FEASIBILITY ASSESSMENT FOR WATER SERVICE PROVISION TO INFORMAL TENTED SETTLEMENTS (ITS) IN LEBANON.

A CASE STUDY OF NORTH BEKAA.

TRIANGLE

OXFAM

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LIST OF ABBREVIATIONS

AUB	AMERICAN UNIVERSITY OF BEIRUT
BDL	BANQUE DU LIBAN
BCM	BILLION CUBIC METER
BWE	BEIRUT WATER ESTABLISHMENT
CAS	CENTRAL ADMINISTRATION OF STATISTICS
CDR	COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION
ESCWA	ECONOMIC AND SOCIAL COMMISSION FOR WESTERN ASIA
EU	EUROPEAN UNION
GDP	GROSS DOMESTIC PRODUCT
FGD	FOCUS GROUP DISCUSSIONS
INGOs	INTERNATIONAL NON-GOVERNMENTAL ORGANIZATIONS
ITS	INFORMAL TENTED SETTTLEMENT
ITSHH	INFORMAL TENTED SETTLEMENT HOUSEHOLD
LCRP	LEBANON CRISIS RESPONSE PLAN
MENA	MIDDLE EAST AND NORTH AFRICA
MOA	MINISTRY OF AGRICULTURE
MOE	MINISTRY OF ENVIRONMENT
MOET	MINISTRY OF ECONOMY AND TRADE
MOEW	MINISTRY OF ENERGY AND WATER
MOF	MINISTRY OF FINANCE
MOSA	MINISTRY OF SOCIAL AFFAIRS
MOPH	MINISTRY OF PUBLIC HEALTH
MOEW	MINISTRY OF ENERGY AND WATER RESOURCES
NWSS	NATIONAL WATER SECTOR STRATEGY
NWMP	NATIONAL WATER MASTER PLAN
UN	UNITED NATIONS
UNHCR	UNITED NATIONS HIGH COMMISSIONER FOR REFUGEES
UNRWA	UNITED NATIONS RELIEF WORKS AGENCY
VASYR	VULNERABILITY ASSESSMENT OF SYRIAN REFUGEES IN LEBANON
RWE	REGIONAL WATER ESTABLISHMENT
WB	WORLD BANK
WFP	WORLD FOOD PROGRAMME
WTO	WORLD TRADE ORGANIZATION

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EXECUTIVE SUMMARY

1. INTRODUCTION

Lebanon enjoys a favourable water endowment, however throughout the country water re-sources are limited in terms of both quantity and quality, as a result of mismanagement, ageing infrastructure, inadequate investment within a confessional power-sharing system, coupled with depleting water resources and climate change. The influx of some 1.5 million Syrian refugees since 2011, and the resulting increased demand on water provision by an estimated 8 to 12 percent, has further strained the nation's water resources.[1] The additional demand has meant that existing and alternative water sources are being overly exploited to make up for the short-fall. Communities have thus become more dependent on alternative sources such as water de-livery by truck, which in turn has created an unregulated parallel water supply market, further weakening the formal water providers. This has moreover resulted in consumers paying rates of up to 200 to 300 percent higher than public water fees. [2]

Syrian refugees living in informal tented settlements (ITS) are in an especially difficult position,[3] being at the back of the proverbial queue for public water and other unregulated water sources. To alleviate the problem of water sourcing for refugees, humanitarian aid agencies have been delivering water by trucks. While this has ensured Syrians have adequate and, importantly, non-contaminated water, it has come at a financial and environmental cost. Water sources are po-tentially being depleted in an unregulated and unsustainable manner, and aid agencies are spending considerable sums to provide a service that is not sustainable in the short or long run.

As such, a reformulation of water service provision is required to achieve a win-win outcome for all concerned parties, namely: the Lebanese that are already experiencing water shortages and having to pay a high cost for water deliveries; the formal water service providers, the Regional Water Establishments (RWEs) that are weakened by their administrative and financial deficits; the Syrian refugees who are dependent on local provision in whatever form it comes and often pay out of pocket for water deliveries; and the aid agencies that are battling against the odds to source needed funds to assist vulnerable communities.

Under the current arrangement all parties are unnecessarily sourcing water at a high cost and inadvertently empowering a parallel water market to the detriment of the RWEs. Therefore, in order to provide a safe and adequate water supply to all water users within the country improv-ing the estimated 50 percent of the water network that is in need of constant repair and mainte-nance, and lowering the rate of unaccounted for public water (estimated at around 48 percent)[4] is an essential starting point. However, this is easier proposed than done within a complex polit-ical-economic environment in which sectarian, regional and local particularities need to be taken into consideration. The country's legal framework is equally complex.

Therefore, this study builds an evidence base on the socio-economic and political causes and impacts of current water supply to both Lebanese citizens and ITS Syrian refugees, taking nine villages in North Bekaa as a case study area. The research is employed to unpack the obstacles to providing more sustainable solutions, namely extending piped public water to ITSs, focusing on the financial, social and legal feasibility requirements. In light of the study findings, a multi-level governance approach is recommended to address water supply to all concerned communities. With this, a Win-Win can be achieved. Humanitarian agencies would fulfil their commitment to providing proportional assistance to vulnerable Lebanese communities along with Syrian refugees, while supporting Lebanese governmental institutions, namely municipalities and RWEs, both of which are the integral to the country's refugee response plan, the joint United Nations-Government of Lebanon Crisis Response Plan (LCRP).

2. GOVERNANCE OF LEBANON'S WATER SECTOR AND THE SYRIAN REFUGEE CRISIS

Law 221 on the organisation of the water sector, adopted by Lebanon's parliament in 2000 is, in large part, the main law to which regulations around water policy should refer. Lebanon's only real water sector strategy (the National Water Sector Strategy – NWSS) was endorsed at the executive level by a previous cabinet but has no legal basis in Lebanese law and can be easily rescinded by another government. While the NWSS remains an important framework for reform, its implementation has been constrained by weak accountability and continuous delays in the implementation of Law 221 that guarantees the institutional and legal autonomy of the RWEs.

In addition, the draft Water Code was prepared and approved by the Council of Ministers (CoM) in 2005 and still awaits ratification by parliament.[5] The Code envisions a National Council for Water headed by the MoEW as a regulatory authority for the water sector, mandated to prepare a six year development plan for the water sector.

The draft National Water Master Plan (NWMP), a set of regional plans to map and plan activities for regional water establishments, is being put together with the support of international devel-opment agencies. This initiative seeks to provide an overview of capital investments and to identify priority actions necessary to reach full or near full coverage of potable water and wastewater, as well as organized irrigation practices, up to the year 2035.[6] It is important to note that these plans, thus far, do not take refugee needs into consideration.

Inadequate supply, increasing demand, costly delivery and dwindling resources can in one way or another be attributed to water resource governance issues at almost every level. The imple-mentation of water laws and corresponding reforms, plans and strategies should be understood in the framework of the power-sharing system and its dynamics of power allocation within the country. Indeed, the full implementation of Law 221 in its current form would limit the possibilities of political intervention by turning the RWEs into financially autonomous entities, which are not fully controlled by the COM or the MoEW.[7] According to Law 221's by-laws, the MoEW would have 'administrative supervision' over the RWE insofar as 'orientation and recommendations'.[8] However, the MoEW would be able to obstruct the ratification of decisions no more than one and a half calendar months, after which time decisions would be ratified by default. Only under certain conditions the COM can, however, dismiss the director of a RWE.[9]

In practice, however, RWEs have not been granted the administrative and financial autonomy necessary for them to build their capacity to manage water service provision. As such they re-main financially and administratively dependent on the MoEW and other actors such as the Council for Development and Reconstruction (CDR) and municipalities to fill the service provision gaps.[10] Additionally, institutional reforms that envision a nationwide metering programme and consumption based tariffs have not materialized.[11] Transitioning to volumetric pricing policies instead of the current flat rate, would incentivize users to conserve water, which would in-turn assist RWEs' cost-recovery schemes and enhance their financial autonomy.[12] However, the ability to make this policy change lies in the hands of the MoEW, which has not taken the necessary measures.

The Syrian refugee influx is estimated to have increased the demand for water by 8 to 12 per-cent, equivalent to a total increase of some 0.04 to 0.07 BCM by the end of 2014 with the Bekaa accounting for the highest share of this increase among regions.[13] On average, across the country 30 percent of Syrian refugees used piped public water as their main water supply source followed by wells (24 percent) and public reservoirs/ standpipes (22 percent).[14]

However, for the estimated 16 percent of Syrian refugees in Lebanon that are living in ITSs al-ternative means of water and wastewater service provision still need to be put in place.[15] Refugees commonly rent the land where for their settlements from Lebanese landowners. Legally however, only registered rights are enforceable against third parties.[16] For ITS residents, this means they have no legal claim to their dwellings nor can they prevent the authorities from de-molishing their homes. Such agreements do not commit landowners to provide services to refugee households in ITSs that commonly lack basic sanitation facilities and access to safe water.[17]

Along with help from the local community, international humanitarian organizations have stepped in to assist with the provision of water to the majority of ITSs. These agencies work under the umbrella of the LCRP to coordinate assistance directed at refugees and Lebanese community residents. As of July 2016, 719,514 individuals out of 1,343,137 targeted (53.5 percent) under the LCRP have been provided with sufficient water supply at an adequate level of service.[18]

3. METHODOLOGY

To assess the social, economic, and political feasibility of transitioning the provision of Syrian ITS households away from informal water trucking towards public water provision, this study makes a robust socioeconomic and political assessment of nine villages located in Lebanon's Northern Bekaa Valley. The nine villages fall under Oxfam's Water Sanitation and Hygiene (WaSH) sector areas of coverage. By using these villages as a case study, the study fills information gaps such as those related to demand, supply and cost dynamics, willingness to pay for reliable and good quality water supply as well as attitudes and perceptions of Lebanese communities towards public water supply to Syrian ITS households.

