

Water Trucking and Desludging Markets Study in Lebanon



UPLoAD 2019

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Introduction

1. Context and aim of the study

Uninterrupted residential supply of water is not very common in Lebanon. Especially in summer, water shortages become a severe problem in many areas. In the last decade, the Lebanese government has engaged in a large program of reforms and investments in the water sector. The aim of this program is to ensure a sustainable management of water resources and wastewater and a continuous provision of safe water to households and economic activities. Despite these efforts, the overall situation remains problematic. While some areas in North Lebanon receive 22 to 24 hours a day of tap water all year long, other areas in the Bekaa receive only 7 to 8 hours a day. In Beirut and Mount-Lebanon this can fall to 3 hours a day in summer (Ministry of Water and Energy, 2012). Moreover, the pressure of water in pipes may not be sufficient to reach upper apartments in high buildings. Deficiencies in the water sector represent 3% of the GDP (World Bank, 2012). Poor water quality and intermittent supply impose high costs on households in order to cope with these deficiencies. Buying water from trucks and purchasing bottled water are common. Around 307 million USD are spent in the water sector on top of the State's expenses (Allès, 2016).

Dealing with wastewater has been a priority of the water sector for the last decade. From only 8% of treated wastewater ten years ago, Lebanon reached 18% in 2016 (Allès, 2016). There are now 10 large treatment plants - six went operational after 2012 - and around sixty small treatment plants in small towns and villages. However, the sector remains problematic as many of these plants are either not working or operating beneath their capacity. In fact, operational costs and lack of human resources remain major problems for municipalities and water establishments in charge of these plants. Moreover, sewerage networks are lacking in many rural and suburban areas. Even when they exist, many are not connected to treatment plants and discharge in the sea, rivers or valleys. Wastewater septic tanks and pits are common. While some are desludged through desludging trucks many are bottomless and end up infiltrating wastewater in underground aquifers.

The Syrian war and the displacement towards Lebanon of a population of more than a million persons, since 2012, have exacerbated this situation. This translated in a sharp increase in demand as well as a pressure on infrastructure and a rise of pollution. A large part of the displaced population integrated housings that were connected to water and wastewater networks. However, a considerable part of this population settled in informal tented settlements (ITSs) or other informally transformed structures with no connection to networks. The latter population is provided water and has its wastewater removed mainly through water and desludging trucking services. Hence, one can observe as of 2012 a quick development of these trucking markets, with many truckers serving only displaced Syrians. However, there is no data or information on water trucking and desludging nationally, neither a proper estimation of the amount of money both markets represent. Humanitarian agencies involved in the water, sanitation and hygiene (WASH) sector in Lebanon have been active in the last years in gathering

information and developing information platforms on the sector, in order to rationalize and optimize their activities. Nevertheless, a clear understanding of these trucking markets and their analysis, in terms of value chains, regional variations, formal and informal regulation, environmental impacts, their articulation with other sources of water provision (bottled water, wells, etc.) and in terms of service provision (direct involvement of municipalities and unions of municipalities), is much needed.

In fact, in the past three years, funding support to the water sanitation and hygiene (WASH) response activities related to the Syrian Crisis has been falling. In this sector, in 2016, donors funded 90 million USD for an appeal of 391 million USD. In 2017, they ensured only 60 million dollars for an appeal of 280 million dollars (Adams, 2018). In 2018, as per UNOCHA financial tracking service¹, only 41 million dollars were secured for an appeal of 250 million dollars (Water Sector Coordination, 2018).

Moreover, taking also into consideration the eligibility period of certain funds, this translated into considerable cuts in the quantities of water serviced to Syrian displaced populations and other vulnerable populations in Lebanon. From an average of 30-35 l/capita/day in summer, the humanitarian agencies in March 2018 had to lower their support to 15 l/capita/day during the winter period. Some humanitarian actors stopped investing in new tanks and latrines but maintained funding for desludging services due to possible environmental impacts (World Vision, 2018). As shown by two studies prepared by Oxfam and World Vision, in 2018, these cuts in funding have dire health, economic and social consequences on concerned populations, especially those living in informal tented settlements (ITSs) (Adams, 2018; World Vision, 2018).

As prospects of funding in 2019 signal a continuation of previous trends, humanitarian agencies active in the Water Sector are looking for alternatives to the current situation, especially regarding ITSs.

The objective of this study is to gain a better understanding of the water trucking and desludging markets and their respective value chain to support programming for the provision of water supply and desludging services to vulnerable communities. More precisely the study will look at the market chain and characteristics of the market stakeholders; as well as prices and revenues, allowing thus a better assessment of potential new strategies of humanitarian agencies for addressing ITSs dwellers' WASH needs.

In fact, the present state of affairs is seen as unsustainable. Without adequate funding, humanitarian agencies would not be able to secure operational costs or purchase the needed WASH services on the local markets. The latter are based mainly on water and desludging trucking services. The Syrian displacement crisis and the adopted strategies of response in the Water Sector have considerably affected the markets of those services, since 2012. New formal and informal businesses - many inexistent before the crisis - developed. The role of humanitarian agencies was essential in orienting and structuring transactions in this market. This was done

¹<https://fts.unocha.org/countries/124/flows/2018?f%5B0%5D=DESTINATIONGLOBALCLUSTERIDNAME%3A%2211%3AWATER%20SANITATION%20HYGIENE%22>

mainly through more or less standardized contracts covering, beyond quantities and prices, issues of water quality and environmental discharges. Moving beyond the present model of WASH service delivery might hence bring considerable destabilization to these markets and unforeseen economic, sociopolitical and environmental impacts.

2. Market Study Strategy and Methodology

In order to address the objectives of this study, a strategy was developed.

2.1 Research strategy main orientations

As this study was considered of importance for several agencies in the water sector in Lebanon, a steering committee was set early in the process, and the terms of references were negotiated collectively with the consultant. The aim was to bring in the knowledge and experience of these agencies and their concerns as to the objectives of the study. The adopted research strategy had to integrate these concerns and identify proper ways to address them within the temporal and budget limitations of the consultancy.

These concerns varied from interest in the environmental impact of present WASH delivery practices, in opportunities and limitations of the appropriation of the management and operations of these practices by Lebanese institutions, or in coping mechanisms of ITSs dwellers in context of water scarcity, etc. However, most important was the concern with prices, quantities and their variations in different contexts. Indeed, prices and quantities of water and desludging services available to ITS dwellers varied considerably from one case to the other due to issues of monopoly and competition, availability of water resources in the area, local actors and municipalities' attitude, humanitarian agencies' practices, etc. Hence, looking into these variations would allow also looking into the concerns mentioned above.

In order to inform on the variety of contexts, the adopted research strategy, first, engages in monographic descriptions of a selected number of cases that have been identified by the steering committee as projecting a sufficient diversity of contexts. Then, in order to move from specific contexts and be able to produce general knowledge about issues of study, the research strategy produces a transversal analysis. The latter is not strictly comparative. It rather looks into how different actors of these markets are contributing to their organization and how these markets and their potential transformation according to three scenarios are or would affect them.

2.2 Three possible alternative scenarios

These three possible scenarios are those presently considered for mainstreaming by the humanitarian community in the Water Sector in Lebanon. The first scenario includes a WASH services' voucher or cash for WASH model to be integrated in the basket provided per capita to UNHCR registered refugees. The second aims at bringing water establishments to provide water and wastewater services. The third focuses on assisting municipalities and empowering them to take in charge water trucking and desludging services in their territory. These scenarios are not

considered necessarily as exclusive. Some humanitarian agencies are experimenting - or are planning to experiment - these scenarios in different areas.

a) Scenario 1: Adopting the WASH voucher model or cash for WASH

This model moves away from the collective services of WASH needs to household services. Integrated in the "basket" of services provided monthly to households recognized as refugees by UNHCR, this WASH voucher or cash for WASH could be used by households to purchase their WASH needs. This model is controversial considering the complexity to measure the simultaneous opportunities and risks it entails.

The main advantage of this model of WASH provision is to allow considerable cuts in expenditures related to humanitarian agencies' operational involvement, especially in terms of employment salaries. Savings are used to increase quantities of water and desludging services that beneficiaries can purchase. It also gives ITS dwellers control - and responsibility – over the money to be spent.

At the same time, in the absence of signed contracts between humanitarian agencies and services providers, this reinforces the deregulation of the markets. There are concerns that, in this situation, prices would rise, water quality would suffer, and unchecked environmental discharging would grow. Moreover, displaced Syrian population non-registered by UNHCR and presently living in serviced ITSs would be excluded.

In order to consider how such risks should be addressed and mitigated, there is a need to understand the present functioning of the water trucking and desludging markets and how ITSs dwellers are impacted, especially in areas not serviced by humanitarian agents. It is also important to investigate the way these trucking businesses operate, and how prices are negotiated in order to assess their capacity to continue providing the service adequately if such model is to be adopted.

b) Scenario 2: Supporting Water Establishments

As per law 221/2000, the four regional water establishments² are in charge of water and wastewater management services to populations in Lebanon. These institutions are to set strategies and develop operations in the fields of domestic water, sewerage and irrigation. In the last fifteen years since their creation, these institutions have been active in building up their managerial and operational capacities, as well as developing infrastructures. However, as said earlier, much still has to be done, as water and wastewater services in Lebanon are still very problematic. In the areas serviced by the networks, quantities and quality of water may not be necessarily sufficient or adequate. Inadequate infrastructures, informal connections, fraud, tens of thousands of illegal wells, the absence of metering and climate change are all contributing to the crisis of water provision. In this situation of water cuts, many people are contesting fees. For them, a reliable service is a prerequisite to any fee. As for wastewater, water establishments have not been able yet to take their responsibilities on this front. Their focus has been in the last

² BEIRUT AND MOUNT-LEBANON WATER ESTABLISHMENT (BMLWE), BEKAA WATER ESTABLISHMENT (BWE), NORTH LEBANON WATER ESTABLISHMENT (NLWE) AND SOUTH LEBANON WATER ESTABLISHMENT (SLWE)

decade on water provision. Wastewater management is still largely developed and operated by the Council of Development and Reconstruction (CDR) and municipalities or private companies reporting to them. Moreover, in the case of many towns and villages, water establishments are not in charge of water services. Traditional local committees or municipalities who have been historically taking care of these services resist turning local water sources and water and wastewater networks to the establishments.

The present Syrian displacement crisis has brought considerable additional strain on the capacity of water establishments to deal with existing challenges. Demand on water consumption has rose since 2011 of 8-12%, while additional quantities of generated wastewater are estimated at 9-14% (Ministry of Environment, European Commission, & United Nations Development Program, 2014). As said earlier, the largest part of the Syrian displaced population was housed in existing buildings in urban and rural areas, and consequently benefited from the water and wastewater networks coverage. However, around 15-17% integrated informal tented settlements. *À priori*, this population had no access to these networks. In fact, the connection of ITSs to networks was considered as a *de facto* recognition of a long-term establishment of these settlements. The latter possibility being highly rejected by Lebanese governments has considerably impacted WASH strategies to serve these ITSs.

Nevertheless, as per the WAP database³ 2019, today nearly 8% of the ITSs in Lebanon are using water from public networks and reservoirs as a main or secondary source of water. This can be explained by several factors. First, in some cases, municipalities and local committees still control water networks and choose to allow access to ITSs. Second, illegal connections exist in many cases. Third, most importantly, in the last couple of years, and in order to control and rationalize the consumption of water in ITSs, some water establishments have accepted to allow the connection of ITSs to networks as long as this connection is based on an account in the name of the landowner - where the ITS stands - and paid by him. Hence, water trucking would no longer be needed, and ITSs dwellers would receive the same amount of water received by populations connected to the network. As for wastewater, WAP database shows that in 5.4% of ITSs there is a direct connection to wastewater networks. Presumably, certain municipalities operating wastewater networks, either moved by solidarity or environmental concerns, chose to allow connections for ITSs close to those networks. However, this remains a marginal situation with most ITSs present in agricultural areas far from sewerage networks. Presently, other alternatives to connection to networks, but involving water establishments are in consideration. This is the case for example of propositions that calls for these authorities being provided the necessary trucking equipment, training and funding so they will take care themselves of the water and desludging trucking services. In any case, there is still much room for more public authorities'

³ FOR JANUARY 2019. THIS DATABASE WAS CREATED TO ASSESS THE SITUATION OF ITSs THEIR VULNERABILITIES IN THE WASH SECTOR. IT WAS APPROVED AND BECAME OPERATIONAL BEGINNING 2018. IT IS CONTINUOUSLY AMENDED BY PARTNER HUMANITARIAN AGENCIES ON ACTIVITY BASIS. IT IS CONSIDERED, BY ITS OPERATOR INTERVIEWED FOR THIS STUDY, LIKE A "NOTEBOOK FOR AGENCIES" AND IS ACCURATE TO 85%. IN THIS STUDY, IT WAS DECIDED TO ADOPT THE WAP DATABASE AND NOT THE IAMP THAT IS USUALLY USED FOR GENERAL INFORMATION ON ITSs AND THEIR POPULATION. IN FACT, THE WAP IS THOUGHT TO BE MORE ACCURATE AS IT IS CONTINUOUSLY MONITORED WHILE THE IAMP IS BASED ON 4 MONTHS SURVEYS, AND IT IS MORE ADAPTED TO WASH ISSUES.

involvement in WASH services to ITSs, if not an operational involvement at least a control and monitoring one.

This option of supporting the water establishments is preferred by humanitarian agencies operating in the Water Sector in Lebanon. It brings at low cost adequate and equitable quantities of water to vulnerable populations, it minimizes risks of environmental degradation due to discharging in the environment and uncontrolled exploitation of illegal wells (as in the case of trucking services) and it gives Lebanese public authorities a more strategic position to be able to think and act comprehensively on the humanitarian-development nexus in the Water Sector. Hence, for the Water Sector Coordination leading on humanitarian action in this sector in Lebanon, one of the priorities for 2019 would be *"the implementation of approved national solutions for cost-effective service of informal settlements that benefit also host communities. Water Establishments can take a stronger leadership in the overall coordination of the response, overseeing and directing both the humanitarian and the development part"* (Water Sector Coordination, 2018). In fact, as recognized in the 2017-2020 Lebanon Crisis Response Plan, thinking and developing articulations between humanitarian and development actions is a priority for the Lebanese government, donors and humanitarian agencies involved in this plan (Government of Lebanon & United Nations, 2019). This mainly translates into support to Lebanese public institutions and their empowerment to take in charge humanitarian issues and be able to deal with them. Moreover, this is in line with what the new minister of the MoEW, that has taken office in February 2019, has in mind for dealing with WASH in ITS issues, this is based on discussions with the minister's water adviser.

c) Scenario 3: Empowering municipalities

Municipalities in Lebanon have long been a central actor in public services' provision. In the Water Sector, historically, despite the existence of central State institutions in charge of water provision and - since the creation of the water establishments - wastewater management, many municipalities and local committees have been actively dealing with these issues. Many are still doing so, especially in the Bekaa and the North but also to a lesser degree in Mount-Lebanon and the South. This includes developing water and wastewater networks, drilling wells and building reservoirs, managing maintenance and the collection of fees, etc. Some have even their own wastewater plants. The degree of efficacy and effectiveness of these local institutions in managing WASH services varies considerably. In fact, municipalities differ in size and resources.

Going for a new humanitarian strategy in the Water Sector that would empower municipalities to be able to take in charge these services to ITSs dwellers on their territory has its strengths and challenges. On one hand, it will align with international recommendations (e.g. those of the Humanitarian World Summit) for bridging humanitarian and development strategies, especially in areas of protracted crisis. As municipalities are in close relations with the local context and are best aware of its intricacies, this option would allow then the optimization of funding. The latter would also allow complementing funds that have been supporting local development in Lebanon. On the other hand, this option faces several challenges. The first is institutional. By law, water and wastewater management is the responsibility of regional water establishments.

Municipalities have no legal right to control and manage related resources and infrastructures. There are presently important tensions between water establishments and some municipalities and local water committees who refuse to deliver these resources and infrastructures to the water establishments. The main argument of local actors is that the water establishments are not providing sufficient quantities of water to their subscribers. By maintaining control on local water resources and networks in their territories, local actors believe that they would ensure covering their water needs. As for the water establishments, they insist that they cannot provide comprehensively water in their regions if they do not have access to resources.

Finally, municipalities also are less involved in sanitation management and desludging. The second challenge is sociopolitical. While in some areas, host communities have shown great solidarity with displaced Syrian populations, in others, they have shown indifference if not outright hostility. This is linked to political positioning in regard of the Syrian conflict, as well as to the presence or not of family and communitarian ties between host and displaced populations. But it is also linked to the impact of this displacement, in terms of competition, on an already strained employment market and limited resources and services. This has projected itself on the way municipalities all over Lebanon have dealt with the displacement crisis. Some have actively provided assistance and services to displaced populations, others have allowed humanitarian agencies to do so on their territories and maintained a high degree of coordination with these agencies, and others have stigmatized Syrian populations, and especially ITSs dwellers, and tried to limit their presence and mobility on their territories through bans and curfews. Hence beyond the capacity of engaging in a role in WASH services in ITSs, there is also that of the willingness to do so.

In any case, if such an option is to be adopted, this would require a strong involvement of the humanitarian community in brokering understandings between water establishments and municipalities as to possible cooperation and complementarity, as well as investment in institutional capacity building. This would also mean that humanitarian agencies would have to deploy a very different set of competencies than those presently mobilized in Lebanon.

2.3 A Five-Steps strategy

In proceeding with this research strategy, five steps were identified, each necessitating its own set of investigative and analytical methods.

a) General overview of existing data and documentation

The general overview based on existing data and documentation as well as complementary interviews with key informants, aims at providing a first understanding of the main challenges regarding present WASH issues and WASHES services in ITSs, as well as the overall structure and tendencies of the water and desludging trucking markets. It builds on:

- Published reports and other available online documents addressing general issues of WASH in ITSs in Lebanon and more particularly those considering the water and desludging markets as well as possible alternatives to them. These documents are produced by humanitarian agencies as study reports, dashboards, communication

documents (briefs, PowerPoint presentations, brochures), etc. They discuss or report on WASH needs and services, alternative practices, impacts on the concerned populations and the environment, etc.

- The WAP database that presents gathered data by humanitarian organizations on ITSs, their demography and their water and wastewater infrastructures and services.
 - A list of water trucking services providers in Bekaa and North, prepared by humanitarian agencies, including truckers' names, areas of coverage, annual volumes trucked. The list is not entirely consistent regarding volumes as some humanitarian agencies provided figures for cadasters and others for truckers.
 - Complementary interviews with key informants including municipal officials and water and desludging services providers - other than the ones involved in the chosen case studies - in the Bekaa and Akkar areas to understand the general dynamics of the market, including monopoly and competition.
- b) Representations and positions of institutional actors as to strategies for WASH services in ITSs

Based on interviews with key representatives of water establishments and humanitarian actors from the Water Sector Coordination, identify the different representations and positions of these actors as to WASH services in ITSs, as well as opportunities and challenges of providing these ITSs with connections to water and wastewater networks.

c) Monographic descriptions of case studies

The case studies methodology helps building a systemic understanding of a phenomenon in a particular context. It is a "bounded" "integrated" system which elements could be identified in their articulation (Merriam, 1998; Stake, 1995; Yin, 2002). As it allows analyzing the "how" and the "why", it is most useful for the evaluation of programs (Yin, 2002). It mobilizes a diversity of methods in social sciences including interviews, focus groups, observation, etc.

This study uses this methodology as it allows understanding particular phenomena: water and desludging trucking markets, their dynamics, and their possible transformations in the context of structural changes - the adoption by the humanitarian community of one of these scenarios.

In each case, interviews have been conducted with a diversity of informers to bring information on particular topics relevant to the functioning of these markets and their transformations:

- Representatives from local authorities: Investigators reached for municipal mayors of municipalities when available. If not, they interviewed key persons in the municipal administration. In one case, and in the absence of municipality, the interview was conducted with the local mokhtar. These interviews aimed at understanding the context of the local territory (demography, presence of water and WASH infrastructures, etc.), governance relations, involvement of local authorities in WASH services provision, involvement in serving ITSs, involvement in regulating or monitoring trucking markets, and their position regarding a change in the present ITSs WASH services model.
- Representatives of humanitarian agencies in charge of serving the case study ITSs. These interviews aimed at understanding the ITS (history, demography, etc.), the water and sanitation infrastructure in the ITS and its vicinity, the way it is serviced for its WASH

needs, the contracts with trucking services providers and humanitarian agencies' position regarding a change in the present ITS WASH services model.

- The shawishs of the ITSs: The shawish is a representative of the population of the ITS and is usually in charge of communication and negotiation with humanitarian agencies, landowners, local authorities, employers and WASH services suppliers. These interviews aimed at understanding the ITS (history, demography, etc.), the water and sanitation infrastructure in the ITS and its vicinity, the way it is serviced for its WASH needs, the way ITS dwellers are using water and coping with its scarcity, the relation with the landowner, the municipality and the local population, and its position regarding a change in the present ITS WASH services model.
- Water and desludging trucking services' providers: These interviews aimed at understanding the business of these providers (including the volume of work, the geographic coverage, the informal or formal nature of the business and the size of its staffs, its operational practices, etc.), the sources and infrastructures they use, their contracts and follow-up relations with humanitarian agencies and their position regarding a change in the present ITS WASH services model.
- Lebanese residents living near the ITS. These interviews aimed at comparing the difference of condition regarding WASH services between ITS dwellers and those living in more standard housing.

In addition to these interviews, investigators organized in each ITS focus group meetings with small numbers of their dwellers. The aim of the focus groups is to have a panoramic view of a diversity of experiences as to living in the ITS and using its WASH infrastructures and services. In each ITS, investigators took photos of existing infrastructures, their conditions and their uses. Totally, the study was informed by 85 interviewees and participants to focus groups.

As for the choice of the case studies, their number, location and their specificities were determined by two factors. First, due to the limited time and available funding, the study covered ten different case studies. Second, the study aimed to bring a diversity of situations from different regions of Lebanon and consider variations mainly as to modalities of WASH services provision or their absence, and existence of competition or monopoly situations. Representatives of humanitarian agencies members of the steering committee set the choice of these cases. The latter are:

- In the Baalbek district:
 - Aarsal-035, rely only on trucking for water and desludging services in a high competition market
 - Temnine-ElFaouqa-005, it benefited from additional quantities of water from a joint funding, it also has its wastewater desludged at relatively lower prices than those practiced in the area though it discharges in a distant wastewater treatment plant in West Bekaa
- In the Zahle district:
 - Raiit-08, rely only on trucking for water and desludging services, it has a particular situation in the desludging services as it is far from the water treatment plant, leading to high prices.
 - Zahle-050, rely only on trucking for water and desludging services in a market with fair prices
- In the West Bekaa district:

- Joubb Jannine-005, rely mainly on trucking for water and desludging services with high desludging prices
 - In the Akkar Governorate:
 - Semmaqiye-003, an ITS without water trucking and the presence of a contaminated well on premises in a rural area difficult to access near the borders
 - Qobbet Chamra-056, an ITS with the presence of a contaminated well on premises with water and desludging services and the presence of a competitive market
 - Bzal-002, an ITS with well that is seasonally contaminated, serviced for water and desludging in the presence of competitive markets with lower prices
 - In the Mount-Lebanon Governorate:
 - Choueifat-001, an ITS without water and desludging services with the presence of a contaminated well on premises
 - In the South Governorate: Ouazzani, an ITS not managed by any humanitarian agency, without water and desludging services with the presence of a well on premises.
- d) Transversal analysis

In a case study methodology, the transversal analysis could be developed in two ways. It could be based on a structured comparison approach, as it allows the identification of particular types of situations represented in each case. Alternatively, without necessarily categorizing types, it could allow a wider overview where cases present a complementary picture of an overall complex situation.

In this study, it is the latter approach that has been favored. Due to the limited number of ITSs covered in this study when compared to their total number in Lebanon, it will be very difficult to speak of representative case studies and ideal types. However, the ten case studies chosen here can bring enough diversity to allow understanding the way different stakeholders are affected by these markets or their possible evolution. These stakeholders include the ITS dwellers, the trucking services' providers, the humanitarian agencies and the municipalities.

The new perspective allowed by the transversal analysis will then inform on the relevance of the three scenarios to be considered in this study.

2.4 Limitations of this study

The research strategy has shown to be effective and allowed the emergence of findings that could inform decision making as to how to deal with WASH issues in ITSs. Nevertheless, the adopted methodology accounts to some limitations:

- The selection of the case studies: Though covering a rich diversity, the case studies do not include a situation where the ITS is connected to water or sewerage public network. This does not allow grasping ITS dwellers situation in these conditions. However, as it was pointed out in interviews with key public institutions' representatives and in interviews in ITSs covered in this study, dwellers of such ITS are most likely to be performing well. They would have similar access to water and sanitation as households living outside ITS.
- In some cases, identified interviewees were not receptive as to the investigators request for interviews. This has occurred in the case of the humanitarian agency in charge of WASH services in Semmaqiye-003. Nevertheless, investigators had an interview with another humanitarian agency in charge of shelter services in the ITS. For the same case,

as the municipality was not receptive, an interview was done with the deputy head of the union of municipalities in the area who happens to live in Semmaqiye. In three cases - Temnine ElFaouqa, Choueifat and Ouazzani - investigators could not identify Lebanese nationals living in close proximity of chosen ITS. Interviews were done with Syrian nationals living in apartments there.

- Opinions expressed in interviews: The majority of interviewees have a partial understanding of the whole system and their opinions and perceptions can suffer some bias, thus have to be taken cautiously and certainly not generalized.
- Dynamic landscape: The numbers of tents or individuals living in Informal Settlements are fluctuating constantly as people are moving, thus the data in the case studies should be considered as a picture at a specific moment in time.

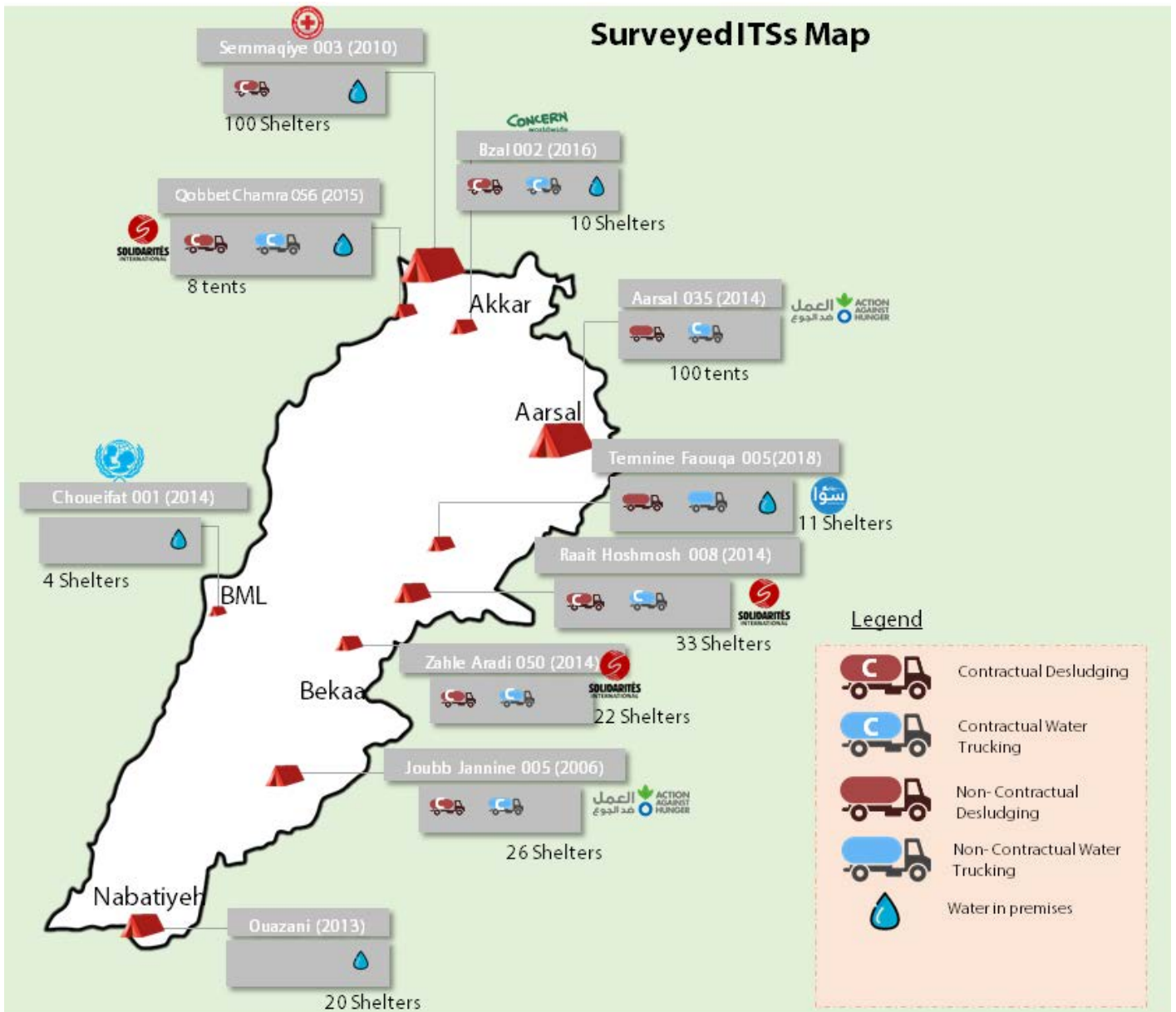
It must be noted however that these limitations do not seem to affect the main findings of the study.

In some cases, especially regarding quantities of water and 'desludging and infrastructures on site, interviewees gave contradictory information. This is the case with information from truckers, shawishs and representatives of humanitarian agencies. To remedy to this issue, cross checking was done by, first, asking confirmation of given information from interviewee, second, triangulating with other available information in other interviews or existent databases (e.g. WAP database). In all, presented figures in this report are considered reliable by authors and what is probably missed in accuracy would not contradict the findings of the study.

3. The structure of the report

Including this introductory chapter, the report is structured into three chapters. The second chapter provides a general context of WASH and ITSs issues in Lebanon and discusses representations and positions of key public institutions towards these issues. The third and final chapter provides a transversal analysis of case studies based on impacts of present markets of water and desludging trucking services, and their possible evolutions, on different stakeholders of these markets. The monographic descriptions of ten case studies are available in the annex of the report.

Surveyed ITSs Map



Lebanese Public institutions addressing WASH issues and ITSs

This chapter presents the general context of Lebanese public institutions in charge of the water sector, the way they have addressed the consequences of the Syrian displacement crisis and the position as to WASH services in ITSs. It is based on secondary data from available publications regarding the water sector in Lebanon and interviews with key representatives of Lebanese public water sector and of the Water sector Working Group⁴. The aim of this chapter is to grasp opportunities and challenges in the face of further involvement of water establishments in the different possible models of WASH services in ITSs.

1. WASH challenges in Lebanon

Already before the Syrian crisis the water and sanitation sector in Lebanon faced important challenges that were exacerbated by the important displacement that occurred. These challenges relate mainly to five issues: (1) inefficient regulatory framework and fragmented governance, (2) limited and inefficient institutional resources, (3) limited and under stress natural resources and unanswered climate change challenges, (4) increasingly unchecked informal/alternative water and sanitation markets.

1.1 Inefficient regulatory framework and fragmented governance in the water sector

At the governance level, responsibilities between different ministries, establishments, other public institutions/ local authorities are diluted and not always distinct, creating confusion, overlaps and gaps. The development of a regulatory framework in this domain has always been a problematic task, although there has been an important effort to develop the regulatory dimension in the last ten years. Under these circumstances, international donors, nongovernmental organizations, and the private sector came to play a non-defined role within a legal framework (IIED, 2016).

The first tipping point in the Lebanese water sector was law 221/2000, which restructured water management public authorities through an administrative and institutional reform. The law combined the 22 local water offices, created between 1950s and 1990s, into four regional Water Establishments (WEs), but did not alter the structure of the central authorities on resource policy (Riachi, USAID, 2016). The regulatory, legislative and management initiatives set in the National Water Sector Strategy (NWSS, 2010) were also not realized, hampering the effectiveness of service delivery (LCRP 2018). The MoEW considers that the NWSS needs revision and innovation

⁴ FIVE INTERVIEWS WERE DONE WITH DECISION MAKERS AND HIGH-RANKING OFFICIALS IN THE MINISTRY OF WATER AND ENERGY, THE WATER ESTABLISHMENTS OF THE BEKAA, NORTH LEBANON AND SOUTH LEBANON AS WELL AS WITH UNICEF. UPON THE REQUEST OF TWO INTERVIEWEES, THE NAMES WILL NOT BE DISCLOSED IN THIS REPORT.

as it is for now only a roadmap and does not have the force of a strategy as it lacks the proper monitoring indicators. Lately came the Water Code that was approved by the Lebanese Parliament in April 2018⁵.

The main objectives of this Code are to organize, develop, rationalize, exploit water resources and protect them from exhaustion and pollution, and also raise the capacity of transportation systems, distribution, operation and maintenance of water utilities; in the aim of insuring a sustainable water resources management for the Lebanese state (Law 77/2018). Awaiting executive decrees for the law and lack of comprehensive quantifiable data on water, on one hand, and wastewater service deficiencies as well as environmental health impact, on the other, makes it hard to prioritize and target - in line with the developed masterplans so far – with the limited funds⁶.

In general, the development of water capacities is the responsibility of MoEW and not that of water establishments. The government considers that all responsibilities related to planning, development and strategies in the water sector need to be centralized.

The water establishments also face many challenges, mainly a major employment shortage and a lack of specialized human resources, especially as statutory employment is not permitted⁷.

As mentioned before, the four water establishments were established in 2000, based on law 221/2000. The Bekaa water establishment consists of five divisions: Zahle, Baalbeck, Hermel, Rachaya and Hasbaya. The Beirut and Mount Lebanon water establishment covers Beirut, Metn, Baabda, Chouf, Aley, Keserwan and Jbeil. The North Lebanon water establishment covers Tripoli, Qobeyat, Koura, Batroun, Dennieh, Minieh, Akkar, Bcharre and Zgharta. The South Lebanon water establishment consists of seven divisions: Saida, Zahrani, Nabatieh, Bint Jbeil, Jezzine and Marjeyoun/Hasbaya. The budget of the establishments varies significantly in light of the number of subscribers and the efficiency of fees' collection⁸.

The responsibilities of water establishments can be described as follows:

- Studying, implementing, operating, maintaining and renewing all potable water, wastewater and irrigation infrastructure, based on the general master plan for water supply and wastewater

5 WORK ON THE CODE DE L'EAU PREDATES BY LONG THE CEDRE CONFERENCE BUT HAS BEEN BOOSTED BEFORE THE CONFERENCE TO GAIN THE INTERNATIONAL SUPPORT.

6 FROM MOEW'S POINT OF VIEW, THERE ARE SOME ISSUES IN THE CODE DE L'EAU AND IT HAS BEEN SENT BACK TO THE PARLIAMENTARY COMMISSIONS FOR AMENDMENTS. MAIN AMENDMENTS RELATE TO THE HIGHER COMMISSION OF WATER WHICH IS SEEN AS TOO BROAD AND WHICH PREROGATIVES OVERLAP WITH THOSE OF THE MINISTRY.

7 THE SOUTH LEBANON WATER ESTABLISHMENT (SLWE) CONSIDERS THAT HAVING CONTRACTUAL EMPLOYMENT AT THIS POINT IS NOT SUCH A BAD THING, AS IT THINKS THERE IS A NEED NOW FOR EMPLOYEES TO WORK ON PROJECTS FOR THE DEVELOPMENT OF THE INFRASTRUCTURES AND OTHER TASKS RELATED TO THIS INVESTMENT PHASE. SLWE SEES THAT AFTER THE END ON THAT PHASE, THEY WILL NOT NEED THE SAME COMPETENCIES AND THAT IT IS BETTER TO WAIT FOR THIS SECOND PHASE TO PROCEED WITH STATUARY RECRUITMENT.

8 IN SOUTH FOR EXAMPLE THE NUMBER OF SUBSCRIBERS IS 170,000 WHILE ONLY 80,000 IN THE BEKAA, REACHING A BUDGET OF 35,000,000 USD FOR THE FORMER, AND 16,000,000 USD FOR THE LATTER.

- Proposing tariffs for water supply, wastewater, and irrigation services, taking into consideration the general socio-economic conditions in the country
- Monitoring the quality of supplied drinking water, irrigation water and discharged treated wastewater at the outfalls and outflows of wastewater treatment plants
- Supervising distributed water quality, wastewater discharge, and treatment plants' effluents.

Some of the main projects and actions done by the Bekaa water establishment include the Priority Action Plan (2011-2012), the implementation of water projects funded by the Lebanese government and the MoEW, the increasing of subscribers from 66,000 to 88,000 in 2014, Master Plans for water, wastewater and irrigation (with USAID), the digitizing of the establishment via an ERP, securing funds of 30,000,000 USD, and several other infrastructure studies and provisions.

Some of the main projects and actions by the South Lebanon water establishment include the construction of water networks (Kfaroumane, Nabatiyeh Faouqa), water towers (Chouqine, Khiam, Sarafand, Bablieh, Kharayeb), and ground reservoirs (Old Saida, Hebariyeh, Bissarieh, Loubieh). It includes also the integration of Chlore systems to all divisions, the rehabilitation of Taybeh pumping station, the introduction of 2000 water meters in Bint jbeil, and several water wells. Capacity building to the establishment' staff and the upgrading of fees collection are also major achievements in the South Lebanon establishment.

For the Beirut and Mount Lebanon water establishment, some of the main projects and actions include the implementation of desalination water station in Hadath (self-funded), the treatment reservoirs in Jamhour (self-funded), building six ground reservoirs in Jbeil, Keserwan, Metn and Baadba (UNHCR) and ground reservoir in Keserwan (UNICEF) as well as the implementation of Janna and Bisri Awwali Dams.

As for the North Lebanon water establishment, the main projects include the redesign and rehabilitation of the Jradeh Pumping Station (USAID), the construction/rehabilitation of water lines and the installation of nine new water pumps across the North, as well as replacing and renewing the Deddeh water supply networks and building the new Deddeh elevated reservoir (USAID). It includes also the implementation of water, reservoirs and networks, as well as a significant number of wells.

In addition to the MoEW and the WEs, several other institutional actors are involved more or less directly in the management of the water and sanitation sector. Affiliated to the MoEW, the Litani River Authority is in charge of the protection of this river and the exploitation of its water in irrigation and energy production. Some ministries are involved in aspects of the resource protection and water quality control (MoE, MoPH), in certain irrigation schemes (MoA), in the enforcement of arrest warrants and controlling violations to the environment (MoIM), etc. Local authorities, in their mandate, have a role in dealing with wastewater issues in their jurisdiction. Despite law 221/2000 that gave monopoly over water management to WEs, many local

committees remain active in managing water in villages and towns, especially in Mount Lebanon⁹, Akkar and Bekaa.

One major challenge also faced by the water establishments is economic, mainly their ability to manage the fees collection, especially with the existing and sometimes efficient roles of municipalities¹⁰. Indeed, there are a significant number of municipalities that manage their water services by themselves, especially in North Lebanon and the Bekaa¹¹. However, the water establishments recognize the need to coordinate with municipalities and to gain their trust. There are even some cases of memorandums with municipalities that have been established.

Another challenge relates to the management of the wastewater sector. There is also unclear allocation of prerogatives in implementing strategies and managing infrastructure. Some water establishments consider that the government and the CDR are responsible of planning and implementing the wastewater treatment plants for example, while the water establishments are responsible of the plants' operation. In this regard the latter claim not having the needed financial and human resources to take in charge operations¹². According to the North Lebanon water establishment, the municipalities have historically been responsible of the wastewater sector, leading in some case to oppositions with the water establishment on fees collection.

The fragmentation of responsibilities and management - especially reflected in the fragmentation of data in different institutions - is characteristic of problematic governance incapable of steering consistent and sustainable public water policies.

1.2 Limited and inefficient institutional resources

The deficiency of Lebanon's water sector extends from governance level to its whole value chain. (LCRP 2018). The lack of resources, both financial and human, has severe effects on water production (including protection and treatment), transmission, storage and distribution, and on the collection, treatment and safe disposal of wastewater.

Water sector inefficiency and its environmental damage are estimated at 3% of the GDP (World Bank, 2012). The water sector in Lebanon is in fact underfunded and systems are in a state of severe disrepair (LCRP 2018). Before the Syrian crisis, the main investments of the NWSS were to be funded on the 2011-2015 period by public budgets. This has represented a major challenge to the implementation of the strategy¹³.

9 ACCORDING TO BEIRUT AND MONT LEBANON, AND NORTH LEBANON WATER ESTABLISHMENTS, THERE ARE RESPECTIVELY 26 AND 6 LOCAL WATER COMMITTEES.

10 THERE ARE ALSO CASE OF MUNICIPALITIES THAT HAVE RIGHTS ON WATER, PREDATING THE FIRST WATER LAW OF 1925. WATER ESTABLISHMENTS ALSO RECOGNIZE THE NEED TO TAKE BACK MANAGEMENT AND RESPONSIBILITIES FROM THESE MUNICIPALITIES WHILE CONSIDERING THEIR EXISTING RIGHT IN SPECIFIC WAY (MAYBE LOWER PRICES, ETC.)

11 ACCORDING TO BEKAA WATER ESTABLISHMENT, THERE ARE 77 MUNICIPALITIES THAT MANAGE THEIR WATER SECTOR BY THEMSELVES WITHOUT ANY REFERENCE TO THE WATER ESTABLISHMENT.

12 FOR EXAMPLE, THE OPERATION COST OF ZAHLE WASTEWATER TREATMENT PLANT IS 150,000\$ PER YEAR.

13 MANY OF THESE INVESTMENTS ARE CONSIDERED IN THE CEDRE (PARIS IV) PLANNING

Before 2011, surface water resources were already largely exploited, groundwater resources were under stress, mainly through private wells,¹⁴ and over 50 percent of networks were past their useful life, leading to unaccounted-for water quantities 13 percent higher than the world average¹⁵. The agriculture sector is a particularly important stressor, as it accounts for 61 percent of total demand and is marked by outdated practices and inefficient systems (LCRP 2018).

Also, only 8 percent of all consumed water was treated before reaching the environment, well below the Middle East and North Africa (MENA) regional average of 32 percent. A more recent study has highlighted that only 3 percent of all Lebanon's sewage receives secondary (biological) treatment before finding its way into the local environment, including groundwater, streams and the coastline. In this regard the MoEW considers that there is an urgent need to move from primary to tertiary stations in order to use wastewater for irrigation.

Service	Deficiency
Water Production	70% of Natural Water Sources are bacteriologically contaminated
Water Transmission, storage and distribution	Continuity of Water Supply Service, in 2009, was 7.6 hrs/day in high season and 13 hrs/day in low season. Average national tank storage time, in 2010, was 9.33 hrs, whilst standard practice is 12-24 hrs. 2010 (NWSS)
Collection, treatment and safe disposal of wastewater	<ul style="list-style-type: none"> Many existing wastewater treatment plants lie dormant due to lack of connection to sewer networks, Lack of Water Establishment capacity to maintain and operate wastewater systems Noting that, the level of (secondary) treatment capacity in Lebanon could be increased from 3 percent up to 75 percent if all existing wastewater treatment plants are upgraded, connected, powered and Water Establishment operation and maintenance capacity provided. However, connecting to treatment plants and ensuring their operation and maintenance requires significant financial resources.

1.3 Limited natural resources under stress and unanswered climate change challenges

With its 17 perennial rivers, more than 2000 springs and considerable underwater resources, abundance of water assets is one of Lebanon's main natural characteristics (DAR/IAURIF, 2004). However, due to weak management, only 6% of the estimated 2.7 billion cubic meters of water are captured and stored for use (World Bank, 2012). Climate change is also a main source of water stress. Projections of average temperature rise, reported by Lebanon's Third National Communication to UNFCCC (Ministry of Environment, 2016), indicate for a business-as-usual scenario +1.7°C by the mid-century and +3.2°C by the end of the century. This is coupled with a

14 THE MOEW ESTIMATES THAT AT LEAST 55,000 - 60,000 UNLICENSED WELLS HAVE BEEN DUG OVER THE PAST FEW DECADES.

15 UNACCOUNTED-FOR WATER (UFW) REPRESENTS THE DIFFERENCE BETWEEN "NET PRODUCTION" (THE VOLUME OF WATER DELIVERED INTO A NETWORK) AND "CONSUMPTION" (THE VOLUME OF WATER THAT CAN BE ACCOUNTED FOR BY LEGITIMATE CONSUMPTION, WHETHER METERED OR NOT). LEBANON'S NATIONAL AVERAGE WAS 48 PERCENT AGAINST WORLD AVERAGE OF 35 PERCENT. MINISTRY OF ENERGY AND WATER (MOEW), NATIONAL WATER SECTOR STRATEGY (NWSS), 2010, (RESOLUTION No.2, DATE 09/03/2012).

fall in precipitation levels up to 11% and a rise of sea level up to 60 cm. This will translate in sharp fall in water reserves, a 70% decrease in snow cover and snow residence period, an extension of the drought season by 18 days, and 30% more floods.

