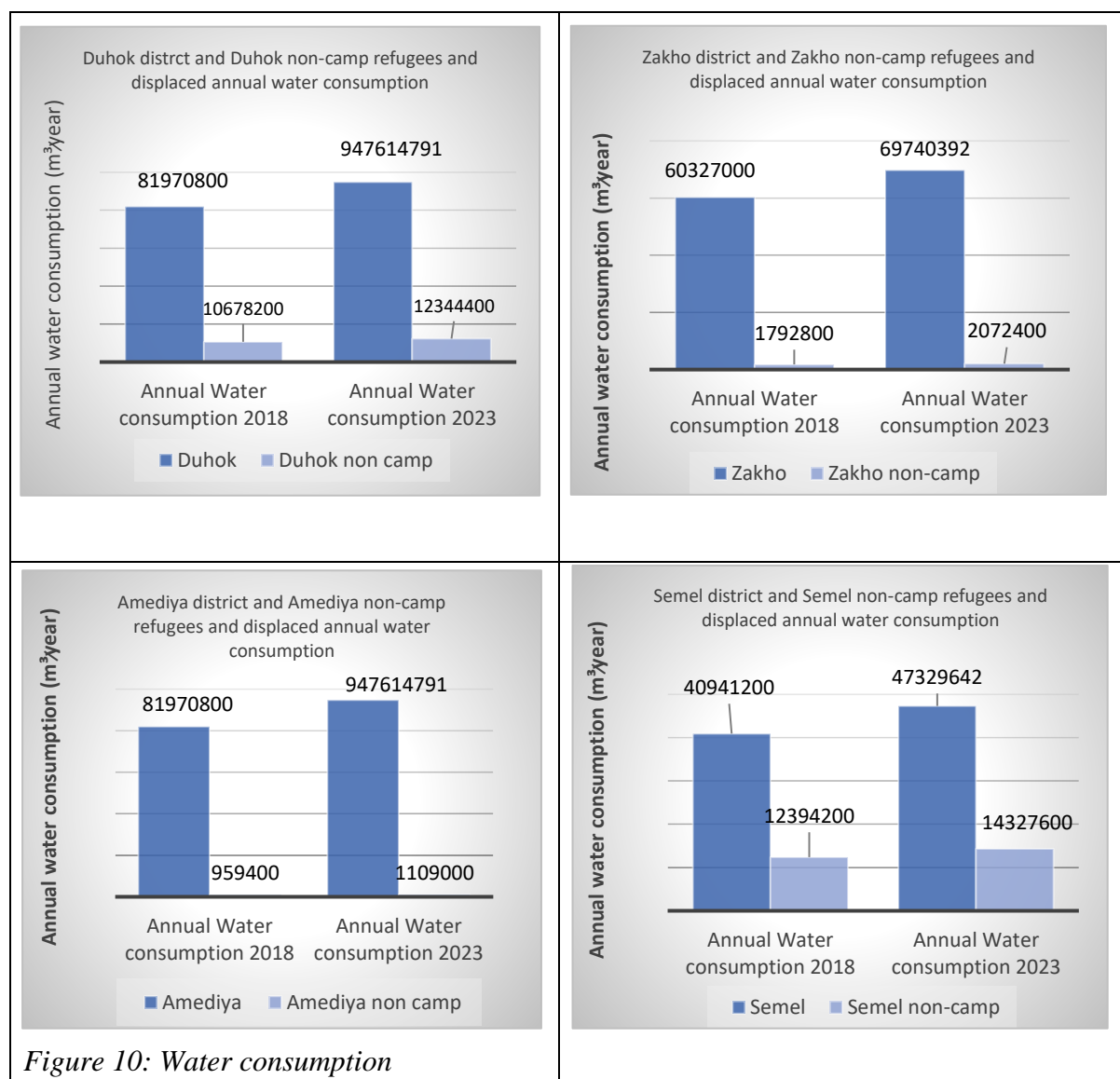


Figure 10: Water consumption

Increased number of population will also cause increased production of greywater as well as blackwater

### 3.2.2 Implications

The main implication expected in this scenario is slightly increased demand of water and sanitation services. However, taking into account that currently population in camps is underserved, new wells will need to be developed or alternative ways to meet the needs will need to be found. Moreover, existing infrastructure will need to be rehabilitated and extended. Additionally, humanitarian aid may be cut for IDPs/Refugees living in camps and within the hosting community resulting in increased pressure on the local authorities.