Several qualitative and quantitative methods were employed during the course of this study, in-cluding an in-depth adaptive literature review of documents and reports on water provision to Syrian refugees, in addition to academic literature concerning the political economy of water provision in Lebanon and the various existing institutional and legal frameworks. The review was supplemented by **two representative quantitative surveys** on perception and water pro-vision: One with Syrian ITS households and another with Lebanese households.

Primary qualitative information was also conducted: A total of **24 key informants** with various stakeholder groups using the snow-ball method, which is a non-probability sampling technique. Interviews included municipal leaders, representatives from political parties, Water Establishment officers, Ministry of Water and Energy representatives, and water policy and provision specialists. Finally, a total of **eight focus group discussions** were held with Syrian ITS households, Lebanese households, water truckers and ITS shawish .[19]

4. FINDINGS AND ANALYSIS

Lebanese households fall into two distinct categories

1. **Public water users**: Households who are connected to the public water network and consume water provided by the Bekaa Water Establishment (BWE). Public water users are the principal group, accounting for 82.4 percent of respondents. Public water users are further disaggregated into paying subscribers who constitute 73 percent of the total households in the area and non-paying users who constitute 9 percent of the total number of households. These non-paying users can either have an official subscription

to the public water network (5 percent of total households) or not (4 percent of all households).

2. **Non-users of public water**: Households who do not consume water provided by the BWE constitute 18 percent of all households and are completely reliant on alternative water sources. Among these non-users of public water, 15 percent of all households are not subscribed to, and nor do they use, public water. The remaining 3 percent of households are subscribed to the public water network, pay their annual dues but claim not to use public water.[20]

It is through this paradigm the dynamics of subscription to, and payment for public water are assessed (See Figure 1).

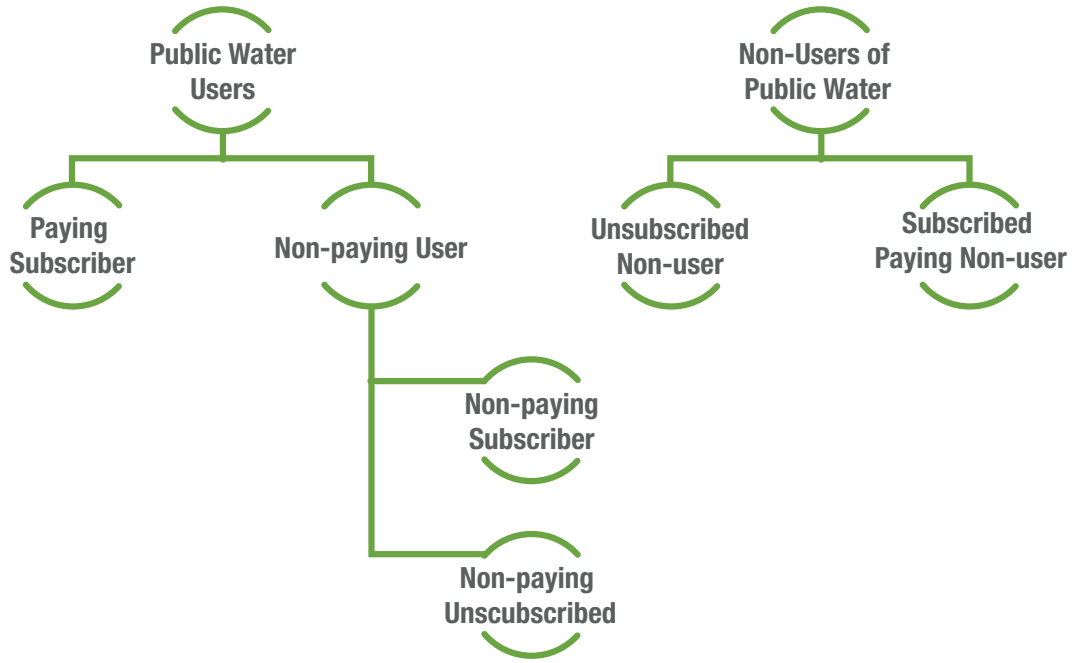


Figure 1: Division of Lebanese households according to usage of public water

4.1. THE LIMPING MULE: DIMINISHING WATER SOURCES STRESS BOTH COMMUNITIES' POCKETS

The continuous water cuts and unreliable public water networks place a significant extra financial burden on Lebanese and Syrian households that use public water. On average, paying subscribers, spend a total of 550,000 LL a year ($367/year) to cover their extra water needs, which is more than double the official rate they pay for public water. Among paying subscribers, public water constitutes 85.6 percent of total water consumption and just 30.1 percent of the total cost of annual water provision. Indeed, for paying subscribers, additional water sources cover just 14.4 percent of consumption and cost these households a staggering 69.9 percent share of total water costs.

Lebanese non-users both consume considerably less water and pay less for water in total than their counterparts, who are subscribed users of the public networks. Nevertheless, the cost per cubic meter for Lebanese households who use public water is cheaper than those who do not use public water.

Perhaps not surprisingly, the non-paying subscribers enjoy the best financial standing amongst their fellow citizens. The study also finds that the majority of Lebanese households who are subscribed to the public water network pay their subscription fees.

LEBANESE HOUSEHOLDS	PUBLIC WATER				NON PUBLIC WATER SOURCES				TOTAL CONSUMPTION	TOTAL EXPENDITURE
	Volume		Expenditure		Volume		Expenditure		Volume	Expenditure
	L	%	LBP (000)	%	L	%	LBP (000)	%	L	LBP (000)
Paying Subscribers	184,721	85.6	237	30.1	31,085	14.4	550	69.9	215,806	787
Unsubscribed Non-Users	0	0	0	0	120,029	100	276	100	120,029	623

Table 1: Main annual water consumption and expenditure categories for Lebanese households.

As for Syrian refugees living in ITSs, **findings also prove that those who benefit from water provided by humanitarian agencies have higher income security**, as they pay considerably less to provide their households with basic water needs. ITSs that are not covered by the water voucher system use up to 6.45% of their total expenditure on water, which amounts to more than double the international standard at 3%. ITSs that are covered by the water voucher system use 3.03% of their total expenditure on purchasing additional water. **Syrians have a better perception of water quality than their Lebanese counterparts, due to the water quality safety measures adopted by humanitarian agencies**. Lebanese who feel that public network water quality is unacceptable doubles from 15 percent in the wet season to 31 percent in the dry season. Indeed, findings show that Syrian ITS households consider the water from truckers which are provided by humanitarian agencies to be clean specifically because they regularly monitor water quality and ensure chlorination.

Findings indicate a willingness among both Lebanese and Syrian ITS households to pay for more reliable and good quality public water supply. However, the amount each cohort is currently willing to pay remains only marginally higher than the present amount allocated to procure water for their households. On average a Lebanese household is willing to pay 24,298 LL ($16) a month to receive a reliable and good quality water supply, which amounts to 291,600 LL ($194) annually corresponding to 19 percent more than the annual subscription rate paid to the BWE. The amount the Syrian ITS households who receive vouchers are willing to pay averages 246,000 LL ($164) a year, and while this is less than the Lebanese households it is still higher than the current subscription rate paid to the BWE. Importantly, in the absence of service improvements tariff increases will not be acceptable by the majority of Lebanese households.

	AVERAGE MONTHLY HOUSEHOLD EXPENDITURE	MONTHLY SUBSCRIPTION FEE TO PUBLIC WATER	MONTHLY NON-PUBLIC WATER	TOTAL MONTHLY WATER EXPENSES	PERCENT EXPENDITURE ON WATER	MONTHLY WILLINGNESS TO PAY FOR CLEAN WATER
	LBP	LBP	LBP	LBP	IN %	LBP
LEBANESE AVERAGE HOUSEHOLD (PAYING)	1,509,167	19,750	45,833	65,583	4.35	24,298
SYRIAN ITS HOUSEHOLD (USE VOUCHERS)	623,833	0	18,917	18,917	3.03	20,596
SYRIAN ITS HOUSEHOLD (NO VOUCHER)	571,167	0	36,833	36,833	6.45	14,864

Table 2: Monthly willingness to pay for clean water among Lebanese and Syrian ITS Households

4.2. THE THIRSTY DRINK FIRST

Research indicates that there are divided opinions among the Lebanese as to whether Syrian ITS households should be connected to the public water network. Approximately half of them believe that the notion itself is a non-starter. Yet more than 40 percent of this cohort also feel that they could change their opinion if there were to be a palpable improvement in the provision of reliable and good quality water supply for all households in the area. Accordingly, the research proves that there is potential for up to 71 percent of Lebanese in the area are willing to accept Syrian ITS households being connected to public water.

Fear of Syrian settlement is the primary reason for refusing to connect Syrians to the water network. While 63 percent of negative responses identified the fear of settlement as their primary reason 52 percent of Lebanese residents also fear that connecting the ITSs to the network might decrease water supply, while some 32 percent claimed that Syrian refugees have no right to water provision in the area at all.

4.3. CLEANING THE STAIRS CLEANING THE STAIRS

North Bekaa suffers a sever inadequacy or even complete absence of infrastructure for and management of water resources. Particular to this region, water is diverted for the irrigation and cultivation of cannabis during the summer, when cannabis nears harvesting. The lack of state intervention in providing viable solutions to the agricultural water demands in the area has resulted in direct conflict between the agricultural and municipal water users, especially in summer as irrigation water demand increases and supply plummets.