In the last decade, Lebanon has shown a deficit in its water renewal. Lebanon has also fallen as of 2014 in the water scarcity country category (Allès, 2016). Major basins such as the Litani basin have witnessed severe falls in their underground water since 2008 along with high levels of pollution in the river and segments of underground water (Jaafar, King-Okumu, Haj-Hassan, Abdallah, El-Korek, & Ahmad, 2016). Pollution of river water is not specific to the Litani as 82% of the wastewater in Lebanon is not treated and delivered to water streams and the sea (Allès, 2016). In 2011, the estimated direct contribution of water supply and waste management stood only at 1% of GDP (Mikhael & Chami, 2014).

1.4 Increasingly unchecked informal/ alternative water and sanitation markets

The diminishing water resources coupled with the increase in water demand are adding more pressure on available water resources. Even though Lebanon seems to have a better situation in terms of available water compared to its neighbors, future projections and climate change challenges makes the current situation unsustainable. According to the World Bank report 2009, the mismanagement within the formal distribution system exacerbates the situation even further as it contributes to an imbalance between water supply and demand in Lebanon. These factors are leading to inadequacies in water supply in terms of quality, quantity, and continuity of service, forcing consumers to resort to the use of alternative water sources, creating a mixed system between formal and informal activities (Farjalla et al. / IFI 2015). As previously mentioned, coping mechanisms in the water sector represent a considerable market of 307 million USD (Allès, 2016). In 2010, household expenditures on water range from 1.6% of their budget in the Bekaa to 3.2% in Beirut and Mount-Lebanon area. A large part of this expenditure is on complementary sources of water (Ministry of the Environment, United Nations Development Program & ECODIT, 2011).

In some cases, the formal and informal systems complement each other, where for example the informal system extracts water from wells and uses the infrastructure of the formal system for conveyance and distribution (Farjalla et al. IFI 2015). In other cases, the informal system is not only used as a necessity to meet the needs of users, needs that are not met by the formal system, but also as a choice, based on perceptions of poor quality of water provided through the formal piped networks. Informal activities exist in parallel to the formal system that is composed of different actors and actions that can combine both formal and informal practices. The first set of actors includes the bottled potable water companies. These companies extract fresh water from aquifers in the mountainous regions, filter, bottle and sell it in different sizes, ranging from 0.5 L to 19 L (World Bank 2009). Some of these companies are licensed; however, many are unlicensed and some use questionable water sources – especially in terms of quality. These unlicensed companies use the same distribution methods as the licensed companies (selling water in various bottle sizes) through some of the same vendors. The main risk in this case, is that, since

these companies are unlicensed and unmonitored, they may be selling water of questionable quality, potentially exposing consumers to health risks (Farjalla et al./ IFI 2015; Machayekhi, 2017).

Another set of informal actors includes freshwater tankers who distribute water that is either extracted from private wells or illegally from public wells. When households face water shortages, they resort to these tankers¹⁶. In some cases, the wells may have been legally drilled and the tankers may have permits to transport water while in others either the wells or the tankers, or even both, may not have the proper permits to operate.

A final set of actors are individuals that either extract freshwater from “private” wells that are located directly under their buildings. Other activities include illegal extraction from surface water (from ephemeral or permanent streams), and illegal tapping of the public networks (Farjallah et al., IFI 2015).

Informality in the water sector, is unregulated by nature, and can have numerous impacts on the environmental, social and economic aspects of urban communities. Seawater intrusion has a major impact on the informal water sector in Lebanon due to over extraction from coastal aquifers (ECODIT 2015; Saadeh et al, 2017). This process is very difficult to reverse and also damages the formal water supply network, residential plumbing and utilities. One of the main economic and social impacts is the added financial cost of acquiring additional water sources provided through the informal system. Even though informal solutions are often shown to be financially feasible for some low-income communities, studies have shown that they can result in higher costs and tariffs to end-users (Farjallah et al., IFI 2015). For example, in Beirut, the average household subscriber is charged 0.6 USD per 1000l, according to the formal water utility subscription terms. However, effectively the water is supplied at less than a third of the promised amount, resulting in residents paying between 10 USD and 15 USD per 1000l to satisfy their needs by a supplement of bottled water and water provided through tankers. Moreover, the cost of water tankers increases in the dry season and in droughts in part due to price gouging by distributors. Finally, impacts can include possible risks to public health, as most of these informal sources are not monitored or regulated, and therefore the quality of water may be compromised, and water may be contaminated (World Bank, 2009).

The formal wastewater system comprises three stages; wastewater collection, treatment and discharge (NWSS, MoEW 2012). Informal wastewater systems are developed when urban areas either lack wastewater collection or sewage treatment (or both). Wastewater treatment and collection services are difficult to access or too costly to subscribe to. These deficiencies are sometimes the result of rapid and unregulated urbanization that surpasses the development capacity of the formal system. In many cases the informal systems may be larger in size than the

16 ACCORDING TO BEIRUT AND MOUNT LEBANON WATER ESTABLISHMENT, AUGMENTING DELIVERED WATER THROUGH PUBLIC WATER NETWORK HAS DECREASED THE TRUCKING SERVICES BY 30%.

formal systems in developing countries, reaching as high as ten times the levels of formal reuse (Farjallah et al., IFI 2015).

The most common informal wastewater solution is the use of septic tanks that need to be regularly emptied by desludging truckers. Some systems are limited to illegal connections to the formal sewerage systems by households. Other informal wastewater systems include sewer systems that are installed by the residents of informal settlements and that connect either to the city-mains or to a nearby river.

Informal wastewater systems relieve communities of the generated wastewater; however, since they bypass regulations, this may be done at a significant cost to public health. Moreover, illegal connections to the public network are leading to contamination of the public water through infiltration, even if the public network is new and well maintained. Septic tanks rely on regular desludging trucking services. Regulations require that latter service providers have operation licenses, but often they operate without. This poses a significant threat to water quality and health. Improper disposal of wastewater exposes communities to waterborne illnesses, an issue that is of even more concern in congested urban areas (Farjallah et al., IFI 2015).

Water establishments recently took measures to address some of these aspects, mainly by establishing better relations with the users. This can take the form of call centers, the organization of fees payment in installments, or smart metering. The latter experience has proven also to reduce water consumption as per the water establishments¹⁷.

2. Dealing with the Syrian displacement crisis

2.1 A new demography of vulnerability

As of end of 2018, the Lebanese government estimates the presence of nearly 1.5 million Syrian nationals on its territory, of whom around 950,300 are registered as refugees with UNHCR. In addition to this population, the Lebanon Crisis Response Plan (LCRP - Government of Lebanon & United Nations, 2019) identifies as vulnerable populations 1.5 million Lebanese nationals, 180,000 Palestinian living in Lebanon before the crisis (PRL) and 28,000 Palestinian that came from Syria after the crisis (PRS). This population lives in a diversity of housing contexts in urban and rural areas. Many of these are informal structures that existed prior to the Syrian crisis including informal neighborhoods, 12 Palestinian camps and 156 Palestinian gatherings. After 2011, Lebanon saw the emergence of thousands of new informal - mainly tented - settlements. The number of these settlements has varied over the years. In March 2019, according to the 61st Inter Agency Mapping Platform (IAMP 61) database, the humanitarian community identifies 5,637 active ITSs inhabited by 296,694 individuals, Syrian nationals in their great majority.

¹⁷ AS PER THE SOUTH LEBANON WATER ESTABLISHMENT, THERE ARE 7000 SMART METERS AND WILL BE EXPANDED TO 25000 SOON. ALSO, ACCORDING TO NORTH LEBANON WATER ESTABLISHMENT, THE SMART METERS EXPERIENCES HAS PROVEN THAT USERS MAY CUT DOWN THEIR WATER CONSUMPTION BY 33%.

For Lebanon to be able to address this considerable challenge, it received the assistance of international donors and a large humanitarian community.

2.2 Coordination with the humanitarian community to build and deploy a response to the crisis

2.2.1 Coordination mechanisms:

From the beginning of the crisis, the Lebanese Government decided to get directly involved in following-up on the actions of humanitarian agencies on its territory. Moreover, with the protracted Syrian conflict, the government wanted to increasingly be part in the definition of the response, so host communities could benefit from these actions and tensions could be minimized between displaced and host populations. It is why the Inter-agency Coordination was established, with the Ministry of Social Affairs (MoSA) co-leading its activities with UNHCR. At the level of the water sector, a Water sector Working Group was established with the Ministry of Water and Energy (MoEW) co-leading with UNICEF.

In partnership with UNICEF which is coordinating humanitarian activities in the Water Sector, there are today 13 large international and Lebanese humanitarian agencies operating in ITSs. The activities of these agencies are mainly in the Bekaa and Akkar areas that represent 76% of the populations of these ITSs in Lebanon. There are wide differences between these agencies in terms of populations covered; e.g. SI covers around 72,500 persons and Medair 2,140¹⁸.

Hence, meetings are regularly held at the level of the MoEW, but also regionally at the level of water establishments to coordinate activities among humanitarian agencies and with the establishments. Moreover, the MoEW grew increasingly strict in insisting that an approval from the ministry is needed for any project in relation to WASH to be implemented by humanitarian agencies.

As of 2012, the Lebanese Government and the humanitarian agencies considered the provision of WASH services to vulnerable populations as a priority in their consecutive LCRPs. These services include mainly the provision of water and wastewater services, but also services related to issues of hygiene and solid waste management. The first LCRP (2012-2014) focused on relief for displaced populations. The second LCRP (2015-2017) aimed to service both displaced and host populations. The third LCRP (2018-2020) is interested also in bridging humanitarian and development concerns and empowering Lebanese institutions.

In the Water Sector, this transition could best be seen in the objectives and priorities of action as defined by the Inter-agency WASH Working Group for 2014 and for 2019 (Water Sector Coordination, 2018). In 2014, the objective is *"to mitigate the risk of WASH related mortality and morbidity through provision of and access to safe water, sanitation and hygiene to the agreed minimum standards for the affected [displaced] population"* (Inter-Agency WASH Working Group, 2014). In 2019, priorities tackle institutional and policy level issues and the strengthening of the humanitarian-development nexus (Water Sector Coordination, 2018).

¹⁸ ACCORDING TO THE WAP DATABASE

2.2.2 Coordination concerns as seen by institutional actors:

However, despite this close coordination and considerable financial support provided to Lebanon in this sector, interviewees in this study have voiced important criticisms and concerns as to the process and outcome of the coordination and response efforts. Six main concerns have come to the front repetitively in interviews with all stakeholders. First, there is clear dissatisfaction with the results when compared to the money invested in the humanitarian action. Interviewees stress mainly the continuous deterioration of water resources and environmental pollution. Moreover, the fragmentation of funding by many different humanitarian actors does not allow for robust and sustainable solutions to the challenges of the Water Sector stated above. Second, some humanitarian agencies' collaboration with municipalities in WASH issues frequently marginalizes water establishments. This further deepens tension between the water establishments and municipalities. Third, interviewees criticized the temporality of humanitarian projects and the way many of these projects become a burden to water establishments. This is especially the case when they need continuous maintenance and operational costs that water establishments cannot sustain. Fourth, interviewees pointed to the fact that despite LCRP increasingly aiming to give more room to stabilization and development actions, awarded funds from international donors in the frame of the Response remain, in the Water Sector, to their large majority associated to humanitarian actions¹⁹. Fifth, interviewees recognized the importance of the data production mechanisms introduced in the context of the response to the Syrian crisis. However, they tend to believe that data remains fragmented and, in many cases, uncertain and does not allow having reliable figures to develop and amend strategies. Sixth, the Governmental restriction on dealing directly with the displaced Syrian population in general and ITSs in particular, has a great impact on the sustainability of solutions, strategies and infrastructures implemented.

3. WASH services in ITS and public institutions

3.1 WASH services in ITS: a panoramic view for 2018

As mentioned by the VASyR 2018 survey (United Nations Commissioner for Refugees, United Nations Children's Fund, & World Food Programme, 2018), indicators for WASH services of Syrian displaced populations have constantly positively evolved since 2015. However, clearly, ITSs dwellers seem to be least faring of the different categories of Syrian displaced populations surveyed.

According to the WAP database (January 2019), wells on site remain central in the provision of

¹⁹ UNICEF has been involved with the MoEW and WEs in several WASH infrastructure and cross-sectorial projects in urban areas to minimize tensions between host communities and displaced populations; it also has provided capacity building to public institutions. However, these investments do not compare with the 40 million USD/year on WASH in ITSs. As for more traditional development funds in the water sector, MoEW has received in the last fifteen years support in terms of loans and grants from large development actors as the World Bank, USAID and to a lesser degree EU. But there is weak articulation and complementarity between these funds and those dedicated to the response.

water to ITSs with ≥ 4 shelters²⁰ where 51% of them depend on (protected or unprotected) wells as a primary source of water. Only 41% of ITSs with ≥ 4 shelters rely on water trucking provided by humanitarian agencies. However, it must be noted that these ITSs represent 229,547 persons, 66% of all ITS dwellers. 29% of ITSs (28% of ITS population) with ≥ 4 shelters purchase themselves water on the water trucking market. It is notable also that 10% of ITS with ≥ 4 shelters rely on public networks and reservoirs as a primary source of water. Noteworthy, these 10% represent in fact 26% of ITS population²¹.

It must be noted however that from a total of 1,478 wells in these ITSs, only 840 have been tested regarding their water quality. Moreover, only 363 of those seem to fall within acceptable standards in terms of fecal coliform, E. coli bacteria and nitrate concentrations and turbidity. This stresses the high risk the present situation represents for ITSs dwellers dependent on wells.

As for bottled water, 8% of the population of ITSs with ≥ 4 shelters declare buying bottled water, this decreases to 5% when considering the population of ITSs serviced by humanitarian agencies. As for additional water trucking, only 2% of the population serviced by humanitarian agencies ask and pay themselves for it²².

Regarding wastewater only 61% of ITSs with ≥ 4 shelters (79% of the population) are serviced by desludging truckers. Desludging recurrence in ITSs varies from every week (7%), every month (9%), every two to six months (15%), every six months and more (10%), while 39% are not clearly accounted for in the WAP database. For latrines, 5.8% of those in ITSs with ≥ 4 shelters are connected to public networks (8.2% of the population). Only 33.7% of latrines in ITSs with ≥ 4 shelters connected to septic and holding tanks, while 60.5% of ITSs have latrines linked to cesspits/ covered pits/ uncovered pits/ water bodies/ water channels/ and above ground. As for grey water, 48.1% is disposed of above ground, 8.6% in irrigation channels and 0.9% in water bodies. Overall, these figures stress a situation of important strain on the environment as considerable quantities of black and grey wastewaters are discharged in nature.

It is clear from the WAP database figures for January 2019 that the present WASH services system, based mainly on water and desludging trucking services paid by humanitarian agencies, is far from answering the WASH needs of ITS. This situation risks getting bleaker in the event of potential additional cuts in budgets dedicated to WASH services.

20 BASED ON DISCUSSIONS WITH THE STEERING COMMITTEE, THIS STUDY CHOSE TO FOCUS ONLY ON ITS WITH 4 SHELTERS AND MORE, AS MOST OF THOSE OF THREE SHELTERS AND UNDER ARE NOT SERVICED THROUGH HUMANITARIAN AGENCIES. THOUGH THE LATTER ITS REPRESENT ACCORDING TO WAP 39% OF ITS, THEIR POPULATION IS ONLY 7% OF TOTAL ITS POPULATION.

21 THESE RESULTS VARY FROM THOSE PROVIDED BY THE VASYR 2018 (UNITED NATIONS COMMISSIONER FOR REFUGEES, UNITED NATIONS CHILDREN'S FUND, & WORLD FOOD PROGRAMME, 2018) THAT INDICATES THAT 46% OF HOUSEHOLDS IN ITS ARE SERVICED BY TRUCKING, 7% FROM PUBLIC NETWORKS, 19% RELY ON BOTTLED WATER AND 21% ON WELLS AND OTHER TYPES OF BOREHOLES. HOWEVER, IT MUST BE NOTED THAT THE WAP DATABASE IS MORE COMPREHENSIVE COMPARED TO THE SAMPLE OF THE VASYR SURVEY.

22 IT MUST BE NOTED HOWEVER THAT FINDINGS FROM THE CASE STUDIES SUGGEST THAT THIS A WIDESPREAD PRACTICE.

3.2. General presentation of the markets of water and wastewater trucking services to ITSs

In the following, we provide an overall panorama of the water and desludging trucking markets.

3.2.1. Water trucking markets

With the increase in water demand due to the Syrian displacement crisis, there has been a wide development of the water trucking market. This is especially the case in areas with an important concentration of ITSs, especially the Bekaa and Akkar areas. There is no developed study analyzing the water trucking market in these areas. Available data is dispersed among a large number of agencies operating WASH services in ITSs in these areas. In the following, based on a list of truckers²³ working with five²⁴ out of twelve humanitarian agencies²⁵ operating in these areas, as well as interviews with three key informant interviews, a general overview of trends in the water trucking markets is provided. It must be noted that the five agencies, include the three largest agencies operating in ITSs - in terms of dwellers' population covered - SI (24%), WVI (20%), AAH (14%), as well as two other agencies LOST (7%) and CWW (4%) playing a significant role in their areas of operations²⁶. Moreover, the agencies in the list also cover significantly the areas of interest to the study: the governorate of Akkar (82%), the town of Aarsal (100%), the rest of the district of Baalbek (42%), the district of Zahle (78%) and the district of West Bekaa (89%).

agency	# truckers	total served (liters)	# of dwellers in ITS served by truckers as primary source	% dwellers in ITSs served by truckers as primary source of water of # dwellers in agency ITSs	# of dwellers in ITS served by truckers as secondary source	% dwellers in ITSs served by truckers as secondary source of water of # dwellers in agency ITSs	# of dwellers in ITS served by truckers	% dwellers in served ITSs of total dwellers in agency ITSs	# of dwellers in agency ITSs	% of dwellers in agency ITSs of total ITS dwellers in area	# of dwellers in ITSs in area	l/capita/day
Aarsal	Lost	10	43,707,000	8,017	97	0	0	8,017	97	8,230		14.9
	AAH	22	253,970,000	24,985	99	70	0	25,055	99	25,325		27.8
	Total Aarsal	32	297,677,000	33,002	98	70	0	33,072	99	33,555	100	24.7
West Bekaa	AAH	4	47,042,000	9,104	54	1,396	8	10,500	62	16,803		12.3
	SI	1	8,307,000	969	86	0	0	969	86	1,128		23.5
	WVI	2	66,103,000	13,292	99	0	0	13,292	99	13,435		13.6
	Total WB	7	121,452,000	23,365	74	1,396	4	24,761	79	31,366	89	13.4
Zahle	WVI	6	115,936,000	25,776	84	578	2	26,354	86	30,783		12.1
	SI	4	200,591,000	29,376	69	3,322	8	32,698	77	42,285		16.8
	Total Zahle	10	316,527,000	55,152	75	3,900	5	59,052	81	73,068	78	14.7
Baalbek	Lost	6	44,462,000	8,958	65	221	2	9,179	67	13,774		13.3
	WVI	4	27,017,000	2,902	19	57	0	2,959	19	15,181		25.0
	Total Baalbek	10	71,479,000	11,860	41	278	1	12,138	42	28,955	42	16.1
Akkar	CWW	31	53,258,000	7,411	71	303	3	7,714	74	10400		18.9
	SI	5	31,754,000	3,270	11	2,578	9	5,848	20	29165		14.9

Table 1: List of truckers operating in Aarsal, West Bekaa, Zahle, Baalbek, Akkar

23 THE LIST OF TRUCKERS TABLE INCLUDES THE HUMANITARIAN AGENCY IN CHARGE, THE TOWNS AND VILLAGES SERVICED, THE NAME OF THE TRUCKER AND QUANTITIES SERVICED. REGARDING THE LATTER, SOME AGENCIES PROVIDE INFORMATION OF QUANTITIES SERVICED BY TOWN/VILLAGE AND OTHERS BY TRUCKERS.

24 ACTION AGAINST HUNGER (AAH), LOST, SOLIDARITÉS INTERNATIONALES (SI), WORLD VISION INTERNATIONAL (WVI), CONCERN WORLDWIDE (CWW)

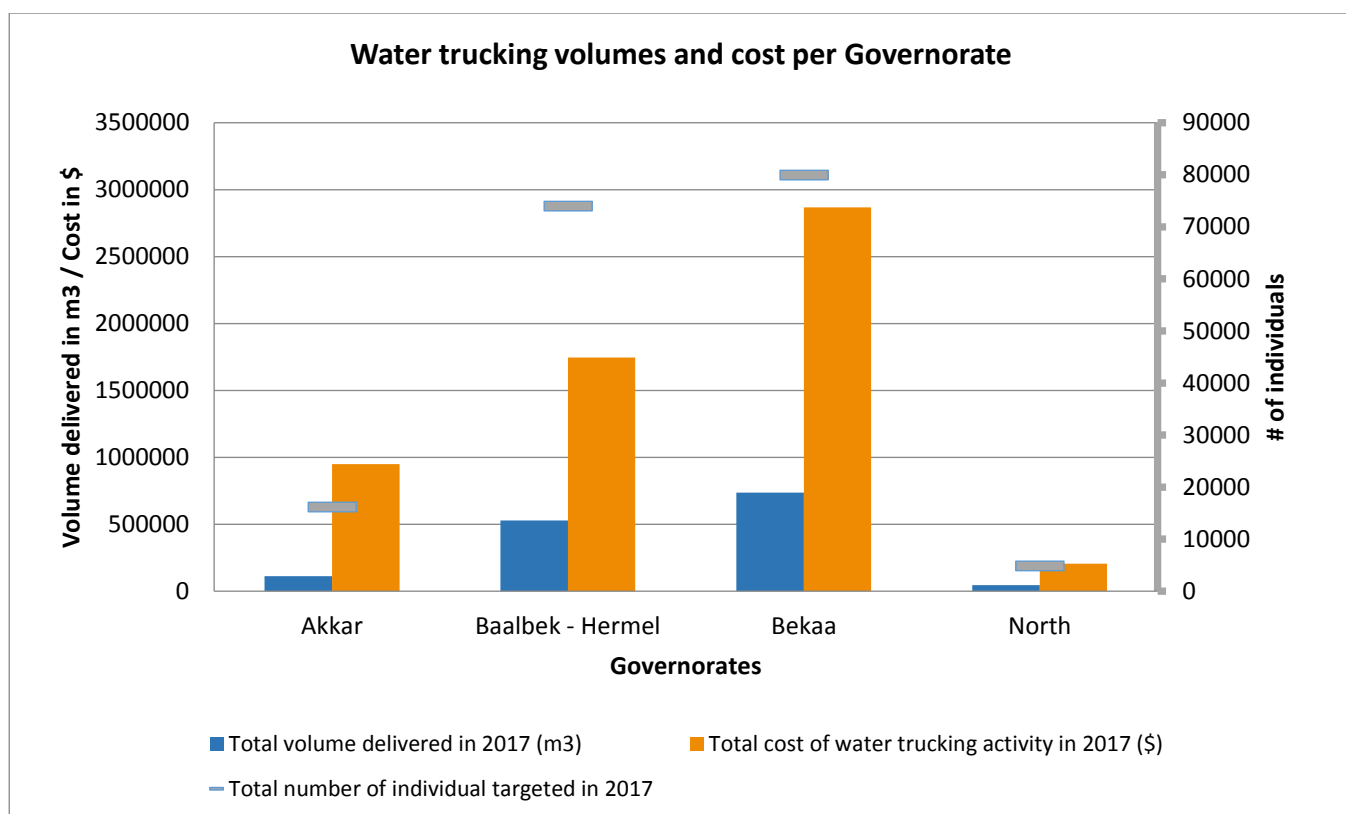
25 THE OTHERS ARE SAWA, LEBANESE RED CROSS (LRC), NORWEGIAN REFUGEE COUNCIL (NRC), OXFAM AND GVC, MERCY CORPS AND MEDAIR

26 LOST IN BAALBEK AREA AND ESPECIALLY AARSAL AND CWW IN AKKAR

Agencies have different policies regarding the way they divide the areas they service among truckers. For example, SI and WVI tend to divide their areas in clusters of neighboring cadasters and organize bids for each cluster. On the other hand, agencies like LOST and CWW call on different truckers to service the same cadasters. As for AAH, with the exception of Aarsal, it does not have more than one trucker per cadaster; however, it might have contracts with a trucker for a geographically dispersed set of cadasters. Hence, the difference in the number of truckers per agency. While WVI has only two truckers in West Bekaa, CWW has 31 truckers in Akkar and AAH 22 truckers in Aarsal. It must be noted however that there is not necessarily a relation between the quantities served by an agency in an area and the number of truckers. For example, the two truckers of WVI in West Bekaa serve 66.1M liters a year and 4 truckers of SI in Zahle serve 200.5M liters a year, while the 31 truckers of CWW in Akkar serve together 53.2M liters a year. In the same way, the average quantity of water delivered (per capita per year) through trucking to ITSs by the same agency may vary considerably. For example, based on quantities delivered and numbers of dwellers in ITSs receiving trucked water, as a primary or a secondary source, SI provides an average of 15 l/capita/day in Akkar, 17 in Zahle and 23.5 in West Bekaa, while AAH provides 28 l/capita/day in Aarsal and 12 in West Bekaa. This variation is related to a wide range of reasons. One of them is the seasonality, as mentioned earlier 15l/p/d are served in winter and 35l/p/d are served in summer. Another reason is the access or not to a secondary source of water to which the ITS and the possibility for the humanitarian actor to install a connection. When the ITS can be connected to a secondary source the quantity of water to serve is considerably reduced. When the water of the secondary source is tested as not contaminated then no water trucking is necessary. When the water test is negative, then 10 l/p/d of trucked water is provided to the ITS for drinking purposes. Another aspect to take into consideration is the external political and social environment of the ITS. In the case of Aarsal the choice was made to maintain a higher volume of distribution in a tensed area in order to reduce the risk of tensions. Regional differences are important in markets of water trucking to ITSs.

Market competition

Regarding market competition, situation varies from one area to the other. For the following analysis, the year 2017 is considered, as data collected by the Water Sector are available for the entire year.



Graph 1 Water trucking total volumes and cost per governorate in 2017 (Water Sector 2017)

In 2017, 50% of the overall cost across the country for water trucking has been spend in the Bekaa governorate and this is for 52 % of the total volume delivered and 45 % of the total population living in ITS targeted with this activities.

Whereas, Baalbek-Hermel governorate, targeting approximatively the same population (42 %), correspond only to 37 % of the total volume of water delivered across the country for only 30 % of the total cost of the activity.

The last significant Governorate is Akkar with 9 % of the population targeted with water trucking activity in 2017 and corresponding to 8 % of the total volume delivered but 16 % of the total cost. This is making Akkar the governorate where water trucking activity is the less cost efficient.

The following table represents the average water trucking cost and average yearly volume delivered per individual, for main governorates for the year 2017.

Governorate	Average of Water trucking cost (\$/m3) in 2017	Average daily volume delivered per individuals in 2017
Akkar	8.43	19
Baalbek - Hermel	3.31	20
Bekaa	3.89	25
North	4.62	25
Total	4.05	22

Table 2: Average water trucking cost depending the governorate and average yearly volume of trucked water per individual (Water sector 2017)

At Governorate level, this preliminary analysis shows first differences in terms of type of service provided; this being mainly due, as described above, to different set-up: volume depending on seasons, reduction of volumes, as connection to local source for domestic use. Second, it reflects differences in terms of cost-effectiveness considering the average cost of 1 m3 of water delivered being for example more than 2 times higher in Akkar than in Baalbek-Hermel or in Bekaa.

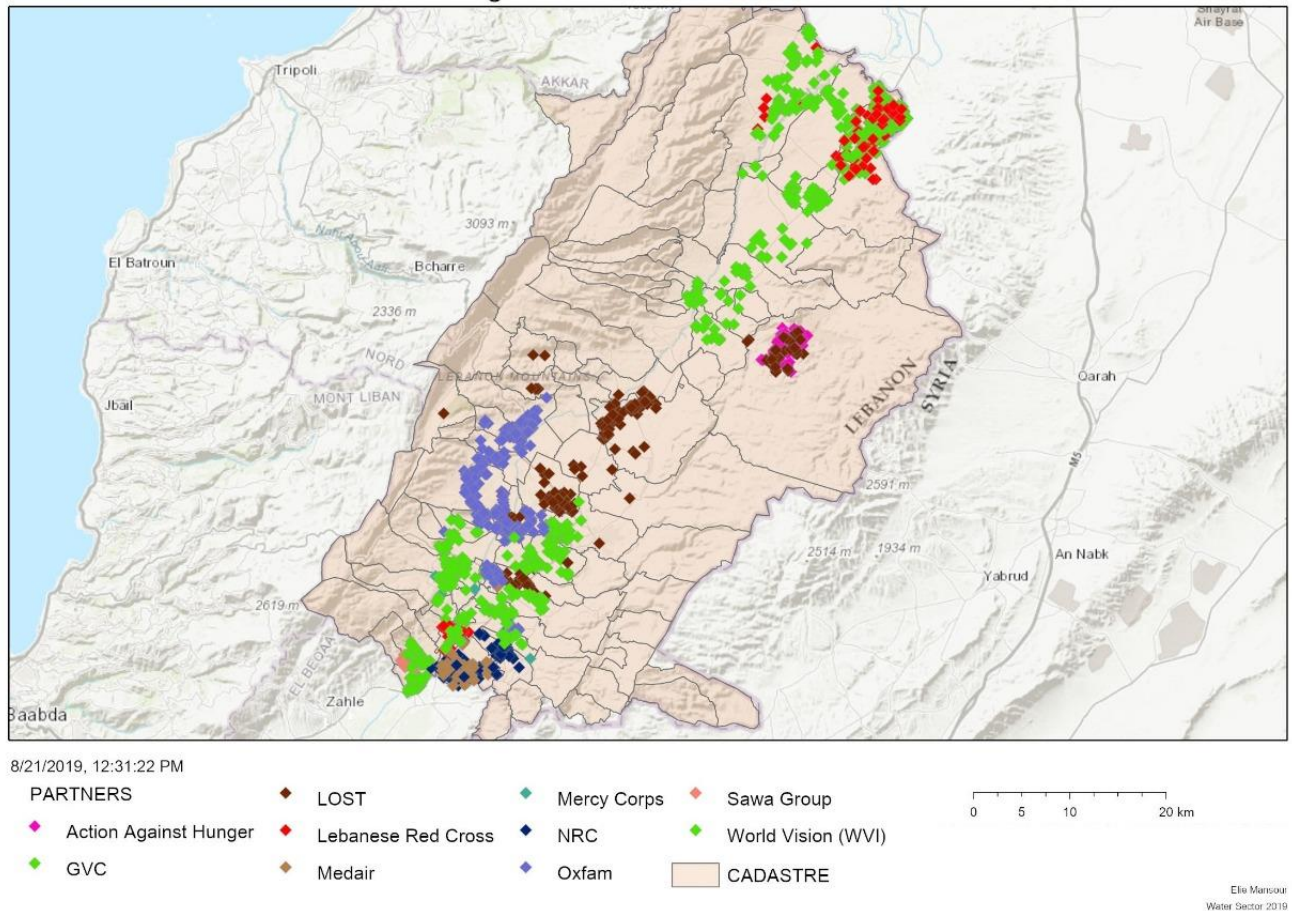
Baalbek – Hermel Governorate

In **Aarsal**, one can observe a large number of truckers (30). Two truckers have contracts with both AAH and LOST. The total volume of water distributed in Aarsal by both agencies reaches 297.7M liters for 33,072 ITS dwellers in 2018. They represent 99% of the ITS dwellers in Aarsal. The presence of this large number of water trucking providers has two reasons. On one hand, the quantity to be provided is high and needs a considerable number of trucks to be delivered. However, there was no large water trucking company in Aarsal prior to the displacement crisis ready to take on this new market. On the other hand, as explained by one key informant, there is a political understanding to encourage a large number of individuals from Aarsal to engage in trucking services as an employment opportunity. This is seen as a way for coping with the negative economic impacts of the displacement crisis and minimizing tensions between host and displaced communities. There are several displaced Syrians that are also providing water trucking services in Aarsal. In respect to said informal understandings, humanitarian agencies insist on working with Lebanese water trucking providers, even if they are not registered. Hence, it can be said that a high level of market competition marks this area.

From data collected by the Water Sector available for the entire year 2017, 57 % of the total cost in Baalbek-Hermel Governorate was spent in Aarsal cadaster representing 71 % of the total volume delivered and 50 % of the total population living in ITS targeted by this activity.

Aarsal is the cadaster with the lowest average cost per 1 m3 of water, with 2.65 \$/m3 over 2017.

WAP Coverage for Baalbeck-Hermel Governorate

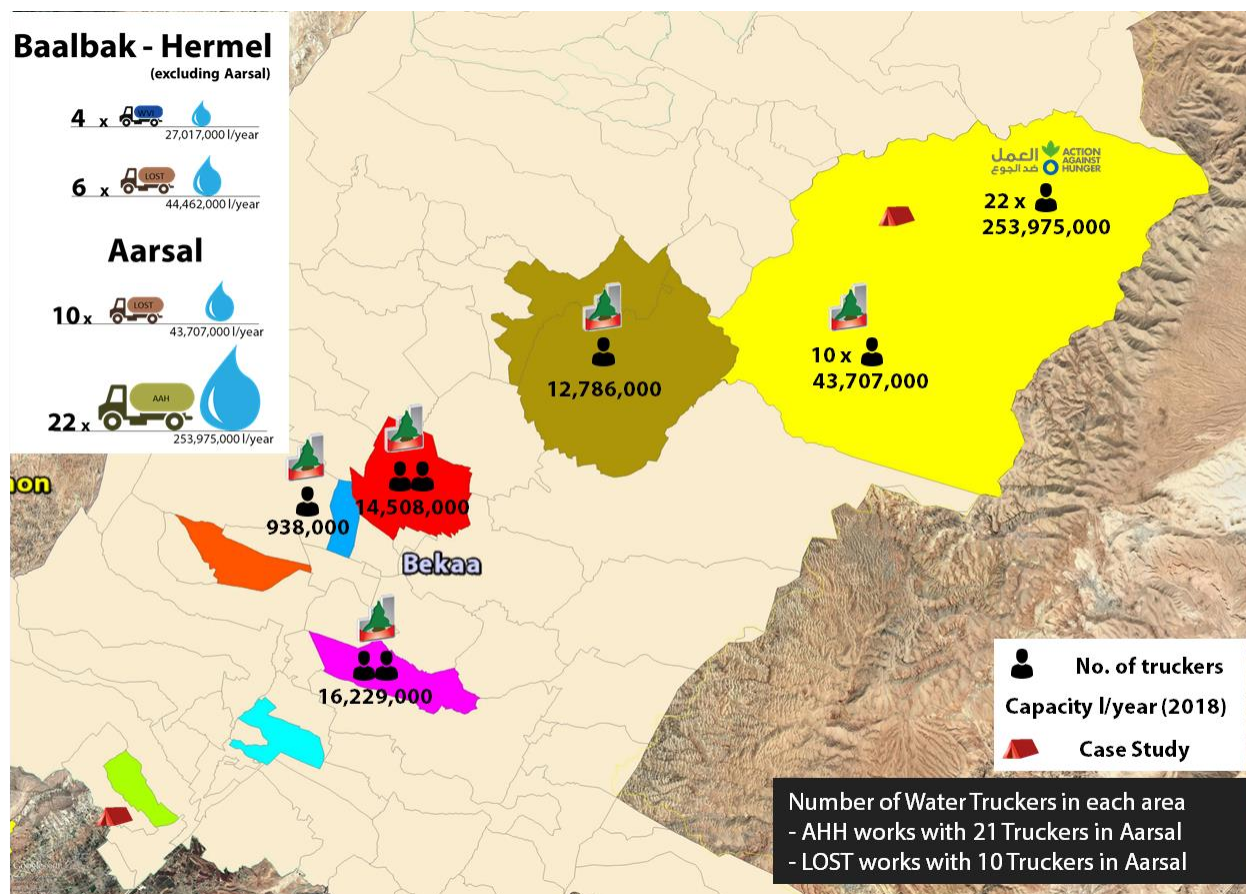


Map 1 : Baalbek-Hermel Governorate - Agencies working in ITSs

For Baalbek Hermel Governorate, **outside Aarsal**, the two agencies studied cover only 42% of the ITSs population. The volumes dealt by each trucker for the two agencies are clearly lower than those in other districts however based on Water Sector collected data for 2017, depending the cadaster, average cost per 1 m3 of water delivered varies from 3 up to 8 \$, showing significant differences.

One other specific characteristic is the lower reliance by humanitarian agencies on trucked water in the provision of water to ITS dwellers. For WVI, this goes as low as 19% of the population of ITS dwellers it services in the district.

The overall trend in the area, as described by a key informant, is the domination of a certain trucker in each specific area of the district. This is to be understood in relation to the strong presence in this area of a certain clan or communitarian-political force to which the trucker is affiliated. This leads to pseudo-monopolies in each area.



Map 2 : Number of water truckers in Baalbek-Hermel Governorate

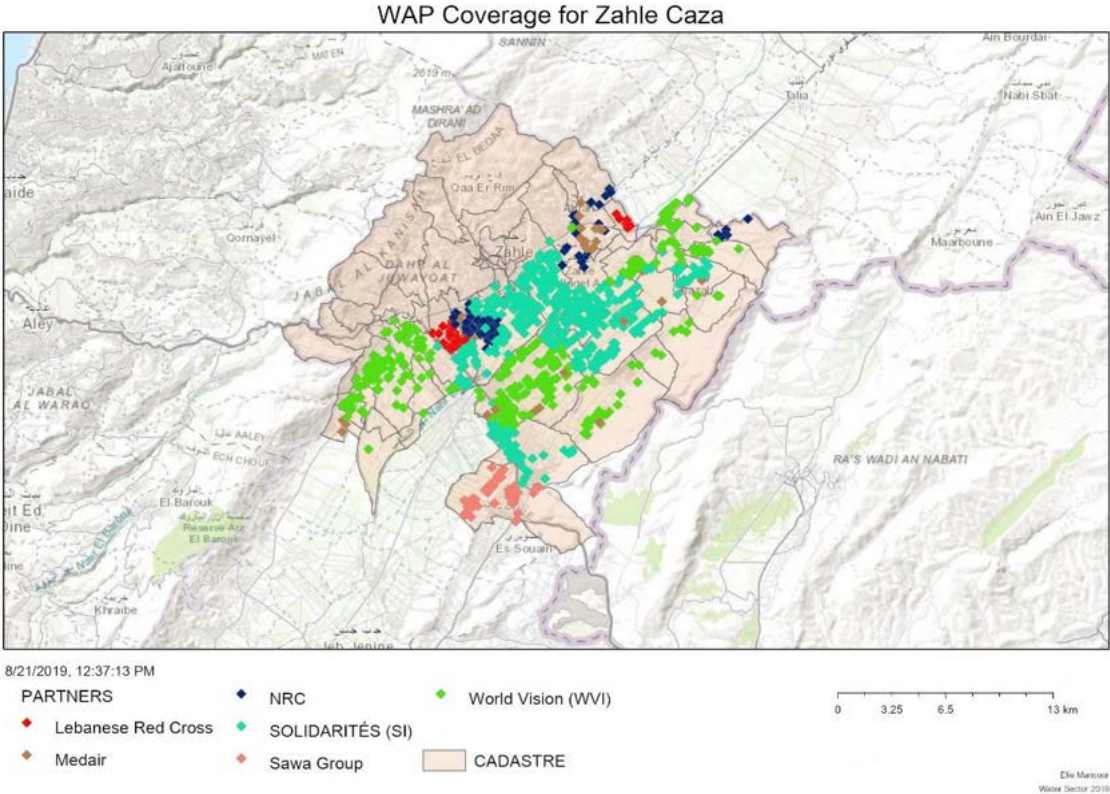
Zahle Kaza

In the district of Zahle, one observes the presence of a limited number of truckers (10) for a large volume of trucked water (316.5M liters in 2018). SI and WVI areas of operation in Zahle cover 78% of the ITS dwellers population. Of these dwellers, 81% are served by water trucking. There are significant disparities between the water truckers operating in the area. Four water truckers operating in Terbol-Zahle (76.6M liters), Bar Elias (62.6M liters), Zahle (49.1M liters) and Anjar (44.5M liters) operate greater water volumes than other truckers. Most of these are registered companies with multiple trucks. Also, in contrast to Aarsal, there is a clear geographical split of areas served by the different water truckers. As per key informants interviewed, some areas like Zahle-Dalhamiye face particularly high competition while others are dominated by a particular trucker.

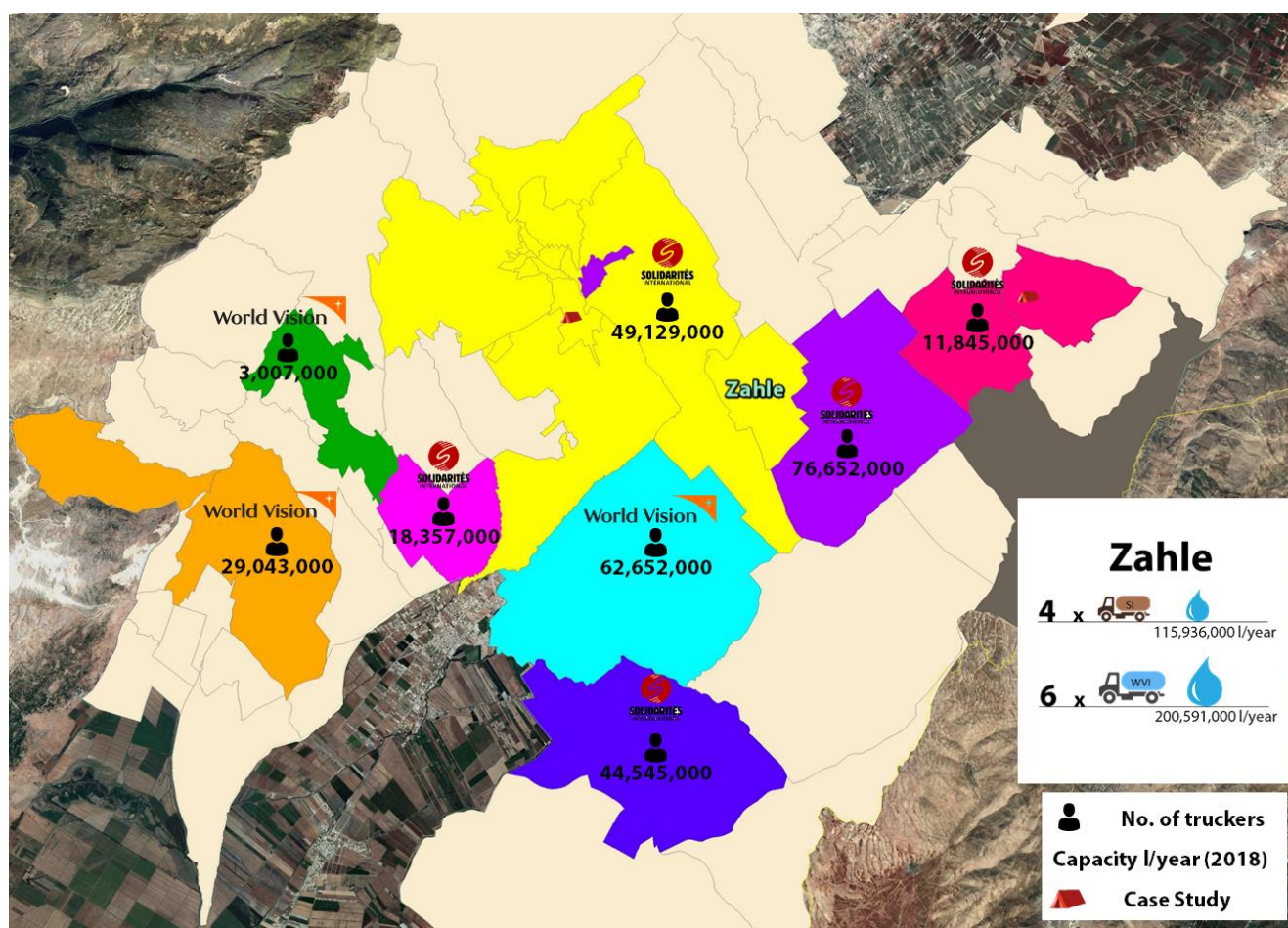
Based on data collected by the Water Sector over the whole year 2017, the average cost per 1m³ is 3.68 \$/m³, with prices varying from 2.2 up to 5 \$/m³ depending the cadaster.

Zahle district gathers 30 % of the total population living in ITS benefiting of water trucking services in the whole country and represents 31 % of the total cost and 34 % of the total volume delivered.

With a low-cost variation between cadasters, high populations depending on water trucking services and several agencies intervening in the area, Zahle district is the most competitive area.