### **3.2.3 Recommendations**

In order to meet needs of hosting communities and remaining IDPs and refugees following recommendations are proposed:

- ✓ rearrangement, relocation of camps considering geography, merging camps considering social divisions or integration of IDPs/refugees within hosting communities,
- ✓ master plans need to be updated and developed further in a holistic manner to include issues of governance, public participation and modernization,
- ✓ existing water and sanitation infrastructure need to be rehabilitated and extended, including network, wells, septic tanks, etc.,
- ✓ network and supply management need to be improved, e.g. pressure management,
- ✓ IDPs and refugees should participate in repairing and maintenance of services in their places of residence including paying fees,
- ✓ new sources of water need to be explored, including reuse of grey water,
- ✓ water resources management need to be improved, which includes decentralization, institutional restructuring of the sector, empowering local water and sewerage departments,
- ✓ water consumption needs to be controlled:
  - water metering introduced,
  - laws & regulations implemented (including tariffs and protection of water resources) and executed,
  - awareness among population should be built,
- ✓ waste water treatment plants/stabilization ponds/wetlands etc. should be constructed, especially for camps (can serve several camps located nearby e.g. Domiz 1&2 and Kabarto 1&2 and nearby villages),
- ✓ de-sludging needs to be controlled, including period (emptying septic tanks), location of de-sludging sites
- ✓ public private partnership should be promoted,
- ✓ coordination among stakeholders including donors, NGOs and local government needs to be improved,
- ✓ continuation of funding and support to Duhok IDPs/refugees by the international community and local government.

## **4. Conflict-sensitivity and gender considerations**

Areas that are subject to water scarcity or water bad quality could be at risk or affected by conflict. Thus, there is a need to understand the relevance of conflict sensitivity within the framework of the work needed to be done in all the policies and operations. Therefore, following guiding principles need to be taken into consideration:

- ✓ Participatory process
- ✓ Inclusiveness of actors, issues and perceptions
- ✓ Impartiality in relation to actors and issues
- ✓ Transparency
- ✓ Respect for people's ownership of the conflict and their suffering
- ✓ Accountability for one's own actions
- ✓ Partnership and co-ordination
- ✓ Complementarity and coherence

Given the fact that women are somehow more directly involved in water management in camps, they should be essential actors when trying to shape decisions related to water.

In the same way, they should be very active actors in the phases of the formulation of the rules of the use of water and its management.

They also have a fundamental role in the monitoring of measures for water conservation. Women should be trained in all organizational, technical and administrative respects involved in community water management and their leadership capacities should be strengthened

## **5. Conclusions**

Each camp is a consumer of natural resources as a consequence of its own operations and people living activities. Camps can reduce operational costs through:

- ✓ energy and water use reduction,
- ✓ re-use of grey water,
- ✓ development and implementation of water safety plans.

Building capacities on aspects related to water and water sustainable management are necessary. After the analysis of the water situation in each area/camp, and of the abilities and capacities the inhabitants have to deal with it, it is important to build up capacities in aspects such as:

- ✓ state of water resources and sustainable approach to the protection,
- ✓ ways to reduce waste of water and maximize its use,
- ✓ re-use of grey water e.g. for flush toilets or irrigation,
- ✓ water conservation,
- ✓ rain water harvesting, especially for irrigation purposes,
- ✓ understanding the challenges to community wellbeing from climate change, ways to respond to climate change and how to manage its risks.



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