The lack of law enforcement in the area reinforces illegality as cannabis farmers divert water sources to their crops. The presence of the Lebanese Armed Forces and law enforcement in the area is largely considered as symbolic by local communities because the law is rarely applied against illegal farming and customary law is seen to supersede state law. In turn, government intervention to resolve water issues is also considered symbolic. Local families revert to old riparian rights and negotiate their access to water sources through backdoor channels.

Illegal boreholes proliferate both as a means for local communities to satisfy their needs but also to gain control over water sources. Local communities rely heavily on boreholes as a way to free themselves from the pressure levied upon them by cannabis farmers upstream. Illegal boreholes however

are becoming more expensive to maintain. As the water-table recedes due to over exploitation, the cost of pumping water increases.

The only public institutions that maintain a certain level of credibility over improving water services in the area are the municipalities. Municipalities are actively involved in water service provision, such as through the management of public wells to both Lebanese and Syrian ITS households and in providing public water infrastructure including pipes and water storage facilities.

Local communities feel that the funds and technical capacity of humanitarian agencies should be channelled towards a more affordable and sustainable solution to the water provision problems affecting the area. As such, the only way that local communities would eventually accept to share public water with Syrian ITS households is through a holistic and sustained improvement in the provision of reliable and good quality water supply to Lebanese citizens.

5. RECOMMENDATIONS

The following set of recommendations aim to provide the parameters for sustainable reform, not just in the area under study, but also in terms of how the Syrian refugee crisis can be transformed into a win-win situation for Lebanon's water sector.

5.1. GENERAL RECOMMENDATIONS FOR THE WATER SECTOR IN LEBANON

Efforts need to be made by the MoEW and the CoM, to fully implement Law 221. This would guarantee the institutional and legal autonomy of the RWEs, in turn empowering them to manage their coverage areas and to work towards cost recovery and more sustainable water resource management.

The MoEW and CoM should finalize a comprehensive National Water Master Plan (NWMP). As such, there should be an effort on the part of the MoEW and the CoM to work with the existing data to finalise the NWMP according to their legal mandate as the regulatory bodies which set the general policy of the sector.

The **MoEW should complete and approve regional water master plans which accurately reflect supply and demand water balances across the country**. The current system where demand and supply are based on assumptions and incomplete information, hinders adequate long-term planning. Indeed, a national water master plan must include agricultural water use, as well as the licensing of illegal wells, and the institution of public water metering. In line with the commitment to empower RWEs, the MoEW will need to assign the RWEs to conduct water master planning and support them in instituting the required reforms.

Transition to volumetric pricing policies instead of the current flat-rate continuous flow tariff, should form the corner stone of any future programmatic action. Changes in tariff structures need to go hand in hand with improvements in the provision of reliable and good quality water supply to subscribers so as to ensure collection of fees and a measured and equitable supply.

5.2. RECOMMENDATIONS FOR THE PROVISION OF WATER SERVICES FOR ITSS:

Humanitarian agencies should transition to sustainable water-provision modalities to Syrian refugees. Namely, the current model of providing water to Syrian ITS households through private trucking is not financially sustainable, has negative impacts on local and national resource management, and strengthens an unregulated informal water market. Instead of perpetuating this situation, humanitarian agencies should be encouraged to work with RWEs in order to align their humanitarian interventions with regional and national water policies. Using the inflows of international humanitarian funding should be

framed as an opportunity to repair and upgrade existing water infrastructure and distribution networks, and in turn provide long-term benefits to both Lebanese and Syrian communities.

In order to affect such a transition, four potential scenarios have been identified:

Scenario 1: Where a public supply network is present and is operated by the RWE, Humanitarian agencies should gradually work towards connecting as many Syrian ITSs as possible to the public water network. This should be done only if the existing water supply in the system can sustain the needs of Lebanese populations in the area, and the additional needs of the Syrian refugees in ITSs. In case the supply is insufficient, then technical water supply systems upgrades should be undertaken, such as expansions in networks coverage, rehabilitation of networks with technical water losses, improvements in water production capacity (pumping or the development of new water sources) and improvements in water storage capacity. **The provision of public water to the ITSs should be supplied to centralized water points in each ITS depending on the total number of persons residing in it**. Each water point should be equipped with a volumetric meter to allow no less than 35L/person/day to be drawn. The fixed output of the volumetric meters will ensure that refugees are provided with sufficient quantities of water while also assuaging any concerns that connecting the Syrian ITSs to the public network will increase water consumption that would in turn result in wastewater production beyond the capacity of existing water infrastructures on site. The Humanitarian agencies should ensure cost recovery to the RWEs, in payments to the RWEs for measured quantity of water provided. Humanitarian agencies will need to work closely with the RWEs to agree a metered tariff system appropriate for water provision to ITSs, and reach an agreement on an effective and equitable billing system, which determines who pays for the service as well as at what rate and frequency. Furthermore, humanitarian agencies will need to enhance engagement with Syrian ITS households to improve community level water management and conservation practices.

Scenario 2: **Where a public water supply network is present but is managed directly by the Municipality or Water Committee rather than the RWE**, a similar technical approach to Scenario 1 should be adopted. However, to ensure a gradual transfer of responsibilities to the RWEs, an agreement between the RWE and the Municipalities needs to be reached whereby the Municipality is given operation and maintenance rights for a set duration after which a handover process to the RWE will ensue. Ideally under this agreement, a cost recovery sharing scheme should be developed whereby a percent of the water consumption payments are allocated to the RWE. In addition, technical units need to be established within the municipalities to coordinate with the WEs. These local units would communicate any challenges in the implementation of the project and report technical problems such as leaks, bursts or electrical faults. This would decentralise the operation and maintenance of the rehabilitated and expanded network while maintaining the supervision and oversight of the WEs.

Scenario 3: **Where a public water supply network is not available or the technical upgrades are financially prohibitive**, then a local borehole (ideally licensed) can be used or developed. The newly developed boreholes can also be used to increase the water production capacity in the area benefitting the Lebanese community as well. The humanitarian organisations need to work with the RWEs and the MoEW to legalise and formalise in a sustainable manner the network of unlicensed boreholes, which are currently both haphazard and unsustainable in nature. Similar to Scenario 1, water supply is to be piped from the existing or newly developed borehole to a centralized water point in the ITS. The Humanitarian agencies should ensure cost recovery to the RWEs, in payments to the RWEs for the measured quantity of water provided.

Scenario 4: Where it is not possible to connect Syrian ITSs to public water networks or licensed boreholes, humanitarian agencies can rely on water trucking; however, not as it is currently practiced. Instead, humanitarian agencies should collectively adopt an approach that contractually binds water truckers to source water from sources managed by the RWEs at an agreed upon tariff per cubic meter, which is payable to the RWEs.

These proposed scenarios need to ensure the buy in of Lebanese communities, local authorities and RWEs. Humanitarian agencies will need to institute an integrated consensus building plan before the implementation of any service provision modality. The consensus building plan is crucial to ensure that reform on the local level does in fact positively impact the lives of Lebanese communities living in the locality. The consensus plan should target the following actors:

- **Municipalities**: Municipalities should represent the core consensus building entity as they enjoy popular legitimacy and maintain solid relations with local power brokers, such as large families and clans. Through these relations municipalities provide crucial access to political parties, who require their allegiance to maintain power at the local level. If municipalities spearhead the proposed initiative, it will be increasingly difficult for potential disruptors to halt any initiative they do not agree with.

- **Local families**: Municipalities can provide crucial access to influential local families and networks that maintain irrigation as well as perceived water riparian rights.

- **Agreement between municipalities and RWEs**: International agencies should lead a process of dialogue and agreement between municipalities and the RWEs. Regular meetings and a memorandum of understanding that brings international agencies and these intrinsic institutions together will prove crucial to implement required reforms, local buy-in and the exchange of expertise required.

- **Public Consultation**: In order to complement the aforementioned consensus building, international agencies need to work with municipalities to foster local buy-in through public consultations. Such consultations can be conducted in order to monitor public opinion as well as help push the reform agenda forward.

5.3. SPECIFIC RECOMMENDATIONS FOR NORTHERN BEKAA

The area under study provides an archetypical example of how each region of the country will require a pragmatic and localised approach to address long-standing issues in a manner which leads to improved water supply for all communities. In order to resolve the water crisis in North Bekaa, humanitarian agencies should:

Aim to implement a consolidated irrigation development plan lead by local municipalities, the LRA as well as the Green Plan and the Ministry of Agriculture. By providing the area with necessary infrastructure to meet agricultural and public water demand in upstream villages, water would be available for public use downstream. The development plan should intend to increase irrigation efficiency with considerable investment in sprinkler and drip irrigation techniques and rain water storage facilities.

Interventions should take into account the actual water balance by mapping the water supply of all available water sources and water demand by all water users, including municipal and agriculture. Only following that, can suitable investment be made in improving water storage capacity and irrigation systems, which contribute to improved water balance and consequently higher water availability for public use. Addressing the water needs of the Dar Al Wasaa families so they can maintain sufficient supply for irrigation and residential use will be the first step towards releasing enough supply to accommodate the required levels of public water provision downstream.

Develop a consensus and outreach plan to engage local communities and municipalities in consultation with BWE should be the basis of any approach. The nine villages in question will also

need to see palpable results in order to allow Syrian refugees to access public water. At first, villages should be informed of the plan to build infrastructure upstream to release water to their villages. In tandem, under the management of the BWE, local municipalities should be encouraged to play a role as implementers in future water sector infrastructure projects under the Municipal Act.

Particular focus will need to be placed on reducing network losses, which account for up to 50 percent of all public water supply. This arrangement will help to foster local trust and ownership of the process, meet municipalities' primary demands for infrastructure reforms and increase their popularity among the local electorate once water supply increases. By creating this consensus, municipalities can also be engaged in the process of ensuring volumetric meters are installed and remain operational during infrastructure reforms.