Map 3: Zahle Kaza - Agencies working in ISs



Map 4 : Number of water trucks in Zahle Kaza

West Bekaa Kaza

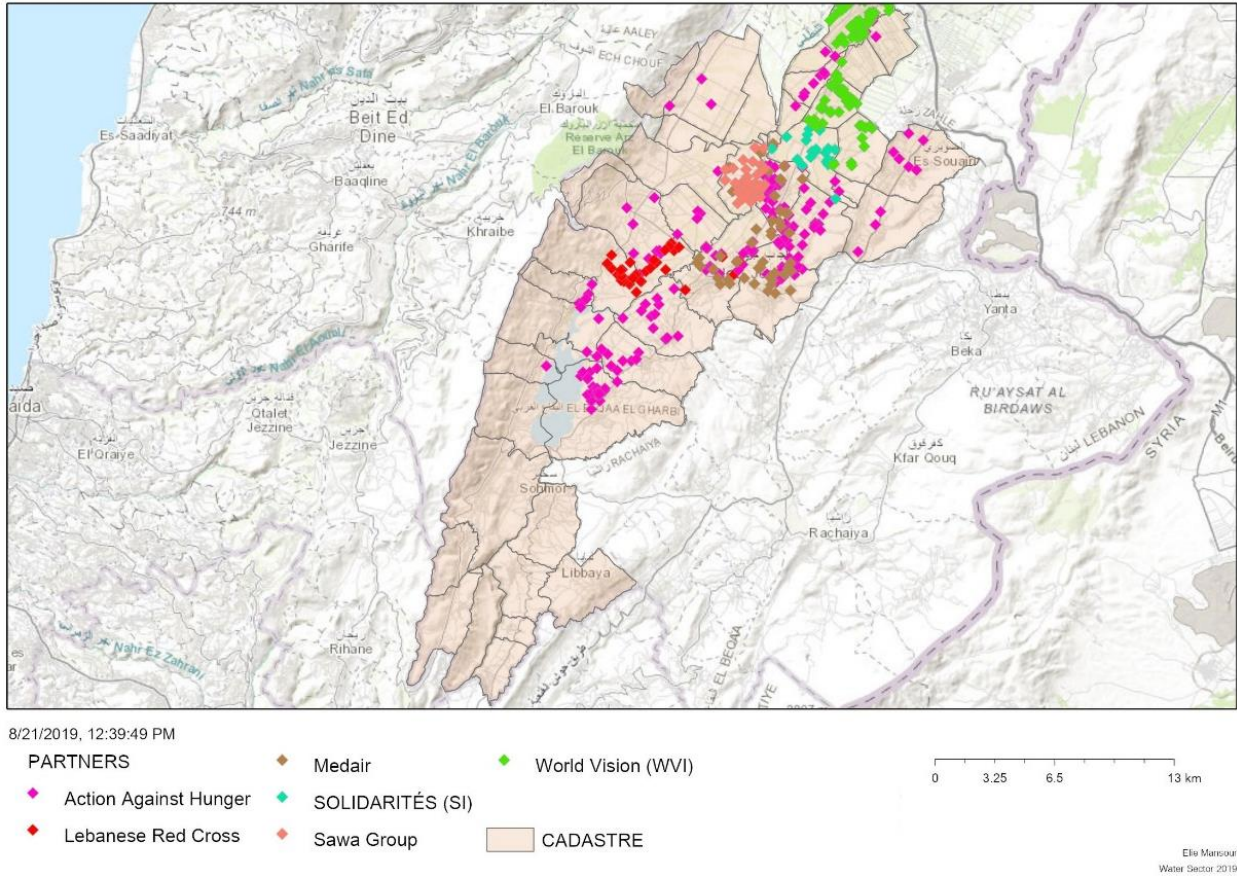
A similar situation exists in the West Bekaa district. In 2018, the three agencies covered by the study provided 121M liters through 7 water trucks to 24,761 ITS dwellers that represent 79% of the total ITS dwellers managed by these agencies in the district. The latter dwellers represent 89% of the total ITS dwellers in the district. Hence, as in Aarsal and in the district of Zahle, trucked water represents the main source of water provision in ITSs. There is a large variation in the total volumes operated between truckers. One trucker in particular operating in Marj reaches 49.2M liters per year while another does not go beyond 160,000 liters. While some of the truckers operate in a geographic cluster, the majority operates in different areas of the district. As per key informants in the area, as in Zahle, there is competition in some zones while in others some truckers are dominant.

Based on data collected by the Water Sector over the whole year 2017, the average cost per 1m³ represents 4.25 \$, with prices varying from 3.33 up to 5.38 \$/m³ depending the cadaster.

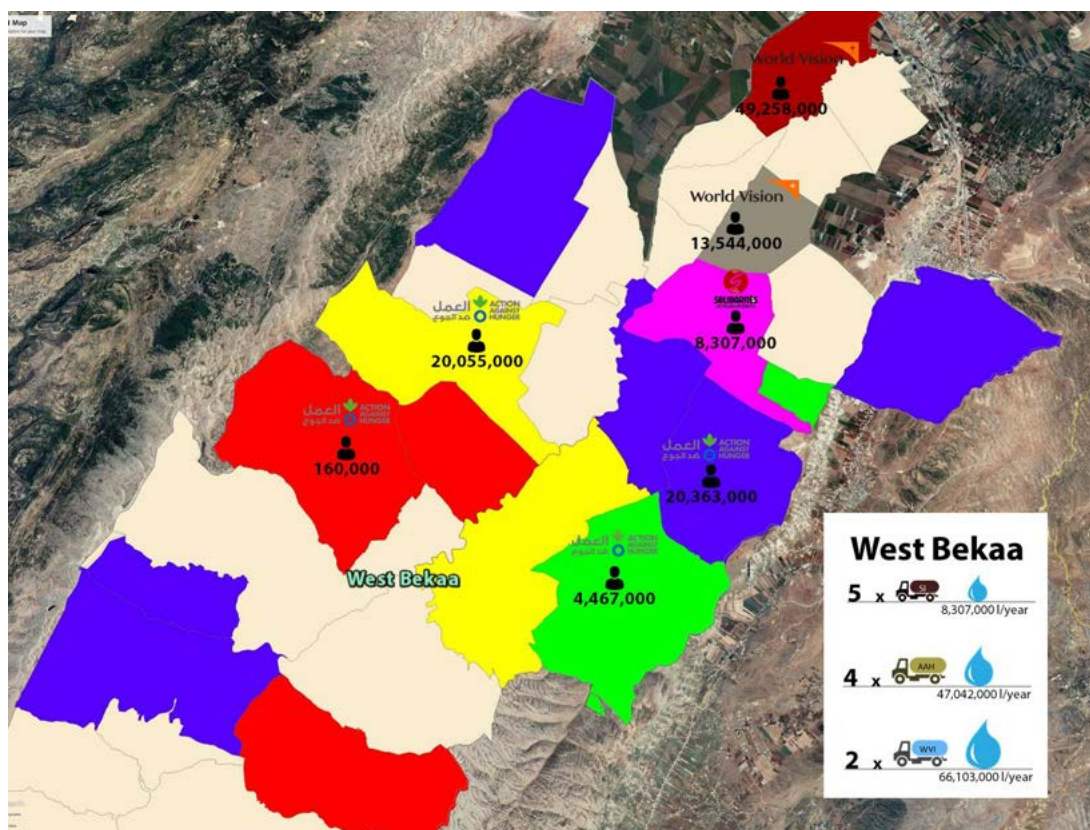
West Bekaa district gather 15 % of the total population living in ITS benefiting of water trucking services in the whole country, corresponding to 19 % of the total cost and 18 % of the total volume delivered.

With the lowest cost variation between cadasters, a significant population depending on water trucking services and several agencies intervening in the area, Zahle district is one of the most competitive areas.

WAP Coverage for West Bekaa Caza



Map 5: West Bekaa Kaza - Agencies working in ISs



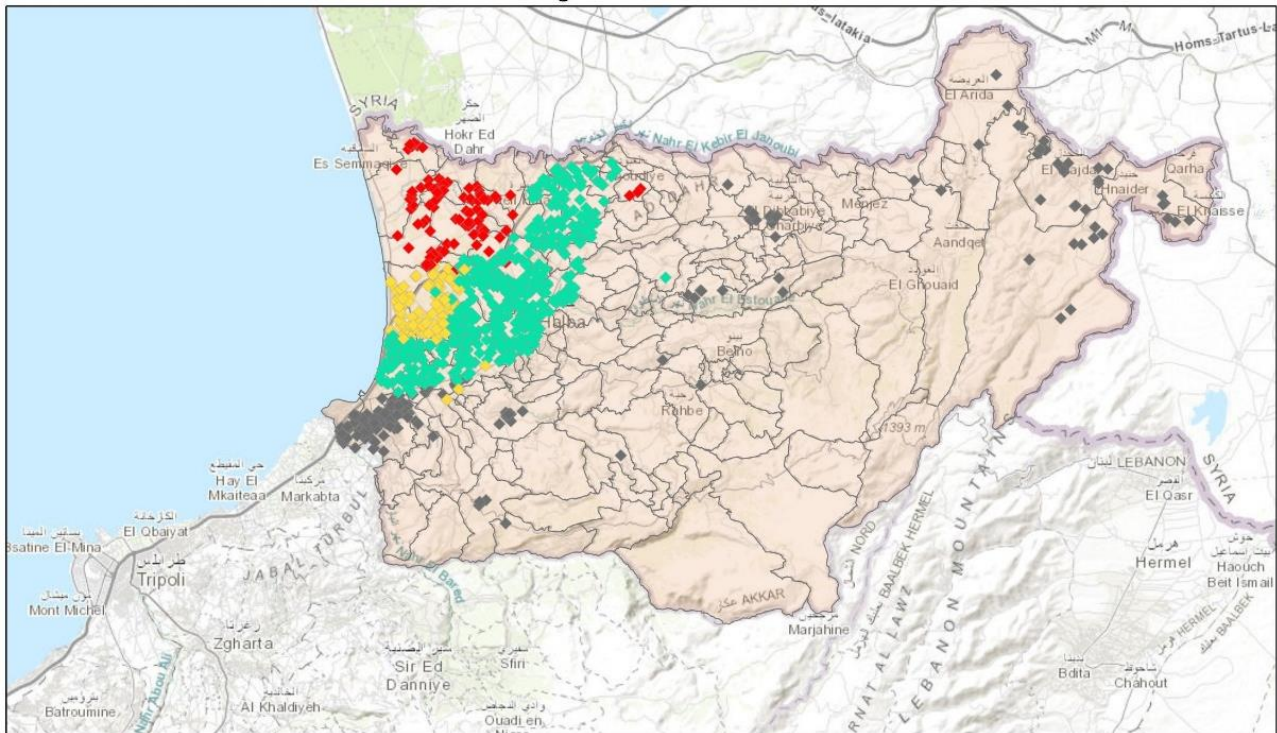
Map 6 : Number of water trucks in West Bekaa Kaza

Akkar Governorate

As for Akkar, the two agencies covered by the study support 82% of the total ITS dwellers of the district. Together they provide 85M liters, in 2018, through 36 truckers to 13,562 dwellers. The latter represent only 34% of the ITS population covered by the agencies. This is due to the fact that some ITS have been connected to secondary sources (to networks by Concern Worldwide and to private boreholes by Solidarités International). The high number of truckers cited above blurs the wide discrepancies between the two agencies and their different approaches. SI works only with five truckers in 144 ITS (among the 775 ITS SI is supporting in total) divided in geographical clusters. On the contrary, CWW calls on 31 truckers for the 252 ITS it supports in Akkar. In many cadasters, CWW calls on several different truckers. In the case of Bebnine and Wadi Jammous for example there are 8 different water truckers in each cadaster. As per key informants in the area, there is high competition in some areas and lesser competition in others. Prices however remain relatively high when compared with other governorates, with an average cost of 8.43 \$/m³ overall the governorate, and with variation from 4 up to 12\$ for 1 m³ of water based on data collected by the Water Sector over the whole year 2017.

Cost variation can be explained by the geographical specificities in which each WASH agency is intervening thus the number of truckers contracted by each agency. While SI and Leb-Relief are working in relatively confined areas compared with the population to support, CWW has a large and remote area to cover with a limited population.

WAP Coverage for Akkar Governorate



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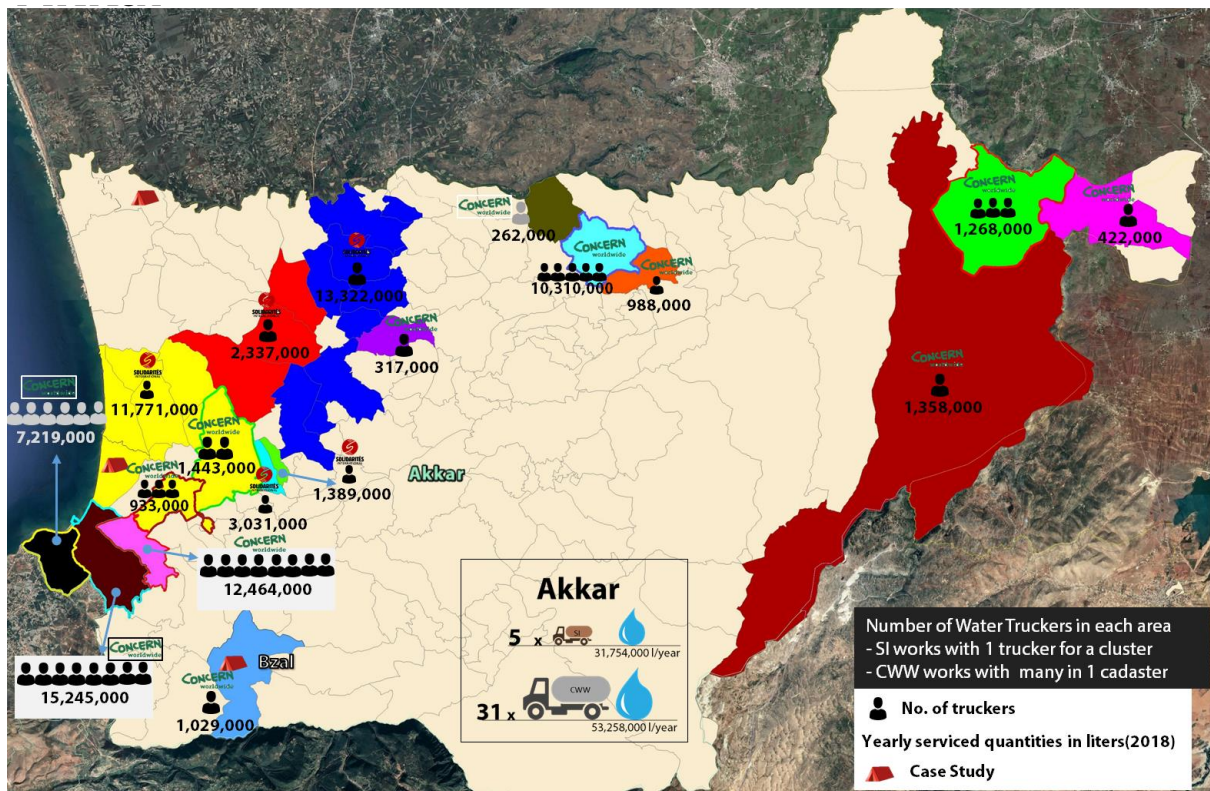
- ◆ Concern (CWW)
- ◆ Lebanese Red Cross
- ◆ Leb-Relief
- ◆ SOLIDARITÉS (SI)

CADASTRE

0 3.25 6.5 13 km

Elie Mansour
Water Sector 2019

Map 7: Akkar Governorate - Agencies working in ISS



Map 8: Number of water truckers in Akkar Governorate

Conclusion

Based on the overall figures provided by the truckers list and the WAP database, one can identify in each area and for the different agencies an average quantity per capita per day. While, in some areas certain agencies have maintained in 2018 an average ratio of 24-28l/capita/day, the largest majority is clearly below this figure. The overall average for all these areas is around 17l/capita/day. As mentioned earlier there is a wide range of reasons that explain these variations among which the seasonality (provision of 15l/p/d in winter and 35l/p/day in summer), the connection of ITSs to a secondary source of water which decreases considerably the quantity of water that need to be provided through trucking, or the choice made to maintain the provision of a higher volume of water to the ITSs due to the risk of rising tensions such as in Aarsal.

Regarding the cost-effectiveness of the trucking modality used to provide water to populations living in ITS, we can observe the following main disparities between governorates and/or within governorates linked to:

- The competition among large number of truckers within the same area.
- The potential monopolistic situation with small number of truckers available, especially in remote areas.
- The capacity of negotiation of each agency, depending on the monthly volume, to contract with one supplier as there is no regulation of the market to standardize costs (depending on specific genuine criteria such as distance from the source, fuel cost evolution, or water quality).
- The cost that the water trucker company may have to negotiate with the authorities in charge of controlling the water resource in each area.

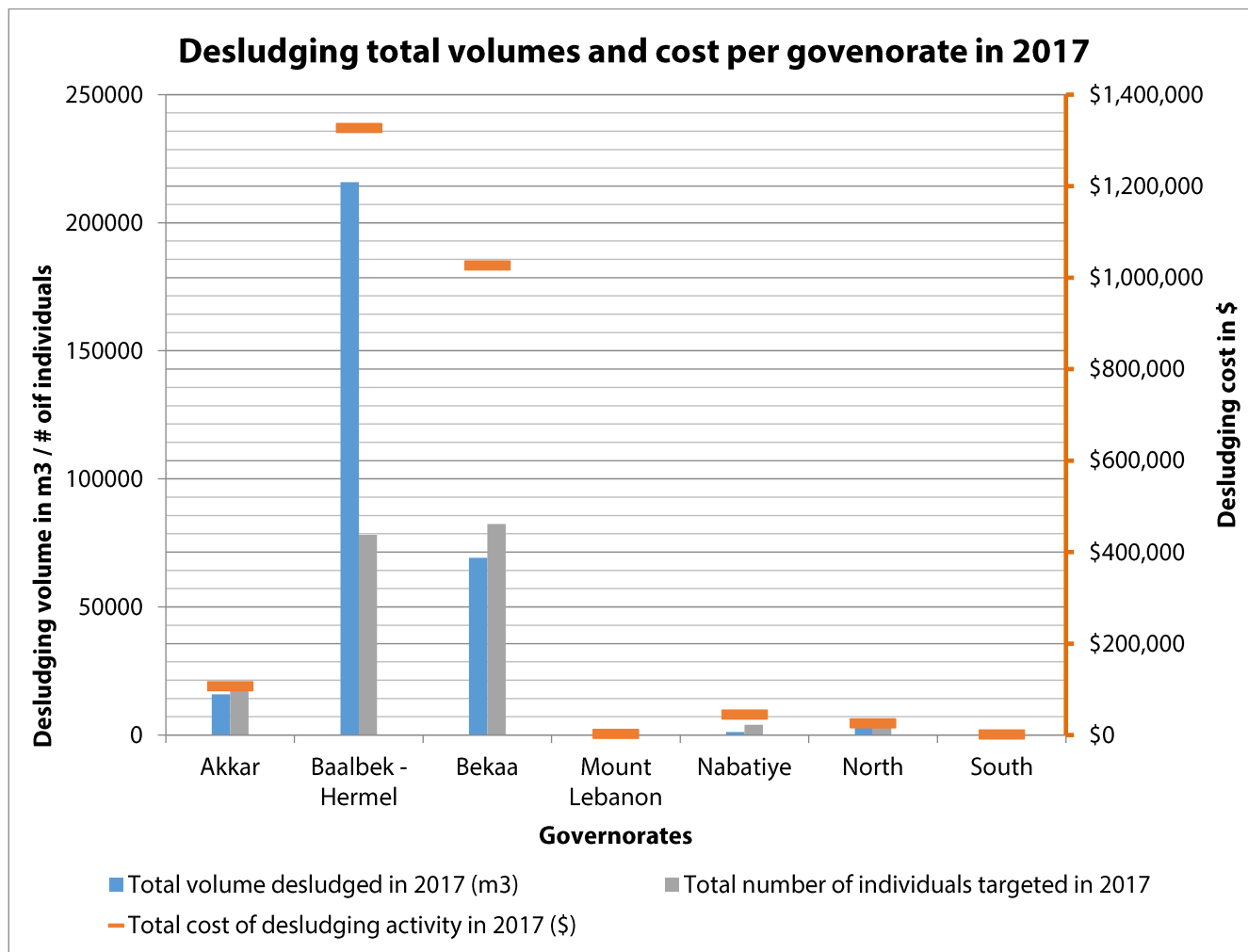
3.2.2. Desludging trucking markets

Before the Syrian displacement crisis, the desludging market was limited in Lebanon. It operated mainly for public infrastructures and buildings isolated from the wastewater networks. However, as mentioned by several observers, since 2012, this market has been growing in volume both of desludged wastewater and of number of trucks. Based on data collected by the Water Sector from 2016 till mid-2018, a remarkable disparity in prices was identified in every territorial boundary either it is a Governorate or a Kaza. The analysis of the market prices showed large variations between Governorates.

Overall the number of desludging truckers is far below the number of water truckers. In fact, entering this market requires higher initial investment, especially in truck costs and more specific knowledge to operate desludging trucks. It requires also getting permits from wastewater treatment plants, as it has become standard operating procedure among humanitarian agencies to ensure desludgers discharge in treatment plants. According to interviews with key informants, humanitarian agencies have different monitoring systems to ensure that this is respected: barcoding, GPS tracker, field monitoring, receipt from water treatment plant, WhatsApp video call, etc.

Market Competition

Regarding market competition, situation varies from one area to the other. For the following analysis, the year 2017 is considered, as data collected by the Water Sector are available for the entire year.



Graph 2 Desludging total volumes and cost per governorate in 2017 (Water Sector 2017)

In 2017, 71 % of the total volume for the whole country was desludged in Baalbek-Hermel governorate and this for 42 % of the total population living in ITS and targeted by desludging activities. In addition, the cost of the desludging activity in Baalbek-Hermel governorate corresponds to 52 % of the total cost of the activity in 2017 across the country.

The desludging activity in Bekaa governorate, targeting 44 % of the population living in ITS in the whole country, corresponds to 23 % of the total volume desludged across the country and 41 % of the total cost of the activity.

The last significant governorate is Akkar with 10 % of the population living in ITS targeted with desludging services in 2017 and corresponding to only 5 % of the total volume and 4 % of the total cost.

At governorate level, the analysis shows large differences in the way the WASH agencies manage the desludging activity. The latter is reflected in the differences of volumes desludged by individual and by the cost-effectiveness of the average cost of 1 m3 of sludge.

The following table represents the average desludging cost and average yearly volume per individual, for each governorate for the year 2017.

Governorate	Average of Desludging cost (\$/m3) in 2017	Average yearly volume desludged per individuals in 2017 (m3)
Akkar	6.71	0.89
Baalbek - Hermel	6.15	2.76
Bekaa	14.84	0.84
Mount Lebanon	9.60	0.33
Nabatiye	37.00	0.30
North	7.65	1.18
South	19.00	0.23
Total Lebanon	8.29	1.64

Table 3 Average desludging activity cost depending the governorate and average yearly volume desludged per individual (Water sector 2017)

The reported activities in ITSs showed also disparities between agencies within the same geographical area.

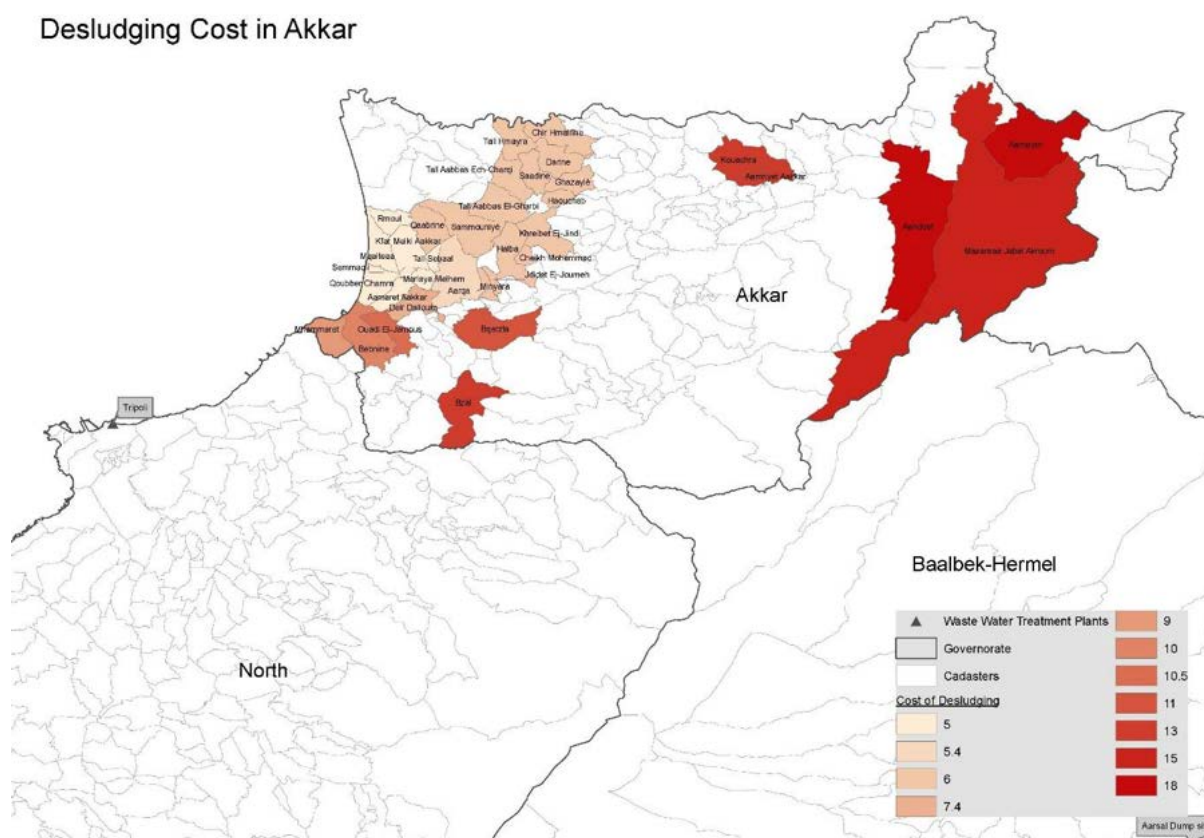
Governorate Agency	# beneficiaries	#m3 desludged	Desludging Total cost	Yearly cost per beneficiary	Average \$/m3/year	Average m3/beneficiary
Akkar	17987	15941	106900	241.92	\$ 6.71	0.89
CWW	3743	3146	36279	110.55	\$ 11.53	0.84
SI	14244	12795	70621	131.37	\$ 5.52	0.90
Baalbek - Hermel	78154	215791.85	1327305.89	290.23	\$ 6.15	2.76
AAH	23000	150113.25	839133.08	36.48	\$ 5.59	6.53
Intersos	14719	6603.1	63389.76	38.10	\$ 9.60	0.45
LOST	9322	15915	93969.5	35.80	\$ 5.90	1.71
MC	17637	37859.8	231769.5	82.07	\$ 6.12	2.15
NRC	4104	965.7	15378.55	16.29	\$ 15.92	0.24
Oxfam	9372	4335	83665.5	81.49	\$ 19.30	0.46
Bekaa	82429	69174.05	1026626.25	615.36	\$ 14.84	0.84
AAH	12245	8582.35	151900.63	38.79	\$ 17.70	0.70
Intersos	7125	4200	40320	22.36	\$ 9.60	0.59
MC	9825	9510.4	142656	14.52	\$ 15.00	0.97
Medair	6667	908.7	8507.52	32.76	\$ 9.36	0.14
NRC	1456	247.8	3532.8	2.54	\$ 14.26	0.17
SI	19842	24271	371072	104.88	\$ 15.29	1.22
WVI	25269	21453.8	308637.3	399.50	\$ 14.39	0.85
Mount Lebanon	741	245	2352	11.21	\$ 9.60	0.33
Intersos	741	245	2352	11.21	\$ 9.60	0.33

Nabatiye	4059	1203.7	44536.9	102.40	\$ 37.00	0.30
CISP	4059	1203.7	44536.9	102.40	\$ 37.00	0.30
North	2835	3337	25517	338.11	\$ 7.65	1.18
CISP	561	2024	18414	282.50	\$ 9.10	3.61
SI	2274	1313	7103	55.61	\$ 5.41	0.58
South	339	78	1482	27.26	\$ 19.00	0.23
CISP	339	78	1482	27.26	\$ 19.00	0.23
Grand Total	186544	305770.603	2534720.05	1626.47	\$ 8.29	1.64

Table 4: Reported desludging activities per agency/ governorate - Water Sector 2017

In **Akkar**, as per a key informant in the area, three desludging truckers dominate the market and are in competition with one another. As per interviewed desludgers, they move from a contract with one humanitarian agency to another. This is said to impact on the low prices in the area. Reported activities to the Water Sector, showed that Akkar has an average desludging cost of 6.71 \$/m3 over the year 2017.

Desludging Cost in Akkar



Map 9: Cost of desludging of 1 m3 in several Akkar cadasters (in USD) (Water Sector reported activities 2017)

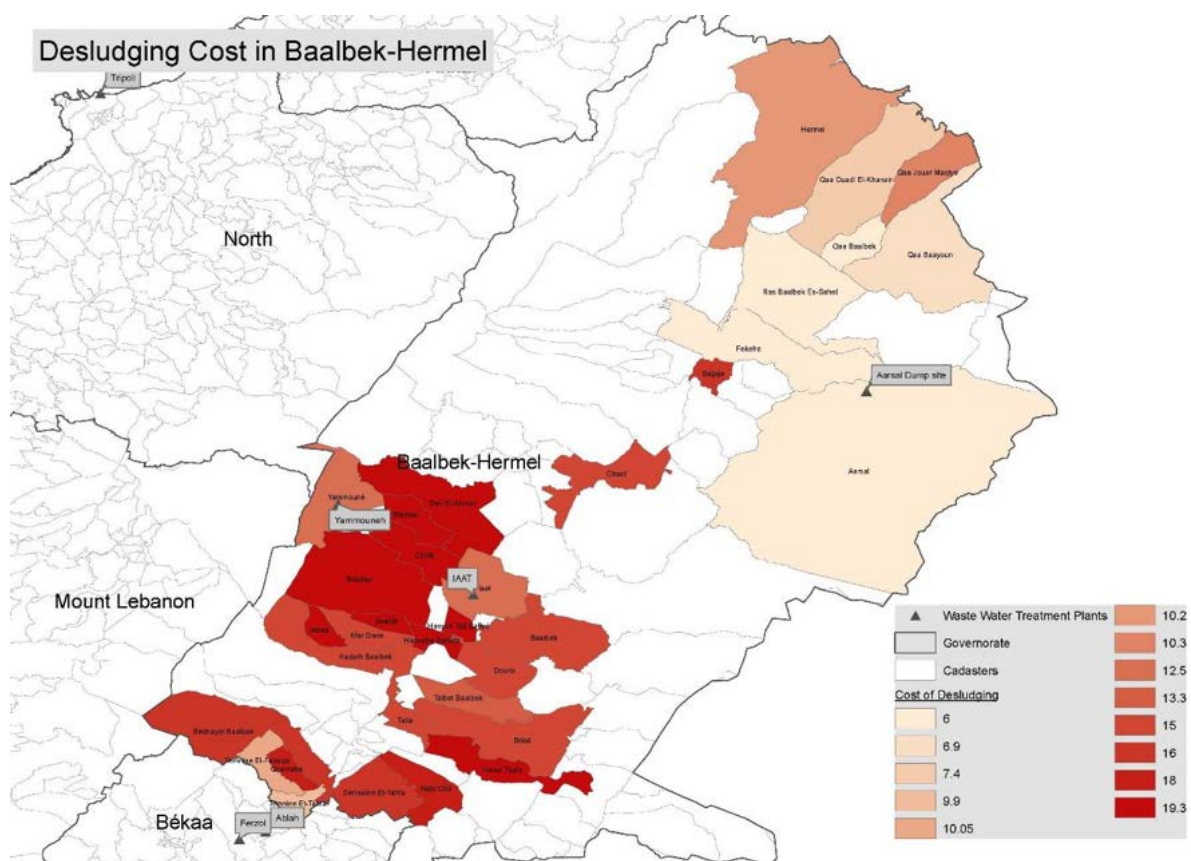
As shown with above map, the price of desludging increases with distance from the wastewater treatment plant located in Tripoli, or at least increases when moving from Akkar coastal area to the peri-urban areas, and to the eastern boundaries with Syria. While SI was paying an average of 5.52 USD/m3 in 2017, CWW were paying 11.53 USD/m3 in the same year (2017) for cadasters far from the Tripoli wastewater treatment plant. The latter shows that within one geographical area, prices can vary according to transport distances but also vary with each agency.

Each NGO is negotiating separately with desludging suppliers and the yearly volumes agreed with contract signed could impact unit costs. Indeed, for the year 2017, SI has desludged 12,795 m3 while CWW 3,146 m3.

In **Baalbek-Hermel**, the average cost of desludging represented 6,15 USD/m3 (2017), being the lowest of the country. However, if we exclude Aarsal cadaster, the cost of desludging has an average of 13.63 USD/m3 (2017), varying from 9.60 up to 19.30 USD/m3 in 2017. Lowest costs being concentrated in the northern parts of the governorate and highest in the southern areas.

The cadaster of Aarsal represents a particularity in comparison with the rest of the governorate with an average cost of 5.47 USD/m3, in 2017, for desludging. It is important to note that the total yearly volume desludged from Aarsal ITS, 197,712 m3, represented 91.6% of the total volume desludged in the whole governorate and 64.7% in the whole country.

This large yearly volume desludged is linked to the fact that, in Aarsal, black and grey waters are collected together and discharged in a large dump site, while in majority, in other areas, mainly black waters are desludged.



Map 10: Cost of desludging of 1 m3 in several Baalbek- Hermel cadasters (in USD) (Inter-Agency reported activities 2017)

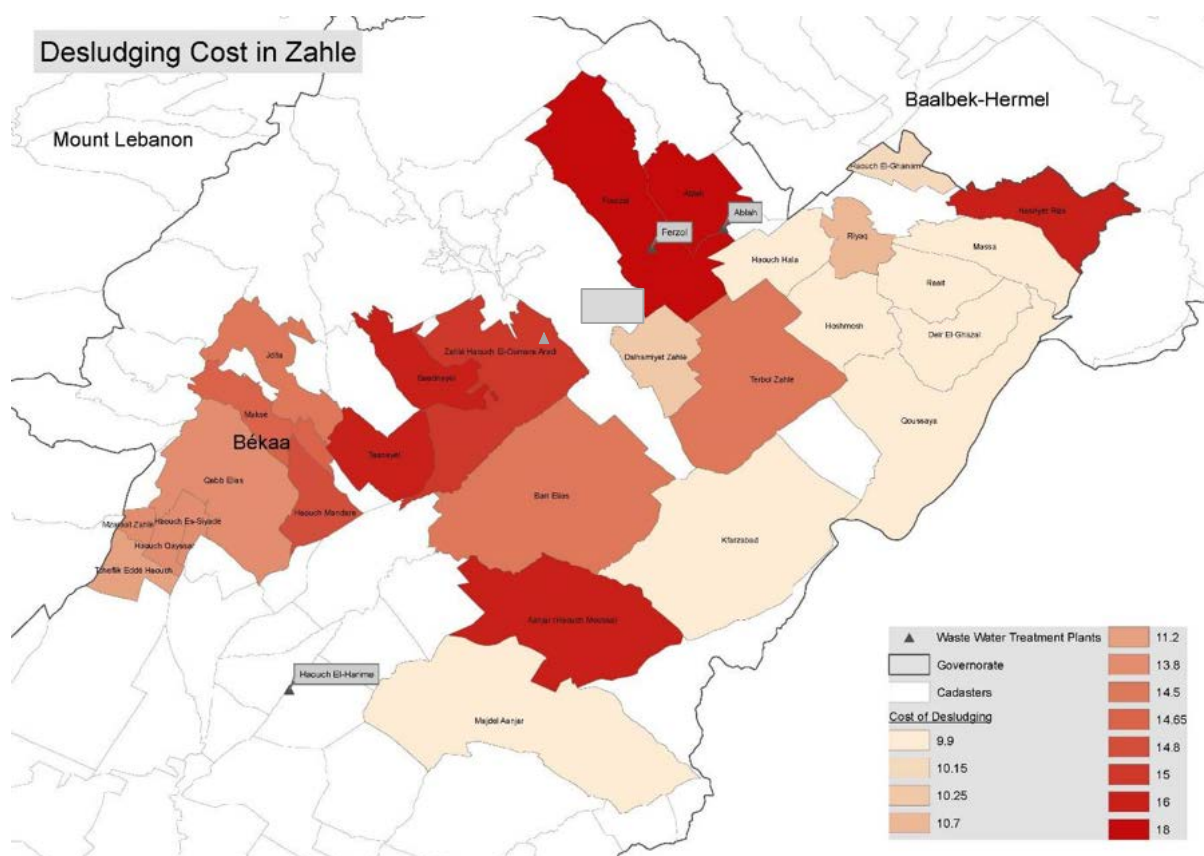
It can be noticed, that cadasters are clustered geographically based on the existence of discharge location:

- North of Baalbek-Hermel governorate including Aarsal;
- Central governorate, around IAAT and Yammounneh treatment plants;

- South West, at the central Bekaa boundaries.

In the **Bekaa**, there is also a limited number of desludgers - five main ones according to several key informants and desludgers. Many operate simultaneously in different districts. One interviewed desludger said he operates in Zahle, Baalbek, West Bekaa districts as well as in Aarsal. This makes this market much more fluid than the water trucking market with high opportunities of contracts. Desludgers in the Bekaa are mostly enterprises with several trucks. Transport costs are elevated as desludgers tend to travel long distances in the Bekaa to discharge in wastewater treatment plants. One desludger explained that in the Bekaa some desludgers know one another and meet regularly and have informal understanding as to the division of the market between themselves. However, there is still competition on certain contracts. Desludgers stress the fall in funding in the last year and its impact on desludged quantities and negotiated prices.

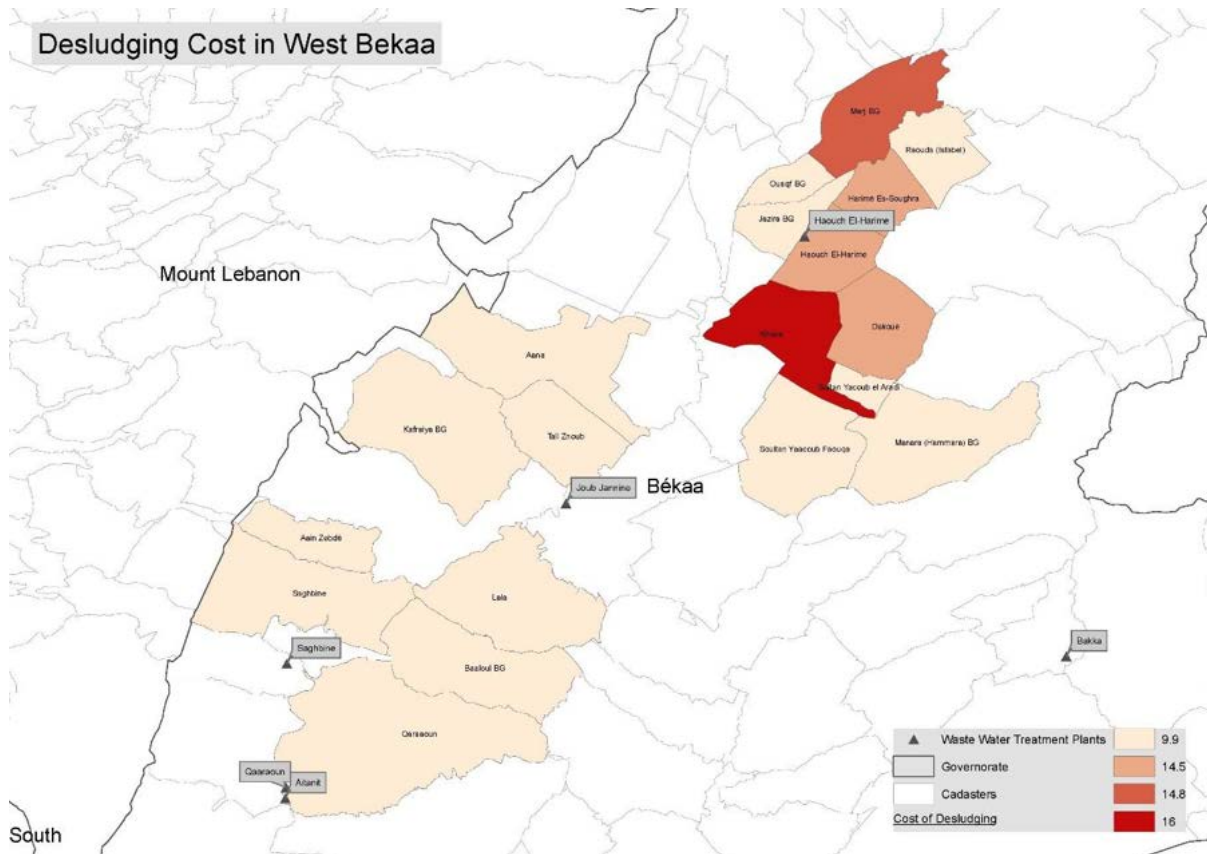
In Bekaa governorate, the average cost of desludging is 14,84 USD/m³ (2017) being part of the highest rates and representing 41 % of the total cost of the desludging activity in 2017 for only 23% of the population living in ITS in the whole country.



Map 11 : Cost of desludging of 1 m³ in several Zahle Kaza's cadasters (in USD) (Inter-Agency reported activities 2017)

In central Bekaa, according to Interagency 2017, desludging in Ferzol and Ablah have the highest rates considering sludge discharge in both localities' treatment plants. Cadasters surrounding the Zahle wastewater treatment plant, prices range from 9.9 USD/m³/year to 16 USD/m³/year.

One can deduce that prices can be affected by the distance to the treatment plant or the discharging point, and that prices changes mainly according to each agency operating in each zone. According to table 4, the price fluctuation is considerable knowing that the stated villages and cadasters are close geographically.



Map 12 : Cost of desludging of 1 m3 in several West Bekaa Kaza's cadasters (in USD) (Inter-Agency reported activities 2017)

In West Bekaa, two main clusters are formed geographically. The first one includes cadasters surrounding the Joub Jannine wastewater treatment plant having similar costs for desludging services. The second, at the North East of the Kaza, surrounds the Haouch el Harime discharge point for truckers on the public network connected to the Joub Jannine waste water treatment plant. Within this second cluster prices fluctuate from 9.9 to 16USD/m3/year of desludging.

The price variation of the desludging market might be explained by the following:

- The non-regulation of the market especially when it comes to contracts with humanitarian agencies: Most agencies are receiving funds from the same source but are negotiating separately with suppliers and different prices were noticed between two different agencies working in the same geographical area.
- The limited competition between truckers compared to water trucking and the freedom for truckers to juggle between different contracts as depicted during interviews.

- The lack of regulations related to wastewater discharge which questions the quality of the sludge disposed in treatment plants/ lifting stations/ manholes and to what extent these infrastructures can deal with this concentrated sludge.

Conclusion

Contrary to the water trucking market, the desludging market has not been affected by funding cuts as depicted several times during interviews conducted. However several aspects are affecting the desludged quantities per individuals per year, which are related to the efficiency of the desludging activity:

- Capacity to respond to the desludging needs: Agencies can face constraints to systematically desludge on time. This potentially leads to bad coping mechanisms as digging new pits or self-desludging and discharge to the environment.
- Type of waste waters desludged: in some cases only black waters are desludged while in other cases it is both black and grey waters which represent a drastic increase of volumes to be desludged and costs to be considered to ensure a sufficient service.
- Type of sludge containment before desludging: some systems installed, collecting wastewater at site level, are using infiltration to the ground of the liquid part after settlement of the solid part to be desludged. The use of this type of system, as cesspit or septic tank, reduces significantly the volumes to desludge compared to holding tanks which are containing all wastewater until desludging. However, infiltration to the ground, depending the area (soil, water table level, proximity of river) can represent a risk of contamination for the environment.

Several parameters and specific context considerations seem to affect the desludging cost of 1 m³ of sludge and transport it to the agreed discharge point (wastewater treatment plant, manhole, and dump site) as:

- The distance between the site and the discharge point.
- The yearly volumes negotiated within a contract with one supplier for a specific area.
- The cost that the service desludger may have to negotiate with the authorities in charge of the wastewater treatment plant or the discharging point.

In addition, the lack of coordination between humanitarian agencies working in same areas and more globally the lack of regulation of the desludging market can lead to significant variations of prices between humanitarian agencies working in same areas.

3.3. Impacts of WASH services' reduction on ITS dwellers

In the early years of the crisis, reports suggest lack of water in ITS proved to have considerable negative consequences in terms of health on ITSs dwellers (CARE, 2013; Solidarités International, 2013). The use of contaminated wells as well as low-standards storage conditions of water have reported to cause outbreaks of diarrhea and epidemic diseases like measles and other outbreaks of rare diseases that have been long eradicated in Lebanon like Leishmaniasis. The gradual deployment of WASH infrastructures and extension of coverage of WASH trucking services has

considerably improved the overall WASH conditions in ITS on the 2014-2017 period.

Recent cuts in WASH budgets have however reversed this trend. As can be seen in the two studies prepared by World Vision and Oxfam, impacts of these cuts could be tremendous on ITSs dwellers (Adams, 2018; World Vision, 2018). Though using different methodologies and covering different areas of the Bekaa valley, these studies came practically to the same conclusions. The impacts of water reduction in ITS could lead to:

- Health issues: mainly WASH-related diseases originating from use of contaminated water, lack of hygiene, proximity to wastewater discharging, etc.
- Livelihood issues: mainly due to cuts in other basic expenditures or increased debt, knowing that the 2018 VASyR survey shows an already strained situation for the largest majority of Syrian displaced population in Lebanon - informal debt representing 52% of income in household budgets (United Nations Commissioner for Refugees et al., 2018). This may lead these households to engage in more dangerous types of work or send their children to work.
- Stigmatization and social tension issues: this situation will make ITSs dwellers extremely vulnerable to stigmatization and raise social tensions with host communities. In fact, WASH-related diseases in these conditions may well spread beyond ITSs, and competition would most likely be expected to rise even more on an already limited employment market.
- Protection issues: this situation is seen to certainly have impacts in terms of increase of domestic violence and abuse.

3.4 Public institutions' representations and actions in ITS and their WASH services

From the beginning of the Syrian displacement crisis, ITSs represented a major element of controversy in Lebanon. In the mind of many Lebanese, an association was established between these ITSs and the historic trajectory of Palestinian camps in Lebanon that went from temporary settlements in 1948 to practically whole towns and villages. Hence, there was strong political resistance as to any form of support to ITSs that would suggest long-term establishment. This was the position finally adopted by the Lebanese Government and State institutions. Hence, in terms of access to WASH services, while displaced Syrian nationals were not discriminated when they resided in residential shelters, those living in ITSs could not be connected to public water or wastewater infrastructures. Officially, ITSs dwellers were not recognized as "regular customers".

At the same time, as shown in interviews, there are severe criticisms from representatives of the water establishments as to the impact of ITSs on the environment. ITSs are seen as contributing heavily to the pollution of water and underground resources in the areas where they are established. And as mentioned earlier, these interviewees criticize the limited contribution of humanitarian WASH services in reducing such negative impacts.

On the other hand, some interviewees mention that ITSs dwellers are using wells and trucking water, paying the private sector. This leads to considerable financial "loss" for the water establishments. Moreover, they cannot control trucking services and wells' pollution, and their impacts on the environment. Overall, interviewees agreed that the situation was unsustainable.

This explains the progressive change in approach of the MoEW and some water establishments towards WASH services in ITSs. While, at first, any public WASH support to ITSs was not tolerated, the present situation shows a more diverse situation. It must be noted that water establishments, despite being affiliated to the MoEW, are financially and administratively autonomous institutions thus explaining the differences between situations.

Lacking in personnel and resources, in many cases, water establishments were incapable of following up and sanctioning non-authorized connections to public networks. This is especially the case when this connection is done with the implicit acceptance of municipalities and other influential local actors. Several interviewed representatives of water establishments recognize this situation.

To influence the situation in ITSs without directly recognizing them as regular residents, some water establishments betted on coordination with humanitarian agencies. Hence, humanitarian agencies were pushed to undertake measures aiming at minimizing non-environmentally friendly discharging. The MoEW has also stressed that it has allowed humanitarian agencies to use operational wastewater treatment plans to discharge ITSs desludging. In the last years, the MoEW in concertation with leading humanitarian organizations, especially UNICEF, has attempted to regulate and control the situation. A first approach was two-fold. On one hand, pushing for the settlement of ITSs only in zones near existing water sources. On the other, using these sources to service the ITSs and the Lebanese population. However, this did not work due to difficulties to impose ITSs' locations.

In the case of the South Lebanon Water Establishment (SLWE), a step further was taken. The SLWE allowed connections of ITSs to public water networks if the landowner set a regular account for his land and paid for it. The SLWE says that these conditions allow serving ITSs without officially recognizing them.

The case of the SLWE represents surely a clear break from previous public institutions' approaches to ITSs' WASH issues. Nevertheless, it is unlikely that the decision to connect ITSs - when conditions apply - could be extended to all ITSs. This is first due to the state of the networks in many areas. Deteriorated networks are not likely to absorb such large increase of demand. Moreover, many ITSs are in agricultural areas far from village and town networks. It is also important to note that, regarding wastewater discharging, this would not necessarily be an improvement of the present situation. In fact, the large majority of desludging through trucking services paid by humanitarian agencies is discharged in wastewater treatment plants, while the vast majority of villages and towns wastewater networks tend to end up discharging in water streams and in the sea.

As for the MoEW, it has many concerns regarding the current situation of the response to the Syrian displacement crisis in Lebanon in the Water Sector, especially regarding ITS. First, there is a concern regarding the environmental impact of the mode of operation that prevailed, with many ITSs discharging their wastewater in a harmful way to the environment. This is seen as having

considerable consequences in terms of contamination of underground water and public health. Second, MoEW denounces a problematic use of existing water resources through the proliferation of illegal wells and uncontrolled overexploitation. Third, MoEW is concerned by possible abuse of the unregulated trucking market which diverts money to private truckers. Fourth, MoEW regrets that even if this situation developed over seven years only limited information is nevertheless available as to this trucking market and as to the real impacts of this mode of WASH services' delivery to ITSs on the environment and water resources.

This is even more problematic for the MoEW as the current situation is in contradiction with two basic principles. The first principle is legal and is based on the premises that water resources belongs and is under the responsibility of the Lebanese State and is a public good. It should not be exploited by the private sector in an uncontrolled way and mostly without the permission of the public institutions in charge. It represents also a financial loss for these institutions. The second principle is expressed in the Government of Lebanon's policy relating to the Syrian displacement crisis, stating that Lebanon is welcoming and assisting displaced Syrians but does not allow long-term settlement of these populations. The MoEW hence negatively views the infrastructures set in the ITSs, especially local networks and connection to public networks.

The MoEW recognizes that public institutions have failed to build a clear national framework to address these challenges and have left the initiative to humanitarian organizations. This led to a fragmented landscape where different types of responses are developed locally. While some of these responses have been positive - or at least in the frame of what the MoEW considers as responsible to the environment - many have been abusive and irresponsible. Some municipalities have also contributed to this situation by allowing the digging of wells, the implementation of infrastructures and the connection of ITSs to public networks.

Presently²⁷ the MoEW has prepared a framework to regulate the situation. This framework is based on three principles: 1) the respect of the Lebanese Government's policy of refusing actions that would lead to a long-term settlement of Syrian displaced population, 2) allowing the Water Establishments (WE) to take the lead in the organization of the response in the Water Sector to benefit financially from it and further develop its operations, 3) insuring that the response will not be at the expense of Lebanese citizens who should have priority. The framework addresses the water and wastewater delivery issues.

Regarding water, the framework is built on four premises: 1) operations are to be led by the WEs, 2) using metering systems to quantify water quantities delivered to ITSs, 3) infrastructures in ITSs are not to be permanent, 4) ITS dwellers would benefit of at least of 50 l/capita/day, in line with international standards for a protracted displacement.

WEs would be provided with trucks and would themselves bring water to ITSs from set water

²⁷ IT MUST BE NOTED THAT THIS NEW FRAMEWORK IS PREPARED AND ADVOCATED BY THE ADVISOR OF THE NEW MINISTER THAT TOOK OFFICE IN THE LAST MONTHS. IT WAS SHARED TO INVESTIGATORS IN AN INTERVIEW IN APRIL 2019. IT WAS NOT MENTIONED IN AN INTERVIEW HELD IN DECEMBER 2018 WITH THE ADVISOR OF THE PREVIOUS MINISTER.

sources equipped with metering systems and deliver the water into plastic tanks, collective or at shelter level, in ITSs. No piping infrastructure system would be allowed in ITSs.

Three situations are identified, based on the presence of nearby public networks and their capacity to accommodate the additional needed quantities. If this is the case, in a first situation, an outlet from the network will be equipped by a metering system and a reservoir from which the WE trucks will provide water to ITSs. In a second situation, the network must first be upgraded. In a third situation, in the absence of an existing water source capable of providing needed quantities without affecting water delivered to Lebanese households, a new water source would be sought and be used for water provision to ITSs.

The MoEW does not recognize a role for municipalities in this framework. It stresses that municipalities have no mandate in the water sector. However, it defends good relations with municipalities, as they are the ones closer to the ground and have a better knowledge of local problems. In the view of the MoEW, municipalities could report these problems to WEs and keep them informed so that the WEs' actions would be informed. It also suggests the possibility of having memorandums of understandings and even contribution to certain local actions in the water sector (like fees' collection) but always under the supervision and leadership of WEs.

As for humanitarian agencies, the ministry believes that they could play different roles in this framework including financial assistance for the provision of trucks, the upgrading of certain networks or the digging of public wells and the setting of metering systems. They could also assist in training and in some operations.

Concerning the wastewater sector, the MoEW advocates for a system based on a new type of septic tanks. This model has been experimented by SI previously and the ministry is willing to experiment it and eventually adopt it. It is based on a process that is believed to allow the progressive decantation of sludge and the biological clarification of wastewater. The effluent water would then be discharged without compromising the groundwater quality. As for sludge, it would be taken once a year and dried in defined sludge beds. This would allow minimizing the need for continuous desludging and it could hence be operated by the WE. This septic tank could be installed underground. It could be connected to latrines and shelters through pipes. However, these septic tanks and pipes would be identified and included in a GPS database so that they could be removed after the ITS is dismantled.

However, many questions are still raised as to the capacity of the MoEW and the WEs to implement this strategy.

4. Conclusions

Through the preliminary analysis based on the general overview of the existing documentation, and interviewing some key institutional actors, two main indications seem to emerge. On one hand, based on the review of the WAP database, the WASH trucking services delivery system developed by the humanitarian community only cover a portion of ITSs WASH needs.

Alternatives to this system seem to be diverse and well implemented, including reliance on local wells or ITSs organizing themselves to call on and pay trucking services providers. However, on the other hand, this review has confirmed concerns highlighted in other studies, (focusing on limited areas and number of ITSs), that further retreat of the humanitarian agencies from the Water Sector will have dire consequences in terms of health, environment and possibly social stability.

In order to consider effective and efficient alternatives to the present system, additional inquiry has been made into public institutions providing WASH services in Lebanon, their involvement in the response to the Syrian displacement crisis and more specifically the way they perceive and treat ITSs. This has shown that public institutions are taking steps to be able to better mitigate the impacts of ITSs on the environment and water resources. More involvement in ITSs WASH services is to be expected. However, it is too early as to assess to what extent and with which consequences.

Learning from the Field: Transversal Analysis of Case Studies

In this market study, the main focus is to understand the value chain in the water and desludging markets to support programming and the development of strategies that would allow a better provision of ITS dwellers as well as a better regulation of these markets. To do so, based on the case studies available in annex, this chapter analyses the place each stakeholder holds in these markets and how they are impacted by it. It also looks into how the different scenarios for reorganizing the humanitarian Water Sector for ITSs identified in introduction, might impact these stakeholders. Hence it will discuss the situation of (1) ITS dwellers, as main beneficiaries of the WASH services, (2) the water and desludging trucking services providers, (3) the humanitarian agencies and the municipalities. As for the State institutions in charge of the Water Sector (the MoEW and the WEs), they do not seem to have so far any impact on the trucking markets in the case studies. Their views on WASH services to ITSs and especially on the trucking markets, as well as their present and planned interventions on these services and to regulate these markets were detailed in chapter 1, but this chapter will go back to discussing their possible contribution on these subjects.

1. The ITSs dwellers

To understand the vulnerability of ITSs dwellers to the water trucking and desludging markets and their potential transformations in case of humanitarian agencies withdrawal of direct management of WASH services in ITSs, the study assessed seven different related dimensions.

1.1 ITSs dwellers access to water: quantity, quality, cost and equity

ITSs dwellers may get access to water from different sources: 1) local municipal or water establishments' networks, 2) wells and boreholes in the ITS perimeter or its surroundings, 3) water trucking services, 4) bottled water. Each of these water sources categories have different implications in terms of available water quantities, water quality and households' livelihoods in the ITS.

As mentioned in the WAP database, some ITSs, not covered by this study, have access to water networks. This is the case of ITSs in the South where there is an understanding between the South Water Establishment and humanitarian agencies for ITSs to be allowed to connect to the establishment's networks if there is a WE account in the name of the landowner and fees paid by him. Most likely, this would mean more accessibility to water for ITSs dwellers, at least beyond the 31 l/capita/day maximum that they seem to receive by trucking in the case studies. However, a thorough analysis of such situations will not be addressed here as none of the 10 cases covered by this study benefits from connection to water networks.

Concerning wells, unquestionably, in terms of water availability, the presence of wells in ITSs represents a considerable asset for their dwellers. Even when the water of these wells is not potable or faces risks of seasonal pollution²⁸, wells' water still covers most dwellers' domestic water needs. In these cases, ITS dwellers seem to feel less affected by water scarcity. Many humanitarian agencies have taken in consideration this factor in their WASH strategies. When connections to wells could be implemented they then lowered the quantity of water per capita per day they provide through water trucking, from 15-35 l/capita/day²⁹ to 10 l/capita/day, mainly for potable water needs. It must be noted however, that the presence of wells in ITSs perimeter doesn't ensure by itself access to water. This is usually negotiated with landowners. While all landowners in the cases covered in this study allow ITSs dwellers to access and use the wells' water if available, it was noted that in summer time when there is increasing need of water for agricultural irrigation, some landowners may refuse or restrict access to wells' water to ITS dwellers, as in the cases of Choueifat-001 and Temnine Elfaouqa-005.

Water trucking remains a main source of water for ITSs dwellers. Even in the case of the presence of wells, water trucking may still be needed. However, quantities provided vary considerably between ITSs. While Temnine Elfaouqa-005 is provided in 2018 the equivalent of 31 l/capita/day, all the others get between 12 and 20 l/capita/day. This is in line with the average figures (17 l/capita/day) that seem to emerge from the analysis of the truckers' list of five main humanitarian agencies presented in chapter 1³⁰. This represents relatively low standards. It must be also noted that trucked water quantities provided by humanitarian agents have been dropping in the last couple of years. This is largely due to insufficient funding available for humanitarian activity related to the Syrian crisis. In this study, only Temnine Elfaouqa-005 has benefited from additional trucking water quantities lately, as the humanitarian agency in charge secured additional funding and invested in more water procurement. As shown in interviews, when trucked water quantities provided by humanitarian agencies are not sufficient, ITS dwellers call and pay themselves for additional quantities from water trucking providers. In this study, this is nearly half of the cases of when this service is present and especially those who do not have wells on premises. To the exception of one case, ITSs dwellers seem to pay more (per 1,000l) than what humanitarian agencies are paying for the same service. One would then assume that in the absence of the humanitarian agencies that are playing an important role in negotiating prices for ITSs, as would be the case in the voucher system or direct cash for WASH modality, ITS dwellers would suffer higher prices.

ITSs dwellers do not resort to bottled water as a main source of water provision. It is nevertheless present in three of the case studies. In the focus groups with the ITSs dwellers in these cases, bottled water is mainly used in households with pregnant women, babies or sick elderly. However, in the case of Semmaqiye-003, where there are no water trucking services and a

28 AS IN THE CASE OF BZAL WHERE THE HUMANITARIAN AGENCY URGES DWELLERS NOT TO USE THE WELL'S WATER FROM NOVEMBER TO FEBRUARY.

29 15L/CAPITA/DAY IN SUMMER AND 35 L/CAPITA/DAY IN WINTER AT LEAST FOR UNICEF PARTNERS

30 THE FIGURES FOR THE DIFFERENT ITS CASES REFLECT ALSO THE AVERAGES BY AGENCY IDENTIFIED IN CHAPTER 1.

polluted well used only for domestic uses, bottled water becomes the main source of potable water in the ITS. Average bottled water consumption in this ITS is estimated to 7l/household/day. This has impacts on the livelihoods of ITS dwellers, with an estimated expenditure for bottled water of 76\$/capita/year. In other cases, dwellers use a large part of the cash of their food vouchers to pay for bottled water.

Quality of water provided to ITS dwellers is a main concern for humanitarian agencies regarding their WASH strategies. This could be seen at least at two levels: the terms of contracts with water truckers and water treatment strategies for water incoming to ITSs.

Special clauses regarding water quality are practically always present in contracts between humanitarian agencies and water trucking providers. This mainly refers to ensuring that the water provided is suitable for drinking. This is ensured through water quality (microbial and chemical) tests and certificates provided by water truckers for their source wells from laboratories recognized by humanitarian agencies. WASH humanitarian actors also test themselves the water provided. It also usually requires the provision of chlorine (215ml/4,300l of water), by the humanitarian agencies or the water trucking providers themselves, to be mixed with trucked water.

In one case, Aarsal-035, where many nearby wells seem to be polluted, there is mention of a water treatment unit, provided by a humanitarian organization, to make the water of one well potable and serve the ITS. This was mentioned during interviews for other ITSs not covered in the study.

To the exception of Ouazzani, all wells in the ITSs covered by this study are reported as polluted by the humanitarian agencies or by the dwellers. This is particularly problematic in the ITSs where no water trucking is provided. Even when not used for drinking, water containing concentrations of fecal coliforms and nitrates - as shown for the two sites of Qobbet Chamra-056 and Temnine ElFaouqa (which receive water trucking)³¹ - is dangerous for dwellers' health.

As for bottled water, its quality is not necessarily satisfactory. In fact, in Lebanon, the market of bottled water seriously lacks quality control. Moreover, ITSs dwellers, to minimize the impact of such purchases on their livelihoods, tend to buy low-cost 5l or 10l bottles, many with questionable quality.

It should be noted that ITS dwellers in general are attentive about the quality of water they receive and use. This is best seen, in the case studies, with the existence at shelter level in ITS of two tanks, one for domestic water (around 1000l) and another for potable water (usually smaller). However, as reported in some cases, especially in the absence of trucking, they may use said-to-be contaminated well water even for cooking to minimize the use of bottled water. This suggests that in a voucher system, in order to cope with financial stresses some ITS dwellers might indeed sell their water vouchers. However, it is difficult to assess the scale of such a phenomenon. In fact, as case studies also show, there is a concern among other ITS dwellers to insure proper water

31 SEE WAP TABLE OF JANUARY 2019

quality to their households even if they have to pay additional costs for bottled water. The financial capacity of dwellers, due for example to a wider access to employment, would be significant in this regard.

Regarding equity in the distribution of water among dwellers in the ITSs, the shawish seems to usually play a central role. Repeatedly in the interviews, the shawishs said to ensure that all tanks of ITSs shelters are filled before giving the water truckers the vouchers they require to be paid by the humanitarian agencies. Moreover, in the case of common tanks and fountains for potable water, the shawishs tend to ensure that certain households do not overexploit available water and that all benefit from it. This is done by setting informal rules³², like in Aarsal-035 where households are limited to filling 20l gallons per day from the potable water fountain of the common tank. For the three cases in our study where dwellers are paying additional water trucking services, water truckers have insured in interviews that, moved by empathy, they might not ask most vulnerable dwellers for money or at least accept postponed payment. No humanitarian agency seems to have included in their WASH strategies, especially regarding access to water, differentiated treatment approaches that would favor most vulnerable households (e.g. considering additional trucked water quantities or bottled water for households with babies and sick elderlies).

All in all, in most cases, ITSs dwellers seem to suffer either from the quality or from the limited quantities of water they are consuming. The lack of available and stable funding that impacted water quantities provided through water trucking in 2018 is leading them to adopt coping strategies that may be detrimental to their health or livelihoods: relying on polluted wells' water, paying for additional trucking and/or bottled water from their limited household budgets.

1.2 ITS dwellers' access to desludging services

Regarding wastewater disposal, the situation of the studied ITSs varies considerably. First, it must be noted that for black waters only half of ITSs have septic tanks. In one of these cases the septic tank is no more operational, and dwellers are directly discharging in nearby waterbody. In another case, septic tanks do not cover the whole ITS and a fifth of the latrines discharge in a nearby water body. In a third case, the septic tank has been full for some time when investigators visited the ITS and dwellers were discharging in cesspits. The other ITSs studied rely on covered pits. This is problematic as covered pits have important infiltration levels. In one case, these pits are even connected by a channel dug by ITS dwellers to a nearby water body. As for grey water, in half the cases, it is disposed in shallow cavities in the ground around ITS shelters. In the others they are connected to existing septic tanks and pits used for black water disposal.

To the exception of the two cases of Choueifat-001 and Ouazzani, the existence of a desludging trucking service is a constant. In these cases - as also what is suggested in the WAP database - desludging is mostly done on a monthly basis. However, in some cases it could be on a sometimes weekly basis like Aarsal-035 or on a semi-annual basis like in Bzal-002. As per interviews, some ITSs are serviced based on referrals and demand of ITS dwellers while others

32 SOMETIMES NEGOTIATED WITHIN WATER COMMITTEES SET BY HUMANITARIAN AGENCIES IN THE ITSs

based on the desludgers' own calendar³³. In the latter case, this has led in certain ITSs studied to tension between the deslugger and the ITS dwellers who see their soak away and covered pits overflowing. Moreover, in two cases studied, the desludgers could not access parts of the ITSs' sites in winter season.

As for desludged quantities of wastewater they remain overall low. Only in Aarsal they reach 18 l/capita/day, as they include also grey water. In other cases, they remain beneath the 2 l/capita/day of black water.

In some cases, when septic tanks were full and not desludged, dwellers disconnected them and relied on bottomless pits they dug or turned their black water into existing grey water pits or simply discharged their wastewater into nearby canals, lands or water bodies. This leads in some ITSs to heavy odor nuisances and more dangerously to the pollution of underground water. This situation is even more critical for dwellers in ITSs relying on local wells for water provision.

In no case have ITSs dwellers resorted to call upon and pay themselves - as some have done for water - desludgers for complementary desludging services. This is maybe in part due to the prohibitive prices of desludging compared to water trucking. However, it is mostly due to the lack of consideration to the retroactive impacts of non-environmental and non-healthy discharging - something shared with many Lebanese in these rural areas³⁴. Only in the case of Aarsal-035 were concerns about wastewater discharging expressed. This nevertheless could be caused by the specific geography of the site where, in heavy rain seasons, the impermeable soil leads to surface water concentration and the rise of wastewater from pits and septic tanks and the flooding of the ITS with wastewater.

1.3 Trucking services to ITSs dwellers as source of local tensions

While Lebanese host populations vastly recognize the Syrian displacement to Lebanon as a problem, the representations of this problem and the ways to address it vary considerably, as shown in the case studies. While in some cases, as in Aarsal-035 and Bzal-002, intricate family ties might bind the Lebanese populations of these towns and villages to the displaced Syrian populations, in others, host communities tend to have very negative representations of displaced Syrian populations, especially those living in ITSs. This translates into limited - sometimes hostile - relations.

While surely not the cause of these tensions, trucking services markets could contribute to intensify them. This is especially the case when these services are said to be provided at lower prices for ITSs than for Lebanese households outside the ITSs. Lebanese households in Bzal and Temnine ElFauqa mentioned this for example. As for Aarsal, while Lebanese interviewees expressed the same grievances, there were also clear complaints from the competition Syrian

33 AS LONG AS HE RESPECTS TEMPORALITIES SET BY THE CONTRACT

34 IN MANY CASES STUDIED, INTERVIEWED LEBANESE RESIDING NEAR ITS AREAS SAID TO RELY FOR WASTEWATER DISCHARGING ON (BOTTOMLESS) PITS AND RARELY CALL FOR DESLUDGING SERVICES.

water truckers' and their lower prices (2USD/1,000l compared to 2.5USD/1,000l for Lebanese water truckers) and what they represent on the water trucking market.

It must be noted that tensions get to grow also in areas where water resources are scarce or in drier seasons. As mentioned earlier, the landowners in Choueifat-001 and Temnine ElFaouqa-005 decided to cut the provision of water from well to the ITS last summer to use it for agricultural irrigation, despite their clear reliance on it.

1.4 Initiative and negotiation capacities of ITSs dwellers regarding trucking markets and ensuring WASH needs

In some cases, ITSs dwellers stand as vulnerable recipients of WASH services marginalized from the negotiations and dynamics building the markets that provide these services. In other cases, they clearly seem to rely on some assets allowing them to be agents in the provision of their needs. This clearly impacts these dwellers' positions as to the withdrawal of humanitarian agencies from the provision of WASH services and the possible recourse to water and desludging household vouchers model or cash for WASH.

The three assets are: the employment rates of ITSs dwellers, the presence of a well and the shawish's social capital.

Having access to employment is central to the livelihoods and quality of life of displaced populations and more so to ITSs dwellers. Far from urban areas and the employment opportunities they provide in the services sectors, ITSs dwellers aim for employment opportunities mainly in the agricultural and construction sectors. ITSs dwellers with medium and high employment rates may have the money to pay truckers for additional services or buy additional bottle water quantities. This is surely different from the cases where such opportunities are limited in a certain area, due to weak economic activities or high competition for employment. Dwellers in such ITSs rely completely on what humanitarian agencies provide them and would engage in negative coping mechanisms that could gravely affect their health and protection situations.

In accessing employment markets in agriculture and construction, the shawish's social capital may play a key role. In fact, in many ITSs, the shawish is not just the dwellers' representative for managing ITS services. He also plays the role of a mediator with Lebanese employers looking for a seasonal or permanent workforce and takes a recognized percentage fee for this role. The social capital of the shawish can also be important when dealing with municipalities, landowners and humanitarian agencies. In some cases, it is believed among the dwellers that connected shawishs could get humanitarian agencies to prioritize their ITS for some projects and funding - including infrastructures to ITS (it has to be noted however here that to intervene humanitarian actors apply very specific and clear criteria and the shawish is not one of these criteria). They can bring appeased relations with municipalities or get them to look the other way.

However, it is mainly the presence of a well on site that seems to represent a crucial asset for ITS dwellers' position on the water provision markets. In all such cases in this study, dwellers seem to feel content and empowered in the face of water provision challenges faced by other ITSs. This

has direct impact on their position regarding the withdrawal of provision of WASH services. These dwellers clearly said that they do not need the services of humanitarian agencies on this front and would happily opt for a vouchers model or cash for WASH. To the opposite, dwellers in ITSs lacking wells and employment opportunities clearly expressed their preference for the continuation of the present model. This is the case for example in Aarsal-035 and Raait-008 where dwellers expressed their fears that a potential switch to the vouchers model or cash for WASH would lead to a weaker position in negotiating with truckers or getting the dwellers to act collectively and secure the needed payments for collective provision. To the exception of the case of Aarsal-035, where the nature of the land leads to regular flooding, ITS dwellers do not seem on the other hand attached to desludging services.

2. Trucking services' providers

In the markets of WASH provision to ITSs, water trucking and desludging providers are central agents. They lead the needed operations that allow the provision of WASH services. For that, they engage in negotiations with humanitarian agencies, municipalities, wells' owners and operators of wastewater treatment plants. The services' prices are usually defined through these negotiations and competition between providers. However, despite the centrality of their position in these markets, this position remains fragile and dependent on the mode of WASH services provision adopted by the humanitarian community. In fact, these trucking services' providers are in a fragile and vulnerable business. It is the Syrian displacement crisis and the development of ITSs that led to the tremendous expansion of water trucking and - in many areas - to the very emergence of the desludging business. A change in the mode of WASH services provision, like switching to the WASH vouchers' model or cash for WASH, may well have unforeseen impacts on these businesses, affecting their development, profitability, job creation potential, even their very existence.

The studied cases project a diversity of situations regarding the water trucking businesses. Service providers range from unregistered individual truckers to medium and large size companies. Some of these businesses are involved in other sector activities like transportation of materials and cars or in construction site services. In the cases of this study, water trucking and desludging services' providers may rely on employees. However, these remain in the average of 2-6 employees, with two cases only going beyond this scope. These are low-qualification - mostly temporary - jobs. In nearly all cases, these employees are Syrians, of which, numerous are living in ITSs. To the exception of the water trucking providers in Zahle-050 and Bzal-002, truckers' activity is focused mainly on ITSs. This stresses their dependence on the ITS WASH provision markets instigated in 2012 by the humanitarian community' present WASH services' delivery system.

To the exception of the case of Qobbet Chamra-56, and the desludging services in Temnine ElFaouqa-005, the prices of these trucking services seem to be mostly falling in the last two years. In fact, despite the rise in fuel prices, truckers are decreasing their prices. This is mostly due to growing competition. In one case, Raiit-008, the water trucking services' provider explained that

he chose to decrease his prices under the pressure of the humanitarian agency in charge of the ITS.

Prices between ITSs and service providers vary largely. For example, water trucking services in ITSs are 2.15USD/1,000l in Aarsal-035 and 6USD/1,000l in Qobbet Chamra-056. These differences in prices are related mainly to local competition and to water trucking services' providers owning or renting wells³⁵. Similar large disparities could be found in the desludging services with prices in Aarsal-035 at 6USD/1,000l and 14USD/1,000l in Joubb Jannine-005. Here, this could be explained by the distance to WWTP³⁶ or the fact that in Aarsal, desludgers do not discharge in wastewater treatment plants. However, this does not cover for the fact that other desludgers that discharge also in wastewater treatment plants charge considerably lesser, as in the case of Bzal-002 (6.5USD/1,000l). This is to be understood in the light of competition and pseudo-monopoly dynamics in these markets, as explained in chapter 1.

It could be also said that, in this study, there is clear regional variations in prices regarding water trucking. In fact, to the exception of Temnine ElFaouqa-005, water trucking prices in the Bekaa are clearly lower prices than the cases studied in Akkar disregarding the size of the site. The case of Temnine ElFaouqa-005 was explained by the water trucking services' provider by the distances his trucks must cover to get from Zahle, where he is based, and his wells are present, to the ITS.

It should be noted that to the exception of Aarsal, where trucking services' providers cover around 6 ITSs each, providers in other areas in this study seem to operate in large numbers of ITSs. One said to be operating in more than 200 ITSs. This projects itself on the knowledge of these providers of the particular situation of each ITS in which they operate. In fact, none of the providers was able to provide values for the volume of their activities in the specific ITS the study was interesting in. They only keep figures of the whole volume of activities related to a contract with a humanitarian agency.

In fact, trucking services' providers for ITSs seem to have adapted their businesses to best operate and be competitive in the context of the present market conditions. The latter are mainly defined by a client-provider relation with humanitarian agencies responsible for a large number of ITSs. To be able to be competitive in this market, some truckers propose to take care of some expenses (like the chlorine to be added to the trucked water), to provide some services (maintenance of some ITS water infrastructures) or even investments (install a treatment system). The one-contract deal with humanitarian agencies also pushes these providers to optimize their operations in order to serve the very large number of ITSs they have to service. This project itself on the paths they follow, the schedules of ITSs' visits, etc. Hence the overwhelming attachment of these providers to the present WASH delivery system and their concerns regarding any possible change.

35 ONLY ONE WATER TRUCKING SERVICES PROVIDER SHARED WITH THE INVESTIGATORS THE PRICE HE PAYS FOR RENTAL OF A WELL. IT IS AROUND 1USD/1,000 L HE TAKES FROM THE WELL.

36 THIS SHOULD BE MITIGATED HOWEVER AS THE DESLUDGER IN TEMNINE ELFAOQUA-005 THAT DISCHARGES IN JOUBB JANINE (40KM DISTANCE) CHARGES 9 USD/1,000 L, WHILE THE DESLUDGER IN JOUBB JANINE-005 CHARGES 14 USD/1,000 L

In fact, only the water trucking services' provider in Aarsal-035 did not show any concern as to such change and believed that it will not affect his business. The fact that only this provider in the study had such a position is not insignificant. As said earlier, the services' providers in this case service only six ITSs, which means a close relation to these ITSs and their dwellers.

The main concerns of the trucking services' providers are threefold. First, this means that they would have to deal directly with ITS dwellers and their representatives for negotiating a separate contract with each ITS. Second, this means a very large uncertainty regarding the (fragmented) geography they may end up covering, the sustainability of these contracts and the guarantee that they would be paid. Presently, contracts with humanitarian agencies, though on trimestral or yearly basis, give them a feeling of security and clear perspective that would allow them to plan and develop their businesses. Third, there is clearly a concern that ITS dwellers might not after all use any WASH vouchers or cash that would be provided to them for WASH and may even sell the vouchers - as pointed out by all trucking services' providers³⁷.

The latter possibility could not in fact be easily dismissed, especially for desludging services. As shown in the case studies, when desludgers stopped serving ITSs, dwellers did not call and pay desludging services on their own. To the contrary, in all such cases, wastewater was discharged in the environment.

3. Humanitarian agencies

As mentioned earlier, although WASH-related trucking services in Lebanon preexist prior to the Syrian displacement crisis, it is the way the response to the crisis was organized by the humanitarian community in the Water Sector that fueled the development of related businesses and strongly (re)structured their markets.

The main asset of humanitarian agencies in affecting these developing markets are the contracts they have with trucking services' providers and the follow-up modalities that they have developed to ensure that these providers would respect the said contract.

Though not legally binding, as not declared and signed in the presence of a notary, these contracts still have considerable value in these markets. They define the ITS to be covered by providers, including quantities to be serviced, rhythms of service and most importantly health and environmental conditions. Contracts used by agencies might differ from one area to the other. As seen in the description of the trucking markets to ITSs in chapter 1, the territorial perimeter of these contracts may be reduced to a few ITSs in a town or village to ITSs in a cluster of towns and villages to ITSs in a diversity of areas on a wide geography. Moreover, these contracts may be based on a general agreement framework based on price per 1,000 l or may be based on defined quantities.

As shown in interviews with trucking services' providers and humanitarian agencies in the cases of this study, contracts have had a deterrent effect and encouraged changes towards more

37 TO THE EXCEPTION OF THE WATER TRUCKER IN AARSAL-035.

responsible behaviors. Humanitarian agencies have used contracts' terms to sanction certain behaviors by giving warnings or by breaking these contracts. Three such cases have been mentioned. One humanitarian agency has given a trucker a warning for using an unregistered truck in providing services to ITSs. He quickly complied by registering his truck. Another agency sanctioned a desludger for calling on children in ITS to help him in manipulating his truck hose. A third agency broke a contract with a desludger for non-environmentally friendly discharge.

Each agency has its own mechanisms to insure minimization of fraud and that health and environmental conditions are respected. Different voucher systems, some even digitalized by barcodes, allow to follow-up on the quantities of water provided or wastewater desludged. This is quite important as the issue of quantities is at the heart of the contract and defines prices and payments to be made. In many cases, the shawish plays an important role as his signature warrants, for the humanitarian agency, that an ITS has been served.

To ensure environmentally safe discharging, some humanitarian agencies have requested the installation of GPS devices on the desludgers' trucks; others require dated photos of the discharging process in the wastewater treatment plant. However, other agencies prefer a more direct human control. One such agency sends an officer with the desludger on his round on ITSs and accompanies him to the wastewater treatment plant. As for water quality, as said earlier, contracts impose attested water quality control of source wells and additional chlorination measures.

In setting these contracts, humanitarian agencies insist on following recognized good practices and standard operating procedures. In fact, most contracts are based on preset templates devised by these agencies at headquarters' level. They respect recognized procedures of bidding and advertisement for the calls for bids. This aims to insure transparency and adequate professional practice.

However, as seen in the case studies, these contracts seem to have some weaknesses. Some providers seem to be serving the same area for long periods. In one case interviewed, one has been doing so for an ITS for more than six years. This is due on one hand to pseudo-monopoly situations when agencies are pressured by local actors to resort to a certain provider or when an informal understanding between truckers makes the bidding system inoperative. Though the humanitarian agencies, as per their procedures, at the end of each contract look for prices practiced in the area by other providers, in these cases, the new bid usually ends up renewing the contract of the same supplier as it is providing the most competitive prices and quality of service. This explains why in several cases, as said to investigators during interviews, truckers believe that their contracts are always automatically renewed. The main benefit of these wholesome large-scale contracts would be the capacity to bring prices down. This has proven itself in most cases when comparing prices paid by humanitarian agencies and Lebanese households outside ITSs for the same trucking services.

However, it is obvious that this system of WASH delivery in ITSs is not sustainable. As shown in this study, for the year 2018, humanitarian agencies had to cut their budgets with implications on the contracts, their continuity and the quantities covered by these contracts. Moreover, it

shows that in the present context, humanitarian agencies are capable of providing adequate services but at very high costs. In the case of Aarsal-035, one of the ITSs of the study benefitting of highest delivered quantities, for 2018 the price per capita paid for both water trucking and desludging services would amount for nearly 62USD/year. In the case of Temnine ElFaouqa-005, where the humanitarian agency has secured additional funds that it invested in additional water trucking quantities, it was able to reach the minimum recommended 31.2l/capita/day at the cost of an estimated 67USD/capita/year.

All humanitarian agencies' local representatives interviewed in the context of this study expressed concerns regarding a possible switch towards a WASH vouchers model or cash for WASH because of the probability most ITS dwellers will sell their vouchers or use this cash to alleviate stress on their livelihoods, despite the impacts that such coping strategies would have on their health and on the environment. Nevertheless, they expressed also concerns regarding the sustainability of the present WASH services provision system with the continuous fall in funding.

4. Municipalities

Regarding involvement in provision of WASH services, the cases of this study show that most municipalities, irrespectively of their size and resources have some form of contribution. This could mean the involvement of municipality in water provision: development and management of existent municipal water or wastewater networks, digging wells, building reservoirs, provision of water trucking services through municipal trucks, financial assistance in the provision of water or desludging services to households by private trucking providers, assistance in operational and maintenance costs for facilitating water and wastewater services on water establishment networks (renting wells, contribution to wells' electrical generators' costs, maintenance activities, etc.) etc. It could mean a role in the control of water quality and the mitigation of environmental impacts of WASH services such as the regular testing of water sources' quality, setting defined areas for desludging, etc. However, as has been shown in the previous chapter, not all municipalities are involved in the same way in provision of WASH services.

As for the relation with ITSs and involvement in supporting them, the case studies show a large diversity. Some municipalities do not even want to consider ITSs as a reality in their territory to deal with. Hence, they do not even hold data regarding their numbers, their locations and their demographics. However, this is a relatively rare case. Even municipalities that hold a negative attitude towards ITSs try to maintain accurate databases about them. They usually even have restrictions on ITSs' location and may well try to limit their sizes and hold landowners responsible of respecting environmental protection conditions. The large majority maintains regular coordination meetings with active humanitarian agencies in their territory. Municipalities may pressure these humanitarian agencies to actively take measures to minimize negative environmental impacts of ITSs. In some cases, on the contrary, municipalities may intervene actively in supporting ITS dwellers. This assistance could be occasional as in the event of sudden heavy storms. It can also be more regular like the provision of social and educational services. In one case, the municipality even intervened to provide burial space for ITS dwellers.

As emerges from this study, when considering municipalities and their present and possible future involvements in WASH services in ITS, it is important to consider their large diversity. Lebanon counts today 1,113 municipalities and 58 unions of municipalities. These municipalities differ in size, resources and demography. Regarding WASH and ITS issues, some municipalities have long been active in providing WASH services and/or implicated in assistance to ITSs in their territories. Other municipalities have never engaged in such services or do not wish to do so. The cases covered in this study reflect this diversity.

First, it is interesting to note that the case of Semmaqiye does not have any municipality. Article 3 of the legislative decree 118/1977 sets the minimum number of inhabitants needed to have a municipality to 300 residents. However, the law 665/1997, amending the 1977 decree, cancelled this article and left to the Ministry of Interior and Municipalities (MoIM) the liberty regarding this issue when it decides to create a new municipality. This leaves the responsibility of government of local matters to the mukhtar of the village. The mukhtar, without any administration, has to deal with the local needs of an estimated population of 2300 residents to which one must add 1,712 dwellers of ITS. The mukhtar can count on a support fund of a maximum of 5,000 USD/month administered by the MoIM. On the opposite, the study shows the case of Zahle, with its 150,000 residents and 17,392 ITS dwellers. Its municipality, one of the largest and most affluent in Lebanon, manages a yearly budget of 23.5 million USD. With hundreds of employees this municipality has been active in setting and developing a large number of projects stretching from large solid waste treatment facilities to public parks, etc. It is important to note that many municipalities in Lebanon count considerably on their shares of the Independent Municipal Fund (IMF) as main source of income. Delays in transfer of the Fund's shares to municipalities could be considerably detrimental to their economies. In the last two years, municipalities have not received any money from the Fund. This has very detrimental impacts on their capacity of action.

Irrespective of size and resources, other factors might contribute to a municipality's capacity to act. First, the presence or absence of a municipal council is another essential condition for a municipality to be able to plan, regulate and engage in large and complex projects. Hence, in a situation like in Raait, where presently there is no municipal council and which is administered by the Bekaa governor, it is unlikely for the municipality to be able to actively deal with local issues, let alone address complex issues like WASH services and ITSs. Second, the presence of committees dedicated to water provision and irrigation in a municipality is expressive of its commitment to deal with these issues. In the case studies, only Qobbet Chamra has a specific municipal committee dedicated to water issues. This might be expected in a large village where there is no public water and wastewater networks, a large population of displaced population in and outside ITSs and heavy reliance on water for agricultural activities. In some cases, there might exist historical local water committees autonomous from the municipality, as in the case of Aarsal. However, usually there is strong synergy between such autonomous committees and municipalities as these committees might call on municipal resources to be able to sustain and develop their actions. Third, the presence of a municipal police is also important for a municipality to be able to impose its decisions and ensure that they are respected. In the context of the Syrian crisis, the MoIM has allowed municipalities to recruit a large number of contractual

municipal policemen. However, falls in municipal resources (e.g. due to delays in transfers of municipalities' shares from the IMF) is leading many municipalities to decommission these policemen.

From the case studies, it is clear that municipalities remain important actors in WASH services in their territories. With sufficient support, they potentially might contribute to alternative scenarios for securing better WASH services to ITSs. However, two factors may not favor such an eventuality.

First, many municipalities may contribute directly or indirectly through financial and operational interventions to the water establishments' responsibility of water and wastewater provision. Nevertheless, this remains a very controversial subject between municipalities and central public institutions in the Water Sector. The latter insist on minimizing the role of municipalities and on their gradual takeover of all managerial and operational tasks in this sector. They continue to consider with suspicion the support from humanitarian and development agencies to municipalities in this sector.

Second, more importantly, municipalities do not see themselves playing a central role in WASH provision in ITSs. This has been repeatedly confirmed in all interviews. For some, they lack resources in the face of such a considerable task. Other municipalities do not consider that ITSs dwellers are their responsibility and would prefer if there was no ITSs on their territory. One even believes that cutting support to ITSs dwellers may even lead them to leave.

Conclusions and Recommendations

The review of existing data on WASH services and water and desludging trucking markets in ITSs, the case studies and the transversal analysis all confirm that the current situation is not sustainable. Potential reduction of funding in the Water Sector and eligibility duration of certain funds would translate into reduction in water quantities provided and capacity to invest in WASH infrastructures in ITSs. In some cases, it is already putting ITS dwellers in a vulnerable position and leading them to mobilize negative coping mechanisms that will be at the expenses of their livelihoods and health as well as of the environment. Moreover, the Syrian displaced crisis in Lebanon led to the emergence of water and desludging trucking markets, involving tens of operators and hundreds of trucks that are highly dependent on this model of WASH services provision to sustain their business. As for public authorities at the local and central levels, they are wary of these unregulated markets as to their impacts on the water resources and the environment.

It must be noted however, that despite these overall common tendencies many elements contribute to very variegated situations accentuating or mitigating these vulnerabilities. These elements include:

- Macro-dynamics at regional level related to sociopolitical and institutional factors affecting monopolies and competition on the trucking markets or the willingness and capacity of public authorities to intervene in the regulation or the provision of WASH services in ITSs.
- Overall policies and modes of operation of different humanitarian agencies, mostly regarding their contracts and infrastructures they adopt and implement.
- Geographical, natural and material factors like availability of water in an area, the presence of public networks, their length and capacity, the location of the ITS and its accessibility, the nature of its soil and degree of infiltration, and most importantly the presence of water resources on site - especially wells.
- Local socioeconomic factors like employment opportunities and the social capital of dwellers and their relations to local stakeholders.

In the light of such a complex situation and diverse landscape, no single mode of operation, like those described in the below three scenarios, will by itself allow facing the various challenges faced by WASH provision to ITSs. Moreover, the constant and rapid evolution of the situation - in terms of proposed new institutional arrangements, tested new modes of operation and technologies and involved new stakeholders (humanitarian agencies entering or retreating from different areas, new truckers, etc.) - renders this eventuality even less probable. Hence, there is a need for a hybrid system that would allow adapting to different contexts.

1. The limitations of the different scenarios proposed by the steering committee

This market study has examined three possible alternative models to the organization of WASH services to ITSs and has looked into implications of the present water and desludging trucking markets on actors involved in this market, including: ITS dwellers, trucking providers, humanitarian agencies and municipalities. Taken separately, none of the three scenarios seem fully satisfactory.