Again, from the offset it should be stressed that the purpose of meters is not to charge volumetric tariffs but rather to manage supply and demand as part of a consolidated water resource management plan. Having this infrastructure in place will also build consensus around volumetric metering for Syrian ITS households provision.

ملخص تنفيذي

تسعى هذه الدراسة لبناء قاعدة معلومات تشمل المسبّبات والآثار الاجتماعية والاقتصادية لطرق توفير خدمات المياه للسكان اللبنانيين واللاجئين السوريين الذين يعيشون في التجمعات العشوائية، من خلال دراسة عينة تشمل تسع قرى في البقاع الشمالي. وقد أُستخدمت نتائج هذه الدراسة لشرح العقبات التي تعترض سبل توفير حلول أكثر استدامة، منها توسيع شبكة أنابيب المياه العامة لشمل التجمعات العشوائية، من خلال التركيز على متطلبات الجدوى المالية والاجتماعية والقانونية. وعلى ضوء نتائج هذه الدراسة، سيتم التوصية بنهج متعدد المستويات لمعالجة مسألة إمدادات المياه لجميع المجتمعات المعنية.

١. المقدمة

يتمتع لبنان بوفرة موارده المائية؛ ولكن، تعتبر هذه الموارد محدودة من حيث الكمية والنوعية ما اذا نظرنا إلى النطاق الأوسع للبلد، وذلك نتيجة لسوء إدارة هذه الموارد، البنية التحتية المتهالكة، الاستثمار الغير كافي في ظل التقاسم الطائفي للسلطة، استنزاف الموارد المائية والتغيّر المناخي. وقد أدى نزوح نحو ١,٥ مليون لاجئ من سوريا منذ العام ٢٠١١ الى زيادة الطلب على المياه بنسبة تتراوح بين ٨ و ١٢ بالمئة، وبالتالي إلى مزيد من الضغط على الموارد المائية في البلاد[١] . أدت زيادة الطلب على المياه الى استهلاك مفرط لمصادر المياه الحالية والبديلة للتعويض عن النقص الناتج عن إزدياد الطلب. ولقد أصبحت المجتمعات أكثر اعتماداً على المصادر البديلة مثل الحصول على المياه من الصهاريج، مما أدى بدوره إلى خلق سوق موازي غير خاضع للرقابة، والذي أدى بدوره إلى تقويض إضافي لعمل مزوّدي امدادات المياه المعتمدين بشكل رسمي؛ هذا بالاضافة إلى دفع المستهلكين لرسوم المياه بكلفة اعلى تتروح من ٢٠٠ الى ٣٠٠ بالمئة مقارنة بالرسوم المتوجب دفعها مقابل المياه العامة.[٢]

يعاني اللاجؤون السوريون في التجمعات العشوائية بشكل كبير من هذه المشكلة[٣] ، إذ انهم يُعتبرون الاقل أولوية بما يتعلّق بالوصول الى المياه العامة وغيرها من مصادر المياه الغير خاضعة للرقابة والتنظيم. وللمساهمة في الحد من أزمة المياه عند اللاجئين، اعتمدت المنظمات الانسانية على الصهاريج لتوصيل المياه الى اللاجئين القاطنين في التجمعات العشوائية. وفي حين أن ذلك قد كفل حصول اللاجئين السوريين على مياه كافية ونظيفة، فإنه أتى بكلفة مالية وبيئية مرتفعة نتيجة لاستنزاف مصادر المياه بطريقة غير منظمة وغير مستدامة، في الحين الذي تنفق فيه المنظمات الانسانية مبالغ باهظة لتوفير هذه الخدمات غير المستدامة على المدى القصير والطويل.

لذلك، فإن إعادة صياغة مقاربة توفير خدمات المياه هو أمر ضروري لتحقيق نتائج مرضية لجميع الأطراف المعنية، وهي: اللبنانيين الذين يعانون أصلا من نقص امدادات المياه ويضطرون إلى دفع تكاليف عالية لخدمات توصيل المياه؛ ومقدمي خدمات المياه الرسميين، ومؤسسات المياه في المناطق التي تعاني من العجز الإداري والمالي؛ واللاجئين السوريين الذين يعتمدون على المصادر المحلية بأي شكل تتوفر فيها، وغالبا ما يدفعون من جيوبهم للحصول على المياه؛ ووكالات المعونة التي تكافح للحصول على الأموال اللازمة لمساعدة المجتمعات الضعيفة والمعرّضة للخطر.

وبموجب الترتيب الموجود حاليا، يلجأ جميع الأطراف إلى الحصول على المياه بتكلفة عالية من دون وجود داعي حقيقي لذلك مما يعزّز سوق المياه الموازية دون قصد ويضر بمؤسسات المياه الرسمية في المناطق. لذلك، من أجل توفير إمدادات مياه آمنة وكافية لجميع مستخدمي المياه داخل البلاد، فانه يلزم اجراء تحسين على نحو ٥٠ في المئة من شبكة المياه التي هي في حاجة إلى إصلاح وصيانة مستمرة، وخفض نسبة المياه العامة المتسرّبة أو المهدورة (تقدر بحوالي ٤٨ في المائة)[٤] . ولكن يظل تطبيق هذا الاقتراح صعبا في بيئة سياسية واقتصادية معقدة يجب أن تؤخذ فيها الخصوصيات

الطائفية والإقليمية والمحلية في الحسبان. أما الإطار القانوني للبلد فهو أيضا بنفس درجة التعقيد.

بناء على هذه المعطيات، تبني هذه الدراسة قاعدة أدلة حول المسبّبات والآثار الاجتماعية والاقتصادية والسياسية لإمدادات المياه الحالية على حد سواء للمواطنين اللبنانيين واللاجئين السوريين الذين يعيشون في مستوطنات الخيام غير الرسمية، من خلال دراسة حالة تشمل تسعة قرى في البقاع الشمالي . واستخدمت نتائج هذا البحث لتبيان وتذليل العقبات التي تعترض سبيل توفير حلول أكثر استدامة، مثل توصيل أنابيب المياه العامة إلى مستوطنات الخيام غير الرسمية، من خلال التركيز على متطلبات الجدوى المالية والاجتماعية والقانونية. وفي ضوء نتائج الدراسة، يوصى بنهج حوكمة متعدد المستويات لمعالجة مسألة إمدادات المياه لجميع المجتمعات المعنية. ويمكن في هذه الحالة خدمة مصالح كافة الاطراف حيث ستفي الوكالات الإنسانية بالتزامها بتقديم مساعدة متماثلة للمجتمعات اللبنانية الضعيفة إلى جانب اللاجئين السوريين، مع دعم المؤسسات الحكومية اللبنانية، وهي البلديات ومؤسسات المياه في المناطق، وكلاهما يشكلان جزءا لا يتجزأ من خطة الاستجابة للاجئين في البلد، أي خطة حكومة لبنان والأمم المتحدة الاستجابة لأزمة اللجوء.

٢. حوكمة قطاع المياه في لبنان وأزمة اللاجئين السوريين

إن القانون رقم ٢٢١ بشأن تنظيم قطاع المياه، الذي اعتمده البرلمان اللبناني في عام ٢٠٠٠، هو إلى حد كبير القانون الرئيسي الذي تحتكم إليه اللوائح المتعلقة بسياسة المياه في البلاد. في حين أنه تمت الموافقة على الاستراتيجية الوحيدة الموجودة لقطاع المياه في لبنان (الاستراتيجية الوطنية لقطاع المياه) على المستوى التنفيذي من قبل مجلس الوزراء السابق، فإنه ليس لها أساس في القانون اللبناني ويمكن إلغاؤها بسهولة من قبل حكومة أخرى. لا تزال الاستراتيجية الوطنية لقطاع المياه تشكل إطارا هاما للإصلاح، لكن تنفيذها يبقى محدودا بسبب ضعف المساءلة والتأخير المستمر في تنفيذ القانون ٢٢١ الذي يضمن الاستقلالية المؤسسية والقانونية لمؤسسات المياه في المناطق.

وبالإضافة إلى ذلك، تم اعداد مشروع قانون المياه و وافق عليه مجلس الوزراء في عام ٢٠٠٥ ولكنه لا يزال ينتظر التصديق عليه من قبل البرلمان . يلحظ القانون انشاء المجلس الوطني للمياه برئاسة وزارة الطاقة والمياه باعتبارها الجهة التنظيمية لقطاع المياه، والمكلّفة بإعداد خطة سداسية لتنمية قطاع المياه.

تتم صياغة مشروع الخطة الوطنية الرئيسية للمياه، وهي مجموعة من الخطط المفصّلة للأنشطة المائية لمؤسسات المياه في المناطق، بدعم من الوكالات الإنمائية الدولية. وتسعى هذه المبادرة إلى تقديم لمحة عامة عن الاستثمارات وتحديد الإجراءات ذات الأولوية اللازمة للوصول إلى التغطية الكاملة أو شبه الكاملة لمياه الشرب ومياه الصرف الصحي، فضلا عن ممارسات الري المنظمة حتى عام ٢٠٣٥[١].

من المهم أن نلحظ هنا أن هذه الخطط، حتى الآن، لا تأخذ احتياجات اللاجئين في الاعتبار.