Regarding the present model that is based on contracts between humanitarian agencies and trucking services providers, four main weaknesses can be highlighted:

- It cannot be financially sustained in the context of probable reduction in funding, common in protracted crisis situations as is the case of Syrian crisis in Lebanon;
- It has shown that it is far from being able to cover the very large demand in ITSs, leaving many unsupported. Even in the case of serviced ITSs, provided service remains below ITSs dwellers' needs;
- This situation is leading to considerable economic and social costs for ITSs dwellers;
- It is also favoring potential massive pollution.

As for possible voucher model and cash for WASH modalities:

- It brings risks of deep destabilization of trucking services' markets;
- There is also risks of vouchers being sold by ITS dwellers or cash not used for WASH services to cope with pressing financial constraints;
- Remedies for these concerns, as applied by certain humanitarian agencies in Lebanon, require an important involvement of humanitarian agencies in terms of monitoring and control. This implies maintaining present or higher managerial and operational costs of humanitarian agencies.

Regarding a water establishment-centered model aiming to bring these establishments to take in charge WASH services in ITSs:

- There is still high political resistance to any actions that would suggest long-term implementation in ITSs discouraging connection of ITSs to public networks.
- Even in cases where water establishments are proceeding to connections of some ITSs to public networks, several limitations are to be considered. First, many ITSs are situated far from existing public networks in towns and villages. Second, the deteriorated public networks in most areas will face serious challenges in serving the quantities of water needed and wastewater produced in ITSs. Third, only few wastewater networks are connected to wastewater treatment plants while, in the present model, most contracts request desludging truckers to discharge in treatment plants.
- As for the possibility of water establishments taking the place of humanitarian agencies in regulating the present trucking services' markets, it faces important challenges. In fact, water establishments lack the human and financial resources that enable them to replace alone these markets by public-led services.

As for a municipality-centered model:

- It must first face the resistance of many municipalities to be involved in any services related to ITSs.
- Even interested municipalities clearly lack the resources to take the place of humanitarian agencies in these markets.
- Involvement of municipalities in the Water Sector has recurrently proven source of tension with water establishments.

2. A rapid sketch of a possible hybrid model

In this context, it is clear that what is needed is a hybrid model. In fact, no actor can replace alone the role humanitarian agencies are playing today in the WASH provision to ITSs, let alone provide a more sustainable model.

These agencies play mainly four different roles:

- 1) *Regulation of markets* through contracts,
- 2) *Monitoring and following up on the implementation* of contracts' terms specifically regarding quality of services and environmental protection,
- 3) *Building databases* as to the situation of ITSs,
- 4) *Maintaining communication* with different actors that may affect the markets, especially water establishments and municipalities.

Next to these roles played by humanitarian agencies, there is the central *operational role* played presently by private sector water and desludging trucking services providers: operating fleets of trucks and staffs to ensure that contracts are executed. Moreover, there are the roles of *funding* and water sector coordination, played mainly by donors and UNICEF, that provide the general framing to the humanitarian response in ITSs and, subsequently, to these markets. All these roles are essential for the present functioning of the markets. However, other roles are to be fulfilled in order to move towards a more sustainable and environmentally sound situation. Most notably, there is a need for:

- 1) The *production of studies on these markets*, their challenges and opportunities for more sustainable solutions
- 2) *Strategic planning* that would allow linking existing resources (wells, springs, etc.) and facilities (WWTP, etc.) to demand for water and wastewater services in ITSs. Based on an overall masterplan for each region, each cluster would use a set of identified public springs and public and private wells as well as wastewater treatment plants and discharging areas and would have to pay proper fees for this use of a public good.
- 3) Ensuring the *development and adaptation of sufficient water and wastewater infrastructure* that would suffice the demand of populations, including Lebanese, Syrians, ITS dwellers, etc.
- 4) Insuring quality through the *development of a certification system and common norms* for the water and desludging trucking businesses. Truckers respecting norms would receive permits and be included in ITS servicing.

These roles go clearly beyond the capacity of humanitarian agencies in charge of providing WASH services to ITSs. However, different actors could contribute to different roles if a clear framework that adapts these roles to the capacities and interests of the different actors is adopted.

In the following we provide a rapid sketch of alternative possible scenarios to the present situation and point to the need for articulating these different scenarios to get to a hybrid model of WASH services provision to ITSs. The goal is to reach a model that would be best adapted to the capacities of the different actors and ensure issues of social equity, environmental sustainability and economic stability of these WASH services are dealt with. Moreover, we point for water provision to a roadmap of steps and needed studies that actors involved in the Water Sector coordination could follow in order to gradually define this hybrid model.

2.1. Maintaining humanitarian funding as sine qua non condition for WASH provision to ITSs

It must be clear that possible scenarios to change the actual situation do not mean in any case a full retreat of humanitarian actors from the effort towards insuring WASH services to ITSs. Lebanese institutions and actors are not capable, even if willing, to deal with such a challenge. They are at least in no way able to put forward the money needed for that. As explained by one interviewee, a stop in funding would generate a profoundly destabilizing crisis with dramatic political and security consequences on Lebanon and beyond.

2.2. More structured information management as a prerequisite to any hybrid model

The first step of the roadmap, irrespective of the scenarios that would be adopted, is to work on developing the present WAP database and articulating it with other databases - as for example the Healthy Camp Monitoring Tool (HCMT). It is important to have a database that would allow monitoring and assessing different aspects relevant to the strategizing of WASH service delivery in ITSs. These include:

- Information at household level of vulnerabilities, including mainly livelihoods vulnerabilities (access to employment, etc.) and health vulnerabilities (presence of babies, elderlies, permanent disabilities or heavy sicknesses, etc.). This information could be considered when assessing the needs of households, so they would be favored in water quantities. Such data exists in databases of agencies in charge of other sectors and bridges should be set to allow benefitting from these databases.
- Information on ITS sites' vulnerabilities, including risks of flooding, difficult accessibility, etc.
- Information on local governance and the position of local authorities regarding Syrian displaced populations and ITSs, including will and capacity to intervene in ITSs' service.
- Information on existing public infrastructures and networks in the vicinity of ITSs, their load capacity, etc.

This database would be most likely developed by the Water Sector Coordination in concertation with humanitarian agencies and WEs in each area.

Possible scenarios and roadmaps

A. For Water Systems

The present water system in ITSs consists currently of three streams:

On the level of delivery: Water service providers use private wells and distribute water by trucking to ITSs where the water infrastructure and distribution is managed by a humanitarian agency.

On the level of monitoring: The humanitarian agencies ensure proper water quality and local water needs monitoring. This means that these agencies have information and follow up on the source of the water distributed (public or private wells, springs, etc.) and on the population of ITSs.

On the level of funding: The water sector ensures to fund water distribution, the infrastructure implementation, and the development of WAP & IAMP databases.

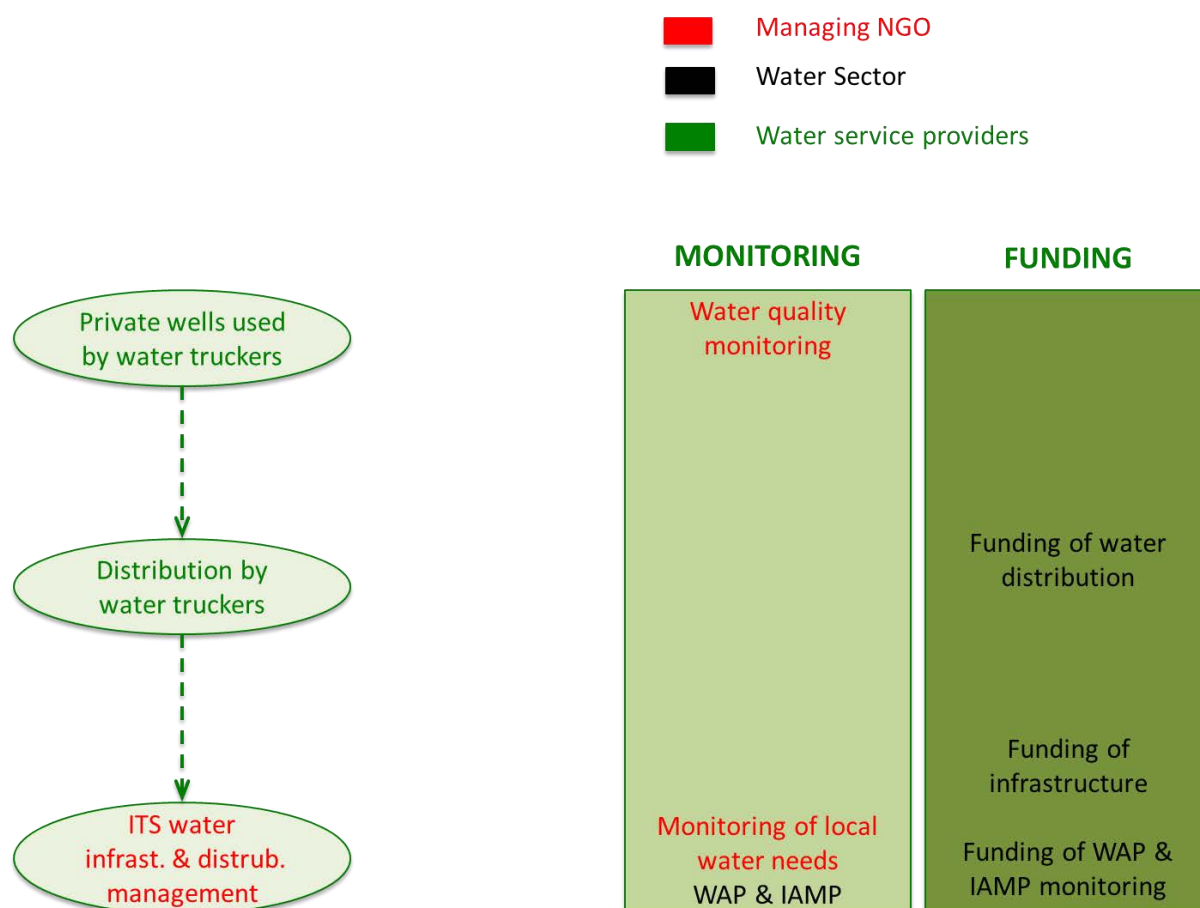


Figure 2: Present Water system in ITSs

With the introduction of a new actor, the Water Establishment, to the existing system, three scenarios are to be considered.

I. Scenario 1: Business as usual +

The first scenario implies slight modifications to the existing system. It is based on the premises that WEs implication remains limited.

On the level of delivery: The water sector must adopt certification of water truckers and set price ranges per area. The certification might be imposed as condition for accessing contracts or could be encouraged by giving advantages to certified truckers. In order to set price ranges, different objective parameters could be adopted. These include issues of distances (spread of ITSs), difficulty of accessibility to sites, price of these services outside ITSs, etc. Humanitarian agencies should be integrating households' vulnerability methods in water distribution for ITSs.

On the level of monitoring: The water sector, through an effort of centralization of data existing among managing humanitarian agencies, should be able to map all wells used, including data on the quantities of water extracted from these wells for ITS consumption and water quality of each well. This data could be then shared with WEs so they would engage in an evaluation of the impact of water servicing of ITSs on water resources in each area and plan and adapt WEs' masterplans accordingly.

On the level of funding: the same existing system applies.

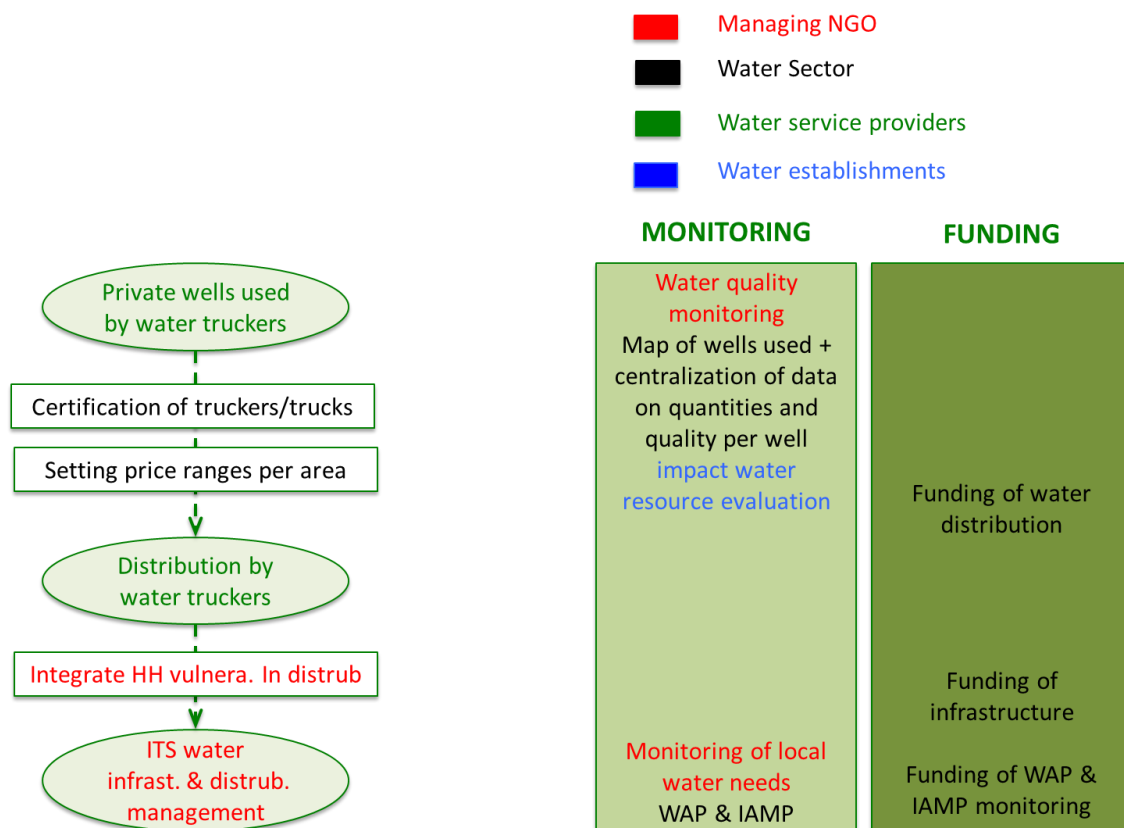


Figure 3: Scenario 1: Business as usual

II. Scenario 2: MoEW base plan scenario

This scenario is based on the adoption of the roadmap shared for this study by the MoEW. It delegates the essential role for water management and distribution to the regional WEs.

On the level of delivery: The WEs are to be responsible of selected water sources, and of distribution of water to ITSs by a fleet of trucks they would buy and operate. At the same time, WEs should be:

- Identifying available water sources per area (based on existing Masterplans, hydrogeological studies, etc.)
- Possible introduction of new water sources (e.g. digging of new wells) to service ITSs based on the first point
- Setting a defined public water source per ITS or cluster of ITSs
- Equip water sources with water meters
- Setting fees.

Humanitarian agencies should be responsible of water ITSs infrastructure and distribution management in ITSs based on a household vulnerability assessment.

On the level of monitoring: In addition to the actual role of humanitarian agencies and of the water sector, the WEs should be mapping all used wells and centralizing the quality / quantity data of each well for proper monitoring. The WEs would then regularly continue monitoring and evaluating the impact on water resources from ITS-linked demand.

On the level of funding: The water sector, in addition to its actual role, should be mobilizing funds to equip and dig new wells (based on the identification exercise of the WEs), funding feasibility studies of setting new fees for metered water distribution (including socio-economic parameters).

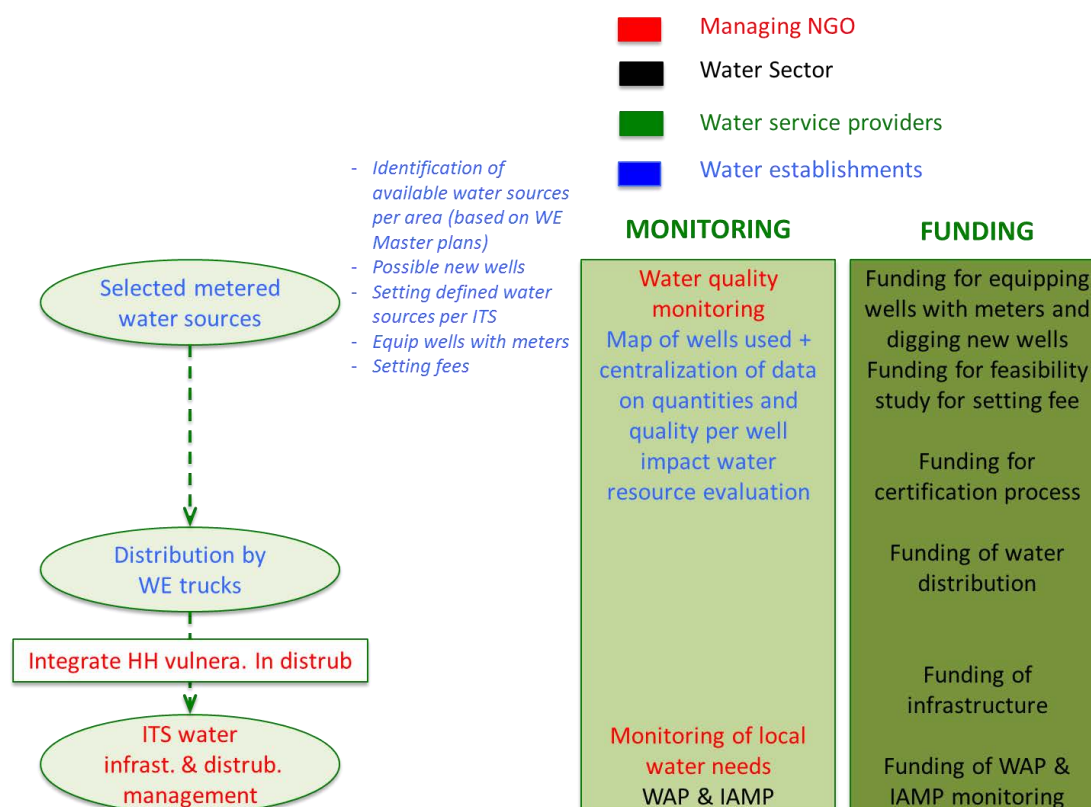


Figure 4: Scenario 2: MoEW base plan scenario

III. Scenario 3: Realistic-ambitious scenario

This scenario is based on the premises that WEs could not or prefer not to engage in the operation of a large fleet of trucks. Indeed, if considering the present number of trucks used in the Bekaa for example and the considerable operational work undertaken by truckers and humanitarian agencies to ensure timely delivery to ITSs, this would be a huge demand in employees and managerial capacity for BWE. Hence, this scenario aims at optimizing the strengths of both previous scenarios. However, it will require an important will of coordination and effort of complementarity mainly between the Water Sector and WEs.

On the level of delivery: As in scenario 2, the WEs select the metered sources, while ensuring a proper identification of available water sources per area, possible introduction of new wells, setting a defined water sources for each ITS, equipping wells with meters, and setting fees. However, as they would not be engaging in distribution, this would be left to other actors, mainly private truckers, but potentially also interested and capable local authorities and local NGOs. WEs will be charged of certifying water truckers. The Water Sector assists WEs setting prices ranges per area. The role of humanitarian agencies extends beyond managing water infrastructure and distribution management inside ITSs, to studying the possibility of introducing the cash for WaSH and vouchers but also integrating household vulnerability in distributing water to ITS' dwellers.

On the level of monitoring: In addition to the roles stated in scenario 2, the water sector has to expand the mapping exercise to identify: willing municipalities and local NGOs to enroll in the process, also to map local water markets in order to identify competitive market and monopolies. The latter has implication on opportunities and risks of using Cash for WASH or voucher models.

On the level of funding: same model as scenario 2.

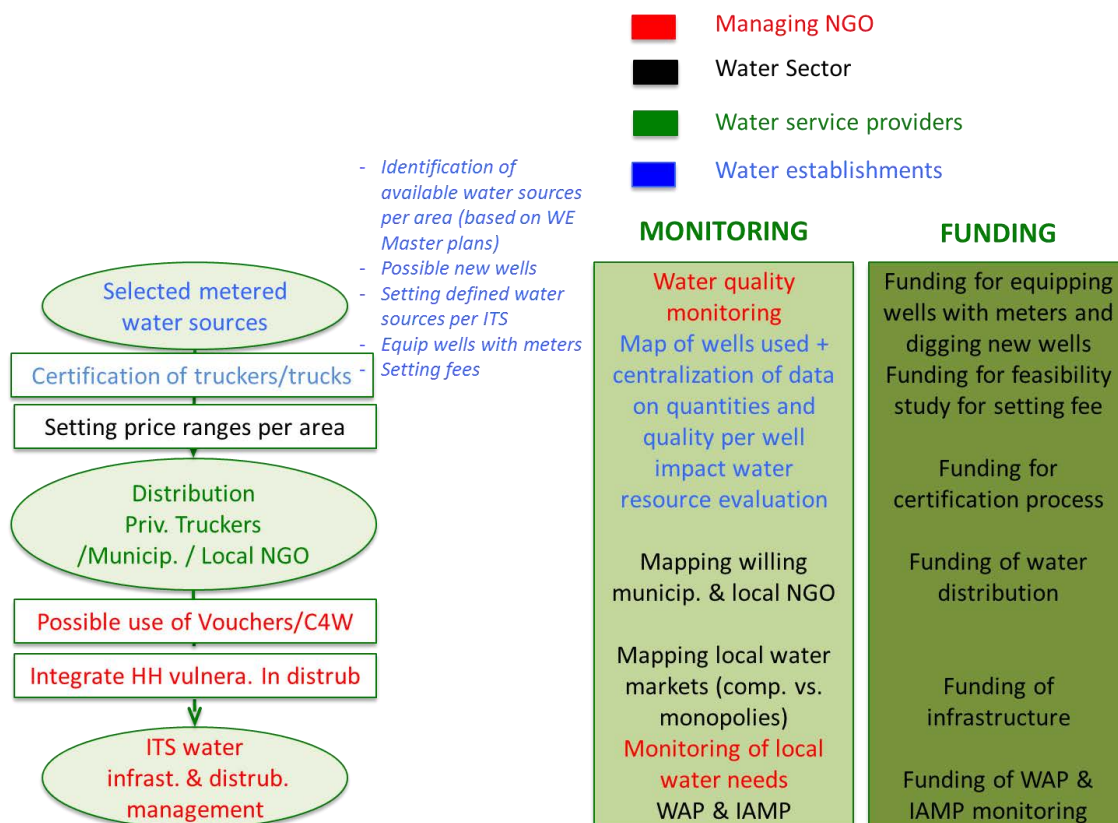


Figure 5: Scenario 3: Realistic ambitious scenario

IV. ROADMAP: Moving between scenarios

The idea of a roadmap is to propose a way for stakeholders to be able to gradually move between scenarios. The proposed roadmap builds mainly on two variables: 1) immediate-term and medium-term temporalities, 2) the willingness or not of WEs to get more involved in the water provision process to ITSs and, if yes, in what way. Hence, two different tracks are possible, set in the diagram in phases 1 (linked to the Water Sector decision making process) and phases 2 (linked to the WEs decision making process), with possible articulation/transition between them.

To sum up and propose an applicable roadmap for water trucking, the following phases are to be followed:

- Phase 1.a (moving to Scenario 1): The Water Sector continues managing the system, while new methods of integrating household vulnerability in distribution should apply, proper modalities of resource monitoring, assessing the market and setting comprehensive prices per area, certifying water truckers to meet minimal standards and to continue hiring private water truckers for delivery;

- Phase 2.a: This phase consists of assessing the MoEW vision and validating its feasibility, if the entire vision is deemed to be feasible, then the below phase 2.c applies, if it's partially applicable then the below phase 2.b;
- Phase 2.b: Considering that the feasibility assessment of the MoEW vision's if partially applicable, the regional WEs can be implied in setting metered water sources, take the role of developing monitoring procedures, setting prices per area, and certifying water truckers, while distribution remains the sole job of private water truckers;
- Phase 2.c (Scenario 2): This phase translates the full vision of the MoEW, where WEs will in charge of setting metered sources, monitoring delivery, and distributing water with their own trucks.

Phase 1.b: This could follow either Phase 1.a or Phase 2.b. It would require from the Water Sector to investigate alternative distribution methods for each geographical area. The assessment might lead to engaging more distribution partners such as municipalities, local NGOs, and reactivating a cash for WaSH or vouchers modalities.

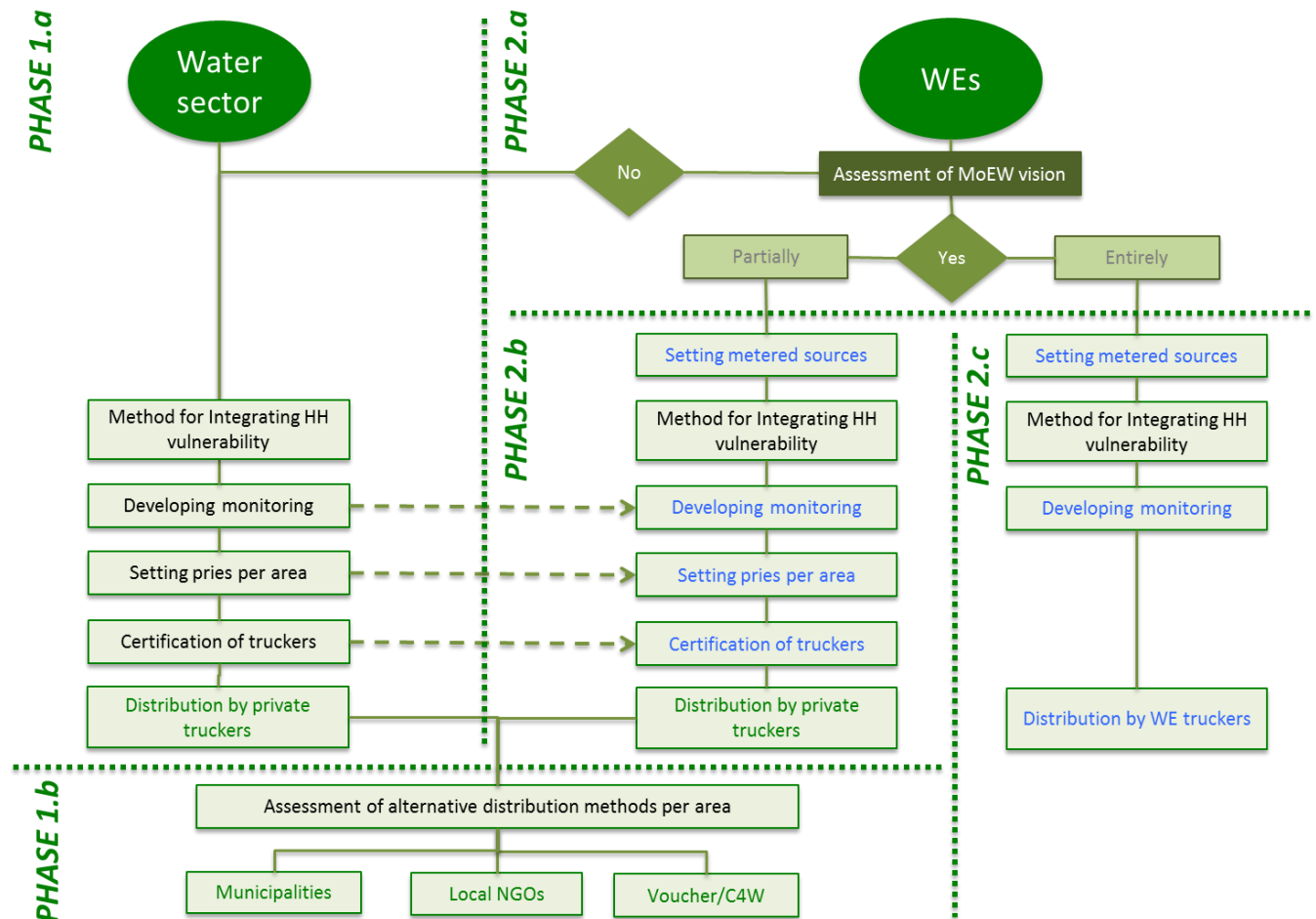


Figure 6: A roadmap for water trucking: Moving between scenarios

B. For Desludging Systems

The actual desludging system, similarly, to water trucking, consists of three streams.

On the level of delivery: Humanitarian agencies manage the infrastructure and desludging services inside ITSs, while private desludging service providers take charge of the transportation and discharging points.

On the level of monitoring: Humanitarian agencies monitor desludgers' discharging points, and the desludging on the ITS's premises. While the water sector monitors the continuous update of the WAP and IAMP databases.

On the level of funding: The water sector funds desludging services, ITSs wastewater infrastructures, the WAP and IAMP platforms.

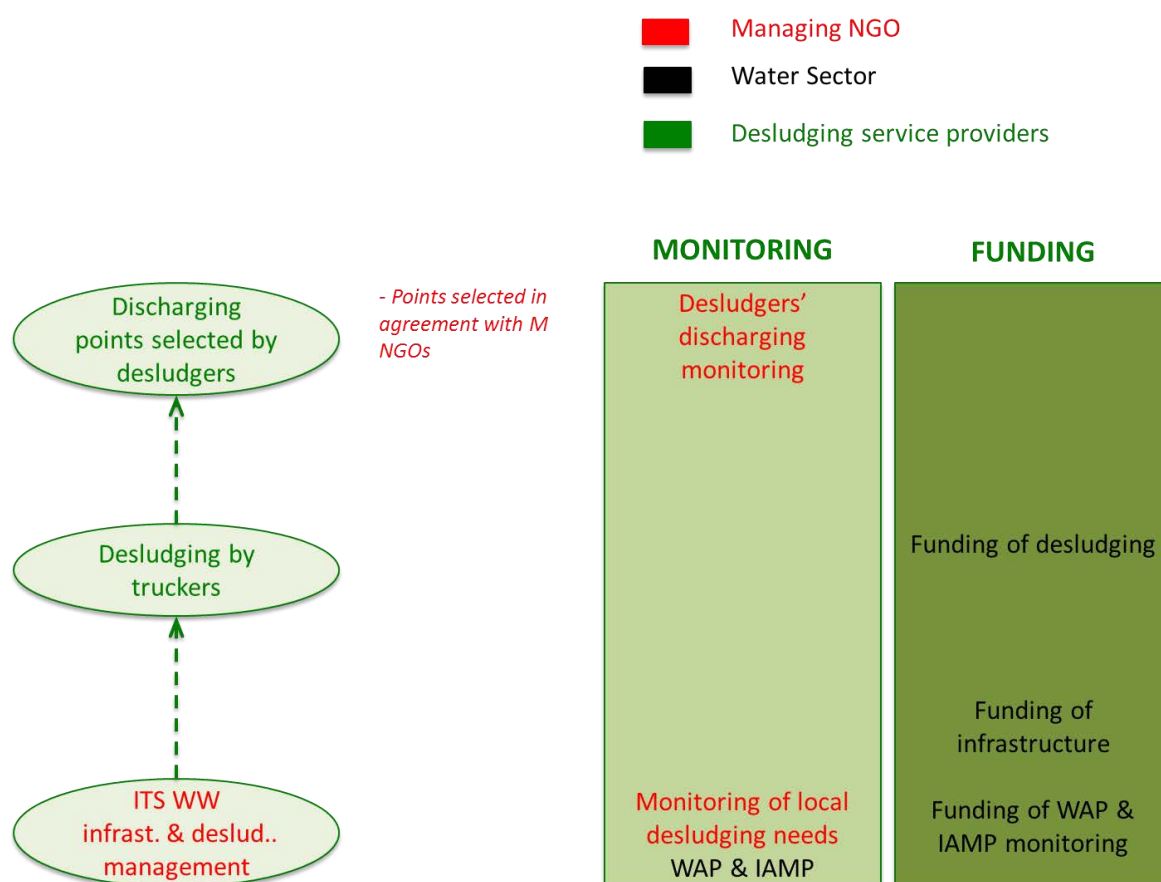


Figure 7: PRESENT DESLUDGING SYSTEM IN ITSs

I. Scenario 1: Business as usual +

This scenario is based on the same premises of limited involvement of WEs. It brings additional role for the Water Sector to play, especially on the level of planning. The Sector should:

- Map all discharging points which are selected by WWTPs
- Identify discharging points for each ITS in respect with WWTPs capacities
- Increase desludging activities in order to be able to cover all ITSs

On the level of service delivery: The Water Sector should set price ranges for each geographical area based on objective parameters. A certification process could also be set for all desludging truckers working for the Sector.

On the level of funding: The Water Sector should support the processes of discharging points' identification and conduct the certification mechanisms.

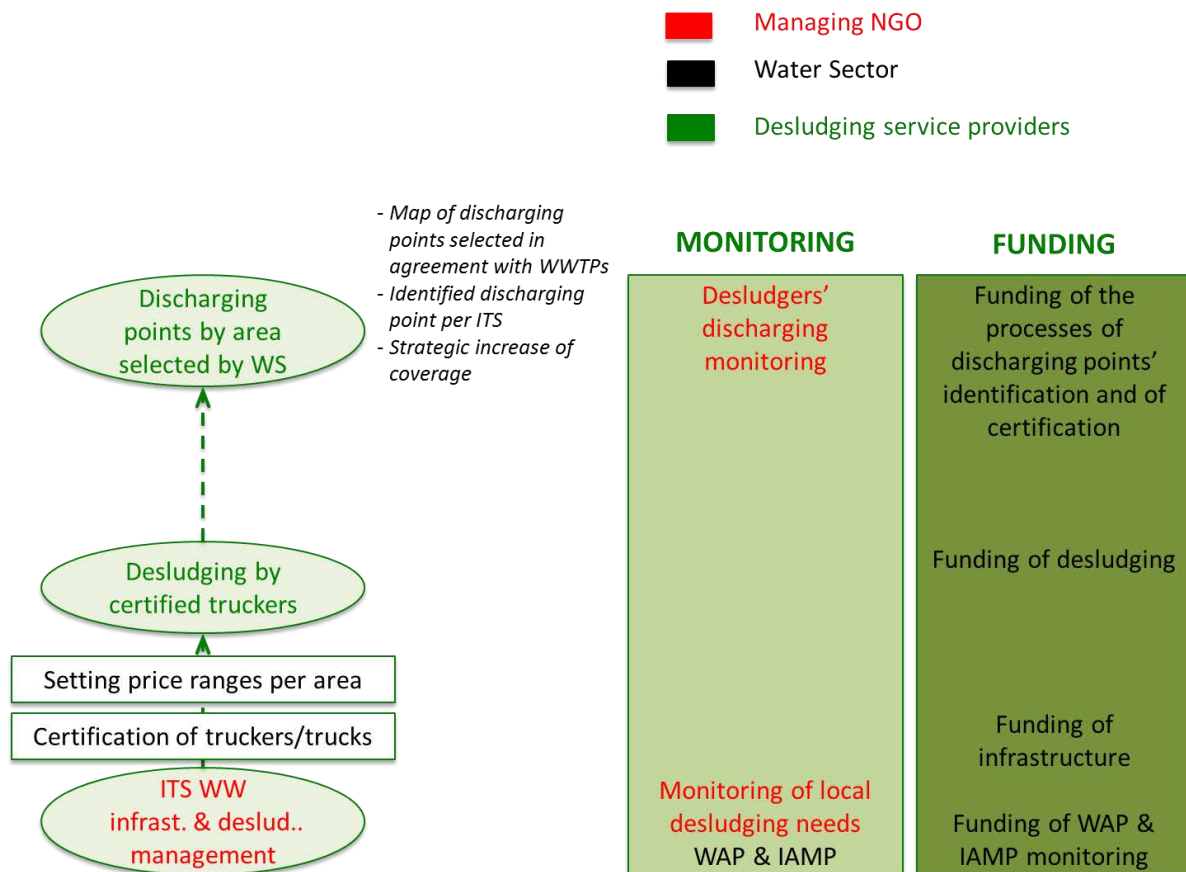


Figure 8: Scenario 1: Business as usual

II. Scenario 2: Local Wastewater Treatment System (LWWTS) – based scenario

This scenario implies a role for regional WEs and introducing LWWTS in ITSs in order to minimize environmental impact of wastewater. These LWWTS are presently piloted in some ITSs by a number of humanitarian agencies. They are supposed to allow discharging in nature of around 85% of the treated wastewater. The remaining will be sludge that should be evacuated. These LWWTS are to be installed in all large ITSs. This would entail a considerable reduction of remaining wastewater in need to be desludged. This would have also an effect on the desludging market. Fewer desludgers are needed. There could be then a possibility that the Water Sector and not managing humanitarian agencies would directly negotiate the contracts with desludgers, forcing a reduction in prices.

This scenario will however also need to consider the treatment of the remaining sludge. The latter will not be suitable for direct discharging in WWTPs. The alternative is to equip WWTPs in

every area with sludge treatment facilities (STF) that would transform sludge into compost. Present pilots suggest that this could be done with affordable prices and allow additional revenues to WWTPs through selling of compost.

Nevertheless, one must bear in mind that equipping all large ITS with LWWTS and related WWTPs with STF is a considerable which economic feasibility and funding should be evaluated with Water Sector donors.

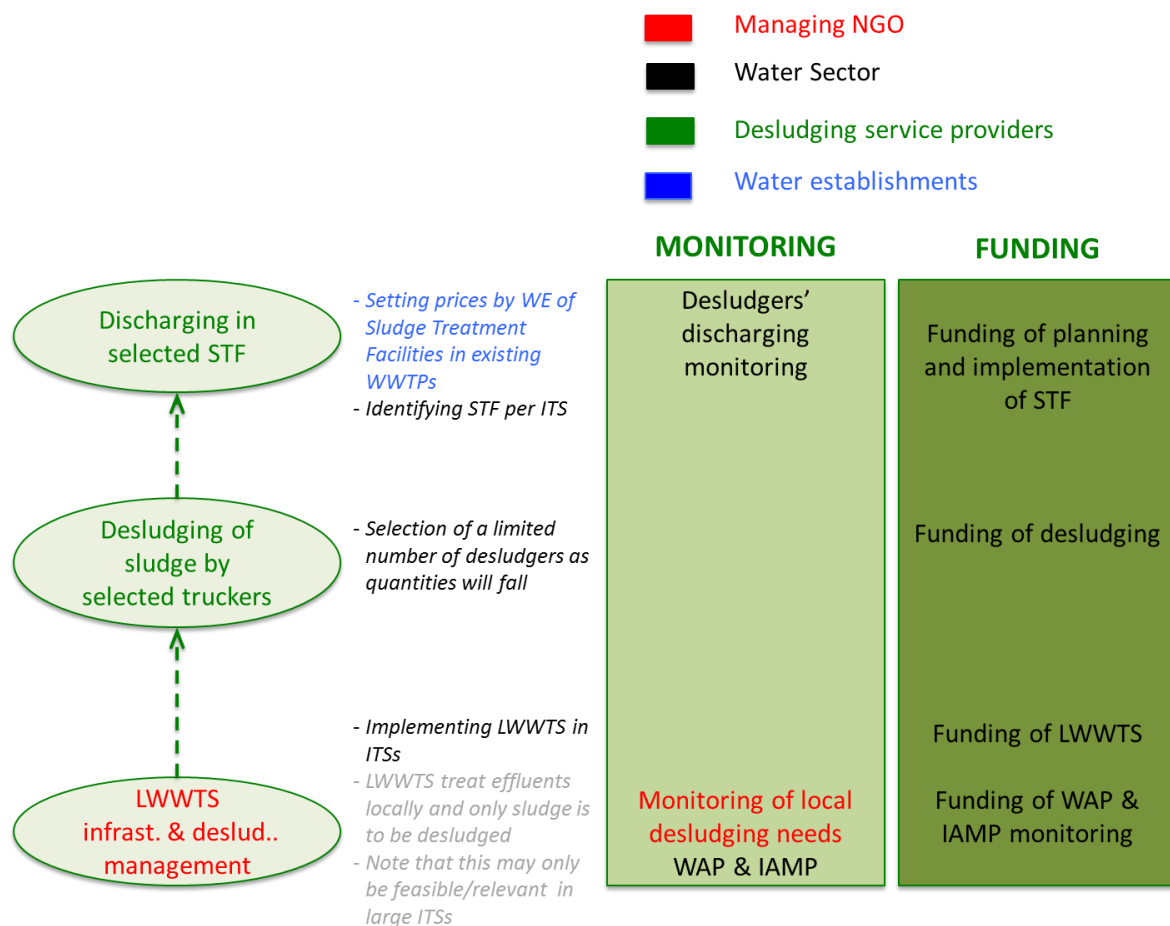


Figure 9: Scenario 2: LWWTS-based scenario

C. The need for further studies

In order to be able to assess which scenarios are most adapted and implement them, there is a need for further studies and research.

Study I: Looking into the WEs possible involvement

This would entail understanding and evaluating risks in relation to:

- *Governance issues:* looking if there is enough political support for the MoEW framework and the will to implement it. It must be noted that such a framework, if applied, will impact strongly the present trucking markets. Tens of truckers, many

with political backing, will resist it. Such an evaluation is not easy to explore but it must be done in concertation with the MoEW and WEs.

- *Capacity issues:* building a fleet of trucks that would replace both water and desludging truckers, means the investment in hundreds of trucks. Even if only scenarios I.2 or I.3 are adopted there is the need for investing in reservoirs, meters, new wells and networks as well as upgrading of existing networks, wells, and wastewater treatment plants. This requires large financial resources. All WE-based scenarios require also important human resources in terms of numbers and qualifications. The study must evaluate these capacities and opportunities for funding and training.
- *Network coverage:* especially while looking into scenario I.3, the study must be attentive as to the percentage of ITSs and ITS dwellers that could be covered by this mechanism without having to considerably expand the networks. In fact, public water and wastewater networks are mostly concentrated in urban and suburban areas and do not necessarily cover agricultural areas, where a large part of ITSs are situated. It must be assessed if this option is worth investing in or other options might be more beneficial.
- *The issue of temporality:* These scenarios might get adopted but this might take some time as decision making processes might be slow and there is need for time to get these scenarios operationalized. Decision makers must think if this delay is acceptable as to the urgency of the situation.

Study II: Looking into the local authorities-based scenarios

As seen in two case studies, some municipalities are already intervening as water truckers in their towns. However, as mentioned in chapter 1, local authorities have very different situations and capacities. Hence there is the need, in every area to engage in an evaluation of feasibility of these scenarios. This would entail mapping and evaluating opportunities and risks in the overall situation of local authorities in relation to:

1. Their *willingness to engage* in these scenarios and possibilities of getting more LAs interested through incentives. It must be noted that risks in this regard are high for WASH programming with, for example, some local authorities changing their minds under popular pressure.
2. The financial and human capacities of these local authorities and opportunities for funding their truck purchases or training their staff and municipal police to be able to operate trucking logistics and/or monitor and control water quality and pollution risks.
3. The *geography of coverage* that would emerge, if capable and willing local authorities were considered: In fact, it is important that the emerging territory is sufficiently large to invest in such an option and if the remaining area, that would have to be dealt with through other options, is not very fragmented and difficult to manage.
4. *Possible articulations* between those scenarios and WE-based scenarios, especially I.2 and I.3, and the types of conventions and MoUs that would be needed to organize the relations with WEs. This is to be considered in the case of the different WEs who would possibly be holding different positions as to how to deal with ITS issues.

Study III: Looking into local NGOs based scenarios

While some local NGOs with WASH expertise are now working at the national level, it must be noted that these are few in numbers and, as mentioned in interviews, they are very solicited and taken by their activities. In any case, for local NGOs to engage in trucking services, they most probably will do so in specific areas where they are based. Hence, it is important to understand local differences in regarding to the potential development of these scenarios. The study must then look into:

1. *Possibilities and limitations as to present large local WASH NGOs to engage in water and desludging trucking services, the risks they entail in their work and the training and financial support they would need for that.*
2. *Understanding the regional presence and concentration of possibly interested local NGOs to operate WASH trucking services to ITSs.*
3. *The evaluation as to these NGOs human and financial capacities and opportunities to support them.*
4. *The geography of coverage that would emerge, if capable and willing local NGOs were considered.*
5. *Possible articulations with other scenarios, especially I.2, I.3, II.1 and II.2.*

Study IV: Looking into voucher and Cash for WASH scenarios

The voucher or Cash for WASH modalities allow households in ITSs to choose between different providers and most importantly for humanitarian agencies to lower managerial costs. However, as discussed in the case studies and transversal analysis, this option might bring differentiated outcomes as to ITS dwellers' vulnerability and trucking markets, depending on different factors. Hence, before adopting scenarios that would favor these modalities, there is a need for an evaluation at ITS level that takes in consideration the following aspects:

1. *The presence or absence of competition in the local trucking markets and its impacts on the relevance of the voucher or Cash for WASH and their claimed benefits.*
2. *The differentiated situations of ITS dwellers in terms of livelihoods, as ITS dwellers benefitting from good livelihood situations are more likely to use their vouchers and not sell them to cope with their financial problems than dwellers with poor livelihood situations. This evaluation should be based on a mapping crossing available databases in different sectors, including of course WAP and HCMT.*
3. *The geography that emerges when considering all the ITSs that fit these characteristics. One must question if this geography is consistent and not very fragmented, so these scenarios could be soundly adopted.*
4. *Possible articulations with other scenarios.*

Based on this study and proposed ones, a variegated geography of ITS WASH services might emerge. The more WEs are involved and playing strategic roles, the more ITS WASH services would be addressed in a comprehensive and structured way. However, even in the cases where WEs will not engage directly in these services - as is the case of most now - a structured and concerted reflection involving human agencies, MoEW, WEs, local authorities and NGOs could

lead to regionally comprehensive hybrid scenarios, socially equitable, environmentally responsible and economically viable solutions.

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Annex 1 | List of Interviewees

Interviewees	Bekka				
	Aarsal	Joubb Jannine	Temnine el Faouqa	Zahle	Raiit
Municipality	Bassel H.	Issa D	Houssein A.	Assad Z.	Saad S.
NGO	Kamel K.	Kamel K.	Mohamad B. & Tarek A.	Lora & Hiba	Lora & Hiba
Shawish	Ahmad M.	Mahdi H.	Mahmoud C.	Ali A.	Ali A.
Syrian refugee 1	Nasha O.	Ghourab J.	Abdalla A.	Omar D.	Noura A.
Syrian Refugee 2	Amina Y.	Iman A.	Fadila S.	Zeiant	Houssain O.
Syrian refigee 3		Wamda A.	Jasem M.		Yasser T.
Lebanese resident 1	Mouhamad H.	Ahmad K.		Kamal Z.	Linda A.
Lebanese resident 2	Ahmad A.				Leila N.
Lebanese resident 3					
Trucker	Abdel sater H.	Adnan J.	Mohamad A.	Milad S.	Wissam N.
Disludger	Fidaa H.	Imad C.	Khaled G.	Ahmad H.	Ahmad H.

Interviewees	Akkar			BML	South
	Bzal	Qobbet Chamra	Sammaqiye	Choueifat	Ouazzani
Municipality	Hatem O.	Kaled A.	Abdalla D.	Hicham R.	Ahmad Dib M.
NGO	Olivia L.1Jana N.	Mohamad F.&Sirne S.&Ekbal H.	Mohamad F.	Hussein N.	Ali J.
Shawish	Faten H.	Moustafa S.	Jamal D.	Ahmad H.	Suleiman K.
Syrian refugee 1	Hind O.	Jawaz S.	Noujoud A.	Kolthoum H.	Ali A.
Syrian Refugee 2	Fadi J.	Ghazia H.	Mohamad D.	Sabrine H.	Khadija A.
Syrian refigee 3				Mohamad K.	Abu Turki
Lebanese resident 1	Ahmad M.	Ali B.	Hisham D		
Lebanese resident 2	Yassine A.	Jawaher M.			
Lebanese resident 3					
Trucker	Khaled A.	Bilal S.		Khodor H.	
Disludger	Khaled Aw.	Marwan A.			

Annex 2 | Case Studies

1. Aarsal

1.1 Town Profile

a) Demography

Aarsal is located in the Governorate of Baalbek-Hermel, Baalbek district. The city's population varies according to source. For the municipality, the number is around 45,000, whereas for Action Against Hunger (AAH) it is between 15,000 and 20,000. The figure of Syrian displaced population in town and living in ITSs also varies according to sources³⁸. According to WAP, the total number of Syrian displaced population is 33,555 living in 170 active ITSs.

b) Municipality profile

The municipality was founded in 1962, has a budget of 3 million USD, 10 permanent employees, 50 contractual employees, 3 policemen and 2 municipal guards. The municipal council is composed of 21 members, it has seven municipal committees but none for water and irrigation. In fact, there is a local water committee for the town coordinating closely with the municipality. According to the municipality, this committee - the historically established regulator for water distribution in town - is trying to hand over to the municipality the responsibility of the water sector³⁹.

According to its representative, the municipality knows the locations of all ITSs and has a good knowledge of the ITSs' dwellers' problems. In some instances, it intervenes in limiting the number of tents in certain ITSs to minimize overcrowding and pollution risks.

Always, according to its representative, the municipality collaborates closely with the humanitarian agencies dealing with Syrian displaced populations' issues. It intervenes in emergency situations (land movement, floods, etc.) to assist ITSs. It is involved in minimizing pollution related to wastewater discharge, mainly through the allocation of a rented discharging lot for desludgers to use. In addition, the municipality coordinates with the Army and the Internal Security Forces to control the trucks' discharging operations. Moreover, the health municipal committee controls regularly the water quality for pollution and contamination.

c) Water and wastewater networks

According to the municipality, only some parts of the town are connected to public water networks. Four public wells, three of which operate on solar energy, seventy illegal private wells

38 FOR THE MUNICIPALITY, THE NUMBER OF REFUGEES IS 55,000 OF WHICH 7,000 LIVE IN TOWN, AND THE OVERALL NUMBER OF ITSs IN TOWN IS 120 SCATTERED ALL OVER THE TOWN. FOR AAH, SYRIAN REFUGEES' NUMBER IS 46,000. IN THE AGENCY'S AREA OF INTERVENTION IN AARSAL, 25,885 ARE LIVING IN INFORMAL HOUSING (ITSs, UNFINISHED BUILDINGS, ETC.) AND THE OVERALL NUMBER OF ITSs IN TOWN IS 165.

39 HOWEVER, ACCORDING TO THE MAYOR, THE MUNICIPALITY IS RELUCTANT PRESENTLY TO ACCEPT AS THERE IS A FINANCIAL ISSUE RELATED TO BELATED PAYMENTS OF FINANCIAL ENGAGEMENTS DUE ON THE COMMITTEE

and al-Raayan spring, even though far from town, provide the town with sufficient irrigation, domestic and potable water. Where there is no public water network, some of the wells' owners have managed to build private networks with water-meters. However, most of the wells are mildly contaminated and quantities are affected by seasonal variations. Households not connected to private or public networks resort to private truckers for water provision. According to the municipality, the town has no wastewater network and relies mainly on pits directly in soil with no concrete walls.

d) Impact of Syrian crisis

The main sources of tensions are competition on the job market and the wastewater environmental impact. Moreover, displaced Syrians residing in town are using their own vehicles for trucking and desludging services for both Lebanese and ITSs, thus creating competition and therefore tension. According to an interviewed Lebanese resident, before the crisis there were only four desludging trucks and presently more than thirty.

1.2 ITS Profile

a) Demography and location

The ITS was established in 2014 in a vacant land, at the outskirts of Aarsal Town. The land is privately owned and renting fees are paid to the landowner. According to WAP, ITS-035 in Aarsal is constituted of 97 shelters built on an area of 15,000 sqm with 362 dwellers. According to shawish, 27% are women and 48% are children. The largest majority of the dwellers are from Al-Qusair area, not far from the Lebanese borders. One particularity of this ITS is the presence of 35 prefabricated units, called locally 'Caravans'. These units were provided to several widows or women headed households, in the aim of providing this particular population a higher level of privacy⁴⁰. The ITS population witnesses very high rates of unemployment related to an overall unemployment problem in Aarsal town.

The ITS is located on a low area known to be a swamp, and where several streams discharge, making flooding a frequent phenomenon. Thus, the dwellers of this ITS suffer continuously from inundation and needs significant desludging support.

b) Governance and stakeholders

The shawish of the camp came to Lebanon in 2014, he took over this position from a previous shawish. He is counseled by an informal committee of dwellers that meets when needed. The shawish negotiates the schedules of water provision and desludging services with trucking providers. From the shawish's perspective, there are good relations and support from the municipality and all humanitarian agencies for ITSs in Aarsal. As for the position of the dwellers regarding a possible withdrawal of the humanitarian agencies from the direct management of WASH services in ITSs, they fear that this might bring disorder and confusion and prefer to

⁴⁰ THESE CARAVANS HOWEVER STARTED TO SUFFER FROM LACK OF MAINTENANCE AND THE WOODEN FLOORS ARE ALREADY DAMAGED BY THE HUMIDITY AND WATER FLOODING. THE HUMANITARIAN AGENCY THAT PROVIDED THESE CARAVANS IS NO MORE OPERATING IN AARSAL.

maintain the present situation. Nevertheless, they would not mind such a change if it is very well regulated.

c) Water provision in ITS

ITS-035 has an infrastructure constituted of 1,000 l tank for each shelter used to store domestic water⁴¹, and two common tanks of 4,000 l for potable water. The individual tanks are cleaned by dwellers each month. The water trucker regularly adds chlorine to provided water. Potable water for the common tanks is provided from a well located in the ITS's proximity, with a water treatment unit funded by the Qatar Red Crescent. The dwellers are allowed to fill for each shelter 20 l of potable water from the common tanks every day. For domestic water, the water trucker fills the 1,000-l tank for all ITS dwellers⁴². The water comes from private wells outside town. The total provided quantity of water for the ITS is around 3,500,000 l per year⁴³, with a significant decrease in quantity provided in previous years, due to funds' shortage⁴⁴. According to the humanitarian agency's representative interviewed there is a seasonal variation of 15l/day/person in winter and 35l/day/person in summer.

The water provider is a Lebanese unregistered individual business⁴⁵, specialized in water provision, and has two trucks of 4,000 l, two of 4,500 l and one truck of 7,000 l. He delivers monthly a total water quantity of 803,000 l to six ITSs in Aarsal. He follows up his business through phone. During his service of ITSs, he requests dwellers to assist him by opening their tanks.

He works with AAH on a yearly-basis contract, and he started providing water to ITS-035 only in 2018. He was selected based on a public bidding process. According to the humanitarian agency's representative the most important criteria in winning the bid is related to the service cost (70%), volume of truck (20%) and quality of water (10%). The contract is prepared by AAH, and it defines the price of the provided service, the payment modalities, the water quantity to be provided, as well as the modality of treatment with chlorine. The water sources must be tested according to the contract.

d) Wastewater management in ITS

There are 97 indoor latrines in the ITS connected to four common covered pits cumulative capacity of 400,000 l. The grey water goes also to these covered pits. As the ITS shelters suffer in winter from frequent inundation, the dwellers often request additional desludging services that they claim to be paying themselves.

41 WHILE THE WATER PROVIDED IS SAID TO BE POTABLE, THE ITS DWELLERS SEEM TO DIFFERENTIATE BETWEEN THIS WATER THAT THEY USE ONLY FOR DOMESTIC USES AND THE WATER IN THE COMMON TANKS THAT THEY USE FOR DRINKING - AS MENTIONED BY DWELLERS IN THE FOCUS GROUP,

42 DURING INTERVIEWS AND FOCUS GROUP, THE ISSUE OF DWELLERS RESIDING IN THE ITS AND NOT ENTITLED TO ASSISTANCE HAS REPEATEDLY BEEN RAISED. IN THIS CAMP, THROUGH DWELLERS SOLIDARITY, THEY ARE SHARING THE WATER PROVIDED BY TRUCKERS.

43 THE HUMANITARIAN AGENCY PROVIDED A FIGURE OF 26.5 L/CAPITA/DAY AND THE WATER PROVIDER MENTIONED IN THE INTERVIEW 67,150 LITERS PER WEEK

44 ACCORDING TO THE HUMANITARIAN AGENCY'S REPRESENTATIVE

45 THE WATER PROVIDER HAS ONE EMPLOYEE, HE WORKS FROM HOME, AND PARKS HIS TRUCKS NEAR HIS HOUSE. HE DOES NOT GO TO A PARTICULAR GARAGE FOR MAINTENANCE.

The desludging of wastewater is provided through a private desludger that removes around 2,500,000 l/year⁴⁶. The desludger service provider is an unregistered small business⁴⁷ that owns four trucks of 16,000 l each of which he usually uses regularly only two. He follows up on his business through phone. The wastewater is discharged in the land defined by Aarsal municipality.

The desludging provider works with AAH on a yearly-basis contract and he only started serving this ITS in 2018. The selection is based on a public bidding process⁴⁸. According to him the main criteria for winning the contract was the price and the capacity of desludging in terms of quantity. The contract defines the quantity of water to be desludged (18.5 liters/capita/day), the discharging place, the service price, and the payment modalities.



Picture 1: Water channel next to Aarsal-035

1.3 Market modalities

a) Price and competition

In Aarsal town, there is an informal local political understanding for encouraging people from Aarsal to operate in the water trucking and desludging markets⁴⁹. This is seen as a way to provide job opportunities and minimize the negative impacts of the Syrian displacement crisis in town. This is leading to the presence of a very high number of providers - e.g. nearly 30 water trucking

46 AS PER CONTRACT, IT IS 18.5 LITERS/CAPITA/DAY

47 HE HAS 4 PERMANENT LEBANESE EMPLOYEES AND ONE SYRIAN ITS DWELLER. HE TRAINS THEM ON TRUCK DRIVING AND HOW TO DESLUDGE AND DISCHARGE. HE HAS NO OFFICES, WORKS FROM HOME AND PARKS HIS TRUCKS NEAR HIS HOUSE. HE HAS A CONTRACT WITH A GARAGE FOR MAINTENANCE

48 THE PROVIDER CLAIMS TO HAVE KNOWN ABOUT IT FROM FACEBOOK.

49 AS EXPLAINED IN SEVERAL INTERVIEWS CONDUCTED WITH KEY INFORMANTS IN THE AREA

providers in town. This has led however to a significant competition in both water provision and wastewater desludging sectors. This is accentuated by the fact that some displaced Syrians have also engaged in these services. Some of these Syrian water providers have brought their trucks with them from Syria, adapted them and are using them for these services. Though, humanitarian agencies insist on having contracts with Lebanese trucking providers, Syrian truckers seem to present an important competition in the trucking market, especially outside ITSs. The water price has decreased if compared to previous years due to competition. Outside ITSs, Lebanese truckers provide water for 2.5USD/ 1,000 l while Syrian truckers provide water for 2USD/ 1,000 l. The price of desludging service also decreased if compared to previous years. Inhabitants in Aarsal pay 4.2USD/ 1,000 l outside the ITSs. ITS's dwellers also pay 3.22USD/1,000 l outside the contract provision. Noteworthy, the desludgers are all Lebanese and, as per the Lebanese interviewees, their number has increased from 3 to around 30 in the last years due to the growing need for desludging services.

As per the yearly contract with the water trucker, AAH pays 2.15USD/ 1,000 l to provide water for this ITS, equivalent of 7,525 USD per year. Hence, the cost of this service per capita/year for AAH - excluding other maintenance and investment costs - for water provision is 20.8 USD. For desludging services, AAH pays 6USD/ 1,000 l of wastewater, equivalent for this ITS to 15,000USD per year or 41.44USD/capita/year.

AAH has contracts with several providers across the ITSs in Aarsal. It considers that one provider cannot meet the need of all ITSs from one side, while from the other side this maintains competition and avoid monopoly. While the cost is the main criteria in winning the bid for water provision, the trucks volume and capacity to provide large quantity are also main criteria to win the bid for wastewater desludging. As a total for Water Sector, AAH pays 62.22USD/capita/year in ITS-035 in Aarsal.

b) Market sustainability

Dwellers of ITS-035 in Aarsal do not have the capacity to contribute to cost of WASH services in case of the humanitarian agencies withdrawal. They fear disorder in WASH markets and have expressed a high dependency on AAH.

As for the municipality, it maintains the good relations with ITS dwellers in general and has shown the will to intervene in assistance in case of emergency situations such as flooding. It is also active in monitoring water quality. Outside the regulatory framework set by contracts with humanitarian agencies regarding the environmental impact of Water Sector and mainly desludging, the municipality seems to be an important actor controlling the desludging processes and addressing pollution issues. The municipality expressed a will to help and support displaced Syrians in the provision of WASH services but also underlined a lack of human and financial resources to do so. In fact, the cost of WASH services to ITSs in Aarsal - excluding investment and maintenance costs - would easily amount more than 2 million USD/year⁵⁰, while the total budget of the municipality is 3million USD/year.

50 THIS IS BASED ON THE FIGURE OF 33,555 ITS DWELLERS MENTIONED IN THE WAP AND THE CALCULATED 65.6USD/CAPITA/YEAR

Demography:

- 45,000 residents (Mu);
- 39,344 registered displaced in all town;
- 170 active ITSs (WAP);
- 33,555 dwellers in all ITSs (WAP)

Infrastructure Systems:

- 70 illegal wells, many may be contaminated;
- 4 wells for the municipality connected to water networks;
- Sufficient water provision;
- Spring far from town (Al Raayan spring);
- Some parts of town not connected to WW networks;
- Presence of Syrian water truckers in town;
- Significant increase in water demand with Syrian crisis.

Municipal Assets:

Profile:

- Founded in 1962,
- 21 council members;
- 10 permanent employees, 50 contractual;
- Budget: 3 Million USD;
- 7 committees of which 1 for Agriculture.

Knowledge of refugees:

- Know the locations of ITSs;
- Intervene for support in emergencies.

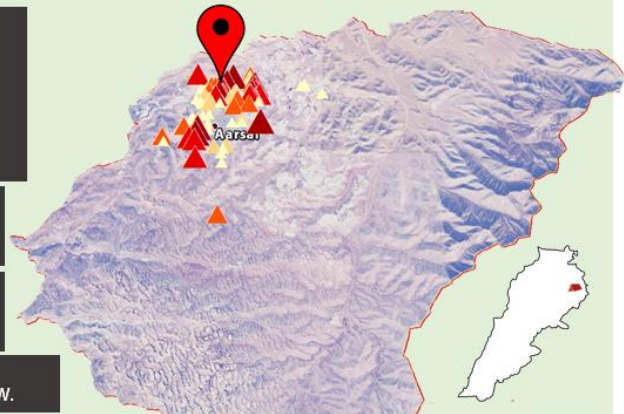
Ability to negotiate: Coordination with local water committee; coordination with security bodies in controlling discharging of WW; coordination with many humanitarians in ITSs.

Ability to develop projects: - 3 wells operating on solar energy;
- Solutions to reduce environmental impact in discharging sites for ITSs' WW.

Capacity to regulate: - Controlling ITSs' size to limit WW pollution;
- Controlling regularly water quality.

Case Studies

Aarsal



Case Studies

- Established in 2014
- 27% women, 48% children
- Very high rates of unemployment



- Small enterprise
- 4 x 16,000 l trucks
- 1 year contract (since 2018)
- Works in 6 ITSs in Aarsal

- 4 covered pits (400,000 l capacity)
- 2,500,000 l/year
- 18.5 l/c/day

- 362 Dwellers
- 97 Shelters



6\$/1,000 l
Paid by ACF –
3.22\$/1,000 l – Paid
by dwellers

Non environmental
discharge in a land defined
by the Municipality

97 indoor latrines

Grey Water
discharge into pits



1,000 l per
shelter



Only 20
l/shelter/day

D

P

2 Common 4,000 l
for Potable water

2.15\$/1,000 l paid by AHH

Provided by
Water Truck

CL



- Small enterprise
- Specialized in water trucking
- 2 x 4,000 l trucks + 2 x 4,500 l trucks + 1 x 7,000 l truck
- 1 year contract (since 2018)
- Works in 6 ITSs in Aarsal
- Delivers 803,000 l/month to 6 ITSs in Aarsal

3,500,000 l/year (2018) Decrease in quantities
from past years
15 l/c/day in winter
35 l/c/day in summer

Water Treatment
Unit

Aarsal 035



2. Zahle

2.1 Town Profile

a) Demography

Located in the governorate of the Bekaa, Zahle district the city's population is 150,000 inhabitants according to municipality and the number of Syrian refugees is 90,000 of which 60% to 70% live in ITSs scattered on agricultural and industrial areas. According to WAP, in Zahle there are 278 registered ITSs of which 240 are active. They host 17,398 dwellers⁵¹.

b) Municipality Profile

The municipality of Zahle was founded in 1878. It has a budget of 23 million USD. 21 permanent employees and a police force composed of one permanent police officer and 84 on contract basis. The municipal council is composed of 21 members. It has more than 15 municipal committees but none for water and irrigation.

The municipality does the census of the Syrian displaced population and tries to maintain locations of ITSs in the plain areas as per the interviews with the municipal representatives. Municipal services (like Solid Waste Management) are only partially delivered to the ITS through private contractors and no connection to water for the ITSs are allowed. The cooperation with humanitarian agencies remains oriented at limiting the impact of the refugee presence on the Lebanese population and environment.

c) Impact of Syrian crisis

The tension is high between the municipality and the Syrian displaced population. According to interviews with the Municipality's representatives, if ever humanitarian agencies withdraw or leave the ITSs, the municipality would ask the refugees to evacuate and leave the ITSs.

2.2 ITS Profile

a) Demography and location

ITS-050 in Zahle Haouch El-Oumara Aradi is constituted of 12 shelters built on an area of 500 sqm. As per WAP, the number of dwellers is 97⁵². According to the humanitarian agency officer, 30% are women and 55% are children. Dwellers are direct and indirect relatives. They can find employment only seasonally, in the two sectors of construction and agriculture.

The ITS was established in 2014, with the help of the previous shawish, father of the current shawish. The ITS is in an industrial and agricultural area. The land is privately owned and was

51 IT MUST BE NOTED THAT THERE IS A LARGE MISMATCH BETWEEN THE FIGURES PROVIDED BY INTERVIEWEES (THE REPRESENTATIVES OF THE MUNICIPALITY, THE REPRESENTATIVES OF THE HUMANITARIAN AGENCIES) AND THE WAP. THE FIGURES PROVIDED BY LOCAL ACTORS ARE LARGER BENEATH THOSE OF THE WAP. THIS MAY BE DUE TO DIFFERENT PERCEPTIONS OF WHAT IS INCLUDED OR EXCLUDED WITHIN THE CITY OF ZAHLE.

52 HOWEVER, THE FIGURE PROVIDED BY THE HUMANITARIAN AGENCY OFFICER IS SLIGHTLY DIFFERENT WITH AN ESTIMATED 78 DWELLERS, THE SHAWISH GAVE THE WAP FIGURE.

vacant before the ITS establishment. The shawish mentions that it suffers from the proximity to a slaughterhouse.

b) Governance and stakeholders

The present shawish seems influential in the camp. His father founded the camp. Himself, he moved to Lebanon in 2012 and became shawish in 2014. He works in the construction sector and makes 20\$/day⁵³. He manages the camp and takes care of infrastructures. However, it seems that he is at odds with different stakeholders.

According to interviews one noteworthy aspect of this ITS is related to governance where bad relations were reported, mainly between the Shawish and the water services provider⁵⁴. Other concerns were voiced by the shawish regarding the relation between the dwellers and the municipal police⁵⁵.

c) Water provision in ITS

ITS-050 has an infrastructure constituted of 1,000 l tank for each shelter used to store domestic water, and another 100, 200, 300 l tank for potable water as reported by the Shawish. The water is provided by trucks cumulating a total quantity of 721,600 l/year, equivalent to 20.3 l/capita/day. According to the trucking water service provider, the supplied quantities changed with seasons and it consists of 14l/person/day in winter and 35l/person/day in summer. The trucker provides water from a private well that he owns, and he treats the water with chlorine. Quantities have dropped due to restrictions of funds. Quantities were 35l/capita/day all year long since 2014, according to the humanitarian agency and the water trucker. As per interviews, these quantities are insufficient, and dwellers request additional quantities that they pay for themselves. The water provider is a Lebanese medium to large size enterprise that works also in transportation services⁵⁶. It owns five trucks of 10,000 l and 5 trucks of 20,000 l. This provider is serving ITS-050 since 2014, he is also providing water to 49 ITSs of which 30 are in Zahle. The enterprise does not only work in ITSs, and the latter constitute only 50% of its general serviced areas. It has a working volume of 500,000 l/day. He is working with SI based on a contract that includes ITS-050 since 2016. The contract is based on conditions of price, quality and environmental norms.

For its operations, the enterprise uses GPS tracking systems. It follows a specific schedule to cover all ITSs in contracts. When serving ITSs, the enterprise's employees do not need the assistance of ITS dwellers, however they sometimes ask the dwellers themselves to open the water tanks

53 WHICH IS A RELATIVELY GOOD INCOME IN ITSs

54 HE CLAIMS THAT THE PROVIDER DOES NOT ALWAYS BRING WATER WEEKLY AS THEY BELIEVE HE SHOULD BY CONTRACT, LEAVING THEM SOMETIMES WITHOUT WATER.

55 THEY MENTIONED "RAIDS" BY THE POLICE TO CHECK FOR THE DOCUMENT'S REGULARITY WITH SOMETIMES DISRESPECTFUL BEHAVIOR ON THE PART OF THE POLICE.

56 ACCORDING TO THE WATER TRUCKING SERVICE PROVIDER, HIS ENTERPRISE IS A REGISTERED PARTNERSHIP COMPANY. IT HAS 25 EMPLOYEES OF WHICH 10 ARE WORKING IN THE WATER TRUCKING SECTOR, WHILE OTHERS ARE INVOLVED IN TRUCKING ACTIVITIES RELATED TO AGRICULTURAL WORKS AND TRANSPORTATION OF NEW CARS FROM BEIRUT PORT TO BEKAA AREA. THESE 10 EMPLOYEES WORKING IN WATER TRUCKING PROVISION ARE ALL SYRIANS LIVING IN CAMPS. THEY ARE TRAINED ON DRIVING THE TRUCKS, MANNING IT AND USING THE HOSE. THE ENTERPRISE HAS ITS OWN OFFICES AND TRUCKS GARAGE. MAINTENANCE AND REPAIR ARE DONE ON SITE AT THE TRUCKS GARAGE NEAR THE OFFICE AND HAS CONTRACTS WITH SPECIALIZED MECHANICS

covers. In the case of this ITS, the water trucking provider contributes to the treatment of the water by putting quantities of chlorine in water trucks.

The provider considers that SI trusts him as he has a good reputation in many other ITSs that are also managed by SI.

d) Wastewater management in ITS

The desludging of wastewater is provided through a private desludger that removes 68,500 l of wastewater per year from the ITS's pits. Wastewater is collected in individual 1,000 l pits for nearly each shelter. These are connected to indoor latrines present in each shelter. As for greywater, it goes to cesspits.

The desludging service provider is a small Lebanese enterprise that owns one truck of 13,000 l and one truck of 7,000 l⁵⁷. It provides desludging services for nearly 200 ITSs in the region and 30 in Zahle. However, it services also areas in Aarsal and West Bekaa. Its work is only concentrated in ITSs, discharging, for the area of Zahle a monthly wastewater quantity of 1,300,000 l⁵⁸. The wastewater is discharged in Zahle treatment plant. GPS systems are set on his trucks based on the demand of humanitarian agencies.

The desludger started working in 2017 based on a bidding process. The contract is prepared by SI and it defines the price of the service, the capacity of the contractor (number and size of trucks), hose length, the place of discharging, the timing and the payment modalities of the delivery.

2.3 Market modalities

a) Price and competition

The water provision market in ITSs in district of Zahle is characterized by the presence of four large providers⁵⁹ with some competition between them. This is leading prices down in some areas. However, this is not systematic. As in the case of this ITS, water trucking service cost didn't change in the last few years. SI pays 2.45USD/ 1,000 l to the trucker in ITS-050, and a total of 1,768USD/year to cover water provision at a ratio of 18.23USD/capita/year. The ITS's dwellers also need additional water quantities; they pay 3.3USD/1,000 l for domestic water and 6.6USD/ 1,000 l for potable water. ITS's dwellers are not satisfied in general from the price and they think it is expensive.

As for the desludging sector, there is the presence of five to six large providers at the level of the district with a limited competition between them. As explained by one desludger, there is an informal understanding around prices between desludgers with differences in bid offers being usually minimal (less than a dollar). Some even have been serving the same areas for several years. In Zahle city, the service is concentrated mainly in ITSs, as the town is largely connected to public sewage network. As mentioned by the municipality representatives in interviews, all

57 THE DESLUDGER HAS 6 EMPLOYEES OUT OF WHICH 5 ARE SYRIANS. HE PARKS HIS TRUCKS NEAR HIS HOUSE. HE MAINTAINS THEM AT A SPECIALIZED GARAGE REGULARLY.

58 900,000 L IN SUMMER AND 400,000 L IN WINTER

59 AS CONFIRMED BY SEVERAL PROVIDERS WE INTERVIEWED

desludgers come from outside the city itself. As for the price, SI pays in ITS Zahle-050 10.85USD/1,000 l and a total of 743USD/ year, equivalent to a ratio of 7.66USD/capita/year.

Hence, SI pays a total amount of 25.8 USD in Water Sector per capita/year (excluding investment costs and infrastructure in ITSs).

It is noteworthy that both water provider and deslugger have mentioned that their contracts have been renewed continuously after first bid. They claim that this is due to the satisfactory service they provide and the relation of confidence they have established with the humanitarian agency. However, as explained by the agency's officers in the area, the agency gets on every end of contract, through its logistics officers' quotations for prices. However, as no better offer (considering prices, capacity of supplier, quality...) has been received the contracts with the same providers were renewed.

b) Market sustainability

Dwellers of ITS-050 are able to find seasonal employment in agriculture or construction, and they are able to pay a part of their needed domestic and potable water, given that –as they consider– the provided water by SI is not enough.

From a financial perspective, based on above estimations for WASH services' expenditures⁶⁰ per capita per year (25.89USD) in this ITS, it could be estimated that the total cost for WASH services (excluding infrastructures) in ITSs in Zahle would be around 450,000USD/year⁶¹. This is a considerable figure but could be within the capacity of a municipality that manages a budget of 23 million USD to address or regulate as a market,. However, as per interviews with municipal representatives, the municipality aims at minimizing the impact of ITSs on the short term and their dismantling on the mid and long term. In case of Humanitarian agencies withdrawal from direct service in this sector, it does not have the will to interfere in providing WASH services for ITSs and will not regulate the trucking markets.

Although the municipality will not intervene in supporting ITSs, it is currently very active in controlling and limiting water and soil contamination due to wastewater informal desludging that results from ITSs.

60 NOTING THAT THE PROVIDED SERVICES BY HUMANITARIAN AGENCY DO NOT TOTALLY COVER THE ITS'S' DWELLERS NEEDS

61 CONSIDERING A TOTAL OF 17,392 DWELLERS IN ITSs IN ZAHLE BASED ON WAP

Demography:

- 150,000 residents;
- 240 active ITSs (WAP);
- 17,398 dwellers in all ITSs

Infrastructure Systems:

- Legal and illegal wells, Berdaouni river, public networks;
- Some water sources are polluted;
- Local water is not sufficient;
- Depends on private water trucks for domestic use;
- WW networks covering all town managed by BWE;
- Discharge in Zahle WWTP;
- Increase 60% in water demand with Syrian crisis.

Municipal Assets:

Profile:

- Founded in 1878,
- 21 council members;
- 21 permanent employees;
- More than 15 committees;
- Budget: 23 Million USD.

Knowledge of refugees: Statistics on ITSs.

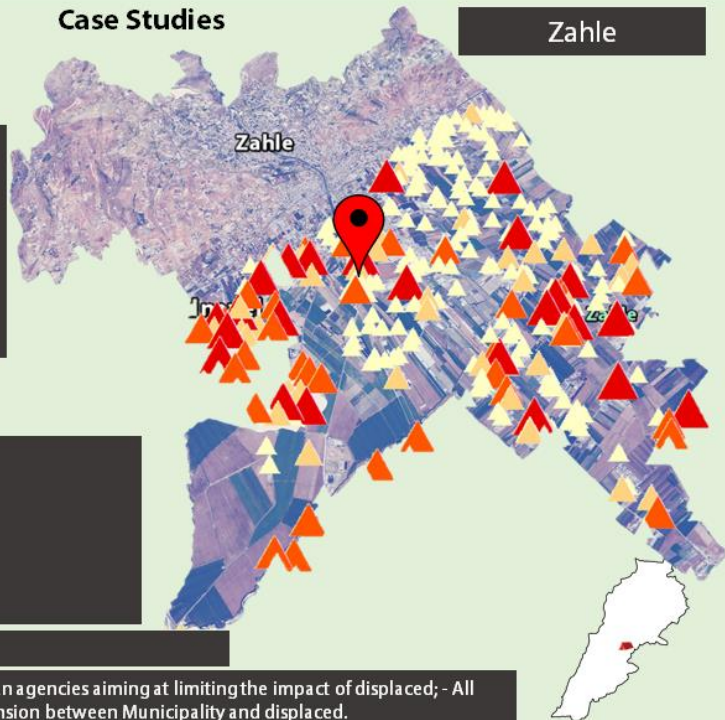
Ability to negotiate: - Basic coordination with humanitarian agencies aiming at limiting the impact of displaced; - All services' providers in ITSs are from outside Zahle; - High tension between Municipality and displaced.

Ability to develop projects: In case of humanitarian agencies withdrawal, municipality does not want to be involved in ITSs and does not provide any support.

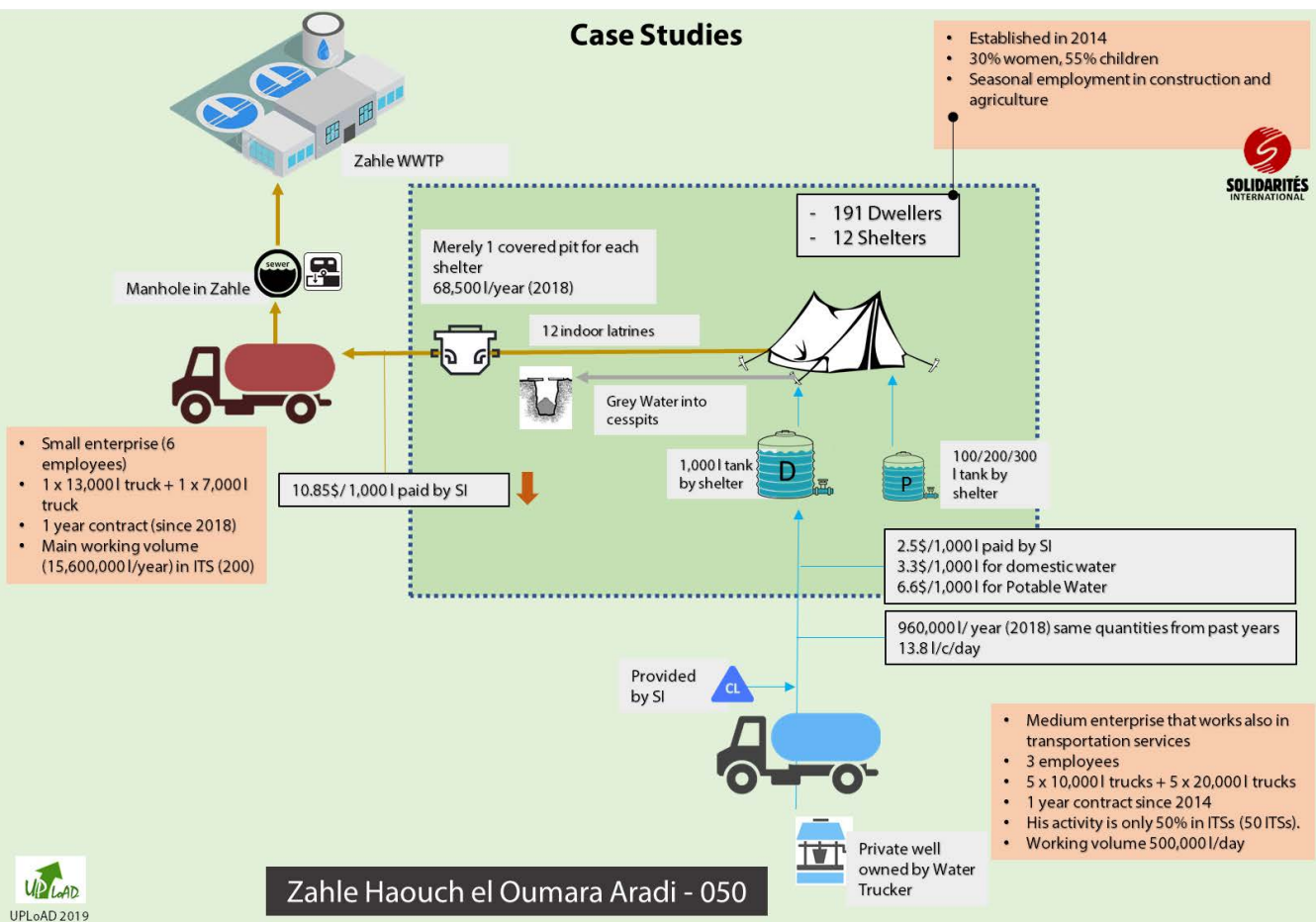
Capacity to regulate: Does not interfere in ITSs renting process or services' provision; Controls ITSs' location and limits it to plain area.

Case Studies

Zahle



Case Studies



3. Temnine ElFaouqa

3.1 Town Profile

a) Demography

Located in the governorate of Baalbek-Hermel, Baalbek district, the town's Lebanese population varies according to sources. For the municipality it is around 6,000 residents, whereas for the humanitarian agency it is 3,000. The number of Syrian displaced population and ITSs vary also according to sources⁶². According to WAP, the number of Syrian displaced population in ITSs is 620 and the number of active ITSs is 24.

b) Municipality Profile

The municipality of Temnine ElFaouqa was founded in 1962. It has a budget of 160,000 USD. It has one permanent employee, six contractual employees and two police officers. The municipal council is composed of 15 members, it has eight municipal committees but none for water and irrigation.

c) Water and wastewater networks

According to the municipality, the town is connected to a local water network and to wells. However, the water quantities are not sufficient to cater for the needs of its inhabitants. Potable, domestic and irrigation water is provided by springs, two legal wells operated by the WE, ten private legal wells and some illegal wells. In addition, the polluted Temnine river is used for irrigation. According to its representative, the municipality contributes 4000 USD/month to the maintenance and operational costs of public water provision in town, of which 2000USD/month on electricity for two public well pumps. As for the wastewater network, it does not cover the whole town. It discharges in the Litani River.

d) Impact of Syrian crisis

Regarding displaced Syrians, the municipality does regular census, it collects solid waste from ITSs and has even connected some to the local water network. However, it claims not coordinate with the humanitarian agencies nor intervenes in any way in regulating ITSs settlement in anyway. There is no perceived tension between the main stakeholders in Temnine ElFaouqa.

3.2 ITS Profile

a) Demography and location

According to WAP, ITS-005 in Temnine ElFaouqa is constituted of 12 shelters and has 76 dwellers. According to shawish, 25% are women and 39% are children. The dwellers are mostly relatives. They can find employment only seasonally, in the two sectors of construction and agriculture.

62 FOR THE MUNICIPALITY, SYRIAN DISPLACED POPULATION IS 3,500 OF WHICH 50% LIVE IN TOWN, AND THE OVERALL NUMBER OF ITSs IN TOWN IS SIX, MOSTLY ON AGRICULTURAL LANDS. FOR THE HUMANITARIAN AGENCY, SYRIAN DISPLACED POPULATION REFUGEES' NUMBER IS 558 AND THE OVERALL NUMBER OF ITSs IS EIGHT.

The ITS was established in 2014 on a 1,000 sqm land in an agricultural area. The land is privately owned, Noteworthy, there were two shelters before the crisis.

b) Governance and stakeholders

The present shawish was recognized as so when a humanitarian agency chose him to coordinate its activities in the ITS. In fact, he does not live in the ITS itself but in a house in its vicinity. He is a Syrian carpenter that came to Lebanon seven years ago and works in the area. The fact that the dwellers have access to employment empowers them. However, they have a vulnerable relation to the landowner. When they were expelled from a nearby ITS by its landowner, the majority of the present ITS population was invited by its landowner to use the land on the condition that they assist in harvesting his vineyards. He also deprives them from access to water from the well in the land during summer time when he needs water for irrigation.

As for the dwellers' position on a possible withdrawal of humanitarian agencies from direct management of WASH in ITSs, dwellers do not seem to mind. They believe that then they would not have to abide by the trucking providers and their schedules and would be able to choose the ones they like⁶³.

c) Water provision in ITS

ITS Temnine Faouqa-005 has an infrastructure constituted by 1,000 l tanks by shelter for domestic use and additional 300 liters tanks for potable water. An existing well on site, that is originally used for irrigation, was reported as contaminated and is being used intermittently for domestic use by the ITS dwellers. SAWA managed to provide 876,000 l/ year in 2018, equivalent to 31.6 l /capita/ day. It is a clear rise compared to 2017, when the agency provided 287,000 liters, equivalent to 7.5l/capita/day. In fact, SAWA managed to combine two funds to supply water for dwellers.

The trucker provides water from two wells, one he owns and the other in the nearby village of Chmestar. The trucker adds 5.5 ml of Chlore to each 10,000 liters of transported water. The water trucker has a small unregistered business⁶⁴ specialized in water trucking. He has two trucks of 10,000 l and 30,000 l. He has GPS trackers installed on his trucks. He claims to operate in 30 ITSs, 6 of them in town with a total working yearly volume of 960,000 l all in ITS. According to the humanitarian agency, the water trucking provision contract with SAWA is a yearly contract. It is based on an advertised bid. The selection criteria are price (70%), trucking volume capacity (20%) and quality of water (10%).

In addition, as mentioned by dwellers in focus groups, they resort regularly also to bottled water - an average of 3 l/shelter/day, equivalent of a total 13,140 l/year.

63 IN FACT, AS MENTIONED BY THE SHAWISH, THEY ARE AT ODD WITH ONE OF THE PROVIDERS AGAINST HIM THEY FILED A COMPLAINT FOR MISBEHAVIOR.

64 HE HAS THREE PERMANENT SYRIAN EMPLOYEES. HE PROVIDES THEM WITH NO TRAINING. HE USES AN OFFICE IN THE OFFICES OF ANOTHER WATER TRUCKING SERVICES ENTERPRISE IN ZAHLE. HE PARKS HIS TRUCKS IN CHMESTAR. HE MAINTAINS HIS TRUCKS IN THE ENTERPRISE'S GARAGES IN ZAHLE.



Picture 2: Hose connection from well to shelters, Temnine ElFaouqa

d) Wastewater management in ITS

The ITS has 10 outdoor latrines and 2 indoor latrines connected to covered pits. As for grey water, it is discharged in small cavities in the ground near the shelters. According to the humanitarian agency the ITS is desludged monthly based on an estimated minimum quantity of 1.7l/capita/day, equivalent of 47,160 l/year. The desludger however claims a total monthly quantity reached of 14,000 l, equivalent to 168,000 l/year⁶⁵. Desludged effluents are discharged in a manhole in Khiara connected to Joubb Jannine wastewater treatment plant⁶⁶.

The desludger has a registered medium enterprise⁶⁷. It has two trucks of 12,000 l and one 8,000 l. The enterprise provides also contracting services. 90% of the total working volume of the enterprise in desludging is in ITSs. It started operating in 2018 in this ITS based on a 1-year contract with SAWA. The contract is based on an advertised public bid. Selection criteria are mainly cost, volume of trucks and capacity of desludger to provide the service. The contract insists on desludger using GPS trackers on trucks and to discharge in a wastewater treatment plant. The enterprise serves ITSs in several localities in the whole Bekaa (Baalbak, Zahle, and West Bekaa districts, however mostly in West Bekaa district), and said to have currently contracts with three humanitarian agencies, including SAWA. The annual working volume of the enterprise

⁶⁵ ACCORDING TO WAP, DESLUDGER IS UNABLE TO ACCESS THE PITS OF FIVE LATRINES IN WINTER SEASON. HOWEVER, THAT WAS NOT MENTIONED IN INTERVIEWS.

⁶⁶ KHIARA MANHOLE IS NEAR THE WORKING AREA OF THE DESLUDGER. ACCORDING TO HIM HE WOULD NOT MIND DISCHARGING IN ZAHLE TREATMENT PLANT IF HIS SERVICED ZONE IS LOCATED NEAR IT. ALSO, ACCORDING TO HIM, KHIARA MANHOLE HAS A PUMPING SYSTEM AND FILTERS; THE WASTEWATER WILL THEN REACH JOUBB JANNINE TREATMENT STATION WITH LESS ACID COMPONENTS.

⁶⁷ IT HAS 16 SYRIAN EMPLOYEES. THEY ARE TRAINED IN DRIVING TRUCKS AND DESLUDGING TECHNIQUES. THE ENTERPRISE HAS ITS OWN OFFICES IN ANJAR.

varies significantly from month to month, according to the desludger; as an indicative example, the quantity of discharged wastewater in March 2019 is 480,000l.

3.3 Market modalities

a) Price and competition

As the water provided by the water establishment and by the municipality is not sufficient, Lebanese inhabitants of the town rely partially on private water truckers. They pay 13.33 USD/1,000 l. In this ITS, the humanitarian agency pays 5.3 USD/1,000 l. According to the humanitarian agency representative, the price did not change significantly in the last years. Hence, the humanitarian agency pays a total of 4,643 USD/year, at a ratio of 61.1 USD/capita/year. The funds for the relatively high cost water provision in Temnine ElFaouqa are provided jointly from two different sources.