ويمكن عزو مسائل مثل عدم كفاية كمية المياه المعروضة، وزيادة الطلب، والكلفة المرفعة لايصال المياه والموارد المتضائلة، بطريقة أو بأخرى إلى قضايا إدارة الموارد المائية على جميع المستويات تقريبا. وينبغي فهم مسألة انفاذ قوانين المياه وما يقابلها من إصلاحات وخطط واستراتيجيات في إطار نظام تقاسم السلطة وديناميات توزيع السلطة داخل البلد. وفي الواقع، فإن التنفيذ الكامل للقانون ٢٢١ في شكله الحالي من شأنه أن يحد من إمكانيات التدخل السياسي من خلال تحويل مؤسسات المياه في المناطق إلى كيانات مستقلة ماليا، والتي لا تخضع لرقابة كاملة من

قبل مجلس الوزراء أو وزارة الطاقة والمياه.[٧] وفقا للوائح القانون ٢٢١ ، فإن وزارة الطاقة والمياه لديها سلطة «الإشراف الإداري» على مؤسسات المياه فيما يتعلّق حصرا باعطاء «التوجيه والتوصيات»[٨]. ومع ذلك، فإن وزارة الطاقة والمياه قادرة على عرقلة التصديق على القرارات لمدة شهر ونصف، وبعد ذلك يتم تصديق القرارات تلقائيا. ويمكن لمجلس الوزراء فقط في ظل ظروف معينة انهاء خدمة مدراء مؤسسات المياه[٩] في اطار هذا القانون.

غير أنه من الناحية العملية، لم يتم منح مؤسسات المياه الاستقلال الإداري والمالي اللازم لها لبناء القدرة على إدارة امدادات المياه. لذلك لا زالت هذه المؤسسات تعتمد ماليا وإداريا على وزارة الطاقة والمياه والجهات الفاعلة الأخرى مثل مجلس الإنماء والإعمار والبلديات لسد الثغرات في تقديم الخدمات[١٠] بالإضافة إلى ذلك، فإن الإصلاحات المؤسسية القائمة على تثبيت عدّادات والفوترة بحسب الاستهلاك لم تتحقق.[١١] ان التحول الى سياسات التسعير بحسب حجم المياه المستهلكة بدلا من المعدل الثابت المعمول به حاليا سيحفّز المستخدمين على اللحفاظ على المياه، والذي من شأنه أن يساعد على تحقيق خطط استرداد التكاليف لدى مؤسسات المياه في المناطق وتعزيز استقلاليتهم المالية[١٢] . ومع ذلك، فإن القدرة على إجراء هذا التغيير في السياسة تكمن في أيدي وزارة الطاقة والمياه، التي لم تتخذ التدابير اللازمة.

ويقدر أن تدفق اللاجئين السوريين زاد الطلب على المياه بنسبة تتراوح بين ٨ و ١٢ في المائة، أي ما يعادل زيادة إجمالية قدرها حوالي ٠،٠٤ إلى ٠،٠٧ مليار متر مكعب بحلول نهاية عام ٢٠١٤، حيث مثّلت منطقة البقاع أعلى حصة من هذه الزيادة بين المناطق اللبنانية الأخرى[١٣] . يقوم ما معدّله ٣٠ بالمئة من اللاجئين السوريين عبر المناطق اللبنانية باستخدام امدادات المياه العامة من الأنابيب كمصدر المياه الرئيسي وتبع ذلك الآبار (٢٤ في المئة) والخزانات العامة / المواسير الرأسية (٢٢ في المئة).[١٤]

لكن بالنسبة لما يقدر بنحو ١٦ في المائة من اللاجئين السوريين في لبنان الذين يعيشون في مستوطنات الخيام غير الرسمية، لا تزال هناك حاجة إلى وسائل بديلة لتوفير المياه وخدمات الصرف الصحي [١٥]. يقوم اللاجئون عادة باستئجار الأرض التي ينصبون عليها مساكنهم من ملاك الأراضي اللبنانيين. من الناحية القانونية، فإن الحقوق المسجلة بشكل رسمي هي فقط قابلة للانفاذ ضد الأطراف الثالثة [١٦]. لكن النسبة لسكان مستوطنات الخيام غير الرسمية، فانه ليس لديهم حقوق قانونية في مساكنهم ولا يمكن منع السلطات من هدم منازلهم. فالاتفاقات غير الرسمية الموجودة بينهم وبين ملّاك الأراضي لا تلزم المالكين بتوفير الخدمات للأسر اللاجئة في المناطق التي تفتقر عادة إلى مرافق الصرف الصحي الأساسية والمياه النظيفة.[١٧]

بالاضافة الى المساعدة المقدّمة من قبل المجتمع المحلي، لقد تدخلت المنظمات الإنسانية الدولية للمساعدة لتوفير المياه لغالبية مستوطنات الخيام غير الرسمية. وتعمل هذه الالات تحت مظلة خطة لبنان للإستجابة للأزمة لتنسيق المساعدات المقدمة للاجئين والمجتمع اللبناني المحلي. واعتبارا من تموز / يوليو ٢٠١٦، تم تزويد ٧١٩،٥١٤ فردا من أصل ١،٣٤٣،١٣٧ مستهدفا (٥٣،٥٪) في إطار خطة لبنان للإستجابة للأزمة بما يكفي من إمدادات المياه بمستوى مناسب من الخدمة.[١٨]

٣. المنهجية

لتقييم الجدوى الاجتماعية والاقتصادية والسياسية لنقل الأسر السورية في المستوطنات غير الرسمية من الاعتماد على المياه التي تصل بالشاحنات الى امدادات المياه العامة، فإن هذه الدراسة تقدّم تقييما اجتماعيا واقتصاديا وسياسيا لتسعة قرى تقع في وادي البقاع الشمالي في لبنان. وتندرج القرى التسع هذه ضمن مناطق تغطية برنامج أوكسفام للمياه النظيفة والنظافة الصحية (واش). وباستخدام هذه القرى كدراسة حالة، تقوم الدراسة بملئ ثغرات عدّة موجودة في المعلومات المتوفرة حول الطلب والعرض وديناميكيات التكلفة، والرغبة في الدفع مقابل إمدادات مياه موثوقة وذات نوعية جيدة، فضلا عن مواقف وتصورات المجتمعات اللبنانية تجاه إمدادات المياه العامة إلى الأسر السورية في المستوطنات غير الرسمية.

وقد تم استخدام عدة طرق نوعية وكمية خلال هذه الدراسة، بما في ذلك مراجعة الأدبيات بشكل تكييفي وعميق للوثائق والتقارير عن توفير المياه للاجئين السوريين، بالإضافة إلى الأدبيات الأكاديمية المتعلقة بالاقتصاد السياسي لتوفير المياه في لبنان ومختلف الأطر المؤسسية والقانونية القائمة. واستكمل الاستعراض من خلال مسحين حول المفاهيم والتصورات المتعلّقة بتوفير المياه: واحد مع الأسر السورية في المستوطنات غير الرسمية وآخر مع الأسر اللبنانية.

كما تم جمع المعلومات النوعية من المصادر الأساسية، وهم **٢٤ مخبر رئيسي** يمثّلون مختلف مجموعات أصحاب المصلحة باستخدام طريقة كرة الثلج، وهي أسلوب أخذ عينات غير احتمالي. وشملت المقابلات قادة البلديات، وممثلين عن الأحزاب السياسية، وموظفي مؤسسات المياه، وممثلي وزارة المياه والطاقة، وخبراء في سياسات وامدادات المياه. وأخيرا، تم عقد ما مجموعه **ثمانية مناقشات جماعية مركزة** مع الأسر السورية في المستوطنات غير الرسمية، والأسر اللبنانية، وسائقي شاحنات المياه وشاويش المستوطنات غير الرسمية.[١٩]

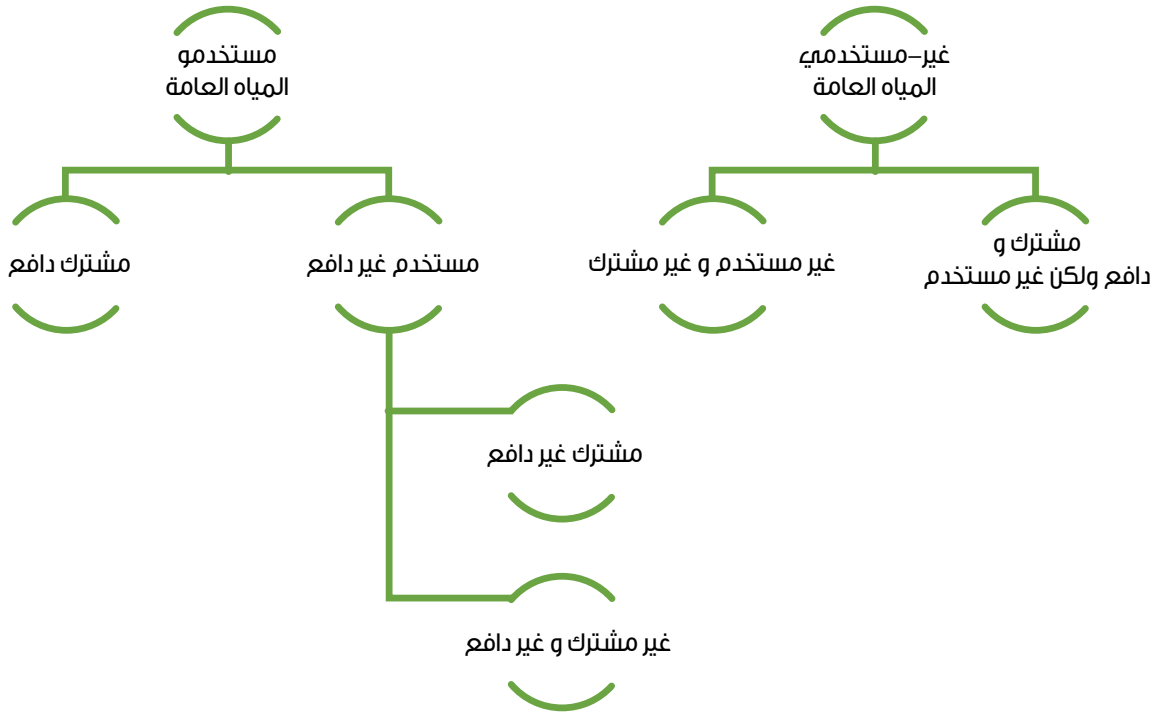
٤. النتائج والتحليل

تندرج الأسر اللبنانية في فئتين متميزتين:

١. مستخدمي المياه العامة: الأسر التي ترتبط بشبكة المياه العامة وتستهلك المياه التي) توفرها مؤسسة مياه البقاع. مستخدمو المياه العامة هم المجموعة الرئيسية، حيث يمثلون ٨٢,٤ في المائة من المجيبين. كما يمكن تصنيف مستخدمي المياه العامة إلى مشتركين دافعين يشكلون ٧٣ في المائة من مجموع الأسر في المنطقة والمستخدمين غير الدافعين الذين يشكلون ٩ في المائة من مجموع عدد الأسر. وبدورهم، ينقسم هؤلاء المستخدمون الذين لا يدفعون الى قسم مشترك رسميا في شبكة المياه العامة (٥ في المائة من مجموع الأسر) وقسم غير مشترك (٤ في المائة من جميع الأسر)؛

٢. غير مستخدمي المياه العامة: تشكل الأسر التي لا تستهلك المياه التي توفرها مؤسسة مياه البقاع ١٨ في المائة من مجموع الأسر في المنطقة وتعتمد اعتمادا كاملا على مصادر المياه البديلة. ومن بين هؤلاء غير المستخدمين للمياه العامة، فإن ١٥ في المائة من مجموع الأسر لا يشتركون في المياه العامة ولا يستخدمونها. أما نسبة ال ٣ في المائة المتبقية من الأسر فهم مشتركون بشبكة المياه العامة ويدفعون مستحقاتها السنوية ولكنهم يقولون بأنهم لا يستخدمون المياه العامة.[٢٠]

ومن خلال هذا النموذج يمكن تقييم ديناميات الاشتراك في، و دفع تكاليف المياه العامة (انظر الشكل ١).



الشكل ١: توزيع الأسر اللبنانية وفقا لاستخدام المياه العامة

٤,١ تناقص مصادر المياه يثقل جيوب كلا المجتمعين

إن استمرار انقطاع المياه ووجود شبكات المياه العامة التي لا يمكن الاعتماد عليها تفرض عبئا ماليا إضافيا كبيرا على الأسر اللبنانية والسورية التي تستخدم المياه العامة. في المتوسط، يدفع المشتركون، ما مجموعه ٥٥٠،٠٠٠ ليرة في السنة (٣٦٧ دولار في السنة) لتغطية احتياجاتهم الإضافية من المياه ، أي أكثر من ضعف المعدل الرسمي الذي يدفعونه للمياه العامة. تشكل المياه العامة ٨٥,٦ في المائة من إجمالي استهلاك المياه لدى المشتركين الدافعين و ٣٠,١ في المائة فقط من التكلفة الإجمالية لتوفير المياه سنويا. في الواقع، تغطي مصادر المياه الإضافية ١٤,٤ في المئة فقط من الاستهلاك لدى هؤلاء المشتركين الدافعين فيما تلكّف أسرهم **٦٩,٩ في المئة** من إجمالي تكاليف المياه التي يدفعونها.

ان غير المستخدمين اللبنانين يستهلكون كميّة أقل بكثير من المياه ويدفعون تكاليف أقل للمياه في المجموع من نظرائهم مستخدمي ومشتركي شبكات المياه العامة. ومع ذلك، فان تكلفة المتر المكعب بالنسبة للأسر اللبنانية التي تستخدم المياه العامة أرخص من الكلفة التي يدفعها أولئك الذين لا يستخدمون المياه العامة. ولعله ليس من المستغرب أن يتمتع المشتركون غير الدافعين بالوضع المالي الأفضل بين مواطنيهم. كما توصلت الدراسة إلى أن غالبية الأسر اللبنانية التي اشتركت في شبكة المياه العامة تدفع رسوم الاشتراك فيها.

الأسر اللبنانية	المياه العامة				مصادر المياه غير العامة				مجموع الاستهلاك	مجموع المصروفات
	الكمية		المصروفات		الكمية		المصروفات		الكمية	المصروفات
	ليتر	٪	ليرة لبنانية (ألف)	٪	ليتر	٪	ليرة لبنانية (ألف)	٪	ليتر	ليرة لبنانية (ألف)
المشتركون الذين يدفعون اشتراكات	١٨٤,٧٢١	٨٥.٦	٢٣٧	٣٠.١	٣١,٠٨٥	١٤.٤	٥٥٠	٦٩.٩	٢١٥,٨٠٦	٧٨٧
غير المشتركين وغير المستخدمين	٠	٠	٠	٠	١٢٠,٠٢٩	١٠٠	٢٧٦	٠	١٢٠,٠٢٩	٦٢٣

الجدول ١: فئات استهلاك المياه والنفقات السنوية الرئيسية المتعلّقة بها للأسر اللبنانية

أما بالنسبة للاجئين السوريين الذين يعيشون في المستوطنات غير الرسمية، **تثبت النتائج أن أولئك الذين يستفيدون من المياه التي تقدمها الوكالات الإنسانية يتمتعون بمستوى أعلى من الأمان المعيشي** ، فهم يدفعون كلفة أقل بكثير لتوفير لأسرهم احتياجاتها الأساسية من المياه. وتستهلك المستوطنات غير الرسمية التي لا يغطيها نظام قسائم المياه ما يصل إلى ٦,٤٥٪ من إجمالي إنفاقها على المياه، وهو ما يزيد عن ضعف المعايير الدولية ونسبته ٣٪. وتستهلك المستوطنات غير الرسمية التي يغطيها نظام قسائم المياه ٣,٠٣٪ من إجمالي إنفاقها على شراء المزيد من المياه. **لدى السوريين تصور أفضل لنوعية المياه من نظرائهم اللبنانيين، وذلك بسبب تدابير سلامة نوعية المياه التي تعتمدها الوكالات الإنسانية.**

ويزداد عدد اللبنانيين الذين يعتقدون أن جودة المياه في الشبكة العامة هي غير مقبولة من ١٥٪ في موسم الأمطار إلى ٣١٪ في موسم الجفاف. والواقع أن النتائج تشير إلى أن الأسر السورية في المستوطنات غير الرسمية تعتبر المياه من سائقي الشاحنات التي توفرها الوكالات الإنسانية نظيفة على وجه التحديد لأن الأخيرة ترصد بانتظام نوعية المياه وتضمن وجود مادة الكلور فيها.

وتشير النتائج الى وجود استعداد لدى الأسر اللبنانية والأسر السورية في المستوطنات غير الرسمية لدفع المال لقاء إمدادات المياه العامة ذات الجودة الأعلى والأكثر موثوقية. ومع ذلك، فإن المبلغ الذي هذه المجموعتين على استعداد لدفعه حاليا هو ليس أعلى الا بالقليل من المبلغ الحالي المخصص لشراء المياه لأسرهم. في المتوسط، فإن الأسرة اللبنانية على استعداد لدفع ٢٤,٢٩٨ ليرة لبنانية (١٦ دولارا) شهريا للحصول على إمدادات مياه موثوقة وذات نوعية جيدة، أي ٢٩١,٦٠٠ ليرة (١٩٤ دولار) سنويا أي ما يعادل ١٩ في المئة أكثر من معدل الاشتراك السنوي المدفوع لمؤسسة مياه البقاع. أما الأسر السورية التي تحصل على قسائم فهي على استعداد لدفع متوسط ٢٤٦,٠٠٠ ليرة لبنانية (١٦٤ دولار) في السنة، وفي حين أن هذه النسبة أقل مقارنة بالأسر اللبنانية فإنها لا تزال أعلى من معدل الاشتراك الحالي المدفوع لمؤسسة مياه البقاع. والأهم من ذلك أنه في غياب تحسينات في الخدمات لن تكون الزيادات في التعرفة مقبولة لدى غالبية الأسر اللبنانية.

	متوسط الإنفاق الشهري للأسرة	رسوم الاشتراك الشهرية للمياه العامة	الانفاق الشهري على المياه غير العامة	اجمالي نفقات المياه الشهرية	نسبة الإنفاق على المياه	الاستعداد الشهري للدفع مقابل المياه النظيفة
	ل.ل	ل.ل	ل.ل	ل.ل	٪	ل.ل
الأسرة اللبنانية المتوسطة (دافعة)	١,٥٠٩,١٦٧	١٩,٧٥٠	٤٥,٨٣٣	٦٥,٥٨٣	٤.٣٥	٢٤,٢٩٨
الأسرة السورية في المستوطنات غير الرسمية (تتلقى قسائم)	٦٢٣,٨٣٣	٠	١٨,٩١٧	١٨,٩١٧	٣.٠٣	٢٠,٥٩٦
الأسرة السورية في المستوطنات غير الرسمية (لا تتلقى قسائم)	٥٧١,١٦٧	٠	٣٦,٨٣٣	٣٦,٨٣٣	٦.٤٥	١٤,٨٦٤

الجدول ٢: الاستعداد شهريا لدفع ثمن المياه النظيفة لدى الأسر اللبنانية والسورية في المستوطنات غير الرسمية

٤,٢ العطشى يشربون أوّلا

وتشير الأبحاث إلى أن هناك آراء متباينة بين اللبنانيين حول ما إذا كان ينبغي ربط الأسر السورية بشبكة المياه والصرف الصحي العامة. ويعتقد نصفهم تقريبا أن الفكرة نفسها ليست واردة اطلاقا. ومع ذلك، يشعر أكثر من ٤٠ في المائة من هذه المجموعة بأن بإمكانهم تغيير رأيهم إذا كان هناك تحسن ملموس في توفير إمدادات مياه موثوقة وذات نوعية جيدة لجميع الأسر في المنطقة. وبناء على ذلك، يثبت البحث أن هناك امكانية لقبول حوالي ٧١ في المئة من اللبنانيين في المنطقة بربط الأسر السورية في المستوطنات غير الرسمية بشبكة المياه العامة.