Since the public wastewater network does not cover the totality of the town, many of Lebanese inhabitants of Temnine ElFaouqa rely on private wastewater desludgers. They pay 12.5 USD /1,000 l for private desludgers. Inside ITSs the desludging cost is set to 9 USD/1,000 l. This price has rose in the last years due to fuel prices and distance to wastewater treatment plant. Hence, the humanitarian agency pays a total of 425 USD/year for desludging services at a ratio of 5.6USD/capita/year.

The humanitarian agencies request services from water and desludging providers based on yearly contracts. The total cost for WASH services provided by humanitarian agencies is 66.67 USD/capita per year, which is the highest cost observed if compared to the other case studies of this research, noting that the water provision's cost is what contributed to the raise in the total WASH cost.

b) Market sustainability

In case of humanitarian agencies withdrawal, the municipality stated that it will not be able to take any measures in supporting the ITSs due to its budget deficit. However, it considered that it will try to help as possible, given the good relation it has with the ITSs dwellers.

If the municipality was to provide these WASH services - excluding investment and maintenance costs - for all ITSs dwellers in Temnine ElFaouqa, it would cost it a total of 41,500 USD/year, knowing that the municipal budget is 160,000 USD/year.

The municipality does not have currently an efficient role in regulating the prices and the quality of water and desludging services. Therefore, it is unlikely to be able to replace the regulating humanitarian agencies' role, and accordingly environmental impact and health hazards derived from improper practices are likely to occur. From the other side, the humanitarian agency has a strict control on the discharging, through GPS monitoring of desludgers' mobility, and the legal protection of the contracts.

On the other hand, the shawish considered that the voucher system replacing the direct role of humanitarian agency would be better, as dwellers would be able to request water services whenever they need it and they will have more freedom in choosing truckers.

Case Studies

Temnine ElFauqa

Demography:

- 6,000 residents (Mu);
- 24 ITSs (WAP);
- 620 dwellers in all ITSs (WAP).

Infrastructure Systems:

- 2 local public wells (BWE);
- 10 private legal wells and other illegal wells;
- Temnine river (polluted) for irrigation;
- Water quantity not sufficient;
- Local networks connected to wells; Provision also from private truckers;
- Bottled water 6 to 10 l/day;
- 40% increase in water demand;
- WW networks not covering all town, discharge in Litany.

Municipal Assets:

Profile:

- Founded in 1962;
- 15 council members, 1 permanent employee + 6 contractual;
- Budget: 160,000 USD;
- 8 committees of which 1 for environment.

Knowledge of refugees: Does statistics on displaced Syrians.

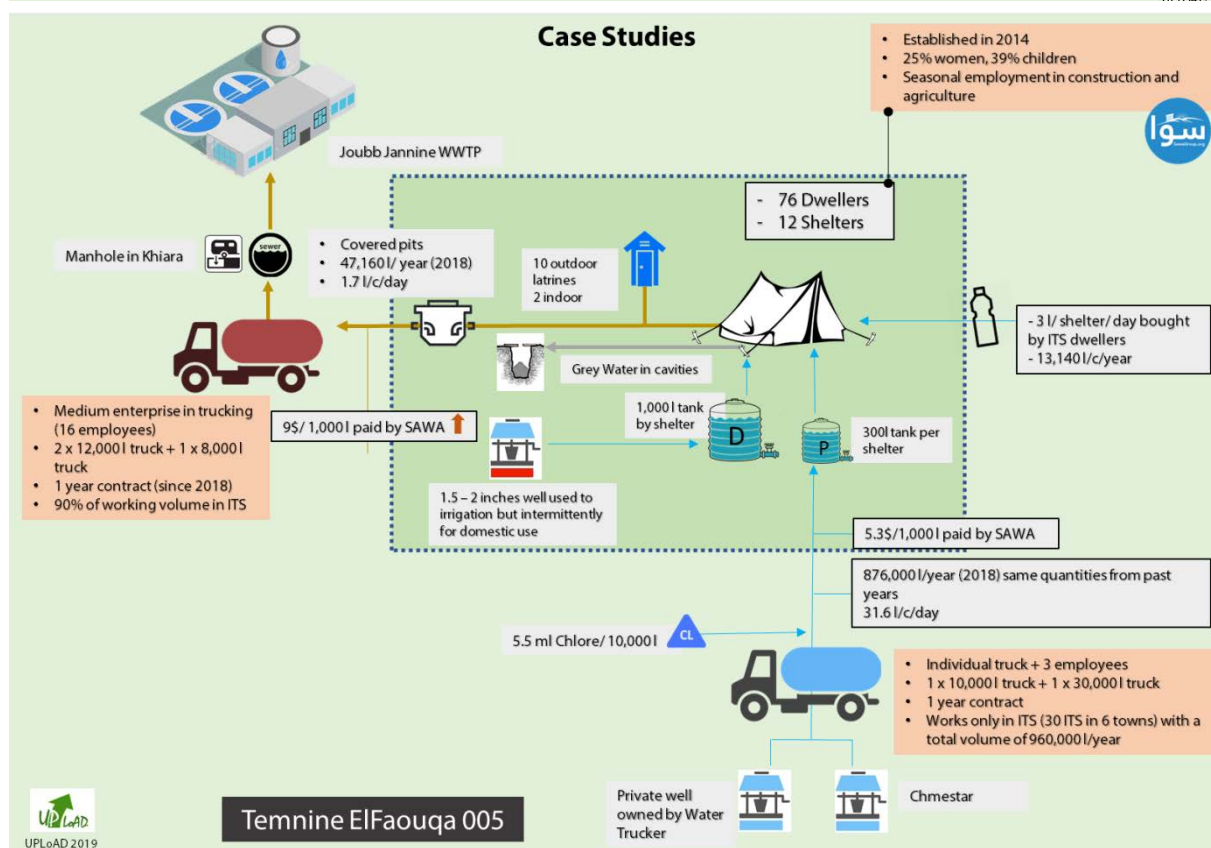
Ability to negotiate: No coordination with humanitarian agencies.

Ability to develop projects: Municipality contributes 4,000USD/month for O&M for public water provision, In case of humanitarian agencies withdrawal, no capacity to act. Will provide help if needed.

Capacity to regulate: No role in ITSs' locations; Controls renting process; Municipality is responsible of water in ITSs through connecting them to public networks.

Temnine El Faoqa

UPLoAD
HUMANITARIAN



4. Raait

4.1 Town Profile

a) Demography

Located in the governorate of Beqaa, Zahle district, the town's population is 4,000 residents and a Syrian displaced population of 3,000, of which 2853 live in ITSs, according to WAP. As per WAP, there are 24 registered ITSs in Raait of which 23 are active. ,

b) Municipality Profile

The municipality of Raait was founded in 1965. It has two permanent employees, one contractual and one municipal police guard. At present, the municipal council is dissolved. However, it has five informal committees appointed by the governor with three permanent employees, but none for water and irrigation.

The municipality does neither intervene in the location of ITSs nor provides services to the refugees. However, it coordinates with some of the humanitarian agencies, does the census of displaced Syrians and imposes some regulations upon the property owners of the ITSs.

c) Water and wastewater networks

Provision of potable and domestic water is through the municipal local network, which covers part of the town. The Water Establishment is not the sole provider of water. The municipality provides water from legal wells, but the residents pay for it. However, water is not sufficient, and the gap is compensated from the Chamseen spring and in some cases from illegal wells for potable, domestic and irrigation waters. The municipality does not control wells' digging and the connection to the local network, nor controls the quality of water. Since the Syrian refugee influx, the increase in needs for water has reached 50%.

Only part of the town is connected to wastewater network operated by the Water Establishment. However, in both cases wastewater is discharged in the environment, mostly in the river. The municipality does not control the desludging market and the discharge operations.

d) Impact of Syrian crisis

Though the municipal representative interviewed mentioned an increase of 50% on water demand since the beginning of the crisis, he assured that there is no perceived impact of the Syrian crisis in terms of social tensions in town.

4.2 ITS Profile

a) Demography and location

ITS-008 in Raait was established in 2014. It is constituted of 33 shelters on a land of 10 to 15,000 sqm. The number of dwellers is 159, out of which the majority is women. The dwellers do not have direct familial or friendship relations. They have high employment, especially men in construction.

The ITS is located in an industrial area. The land is privately owned and was vacant before the ITS establishment.

b) Governance and stakeholders

Both dwellers and WASH services providers insist on staying within the actual model of service provision. According to them without humanitarian agencies, the situation will be a complete chaos.

c) Water provision in ITS

ITS Rait-008 has an infrastructure constituted of 1,000 l tanks for domestic use for each shelter and additional 250-500 l tanks for potable water.

As of mid-2018, SI provided 144,000 l/2 months in winter, and 672,000 l/4 months in dry seasons, around 15 l/capita/day and 35 l/capita/day respectively to the ITS's dwellers. Before the ITS was serviced by Medair.

The trucker provides water from an owned well in town at a cost of 3.8USD/1,000 l, paid by SI who also requests chlorine doses to the supplied water.

The water trucker has a small business with three employees and 3 trucks of 5,000 l each. He services this ITS since 2013. His contract with SI started in 2018 through a bidding process. He operates also in 25 ITSs in the region.

WAP suggests that dwellers request and pay themselves additional quantities.

d) Wastewater management in ITS

The ITS has 1,000 l covered pits that are around shelters and connected to 10 outside and 10 indoor latrines. As for greywater it seems it is left above ground or assembled in uncovered pits. Desludging in this ITS as per 2018 is 108,000 l/year, 1.9 l/capita/ day⁶⁸ This leads to a situation where most of the wastewater is not desludged. While pits are cesspits in a terrain where there is high infiltration, the 1.9 l/capita/day are a value that is well below minimum desludged wastewater to be expected⁶⁹. When desludged, the effluents are discharged in a manhole connected to Zahle wastewater treatment plant. SI pays desludging fees consisting of 14 USD/ 1,000 l.).

The desludger has also a small enterprise of 6 employees and 2 trucks of 13,000 l and 7,000 l and started operation in 2018 on a 1-year contract with SI. The total working volume of the desludger is 15,600,000 l/year in 200 ITSs in the region.

⁶⁸ CONSIDERING THE POPULATION OF 159 DWELLERS.

⁶⁹ AS PER SPHERE RECOMMENDATIONS, IT MUST BE EXPECTED PER CAPITA PER DAY A MINIMUM OF 3-5 LITERS FOR POUR-FLUSH TOILETS AND 1-2 LITERS FOR ANAL WASHING. NORMALLY PEOPLE TEND TO DISCHARGE MORE BLACKWATER, EVEN IN ITS SITUATIONS.

4.3 Market modalities

a) Price and competition

Many of Lebanese inhabitants of Raait do not benefit from a connection to public network. Therefore, many still rely on water trucking services. They pay 2.5USD/1,000 l of water. Within the ITSs, and particularly in ITS 008, SI pays 3.8 USD/1,000 l and a total of 3,100USD/year, at a ratio of 19.5 USD/capita/year. The cost of water provision and desludging has been mildly decreasing in the last few years. The water and desludging market have witnessed a significant growth with the Syrian crisis, reflected mainly in the growing number of water and desludging trucks.

The water trucker has been serving ITS-008 since 2013 - with Medair before SI -, based yearly contract renewed based on a bidding process.

While Lebanese inhabitants pay 12.5 USD/1,000 l of desludged water, the humanitarian agency pays 14 USD/1,000 l, defined in contract, and a total of 1,512 USD/year, at a ratio of 9.5 USD/capita/year. The desludger provides services for this ITS since 2018, based on a yearly contract that was renewed once without any bidding, but this assertion was denied by humanitarian agency who ensures bidding process is a contractual requirement systematically part of its contracting procedures.

SI pays a total of 29 USD for Water Sector per capita per day.

b) Market sustainability

The WASH trucking services s provided to ITSs dwellers would cost the municipality a total of 83,000 USD/year, while the municipal annual budget is 133,000USD.

In case of humanitarian agencies' withdrawal, the municipality considers that it is up to the ITSs dwellers to provide WASH services for themselves, as it is not willing to interfere. The ITS dwellers are able to find seasonal job in construction sector, and therefore partially contribute to their needs of water provision. However, they have never asked for additional desludging services, beyond what is provided by the humanitarian agency. Though, the shawish stated that SI has a significant role in establishing a regulatory framework for WASH, in terms of prices and service quality, and he considered that in the absence of the humanitarian agency, the market will witness a significant disorder.

Desludged wastewater from ITSs is discharged in Zahle Treatment Plant; however, quantities of wastewater from Raait town are still discharged in water streams. This may be currently related to the absence of an efficient role of the municipality in controlling environmental impact of wastewater improper disposal.

In conclusion, ITS-008 in Raait is in a competitive market, regulated – however- by an efficient role of SI, mainly in the absence of a municipal council. As some of dwellers are able to find seasonal jobs, they would be able to maintain their needs in water, but unlikely in desludging. It is expected that in the absence of the regulatory frame set by the humanitarian agency, dwellers will discharge improperly in water streams or in nearby land.

Raait

Case Studies

Demography:

- 4,000 residents (Mu);
- 23 active ITSs (WAP);
- 2,853 dwellers in all ITSs (WAP)

Infrastructure Systems:

- Both public legal and illegal wells in town;
- Water resources not sufficient local supply, use of Chamseen external spring;
- Some town residents are not connected to Water networks and rely on municipal and private truckers;
- Town partially connected to WW networks, and discharge in rivers;
- 50% increase in water demand.

Municipal Assets:

Profile:

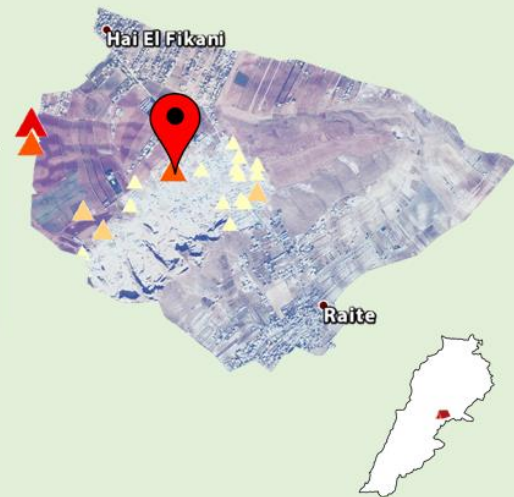
- Founded in 1965;
- Currently resigned municipality;
- 2 permanent employees, 1 contractual;
- Budget: 133,000 USD;
- 5 committees appointed by Governor (none for water/ irrigation/ environment)

Knowledge of refugees: Does statistics on displaced population.

Ability to negotiate: Coordinates with humanitarian agencies.

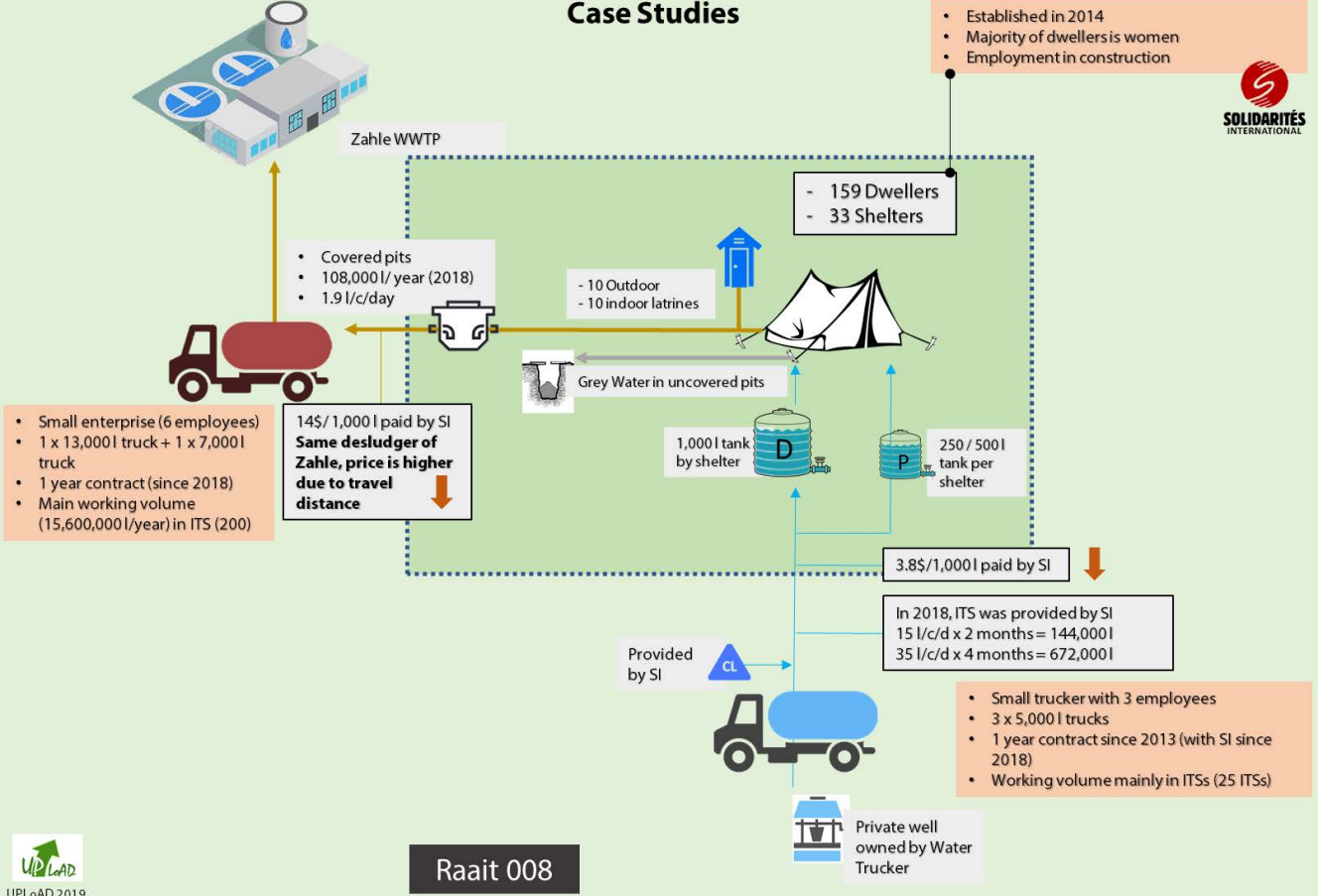
Ability to develop projects: Municipality does not want to provide services for displaced population if humanitarian agencies withdraw.

Capacity to regulate: Municipality does not intervene in ITSs; Imposes conditions on land owners; It regulates the ITSs' connection to public sources.



Case Studies

- Established in 2014
- Majority of dwellers is women
- Employment in construction



5. Joubb Jannine

5.1 Town Profile

a) Demography

Located in the governorate of Bekaa, Western Bekaa district, the town's population is 9,000. However, the number of Syrian displaced population varies according to sources⁷⁰. Also, the number of ITSs varies according to sources⁷¹. According to WAP, the number of displaced Syrian population in ITSs is 4513 and the number of active ITSs is 35.

b) Municipality Profile

The municipality of Joubb Jannine was founded in 1920. The municipality⁷² has 15 permanent employees, a police force of two with ten on contract basis. The municipal council is composed of 15 members. It has eight municipal committees but none for water and irrigation, and one committee for environmental aspects.

c) Water and wastewater networks

According to the municipal representative interviewed, water resources in Joubb Janine should be sufficient and cover the area. There is a water network that is fed by two public wells. However, there are many private wells that are used to provide potable, domestic and irrigation water. In the face of rising demand on water, the municipality has also rented a private well⁷³ and bought a truck to provide water for Joubb Janine residents. According to the municipality, the whole town is connected to wastewater network, which is connected to a tertiary wastewater treatment plant at the town outskirts.

d) Impact of Syrian crisis

According to the municipal representative interviewed, the municipality organizes regularly the census of displaced Syrians. It is not involved in the organization of ITSs locations in town. He also mentioned that during heavy storms, like in the case of the recent Norma storm, the municipality provides assistance to ITSs. This is mainly in relation to shelter and WASH services. However, as mentioned by ITS dwellers, it restricts their mobility in urban area of the town⁷⁴.

What is particular for Joubb Jannine is the tension between the municipality and the humanitarian agencies. According to its representative, the municipality tries to coordinate with the humanitarian agencies but to no avail. He also said that it distrusts the humanitarian agencies and accuses them of encouraging connection of ITSs to water networks without its permission.

70 FOR THE MUNICIPALITY IT IS BETWEEN 16,000 AND 17,000, WHEREAS FOR ACF IT IS 5,000

71 FOR THE MUNICIPALITY, THE OVERALL NUMBER IS 18 WHEREAS FOR ACF IT IS 19, SCATTERED ALL OVER THE TOWN

72 THE MAYOR REFUSED TO COMMUNICATE THE MUNICIPAL BUDGET TO INVESTIGATORS DURING INTERVIEW

73 AT THE RATE OF 8,000USD/YEAR

74 MORE SPECIFICALLY BEYOND THE AMUSEMENT PARK

5.2 ITS Profile

a) Demography and location

According to WAP, ITS Joubb Jannine-005 is constituted of 26 shelters and 126 dwellers. As per the shawish, the ITS is built on an area of 4,000 sqm. 40% of dwellers are women. Dwellers are mainly relatives. A significant percentage of the population works in the agriculture sector. The ITS existed already before the crisis. It was established in 2006, in an agricultural area and grouped a smaller number of shelters for Syrian who worked in agriculture. The ITS suffers from the proximity to a waste disposal land.

b) Governance and stakeholders

The actual shawish is present in Lebanon since the 90s and has been playing a role as a mediator linking Syrian migrant workers to job opportunities in the agricultural sector. Hence, he was naturally recognized as shawish when it came to the organization of services in the ITS. However, the shawish does not directly intervene in all services. This is the case with desludging. The desludger deals directly with each household. The shawish and dwellers expressed frustration regarding their relationship with the municipality, especially the municipal police. It is said to restrain their mobility and to treat them harshly⁷⁵. As for the municipality, it sees the ITSs as a burden that it can't handle due to lack of resources and capacities.

Regarding a possible withdrawal of humanitarian agencies from the direct management of WASH services for ITSs, dwellers were divided. While some believed this would allow getting more quantities, others believed that it might end up in disorder in service provision.

c) Water provision in ITS

ITS Joubb Jannine-005 has an infrastructure constituted of 1,000 l tanks for each shelter.

As per the humanitarian agency's representative, the total provided water quantities are around 600,000l/year, equivalent to 13l /capita/day. The trucker provides water from a rented private well in town in some cases, dwellers request extra service from water provider and pay for it.

The water provider is an unregistered small business⁷⁶. He has three trucks of which two are of 4,000 l and one of 10,000 l. He follows up his operations by phone. He provides chlorine doses to trucks supplying water to ITSs. The total working volume of the trucker is 20,000,000 l/year and covers 18 ITSs.

The water provider started serving ITS-005 in 2018, and he works with the humanitarian agency based on a yearly contract. The contract is granted through an advertised bidding process. The main criteria of selection according to the humanitarian agency's representatives are cost, quality and environmental norms.

⁷⁵ SOME SAY VIOLENTLY

⁷⁶ HE HAS TWO SYRIAN EMPLOYEES. HE DOES NOT PROVIDE THEM WITH TRAINING. HE DOES NOT HAVE AN OFFICE AND OPERATES FROM HIS HOME. HE PARKS HIS TRUCKS NEAR THE RENTED WELL. HE REGULARLY MAINTAINS HIS TRUCKS IN A GARAGE

d) Wastewater management in ITS

The ITS has 22 outside latrines and 1 inside latrine connected to one 4,000 l underground septic tank for black water collection for each group of shelters. As for grey water it is discharged in small cavities in ground near the shelters. The total desludged yearly quantity is around 120,000l/year⁷⁷. It is discharged in Joubb Jannine wastewater treatment plant. The desludger is to visit the ITS on a monthly basis. However, as mentioned by the shawish the septic tanks sometimes get full and overflow on nearby agricultural lands.

The desludging of wastewater is provided by an unregistered small business⁷⁸. He has one 9,000 l truck. He follows up on his business by phone and does not use GPS trackers. The desludger has a total work volume of 2,820,000 l/year in 17 ITSs in the region.

Contractually, the desludger started working in this ITS in 2017 based on an advertised bidding process. According to the humanitarian agency representative, the contract is a yearly one. The selection criteria are mainly cost, discharging location as well as truck volume and capacity to access ITSs. The dwellers do not ask for extra services.

5.3 Market modalities

a) Price and competition

The humanitarian agency pays 2.7 USD/1,000 l for water and a total of 1,620 USD/year, at a ratio of 12.85USD/capita/year. The price of water provision has decreased in the last few years due to competition. The dwellers also request additional water quantities, at a cost of 1.7 USD/1,000 l as they considered that water provided by the humanitarian agency is not sufficient. The contract with water provider is a yearly contract renewed through a bidding process. The inhabitants of Joubb Jannine do not request desludging services as the town is connected to public wastewater network. The humanitarian agency pays an amount of 14 USD/1,000 l for wastewater desludging, and a total of 1,680 USD/year, at a ratio of 13.33 USD/capita/year, while this price has been decreasing in the last few years due to competition. The ITS dwellers do not request additional desludging services. The total cost for WASH services paid by the humanitarian agency is a total of 26.19 USD/capita/year.

b) Market sustainability

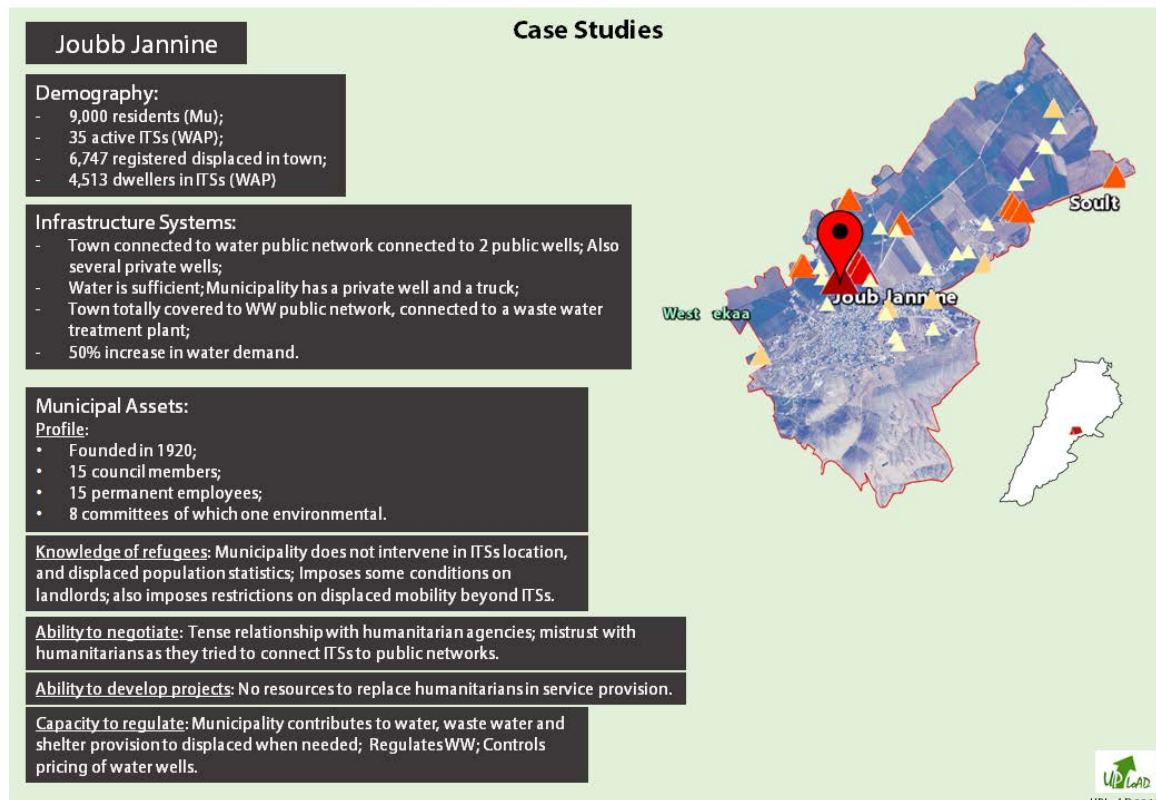
In case of humanitarian agencies' withdrawal, the dwellers of ITS-005 are able to find jobs in agriculture, and therefore to contribute to part of the cost of water provision. But, they do not seem to request additional desludging services when the desludging paid by the humanitarian agency is not sufficient, and therefore the wastewater is left to overflow in the agricultural land.

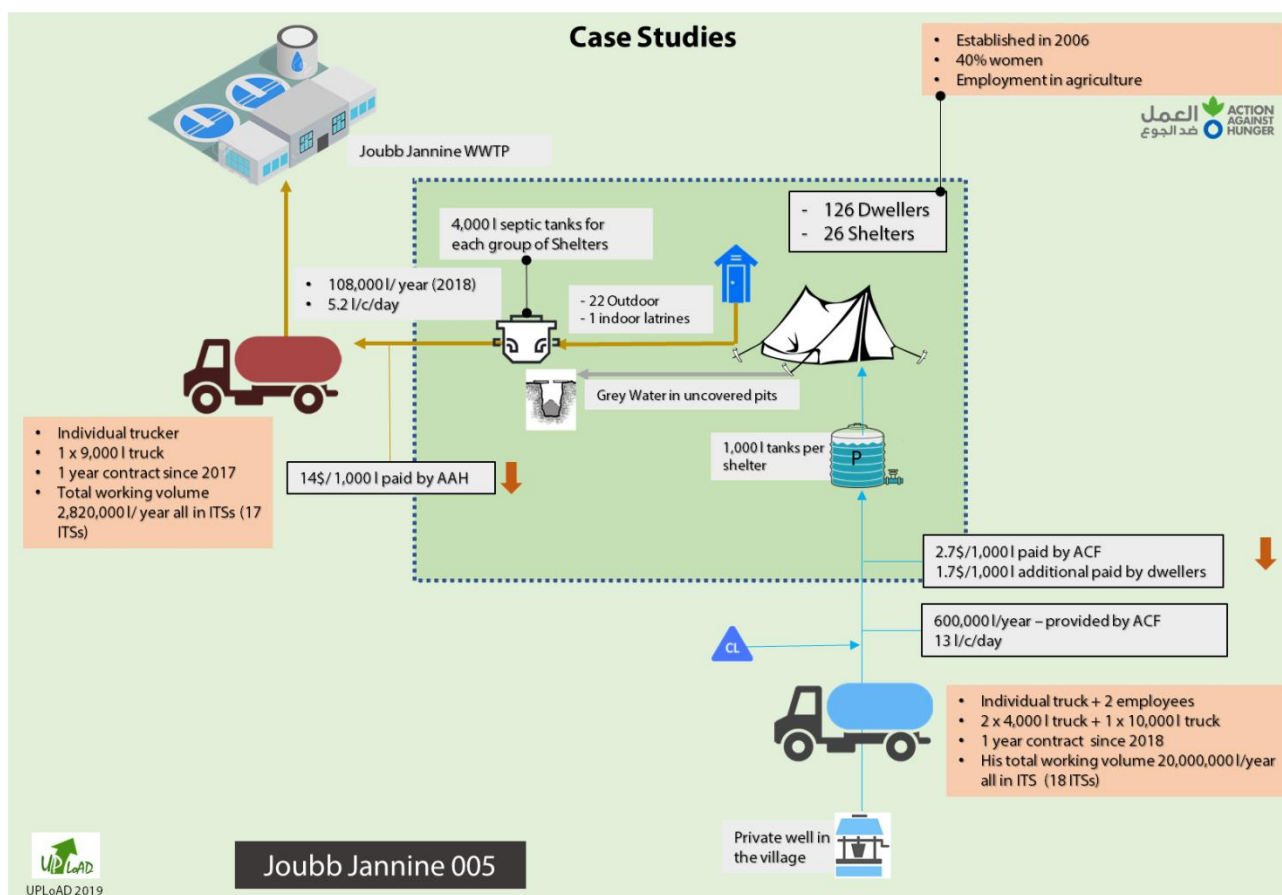
Based on the figures of this ITS, the Water Sector trucking services cost - excluding investment and maintenance costs - for all ITSs in Joubb Janine is probably amounting to 118,200USD/year,

⁷⁷ THE HUMANITARIAN AGENCY REPRESENTATIVE GAVE THE FIGURE OF 3L/CAPITA/DAY WHILE THE SHAWISH SAID 10,000 LITERS/MONTH, WHICH IS APPROXIMATELY THE SAME

⁷⁸ HE HAS TWO EMPLOYEES. HE TRAINS THEM TO USE THE HOSES AND OPERATE THE DESLUDGING TRUCKS. HE DOES NOT HAVE AN OFFICE, OPERATES FROM HOME. HE PARKS HIS TRUCK NEAR HIS HOUSE. HE MAINTAINS HIS TRUCK IN A SPECIALIZED GARAGE IN MARJ.

although dwellers are requesting additional water provision. The municipality stated that it has a will to regulate and control the WASH market. Nevertheless, it considers that it does not have enough funds and resources to do so. The Humanitarian agency plays actually a role in regulating the desludging sector, mainly through the contract conditions that oblige the trucks to discharge in Joubb Jannine treatment Plant. Outside the contract, respecting this condition may not be granted.





6. Qobbet Chamra

6.1 Town Profile

a) Demography

Located in the governorate of Akkar, Akkar district, the town's population varies according to the interviewee. For the municipality it is around 2,800, whereas for the humanitarian agency it is 3,500. As per the humanitarian agency representative, the population of ITSs represent 90% of the Syrian displaced population in town. According to WAP, these represent 2,654 dwellers in 66 ITS⁷⁹.

b) Municipality Profile

The municipality of Qobbet Chamra was founded in 2001. IT has a budget of 50,000USD. and one policeman. The municipal council is composed of nine members and has four municipal committees including for water, irrigation and environment

The municipality does not provide services to refugees, does not coordinate security with the humanitarian agencies and does not impose and define locations for ITSs or hold records of the Syrians. However, in collaboration with the Army, it sets limits to ITTs' at 100m from main

⁷⁹DISCREPANCIES EXIST BETWEEN SOURCES REGARDING THE NUMBER OF REFUGEES AND ITSS IN TOWN. FOR THE MUNICIPALITY, REFUGEES' NUMBER IS 2,800, AND THE OVERALL NUMBER OF ITSS IN TOWN IS 14 ON AGRICULTURAL LAND. FOR THE HUMANITARIAN AGENCY, REFUGEES' NUMBER IS 2,444 OF WHICH 90% LIVE IN NINE ITSS.

highway. It oversees construction inside the ITSs, allows international organizations to install pumps inside the ITSs and assists ITSs' property owners in getting permits to the wells on their land.

On the water front, the municipality bans water truckers from using surface water and springs. It allows ITSs' dwellers to dig and to connect to wells inside their ITSs. According to municipality, the town has seen an increase of 59% in water consumption since the influx of Syrian refugees.

On the wastewater front, the municipality does not regulate the desludging service, however oversees the discharge.

c) Water and wastewater networks

There are no water or wastewater networks in town. The municipality is digging wells and the humanitarian agencies do the connections. People rely on septic tanks and resort to desludgers. However, there is no need for external water sources, private wells are available all year long and the Arafa river water is used for irrigation.

d) Impact of Syrian crisis

The presence of large quantities of water is pacifying relations between host community and the refugees.

6.2 ITS Profile

a) Demography and location

ITS Qobbet Chamra-056 is constituted of 8 shelters built on an area of 100 sqm. The number of dwellers is 47 from which 27% are women and 27% are children. Men work seasonally in the construction sector. The ITS was established in 2015, in an agricultural area. The actual shawish used to ensure jobs to workers and hence became a shawish for the ITS. The dwellers have tight familial relations.

b) Governance and stakeholders

A good relation exists between dwellers and all stakeholders except the landlord. Two interviewed dwellers pretended that ITS dwellers are not allowed to cross outside a periphery delimited by the municipality around the ITSs area. The municipality stated that due to financial reasons, taking the ITS in charge is impossible.

c) Water provision in ITS

ITS Qobbet Chamra-056 has an infrastructure constituted by 3 x 1,000 l communal tanks for domestic use and additional 1,000 l tanks for potable water. In a competitive water trucking market, SI provided 192,000 l/ year in 2018, equivalent to 6 l/capita/ day. The volumes of water provided have decreased since 2015 (492,000l), and 2016 (330,000l).

The domestic water is supplied by an onsite contaminated well, while potable water is supplied by a trucker who provides water from a private well in Deir Dalloum, at a cost of 6USD/1,000 l, paid by SI. SI requires from trucker to add chlorine doses to the supplied water.

The water trucker has a small business⁸⁰ of 4 trucks, 3 trucks of 4,000 l and 1 of 9,000 l. He follows up his operations by phone. He operates also in 20 ITSs in all Akkar, 6 in Qobbet Chamra

His contract with SI started in 2018 as confirmed by the humanitarian agency's officers. It covers several camps managed by SI. Presently for one year (but this may vary based on funding: e.g. from one month to two years). Selection of provider is done based on a bidding process that focuses on price and quality. Since source is contaminated, SI provides 10 l/person of potable water. Water must be provided at least each 15 days. Regarding quality the trucker must provide water test results showing the quality of water in wells. Supplier is paid at the end of month by SI.

During ITS service, he doesn't call for the assistance of dwellers, he makes sure before serving that tanks in camp are clean, so he would not be blamed for water quality. He insures water treatment through chlorination provided by SI (215 ml of chlorine to be mixed with 4,300 l of water). He gets papers form from dwellers attesting him filling the tanks to give to SI to get paid.

- d) Both humanitarian agency representatives and water trucker claim excellent relations.
Wastewater management in ITS

The ITS has three outside latrines of which two are usable, these are connected to 3000l septic tank for black water. As for the grey water it is discharged in a nearby water body. The total desludged quantities per year are 67000 l, 3.9 l/ capita/day. SI pays 7.75 USD/1,000 l which has raised lately during the past years. SI field officer supervises discharging effluents in Tripoli wastewater treatment plant.

The desludger has a small enterprise specialized in trucking services for construction sites. It has engaged in desludging activities in 2015 and in water trucking activities in 2018. He operates with 2 trucks of 15,000 l and 16,000 l and started operation in 2015 on a 1-year contract with SI. As reported by the trucker, he works only in 160 ITSs in Akkar, 15 in Qobbet Chamra. He claims that his annual work volume is 2,232,000 l for the 2015-2018 period, with quantities rise expected to be 10-20% in winter and pits saturating more rapidly. The trucker coordinates his activity by phone. He has refused to install GPS system and counting meters as offered to him by humanitarian agencies⁸¹.

The contract covers several ITS managed by SI. Presently for one year (but this may vary based on funding: e.g. from one month to two years). Selection of provider is done through an advertised bidding process based on price and supplier way to dealing with ITS dwellers, capacity to know the location of all ITSs and discharging at the Suez Tripoli station. The contract sets a price for 1.000 l of sludge but does not define quantities or schedule. According to the humanitarian agency representatives, the desludger is paid by SI every end of month.

80 IT IS NOT A REGISTERED ENTERPRISE. HE DRIVES HIMSELF HIS TRUCKS AND HAS TWO EMPLOYEES (BOTH LEBANESE); HE TRAINS THEM TO DRIVE TRUCKS. HE DOES NOT HAVE AN OFFICE AND CLAIMS TO DO HIS PAPERWORK IN SI'S OFFICE. HE PARKS HIS TRUCKS NEAR HIS HOUSE. HE DOES HIS TRUCKS' MAINTENANCE IN A SPECIFIC GARAGE IN BEBNINE MONTHLY.

81 HE EXPLAINS THAT HE DOES NOT ONLY WORK IN ITSs, SO HE BELIEVES THAT THE GPS IS AN INVASION OF HIS PRIVACY. HE ALSO BELIEVES THAT IT IS REDUNDANT AS AN AGENCY OFFICER ACCOMPANIES HIM TO THE WASTEWATER TREATMENT PLANT. AS FOR THE COUNTING METER, HE CLAIMS THAT THERE IS NO SPACE FOR THEM ON HIS TRUCKS.

All concerned parties seem to be satisfied with his service that was extremely highly rated in interviews.

6.3 Market modalities

a) Price and competition

The humanitarian agency in ITS-056 pays 6 USD/1,000 l of water and a total of 1,152 USD per year with a ratio of 24.51 USD/capita/year. Qobbet Chamra market is a particular case where the water and desludging services cost has increased in the last few years: 5\$ (2018) and 4\$ (2017). This is due to the increase in fuel prices and the distance between ITSs and SUEZ treatment plant in Tripoli as stated by providers. This is still beneath the average price paid by households outside ITS. As water trucker claims, the price is around 8-10\$ for 1,000 l⁸².

Although there is no wastewater network in Qobbet Chamra, the desludging market is more significant in ITSs, as Lebanese inhabitants do not heavily rely on private desludging truckers. The desludging cost is the same for both town and ITSs. In ITS-056, the humanitarian agency pays 7.75 USD/1,000 l⁸³ and a total of 520USD/year at a ratio of 11.1 USD/capita/year. Dwellers also request additional desludging services at a cost of 7.75 USD/1,000 l.

The total cost of WASH services paid by the humanitarian agency is 35.61 USD/capita/year.

b) Market sustainability

In case of humanitarian agencies' withdrawal, the total cost of WASH services in all ITSs in Qobbet Chamra would cost the municipality a total of 94,400 USD per year, while the annual municipality budget is 49,300 USD, making it impossible to the municipality to contribute to ITSs' dwellers needs in water sector. This is also stated by the municipality that considers that its budget is very limited and hardly covers the town inhabitants needs in various services.

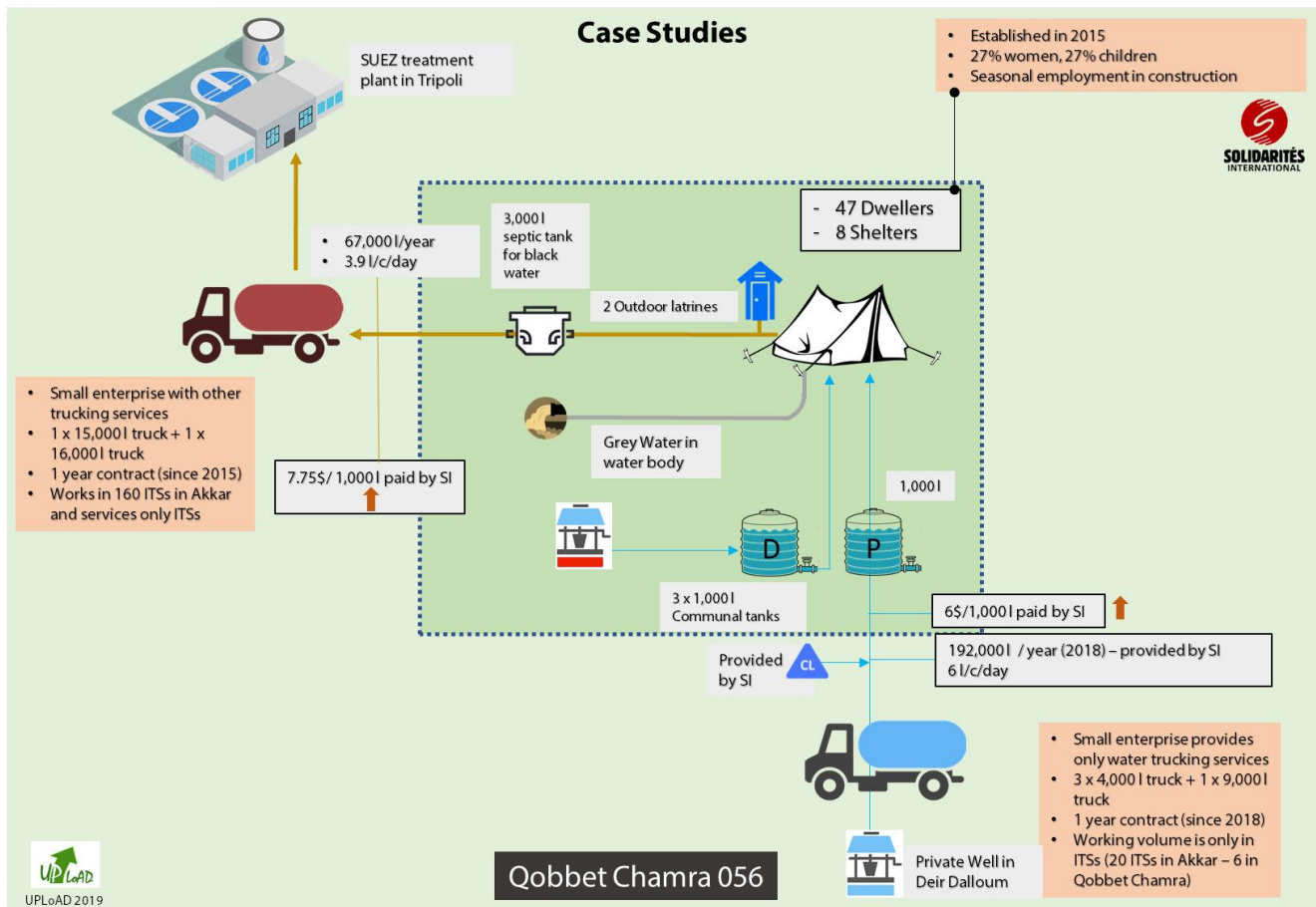
The ITS-056 dwellers are able to access the construction sector and have seasonal jobs, which makes them able to partially contribute to their water provision and desludging needs.