الخوف من التوطين الدائم للسوريين هو السبب الرئيسي لرفض ربط السوريين لشبكة المياه. في حين أن ٦٣ في المئة من الردود السلبية حددت الخوف من التوطين كسبب رئيسي لموقفهم، فإن ٥٢ في المئة من السكان اللبنانيين أيضا يخشون من أن ربط شبكات المستوطنات غير الرسمية بالشبكة قد يقلل إمدادات المياه، في حين أن نحو ٣٢ في المئة ادعى أن اللاجئين السوريين ليس لديهم الحق في الوصول الى المياه في المنطقة على الإطلاق.

٤,٣ تحدّيات وفرص

يعاني البقاع الشمالي من نقص حاد أو حتى غياب كامل للبنية التحتية للموارد المائية وإدارتها. وبصفة خاصة في هذه المنطقة، يتم تحويل المياه لري وزراعة القنب (الحشيشة) خلال فصل الصيف، عندما يقترب موسم الحصاد. وقد أدى عدم تدخل الدولة في توفير حلول قابلة للتطبيق لمتطلبات الري الزراعي في المنطقة إلى حدوث نزاع مباشر بين مستخدمي المياه الزراعية ومستخدمي المياه البلدية، وخاصة في فصل الصيف مع زيادة الطلب على مياه الري وانخفاض الكمية المعروضة.

ويؤدي عدم إنفاذ القانون في المنطقة إلى تعزيز النشاطات غير القانونية حيث يقوم مزارعو القنب بتحويل مصادر المياه إلى محاصيلهم. ويعتبر وجود القوات المسلحة اللبنانية والشرطة في المنطقة إلى حد كبير وجودا رمزيا من قبل المجتمعات المحلية لأن القانون نادرا ما يطبق ضد زراعة المحاصيل غير المشروعة، وينظر إلى القانون العرفي على أنه أقوى من قانون الدولة. وفي المقابل، يعتبر التدخل الحكومي لحل قضايا المياه أيضا رمزيا. تحتكم الاسر في المنطقة إلى النظم القديمة التي تعطي حقوق المياه بحسب الموقع والقرب من مصادرها ويتفاوضون على الوصول الى مصادر المياه من خلال قنوات غير رسمية.

وتنتشر الآبار غير القانونية كوسيلة للمجتمعات المحلية لتلبية احتياجاتها ولكن أيضا للسيطرة على مصادر المياه. تعتمد المجتمعات المحلية اعتمادا كبيرا على الآبار كوسيلة لتحرير نفسها من الضغوط التي يفرضها عليها مزارعو القنب قرب منابع المياه. غير أن صيانة الآبار غير القانونية أصبحت أكثر تكلفة. ومع تراجع منسوب المياه بسبب الاستغلال المفرط، تزداد تكلفة ضخ المياه.

ان البلديات هي المؤسسات العامة الوحيدة التي تحافظ على مستوى معين من المصداقية حول تحسين خدمات المياه في المنطقة. تشارك البلديات بنشاط في توفير خدمات المياه، من خلال إدارة الآبار العامة لكل من الأسر اللبنانية والسورية في المستوطنات غير الرسمية، وفي توفير البنية التحتية العامة للمياه بما في ذلك الأنابيب ومرافق تخزين المياه.

وتشعر المجتمعات المحلية بأن الأموال والقدرات التقنية للوكالات الإنسانية ينبغي أن توجه نحو إيجاد حل أقل تكلفة وبأسعار معقولة لمشاكل المياه التي تؤثر على المنطقة. وعلى هذا النحو، فإن الطريقة الوحيدة التي تقبل بها المجتمعات المحلية في نهاية المطاف مشاركة المياه العامة مع الأسر السورية في المستوطنات غير الرسمية هي من خلال تحسين شامل ومستدام في إمدادات مياه تكون موثوقة وذات نوعية جيدة للمواطنين اللبنانيين.

٥. التوصيات

تهدف مجموعة التوصيات التالية إلى تقديم معايير للإصلاح المستدام، ليس فقط في المنطقة قيد الدراسة، ولكن أيضا من حيث كيفية تحويل أزمة اللاجئين السوريين إلى وضع مربح لكل الأطراف في قطاع المياه في لبنان.

٥,١ توصيات عامة لقطاع المياه في لبنان

على وزارة الطاقة والمياه ومجلس الوزراء العمل جاهدين من أجل التنفيذ الكامل للقانون ٢٢١. فهذا من شأنه ضمان الاستقلالية الادارية والقانونية لمؤسسات المياه في المناطق وتمكينها من إدارة مناطق تغطيتها والعمل على استرداد التكاليف وادارة الموارد المائية بشكل أكثر استدامة.

على وزارة الطاقة والمياه ومجلس الوزراء اتمام خطة وطنية شاملة للمياه. وعلى هذا النحو، ينبغي بذل جهود من جانب وزارة الطاقة والمياه ومجلس الوزراء للعمل من خلال المعطيات الحالية لوضع اللمسات الأخيرة على هذه الخطة وفقا لولايتيهما القانونية كهيئات تنظيمية تحدد السياسة العامة للقطاع.

على وزارة الطاقة والمياه ومجلس الوزراء استكمال وإقرار الخطط الرئيسية للمياه في المناطق التي تعكس بدقة ميزان العرض والطلب على المياه في جميع أنحاء البلاد. فالنظام الحالي الذي يعتمد فيه حساب العرض والطلب على افتراضات ومعلومات ناقصة، يمنع التخطيط الملائم والطويل الأجل. والواقع أن الخطة الوطنية الرئيسية للمياه يجب أن تشمل استخدام المياه الزراعية، فضلا عن ترخيص الآبار غير القانونية، وتثبيت عدّادات لمستعملي المياه العامة. وتماشيا مع االلتزام بتمكين مؤسسات المياه في المناطق، ستحتاج وزارة الطاقة والمياه إلى تكليف مؤسسات المياه بصياغة خطّط رئيسية للمياه ودعمها في إجراء الإصلاحات المطلوبة.

وينبغي أن يشكل التحول إلى سياسات التسعير الحجمي بدلا من التعريفة الثابتة الحالية للتدفق المستمر حجر الزاوية لأي عمل برنامجي في المستقبل. ويجب أن تسير التغييرات في هياكل التعريفات جنبا إلى جنب مع إدخال تحسينات على إمدادات مياه تكون موثوقة وذات نوعية جيدة للمشتركين، وذلك لضمان تحصيل الرسوم وضمان إمداد مقونن وعادل للمياه.

٥,٢ توصيات بشأن توفير خدمات المياه للمستوطنات غير الرسمية

ينبغي على الوكالات الإنسانية الانتقال إلى طرائق توفير المياه المستدامة للاجئين السوريين. وبالتحديد، فإن النموذج الحالي لتوفير المياه للأسر السورية من خلال نقلها بالشاحنات الخاصة ليس مستداما من الناحية المالية، وله آثار سلبية على إدارة الموارد المحلية والوطنية، ويعزز سوق المياه غير المنظم وغير الرسمي. وبدلا من إدامة هذا الوضع، ينبغي تشجيع الوكالات الإنسانية على العمل مع مؤسسات المياه في المناطق من أجل مواءمة تدخلاتها الإنسانية مع سياسات المياه في المناطق والسياسات الوطنية. وينبغي استخدام تدفقات التمويل الإنساني الدولي كفرصة لإصلاح وتطوير البنية التحتية للمياه وشبكات التوزيع القائمة، ومن ثم توفير فوائد طويلة الأمد للمجتمعات اللبنانية والسورية على حد سواء.

ومن أجل اجراء هكذا تحول، تم تحديد أربعة سيناريوهات محتملة:

<u>السيناريو ١</u>: حيث توجد هناك شبكة إمداد عامة تديرها مؤسسات المياه في المناطق، يجب على الوكالات الإنسانية العمل تدريجيا من أجل ربط أكبر عدد ممكن من الأسر السورية في المستوطنات غير الرسمية بشبكة المياه العامة. وينبغي أن يتم ذلك فقط إذا كانت إمدادات المياه الموجودة قادرة على تلبية احتياجات السكان اللبنانيين في المنطقة، والاحتياجات الإضافية للاجئين السوريين في المستوطنات غير الرسمية. وفي حالة عدم كفاية العرض، ينبغي إجراء تحسينات في نظم إمدادات المياه، مثل توسيع تغطية الشبكات، وإعادة تأهيل الشبكات التي تعاني تسرّب تقني في المياه، والتحسينات في قدرة إنتاج المياه (ضخ أو تطوير مصادر جديدة للمياه)، بالاضافة الى التحسينات في سعة تخزين المياه. **وينبغي توفير المياه العامة إلى المستوطنات غير الرسمية من خلال نقاط المياه المركزية في كل من هذه المجمّعات اعتمادا على العدد الإجمالي للأشخاص المقيمين فيها.** يجب تزويد كل نقطة مياه بعدّاد لضخ ما لا يقل عن ٣٥ لتر / شخص / يوم. وسيضمن الضخ الثابت عبر العدّادات تزويد اللاجئين بكميات كافية من المياه مع تجنب أي مخاوف من أن يؤدّي ربط شبكات المستوطنات غير الرسمية السورية بالشبكة العامة الى زيادة استهلاك المياه مما يؤدي بدوره إلى إنتاج مياه الصرف الصحي بما يتجاوز قدرة البنى التحتية القائمة على استيعابها. **ينبغي على الوكالات الإنسانية ضمان استرداد التكاليف لمؤسسات المياه في المناطق بشكل مدفوعات مقابل الكمية المقاسة من المياه المقدمة.** وسيتعين على الوكالات الإنسانية أن تعمل عن كثب مع مؤسسات المياه للاتفاق على نظام تسعير مناسب قائم على العدّادات لتوفير المياه إلى المستوطنات غير الرسمية ، والتوصل إلى اتفاق بشأن نظام فوترة فعال ومنصف يحدد من يدفع ثمن الخدمة فضلا عن السعر وكم مرّة في السنة يتم تسديده.