Several interviewees, including the desludger and humanitarian agency's officers, when asked about introducing the voucher system, doubted to be efficient due to past experience of selling these vouchers and not using their credits properly.

In conclusion, the Water Sector in ITS-056 is mildly competitive, despite the slight increase in services cost. It is worth noting that the humanitarian agency has a significant role in controlling wastewater desludging in SUEZ plant despite the relatively long distance. In the absence of humanitarian agency regulating role, the ITSs dwellers are likely to discharge in improper locations, and to use their vouchers to buy more basic needs. Consequently, negative environmental impacts.

⁸² KNOWING THAT HE STOPPED SERVING THE OUTSIDE ITS IN THE LAST THREE YEARS.

⁸³ ACCORDING TO THE DISLUDGER, THE PRICE HAS VARIED IN THE LAST YEARS, HOWEVER SI HAS NO CLEAR RECORD OF THIS VARIATION. HE EXPLAINS IT WAS 5.5 TO 6 (2015 TILL 2018). RISE OF COST IS RELATED TO INCREASE IN FUEL PRICES AND RAISES HE GAVE TO HIS EMPLOYEES



Case Studies

Qobbet Chamra

Demography:

- 2,800 residents (Mu);
- 2,654 dwellers in 66 active ITSs (WAP)

Infrastructure Systems:

- Private illegal wells;
- Common municipal wells;
- Local networks built by humanitarians;
- No WW network – relying on desludging, local trucks;
- No water network.

Municipal Assets:

Profile:

- Founded in 2001;
- 9 members;
- 9 permanent employees;
- 4 committees of which 1 for water, 1 for irrigation, 1 for environment;
- Budget: 49,300 USD.

Knowledge of refugees: No info on displaced statistics.

Ability to negotiate:

Ability to develop projects: Digging wells; General maintenance of wells. In case of humanitarian agencies' withdrawal, municipality does not have resources to manage ITSs.

Capacity to regulate: No interference in ITSs' location as long as far from highway; Oversees discharging; Allows dwellers of ITSs to connect to wells inside ITSs, and water digging inside ITSs + allowing humanitarians to provide pumps inside ITSs; Bans water truckers from using surface water of rivers and springs; Oversees construction works in ITSs; Assists landlords in getting permits for wells inside ITSs.

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7. Bzal

7.1 Town Profile

a) Demography

Located in the governorate of the Akkar, Akkar district, according to municipality, the town's population is 4,800. According to WAP, there are 156 Syrian displaced ITS dwellers in four ITSs. The latter are located mainly on agricultural lands.

b) Municipality Profile

Bzal municipality was founded in 1986. The municipality has a budget of 500,000 USD to 600,000 USD and 12 permanent employees but no municipal police. Its municipal council is composed of 12 members. and has seven municipal committees but none for water and irrigation.

Moreover, the municipality is not interested in taking in charge the provision of services in town for the Lebanese population. However, it pays half of the desludging fees for each septic tank.

c) Water and wastewater networks

Bzal is endowed with large quantities of water. According to municipal representative interviewed, one spring is sufficient to cater for the needs of its population. However, there is no public water network in Bzal. To insure the provision of water, the municipality rents private wells to which it gives access to private water truckers that deliver water to households on demand. Many households have their own wells. Water quality of wells differs in Bzal. Some is then used for domestic uses and some is used for potable water.

There is no wastewater network in Bzal. People discharge in septic tanks and water bodies. To encourage proper desludging the municipality says it is paying Lebanese residents 20USD per desludging truck.

d) Impact of Syrian crisis

The interviewed municipal representative claims that the municipality has not been active at all in dealing with the Syrian displaced population and their issues. It does not have knowledge of their numbers in Bzal nor the exact location of ITSs. It undertakes minimum coordination with the humanitarian agencies and has no knowledge of the number of those working dealing with the ITSs in Bzal. According to the municipality, there is an increased demand of 15% for water since the Syrian crisis.

There is however no real tension between the host population and the displaced Syrian population. This is due to the presence of close social relations between the community. Many have relatives in the other community.

7.2 ITS Profile

a) Demography and location

ITS Bzal-002 was established in 2016, in an agricultural area near a closed landfill. It is constituted of 9 shelters and 53 dwellers and built on an area of 1,500 sqm. According to shawish, 36% of dwellers are women and 35% are children and are all relatives. Most men work in the construction sector.

An interesting particularity of this ITS is that its dwellers moved to it because they could not afford to pay rents any more. Both Lebanese and Syrians live in this ITS. The actual shawish who was selected early this year is a woman and was selected by a UN agency who hosted her as a daily cleaner and taught her children. The dwellers have tight familial relationships and in tight relationship with Lebanese parents.

b) Governance and stakeholders

The shawish, a Lebanese woman, had an important role in the establishment of the ITS. The property owner of the lot of one of the ITSs happens to be her mother in law⁸⁴. She was also identified as the focal person by humanitarian agencies for this ITS. Dwellers are in good relationship with all local stakeholders.

Regarding the possibility of withdrawal of the humanitarian agencies from the management of WASH trucking services in ITSs, dwellers in interviews believed this would not be really a problem for them in this ITS.

c) Water provision in ITS

ITS Bzal-002 has a well on site. However, CWW encourages dwellers not to use its water during the months of November to February. The main water provision source remains water trucking. The ITS has an infrastructure constituted by 6 x 1,000 l and 2 x 3,000 l communal tanks for potable water use. In a competitive water trucking market, CWW representative declared in an interview that his agency provided this ITS with 324,000 l/ year in 2018, equivalent to 16.8 l/capita/day. This has been a considerable decrease in comparison with the 756,000 l that CWW is said to have provided in 2017.

The water trucker is an individual unregistered provider⁸⁵ and has 1 truck of 3,000 l. ITSs represent 20% of his work volume that amounts to around 1,800,000 l/year. Those ITSs are in the number of four in the area around Bzal. He coordinates his work by phone. He gets his water from a well rented in Bzal at a cost of 0.6USD/1,000 l.

As for the contract it is usually a short-term renewable contract based on available funding. It is awarded on an advertised bid. Price, quality of equipment and quality water are the main selection criteria. It is a framework agreement to provide monthly 15l/capita/day quantities for

⁸⁴ SHE CHOSE VOLUNTARILY TO RESIDE IN THE ITS WITH HER FAMILY AFTER HER HUSBAND DIED AND WAS JOINED BY LEBANESE AND SYRIAN RELATIVES. SHE WORKS AS A HALF-TIME JANITOR IN A SCHOOL.

⁸⁵ HE HAS NO EMPLOYEES. HE WORKS FROM HOME AND PARKS HIS TRUCK NEXT TO HIS HOUSE. HE REGULARLY CHECKS HIS TRUCK IN A GARAGE IN BEBNINE BASED ON A CONTRACT.

winter and 35l/capita/day in summer⁸⁶. CWW requests trucker to add chlorine doses to supplied water. He has been working with CWW based on this contract in the past three years.

d) Wastewater management in ITS

For blackwater, the ITS has six outdoor latrines connected with shelters' greywater to a septic tank of around 50,000 l, which is full and has not been desludged recently. Dwellers have dug cesspits that are used presently for both grey and black water. As per the humanitarian agency officer, the desludging for this ITS is 10,000 l every 6 months.

The desludger has a small registered enterprise⁸⁷ with 2 trucks of 12,000 l and 18,000 l. and a jetter truck. It has already been present since 1993. It operates in 42 ITSs - 4 in Bzal - but also outside ITSs. Its work volume is around 7,200,000 l/year. The owner⁸⁸ coordinates his work by phone. The enterprise discharges in Tripoli treatment plant based on a permit he has received for his enterprise from the union of municipalities of Fayhaa Tripoli⁸⁹. Desludger should provide attesting photos to get paid.

As for contract, it is usually a short-term contract but usually based on funding. It is awarded on an advertised bid. For desludging, CWW uses a fix quantities contract. The criteria of selection are the price, the capacity of the trucker to deliver, number of trucks, hose length and ability to reach all ITSs. The payment is done at the end of the month by CWW⁹⁰.

7.3 Market modalities

a) Price and competition

The water provision market is a competitive market although the price did not significantly change in the last few years. Lebanese inhabitants in Bzal town rely partially on private water truckers and pay 6.67 USD/1,000l. In the ITSs, the humanitarian agency pays 4USD/1,000 l, and a total of 1,296 USD/year, at a ratio of 24.45 USD/capita/year. The dwellers of ITS-002 in Bzal need also additional water quantities, and pay themselves 6USD/1,000 l.

The Lebanese inhabitants in Bzal pay around 10 USD/1,000 l for wastewater desludging. In ITSs, the humanitarian agency pays 6.5 USD/ 1,000 l for Bzal ITSs. For this ITS, this means a total of 130 USD/year at a ratio of 2,45 USD/capita/year. The desludger explains in an interview that working outside ITSs is more profitable as prices are not set based on quantities but on the number of trips

86 HE HAS TO DELIVER WATER AND GET FROM THE ITSs 27 VOUCHERS IN WINTER AND 40 IN SUMMER

87 IT HAS 4 LEBANESE EMPLOYEES. THEY ARE TRAINED TO DRIVE AND USE TRUCKS AS WELL AS DESLUDGE AND MAN HOSES. IT HAS NO OFFICE. THE OWNER WORKS FROM HOME AND HE PARKS HIS TRUCKS THERE. HE MAINTAINS HIS TRUCKS IN A GARAGE IN HALBA.

88 SAID TO BE A MEMBER OF GREENPEACE

89 THE DISLUDGER MENTIONS THAT BEFORE THE SUEZ WASTEWATER TREATMENT PLANT IN TRIPOLI, IN BZAL, THERE WAS THE NEED TO GET A PERMIT FROM THE MUNICIPALITY TO DISCHARGE IN SPECIFIED AREAS IN THE OUTSKIRTS OF TOWN.

90 IT IS TO BE NOTED THAT THE DISLUDGER IN BZAL-002, BASED ON INTERVIEW, HAS ALREADY ALSO WORKED WITH SI AND LRC. HOWEVER, HE SEEMED TO HAVE HAD ISSUES WITH SI OVER THE USE OF AN UNREGISTERED TRUCK TO SERVICE ITS ITSs. WHILE HE LATELY HE DECIDED TO DROP THE CONTRACT WITH LRC, AS HE SAYS THAT MANY OF ITS ITSs HAVE DIFFICULT ACCESS.

of desludging needed. However, the ITS market provides stable income to desludgers. The total cost of WASH services provided by the humanitarian agency in ITS-002 in Bzal is 26.9 USD/capita/year. The humanitarian agency works with water services providers based on yearly contracts. However, the contract has been continuously renewed, and the bidding takes place only in the beginning of the contract.

b) Market sustainability

In case of humanitarian agencies withdrawal, the ITSs dwellers are able to contribute to the cost of their water needs, as they have access to construction market jobs in the region. However, the humanitarian agency's officer interviewed considers - as in other cases - that dwellers are likely to sell the voucher and to spend the money on needs they consider more urgent, and consequently health hazards may occur due to improper wastewater desludging.

Based on the calculations per capita in ITS Bzal-002, the total cost of WASH services for all ITSs' dwellers in Bzal would be around 4,198 USD per year, while the municipal annual budget is 600,000 USD.

The municipality plays an important role in contributing to water provision and wastewater desludging in town but does not have a will to intervene in ITSs. The municipality considers that the number of ITSs is relatively small, and they will not constitute any significant overload on the town, and that they have to provide their needs by they own means.

However, the municipality has a role in regulating the price of water services in town, and to significantly stabilizing the market. Although present in the Water Sector, the municipality does not regulate the environmental impact of wastewater discharging and the town inhabitants discharge the wastewater in land and streams, while ITSs discharge the wastewater in SUEZ treatment Plant – even if larger quantities of wastewater in camps are absorbed by the soil- following the contract conditions set by the humanitarian agency.

In brief, the municipality of Bzal is an actor in regulating the Water Sector, but not at the level of ITSs. Even if the number of ITSs' dwellers is relatively small, the soil contamination by wastewater is likely to be critical, and a more efficient role in controlling the wastewater discharge is needed.

Bzal

Case Studies

Demography:

- 4,800 residents (Mu);
- 4 ITSs (WAP);
- 156 dwellers in all ITSs (WAP).

Infrastructure Systems:

- Municipality rents private wells for water provision;
- Availability of water resources;
- Private truckers to provide water;
- No public water network;
- Presence of illegal wells;
- High levels of informalities in desludging, no connection to public network;
- 15% increase on water demand;

Municipal Assets:

Profile:

- Founded in 1986;
- 12 council members;
- 12 permanent employees;
- Budget: 500,000 USD;
- 7 committees.

Knowledge of refugees: No info on numbers, nor locations

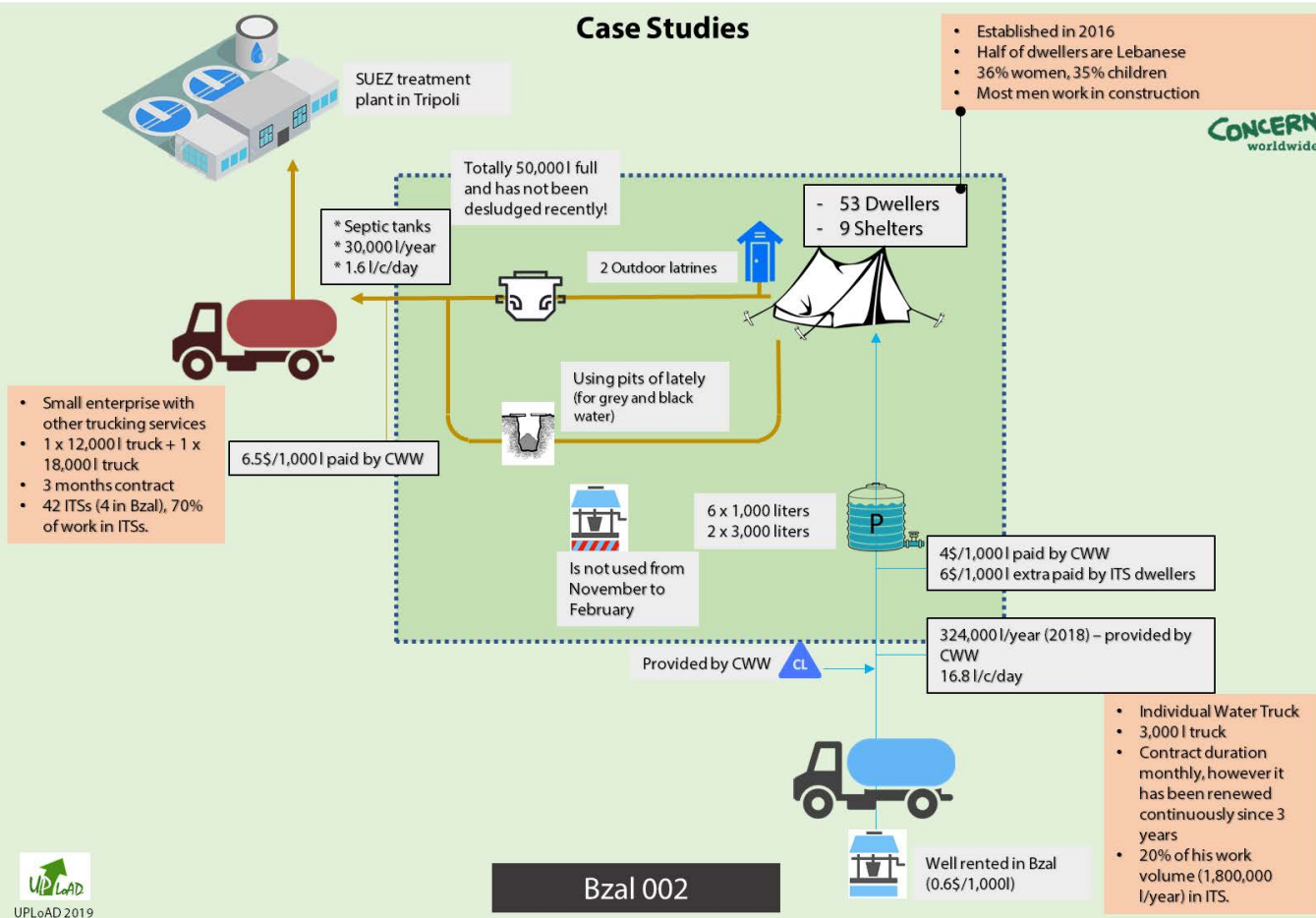
Ability to negotiate: No info on active humanitarians; Minimum coordination with humanitarians; No tensions with displaced Syrians.

Ability to develop projects: In case of humanitarian agencies withdrawal, no interest in taking in charge the services provision for ITSs.

Capacity to regulate: No intervention to regulate prices; No services provided for displaced; Contribute in half of desludging fees in town.



Case Studies



8. Semmaqiye

8.1 Town Profile

a) Demography

Located in the governorate of Akkar, Akkar district, the town's population accounts to 2,200 to 2,400 residents according to its mokhtar. As for the Syrian displaced population, it is said to be very largely living in ITSs. According to WAP, they account to 1,712 individuals living in 8 active ITS⁹¹.

b) Municipality Profile

Semmaqiye is not yet a municipality, it may become one this year. It is represented by the mokhtar and some local actors. Local action is funded by a special program for village development called *In'ash al qura*. In fact, as no local resources are available, the central government funds the basic needs identified by the mokhtar and contractors are directly selected and paid by the central government.

c) Water and wastewater networks

Semmaqiye has no public local water network. Potable water is provided ~~from~~ by three sources: wells, trucks from nearby villages, and bottled water. Domestic and irrigation water are provided from wells.

According to mokhtar, half of the town has a wastewater network, that discharges in the river. For the other half, the wastewater connects to pits in the soil without desludging.

d) Impact of Syrian crisis

No local tension between the host community and the Syrian refugees. On one hand, the presence of large quantities of water is somewhat establishing a kind of equity in water provision and, on the other, Lebanese residents have economically benefited greatly from the presence of the refugee community according to the shawish.

8.2 ITS Profile

a) Demography and location

According to WAP, ITS Sammaqiye-003 is constituted of 100 shelters built on an area of 15,000 sqm near a river that seems to continuously flood according to shawish and humanitarian agency⁹². The number of dwellers is 500. Employments are seasonal in agriculture. The ITS was established in 2010, in an agricultural land near a waste disposal water channel. The actual shawish was appointed by another influential shawish in the area⁹³.

91 DIFFERENT LOCAL SOURCES GAVE DIFFERENT FIGURE. FOR THE MUNICIPALITY, THE NUMBER IS 750 OF WHICH 99% LIVE IN SIX ITSs ON AGRICULTURAL LAND. FOR THE HUMANITARIAN AGENCY, THAT NUMBER IS 1,750 AND THE NUMBER OF ITSs IS 13.

92 ONCE THIS LED TO MOVING THE ITS'S POPULATION TEMPORARILY TO A SCHOOL BUILDING IN THE AREA.

93 WHO NORMALLY TAKES 10% COMMISSIONS FROM DISPLACED SYRIAN WORKERS TO WHOM HE PROVIDES WORK

b) Governance and stakeholders

Dwellers are in bad terms with the landlord who is refusing to issue a contract with them and putting financial pressures on them. Dwellers do not call on water trucker services and, according to interviews, seem to have a bad experience with the LRC appointed desludger.

c) Water provision in ITS

ITS Semmaqiye-003 has an infrastructure constituted by 1,000 l tank for each shelter supplied by an onsite contaminated well for domestic use⁹⁴. There is no water trucking in Semmaqiye-003. Dweller of this ITS rely on bottled water as a source of potable water. Each shelter purchases an average of 5 bottles of 10l per week, approximately 7 l/shelter/day. Hence average consumption would be around, 511 l/capita/year of bottled water, approximately this amounts to 255,500 l/year for the whole ITS. This costs around 76,65USD/capita/year.

d) Wastewater management in ITS

The ITS has nearly an outside latrine for every shelter. Most of these latrines are connected to 1,000 l septic tanks. However, those near the close by water channel discharge in it. In winter season, a large number of latrines in site are not accessible to desludging trucks. As for greywater it is discharged in uncovered pits. When desludging is belated dwellers tend to discharge their blackwater in the uncovered pits.

The desludger is the same enterprise working in Qobbet Chamra.

His contract with LRC has started a year ago and will end soon. The contract is a framework agreement based on a set price for the 1.000l of desludged wastewater. The desludger explains in an interview that the quantities he is serving within the framework of his contract with LRC is considerably lesser than that with SI. The desludger states that he discharges effluents in Tripoli treatment plant and as in the case of SI in Qobbet Chamra an agency officer accompanies him there. He discharges based on a permit by the union of municipalities of Al Fayhaa Tripoli and gives voucher provided by the treatment plant to LRC to get paid.

8.3 Market modalities

a) Price and competition & Market sustainability

The Water Sector in Semmaqiye has the particularity of municipality absence, due to the town small size. In case of humanitarian agencies' withdrawal, this case represents a significantly complicated situation, in terms of availability of actors who would manage the water and desludging aspects in ITSs.

In the case of ITS Semmaqiye-003, there is no water trucking services. As for desludging services, as per the desludger⁹⁵, LRC pays 10USD/1,000 l. Desludger explains differences in prices based on the fact that the ITSs managed by LRC are farer from the wastewater treatment plants, and with

⁹⁴ ACCORDING TO WAP, THIS ITS IS CONNECTED TO THE PUBLIC WATER NETWORK. HOWEVER, AS ATTESTED BY THE SHAWISH, DWELLERS AND DIRECT OBSERVATION THIS DOES NOT SEEM TO BE THE CASE.

⁹⁵ LRC WAS NOT AVAILABLE FOR INTERVIEWS DESPITE SEVERAL REQUESTS FROM INVESTIGATORS

more difficult access. He also explains that the choice adopted by LRC to give a septic tank to each shelter makes it more difficult to service than the large tanks as in the case of many ITSs serviced by SI. This has impacts on prices.

The humanitarian agencies managing the Water Sector in ITSs play a key role in regulating the market and controlling wastewater discharging, although not perfectly. In the absence of the humanitarian agencies, the municipality does not have the capacity to regulate the market, and it is likely that critical environmental impacts and health hazards would occur.



Picture 3: Semmaqiye ITS during January storms, 2019

Semmaqiye

Demography:

- 2,300 residents (Mokhtar);
- 8 active ITSs (WAP);
- 1,712 dwellers in all ITSs (WAP).

Infrastructure Systems:

- Water wells;
- Insufficient water quantities, water trucking from nearby towns;
- Depends on bottled water;
- Part of town connected to public WW network, discharge in river, other parts have pits discharge in the ground;
- No WW desludging.

Municipal Assets:
Profile:

- No municipality;
- No committees;
- Fund from In'ash al qura programme (5,000\$)

Knowledge of refugees: No Municipality

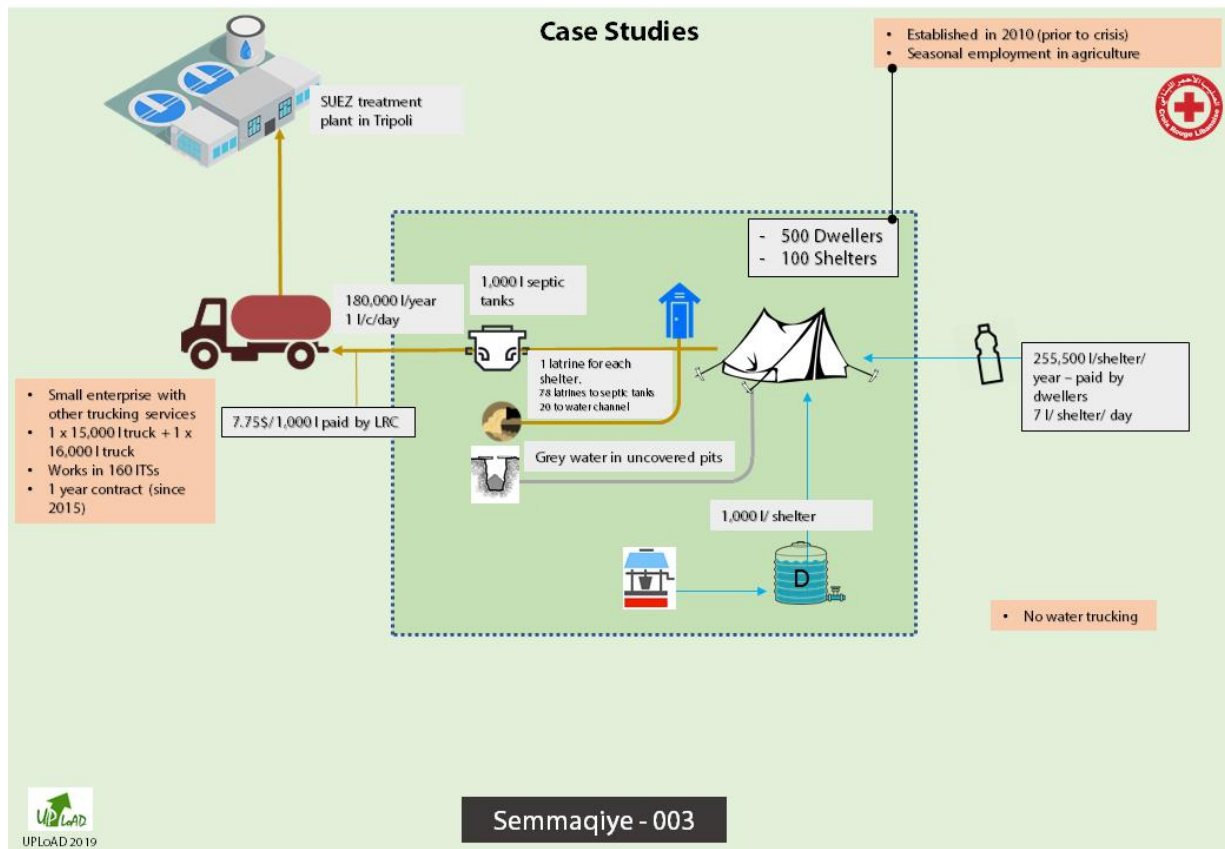
Ability to negotiate: No Municipality

Ability to develop projects: No resource to replace humanitarian in providing WASH services for displaced.

Capacity to regulate: No interference with ITSs' locations; No tension between displaced and host communities.

Case Studies

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9. Choueifat

9.1 Town Profile

Demography

Located in the governorate of Mount Lebanon, Aaley district, Choueifat is one of the biggest and most important cities in southeast of Beirut. The city's population varies according to sources⁹⁶. According to WAP, the town hosts 23 active ITSs inhabited by 710 dwellers. However, the town hosts also a large number of Syrian displaced population living in formal housing⁹⁷.

a) Municipality Profile

The municipality was founded in 1893. The municipality has, according to municipal representatives, a budget of 19M USD, 230 permanent employees, 130 contractual employees and a police force of 130. The municipal council is composed of 18 members and has eight municipal committees but none for water and irrigation. However, it has a sizable knowledge of its territory and a certain capacity to act and regulate.

On the Syrian displaced population' front, the interviewee claims that the municipality monitors the location of ITSs and does the census of displaced. In addition, it imposes environmental sensitive prerequisites on property owners renting for displaced.

⁹⁶ FOR THE MUNICIPALITY IT IS AROUND 600,000 RESIDENTS WHEREAS FOR UNICEF IT IS 30,000

⁹⁷ HOWEVER, AS FOR THEIR NUMBERS VERY LARGE DISCREPANCIES EXIST. THE MUNICIPALITY STATES THE FIGURE OF 13,000 INDIVIDUALS WHILE UNICEF PROVIDES THE NUMBER ON 800.

On the water front, the municipal representative also asserted that the municipality bans pumping of water from rivers and springs. It controls the digging of wells but without controlling the connection to the water network, nor regulating water and the trucking prices.

On the wastewater front, the municipality is said to monitor the desludging process by controlling the discharging of wastewater in Ghadir wastewater treatment plant.

b) c) Water and wastewater networks

The municipality plays an important role in water and wastewater management. The town is connected to the public water network and the water is sufficient all year long for its inhabitants but not for dwellers in ITSs. The main sources of potable and domestic water are seven legal wells within the town of which two are contaminated. The municipality is the sole provider of water. In case of shortages, it resorts to nearby villages. However, the degree of salinity is rising in those wells due to increase in water consumption and pumping since the Syrian refugee influx.

The municipality is in practice responsible for the maintenance and development of the wastewater network; however, the network only covers 40km and is estimated by the municipal representative to need an additional 100km to cover rapid urbanization in Choueifat area.

c) d) Impact of Syrian crisis

The presence of the Ghadir waste water treatment plant is reducing the main environmental impact related to Syrian ITSs as desludging and discharge of waste water are being treated by the plant.

On the social tension front, the municipality is performing many social activities to reduce the tension. However, as claimed in interviews, if humanitarian agencies withdraw from the ITSs the municipality would not be able to provide the urban services.

9.2 ITS Profile

a) Demography and location

As per WAP, ITS Choueifat-001 is constituted of five shelters and the number of dwellers is 26. Of those, 30% are women, and 35% children according to shawish. Though this is a small ITS, dwellers are not relatives. Many men and women employed in agriculture and industrial sectors in a more or less regular basis. The ITS was established in 2014 in an agricultural area near Ghadir river. The latter is said by dwellers to overflow regularly in winter and spring.

b) Governance and stakeholders

As per interviews and focus group, dwellers expressed grievances regarding the municipality and specifically the municipal police. As in other cases studied, they claim that the municipality has cut their illegal connection to the public electricity network; that puts them in a very vulnerable position as they cannot afford to pay for electricity from generators. They do not seem to have particularly strong relations with other local stakeholders. Dwellers recurrently stated that they keep to themselves and that they have become increasingly able to manage themselves. They

used to get support from Intersos, and now the ITS is awaiting UNICEF to start application of their programs⁹⁸.

Since 2017, the present shawish⁹⁹ - son of the former shawish - became in charge of the ITS. He is in charge of all issues including security, relations with the surroundings and with humanitarian agencies and all services.

As per interviews with dwellers and shawish, the withdrawal of humanitarian agencies from serving the sector will probably not affect them negatively, as for them this is already the situation now.

c) Water provision in ITS

ITS Choueifat-001 has an infrastructure constituted by 1,000 l tank connected to an onsite contaminated well for domestic use¹⁰⁰. Its quality is tested by the humanitarian agency every three months. The previous humanitarian agency used to provide 1,000 l every three days through water trucking, but this is no longer the case.

According to interviews and focus group, dwellers of this ITS also purchase 0.8-1 l/capita/day¹⁰¹ of bottled water, approximately a total quantity of 8,541 l/year, at a cost of 50\$/capita/year. The humanitarian agency representative claims that this is most probably paid by the cash card system the agency provides.

d) Wastewater management in ITS

The ITS has four outside latrines connected to four covered pits of around 1,000 l each. These used to be discharged in previous years each two months by 5000 l or 10,000 trucks. However, this is no more the case. As they started to overflow, and as mentioned by the shawish, the dwellers dug a channel connecting them to the nearby Ghadir river. As for greywater it is discharged in surface level cavities on the ground near shelters.

9.3 Market modalities

a) Price and competition & Market sustainability

ITS 001 is a particular case within the case studies of this research, where no market for water trucking neither wastewater desludging exist. Discharging in pits and river is environmentally problematic for the river and the groundwater as well as it contributes to soil contamination. Moreover, but for potable water, the ITS does not need water trucking services. For that, dwellers are significantly relying on bottled water, which is not sustainable economically and environmentally on the medium and long term.

98 IN FACT, FOR THE SHAWISH AND SOME DWELLERS INTERVIEWED INTERSOS IS THE AGENCY IN CHARGE

99 HE ARRIVED TO LEBANON IN 2011. HE WORKS AS DAILY EMPLOYEE IN A PRINTING SHOP AND IS PAID 400000LL PER MONTH.

100 HOWEVER, SOME DWELLERS USE IT ALSO FOR COOKING

101 ESTIMATION OF THE SHAWISH

Choueifat

Case Studies

Demography:

- 600,000 residents;
- 23 active ITSs (WAP);
- 710 dwellers in ITSs (WAP).

Infrastructure Systems:

- 7 private legal wells (2 contaminated);
- Sufficient water all year long in town;
- Public water network;
- 70% of town connected to WW networks and to Ghadir WWTP;
- 30% increase in water demand after Syrian crisis.

Municipal Assets:

Profile:

- Founded in 1893;
- 18 council members;
- 230 permanent employees, 130 contractual;
- Budget of 19 Million USD;
- 8 committees of which none for water but 1 for environment.

Knowledge of refugees: Role in ITSs' location & statistics; Role in imposing environmental sensitive prerequisites on ITS property owners.

Ability to negotiate: Continuous coordination with humanitarians; Actions to reduce tensions.

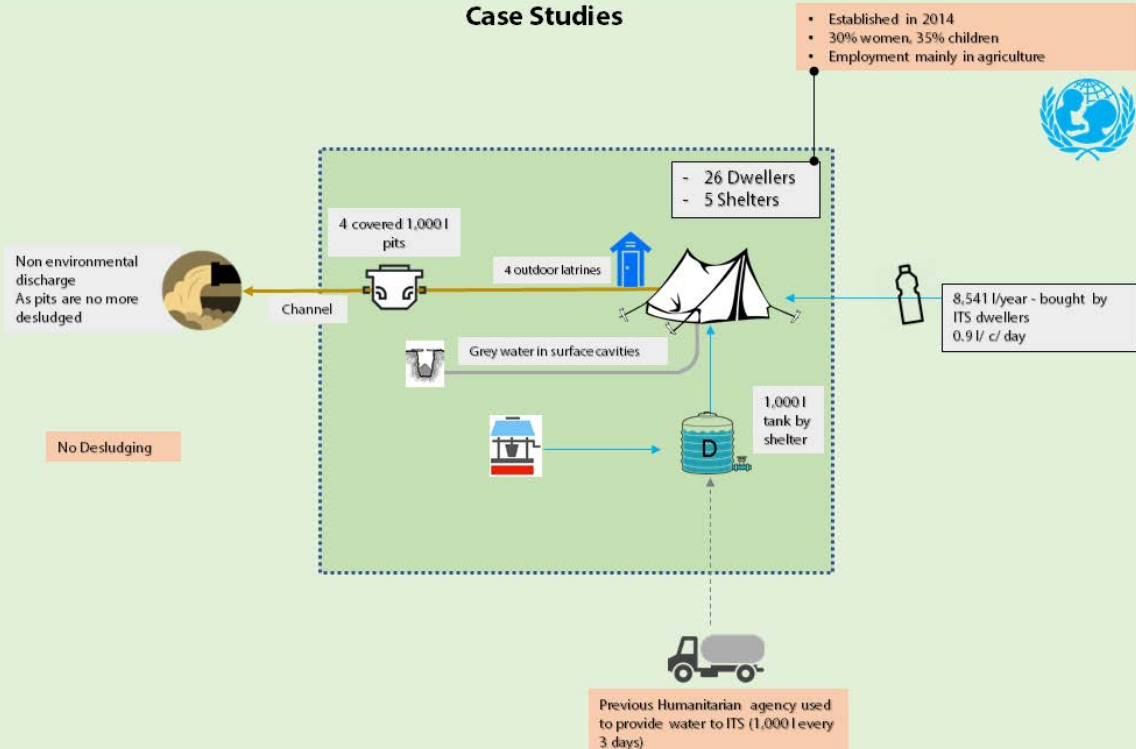
Ability to develop projects: In case of humanitarian agencies withdraw, the municipality does not have capacities to replace it in WASH services.

Capacity to regulate: Municipality controls discharge at Ghadir Plant; Controls wells diggings; Do not control illegal connection to WW networks; Bans water pumping from springs and rivers.



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Case Studies



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Choueifat - 001

9. Ouazzani

10.1 Town Profile

a) Demography

Located in the South governorate, the number of Lebanese population living in town is 600. According to municipality, the Syrian displaced population is 2,000, of which 70% live in ITSs, and the overall number of ITSs in town is six¹⁰², all erected on agricultural lands.

b) Municipality Profile

Ouazzani municipality was founded in 1964. It has a budget of 50,000 USD and five contractual employees. The municipal council is composed of nine members with three municipal committees, but none for water and irrigation. It controls ITSs location and does the census on Syrian displaced population. In addition, it helps connecting the ITSs to water and electricity networks by giving permissions to UN agencies, mainly to the Ouazzani water project. It even contributes in burial services for Syrians. However, as it mentions, it tries to coordinate actions with the humanitarian agencies, but sometimes the latter bypass the municipality, work and implement projects directly in the ITSs without permission or consultation.

c) Water and wastewater networks

According to the municipality, water is sufficient to cover the town and even large parts of South Lebanon. The main source of potable, domestic and irrigation water is the Ouazzani River along private illegal wells for irrigation. The municipality does not control prices. The South Lebanon Water Establishment is the sole provider of water in town. However, according to a study by the municipality there is an increase of 50% in water consumption since the Syrian displacement' influx.

There is a wastewater network in town implemented in the 90's but does not cover all the town and needs rehabilitation and restoration. However, the network is not connected to a wastewater treatment plant; discharge is being done into river and land.

d) Impact of Syrian crisis

Along the years since the beginning of the Syrian crisis, the municipality has done - and continues to do - regular census of Syrian displaced population in Ouazzani. As expressed by the municipal representative in Ouazzani, it is wary of the number of displaced Syrian population outnumbering the Lebanese residents. In case humanitarian agencies withdraw, he claims it would have to collect fees from displaced Syrians in order to provide services to them. Displaced Syrians are said to be perceived as environmental polluters as they dump solid waste in nearby sites, sometimes burning it. The same applies to wastewater. He also claims that ITSs in the area have pits, implemented by humanitarian agencies. However, as said by the municipal representative, it has been a year that the disludger has not operated. Consequently, wastewater is also being discharged in agricultural land. Thus, raising environmental hazards and health issues. The

102 OUAZZANI IS NOT INCLUDED IN THE WAP AND IAMP 61 DATABASES

municipality claims to be involved in ITS serving and following-up on WASH services in ITS by coordinating with humanitarian agencies. It also monitors the location of ITSs and tries to keep them in the agricultural areas outside the village to limit tensions. It is also involved in allowing or not humanitarian agencies to connect certain ITSs to public networks. It is also involved in regular water quality tests in ITSs.

As for social tensions, according to the Shawish, relations between host community and the Syrian refugees are normal due to the presence of Syrians on agricultural land far from the village.

10.2 ITS Profile

a) Demography and location

The studied ITS in Ouazzani is not included in WAP and IAMP 61 databases. In 2018, it is constituted of 20 shelters on 5,000 sqm of agricultural land called Al Themar project camp. It existed prior to 2011 and comprised 8 shelters on a 500 sqm land. According to shawish, the number of dwellers is 100 of which 30% are women, and 40% children. They are all relatives. Men and women are employed in agriculture. The ITS is located next to a landfill and a currently polluted water channel.

b) Governance and stakeholders

The shawish¹⁰³ was assigned for this ITS as a shawish by an influential shawish brokering jobs and responsible of all ITSs in the area. He contributed to the establishment of the camp in 2014. Shawish and dwellers interviewed claim good relations with all stakeholders in the area. They however have presently no contacts with service providers as the ITS is presently not serviced for WASH.

c) Water provision in ITS

This ITS is connected to Ouazzani project¹⁰⁴ but dwellers do not use this water as a primary source. In fact, the ITS has also a well with clean water on site that represents the main source of water in the ITS. However, some households with sick people, babies and pregnant women buy regularly 50l of bottled water by month. It has an infrastructure constituted by one 20,000 l communal tank connected to the well and has a connection also to the Ouazzani project. The communal tank then distributes to 200- 1,000 l tanks for each shelter.

¹⁰³ HE MOVED TO LEBANON IN 2014 (DIRECTLY TO THIS ITS WHERE HE LIVES). HE WORKS IN AGRICULTURE AND GETS 13,000LBP/DAY.

¹⁰⁴ DEVELOPED BY THE SOUTH LEBANON WATER ESTABLISHMENT AND AIMING TO BENEFIT FROM THE RIVER'S WATER FOR POTABLE WATER AND IRRIGATION.



Picture 1: The Elevated Tank connected to the well, and two individual tanks mounted on wheels in Al Themar project camp site.

d) Wastewater management in ITS

Regarding blackwater, the ITS used to have septic sewage discharging tanks, but not used anymore. In fact, since it is no more disludged and full, dwellers dug cesspits¹⁰⁵ to which some latrines were moved and connected. However, other latrines discharge in nearby land and channels. As for greywater they use on ground shallow cavities.

10.3 Market modalities

a) Price and competition & Market sustainability

ITS Ouazzani is a particular case in this study, not having a market for water provision nor wastewater desludging. The water being provided by a clean well inside the ITS, the case is a particular situation where the ITS do not rely on external sources for water provision. However, the discharge of wastewater in pits is non-environmental and is likely to contribute to soil contamination. This improper desludging makes the case unsustainable on the medium and long term. A strict control over wastewater discharging modalities from either the municipality or humanitarian agencies is needed.

¹⁰⁵ SHAWISH CLAIMED THAT IN ORDER TO PAY FOR THESE WORKS, EVERY SHELTER PAID 33USD.

Ouazzani

Case Studies

Demography:

- 600 residents (Mu);
- 2,000 registered displaced in all town (Mu);
- 1,400 dwellers in all ITSs;
- 6 ISs

Infrastructure Systems:

- Sufficient local water + water for irrigation (from Ouazzani project);
- Private illegal wells;
- Lebanese connected to Water and WW public networks;
- WW networks covering 70% of town;
- Septic tanks in town are discharged in the river;
- 50% increase in demand.

Municipal Assets:

Profile:

- Founded in 1946;
- 9 council members;
- 5 contractual employees;
- 3 committees of which one for environment;
- Budget: 50,000 USD.

Knowledge of refugees: Municipality has a role in ITSs location, displaced population statistics; Municipality follows-up on WASH services in ITSs.

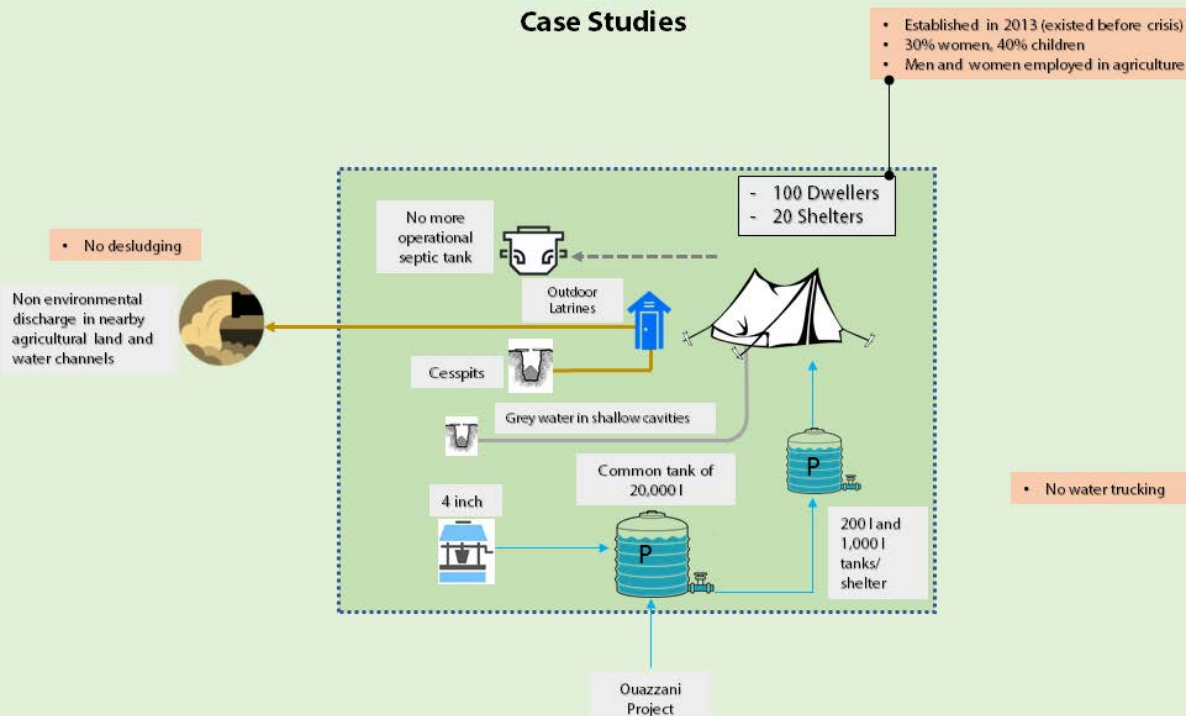
Ability to negotiate: Humanitarians sometimes by-pass the municipality in some actions.

Ability to develop projects: In case of humanitarian agencies withdraw, municipality will treat displaced as regular residents and collect fees.

Capacity to regulate: Gives humanitarians permission to connect to WW networks. Municipality controls connections to public networks, and water quality through tests.



Case Studies



Ouazzani