وعلاوة على ذلك، ستحتاج الوكالات الإنسانية إلى تعزيز الانخراط مع الأسر السورية في المستوطنات غير الرسمية لتحسين ممارسات إدارة والحفاظ على المياه.

<u>السيناريو ٢</u>: حيث توجد شبكة إمدادات المياه العامة ولكنها مدارة مباشرة من قبل البلدية أو لجنة موارد المياه بدلا من مؤسسات المياه في المناطق، ينبغي اعتماد نهج تقني مشابه لسيناريو ١. ولكن لضمان النقل التدريجي للمسؤوليات إلى مؤسسات المياه في المناطق، يتعين التوصل إلى اتفاق بين هذه الأخيرة والبلديات حيث يتم منح البلدية حقوق التشغيل والصيانة لفترة محددة وبعد ذلك يتم تسليم الشبكة الى مؤسسة المياه. بموجب هذه االتفاقية، ينبغي وضع خطة لتقاسم استرداد التكاليف، حيث يتم تخصيص نسبة مئوية من مدفوعات استهلاك المياه لمؤسسات المياه في المناطق. وبالإضافة إلى ذلك، يلزم إنشاء وحدات تقنية داخل البلديات للتنسيق مع مؤسسات المياه. وستقوم هذه الوحدات المحلية برصد أي تحديات في تنفيذ المشروع والإبلاغ عن المشاكل التقنية مثل التسربات أو التشقّقات أو الأعطال الكهربائية. ومن شأن ذلك أن يؤدي إلى إضفاء الطابع اللامركزي على تشغيل وصيانة الشبكة التي أعيد تأهيلها وتوسيع نطاقها، مع الحفاظ على الإشراف والمراقبة من قبل مؤسسة المياه.

<u>السيناريو ٣</u>: حيث أن شبكة إمدادات المياه العامة هي غير متوفرة أو أن التحسينات التقنية كلفتها باهظة ، يمكن استخدام بئرا محليا (من الأفضل أن يكون مرخص لها) أو تطويرها.
ويمكن أيضا استخدام الآبار التي تم تطويرها حديثا لزيادة الطاقة الإنتاجية للمياه في المنطقة التي تعود بالفائدة على المجتمع اللبناني أيضا. ويتعين على المنظمات الإنسانية أن تعمل مع مؤسسات المياه ووزارة الطاقة والمياه لإضفاء الصبغة القانونية على شبكة الآبار غير المرخصة وإضفاء الطابع الرسمي عليها بطريقة مستدامة، وهي حاليا ذات طابع عشوائي وغير مستدام. وعلى غرار السيناريو ١، يجب أن يتم توصيل إمدادات المياه من البئر الموجودة أو التي تم تطويرها حديثا إلى نقطة مركزية للمياه في المستوطنات غير الرسمية. ينبغي على الوكالات الإنسانية ضمان استرداد التكاليف لمؤسسات المياه ، بشكل مدفوعات مقابل الكمية المقاسة من المياه المقدمة.

<u>السيناريو ٤</u>: إذا لم يكن من الممكن ربط المستوطنات السورية غير الرسمية بشبكات المياه العامة أو الآبار المرخصة، يمكن للوكالات الإنسانية عندها الاعتماد على نقل المياه بالشاحنات. ولكن ليس بالطريقة التي تقدّم بها هذه الخدمة حاليا. وبدلا من ذلك، ينبغي للوكالات الإنسانية أن تعتمد جماعيا نهجا يلزم بالتعاقد القانوني سائقي شاحنات المياه بجلب المياه من المصادر التي تديرها مؤسسات المياه الرسمية على أساس تعرفة متفق عليها لكل متر مكعب، تدفع إلى مؤسسات المياه في المناطق.

هذه السيناريوهات المقترحة تحتاج إلى ضمان قبول المجتمعات اللبنانية والسلطات المحلية و مؤسسات المياه في المناطق. وستحتاج الوكالات الإنسانية إلى وضع خطة متكاملة لبناء توافق في الآراء قبل تنفيذ أي من هذه المقاربات لتقديم الخدمات. إن خطة بناء الإجماع أمر بالغ الأهمية لضمان أن الإصلاح على المستوى المحلي سيؤثر في الواقع بشكل إيجابي على حياة المجتمعات اللبنانية التي تعيش في المنطقة. وينبغي أن تستهدف خطة الإجماع الجهات الفاعلة التالية:

البلديات: يجب أن تمثّل البلديات الكيان الأساسي فيما يتعلّق ببناء توافق في الآراء لأنها تتمتع بشرعية شعبية ولديها علاقات متينة مع أصحاب السلطة المحليين، مثل الأسر الكبيرة والعشائر. ومن خلال هذه العلاقات تؤمّن البلديات صلات ضرورية مع الأحزاب السياسية التي تتطلب ولائها للمحافظة على السلطة على الصعيد المحلي. وإذا كانت البلديات تقود المبادرات المقترحة، فسيصبح من الصعب أن يضع المعطّلون المحتملون لأي مبادرة لا يتفقون عليها أن يضعوا عقبات في طريقها.

العائلات المحلية: يمكن للبلديات أن تكون صلة وصل حاسمة مع الأسر والشبكات المؤثّرة التي تتحكّم بحقوق الري والحقوق المتعلّقة بمصادر المياه كما يراها البعض.

التوافق بين البلديات ومؤسسات المياه: يجب على الوكالات الدولية أن تقود عملية حوار وتوافق بين البلديات ومؤسسات المياه الرسمية. ومن شأن عقد اجتماعات منتظمة ومذكرات تفاهم بين الوكالات الدولية وهذه المؤسسات الجوهرية أن تكون مقاربة حاسمة لتنفيذ الإصلاحات المطلوبة، وضمان المشاركة المحلية وتبادل الخبرات المطلوبة.

المشاورات العمومية: من أجل استكمال بناء التوافق في الآراء المذكور أعلاه، يتعين على الوكالات الدولية العمل مع البلديات لتعزيز القبول المحلي من خلال المشاورات العامة. ويمكن إجراء هذه المشاورات من أجل رصد مواقف الرأي العام والمساعدة في دفع خطة الإصلاح قدما.

٥,٣ توصيات محددة للبقاع الشمالي

تشكل المنطقة قيد الدراسة مثالا نموذجيا تثبت كيف أن كل منطقة من مناطق البلد تتطلّب نهجا عمليا ومحليا لمعالجة القضايا التي طال أمدها على نحو يؤدي إلى تحسين إمدادات المياه لجميع المجتمعات فيها. ومن أجل حل أزمة المياه في البقاع الشمالي، ينبغي للوكالات الإنسانية أن:

تهدف إلى تنفيذ خطّة موّحدة لتطوير الري تقودها البلديات المحلية، والمصلحة الوطنية لنهر الليطاني وكذلك المشروع الأخضر ووزارة الزراعة. ومن خلال تزويد المنطقة بالهياكل الأساسية اللازمة لتلبية الطلب الزراعي والعام على المياه في القرى القريبة من منابع المياه، ستكون المياه متاحة للاستخدام العام في القرى المتواجدة باتجاه المصب. وينبغي أن تعمل خطة التنمية على زيادة كفاءة انظمة الري من خلال استثمارات كبيرة في تقنيات الري والري بالتنقيط ومرافق تخزين مياه الأمطار.

وينبغي أن تأخذ التدخلات في الاعتبار التوازن الفعلي للمياه عن طريق رسم خرائط إمدادات المياه لجميع مصادر المياه المتاحة والطلب على المياه من جانب جميع مستخدمي المياه، بما في ذلك البلديات وقطاع الزراعة. انه فقط بعد ذلك يصبح من الممكن الاستثمار بشكل ملائم في تحسين نظم السعة التخزينية للمياه والري، والتي تسهم في تحسين توازن الماء وبالتالي زيادة توافر المياه للاستخدام العام. ومن شأن تلبية حاجات المياه للأسر في قرية دار الواسعة مثلا حتى يتمكنوا من الحفاظ على إمدادات كافية لاستخدامات الري والاستخدامات السكنية أن تكون الخطوة الأولى نحو إطلاق امدادات كافية لاستيعاب الاحتياجات من المياه العامة في اتجاه المصب.

وضع خطة التوافق والتواصل مع إشراك المجتمعات المحلية والبلديات بالتشاور مع مؤسسة مياه البقاع ينبغي أن يكون أساس أي نهج. تحتاج القرى التسع قيد الدراسة أن نرى نتائج ملموسة من أجل السماح للاجئين السوريين للوصول إلى المياه العامة. في البداية، يجب ان تحاط القرى علما بخطة بناء البنية التحتية قرب المنبع للافراج عن المياه إلى قراهم. في نفس الوقت وتحت إدارة مؤسسة مياه البقاع، ينبغي تشجيع البلديات المحلية لتأدية دور المنفذ لمشاريع البنية التحتية لقطاع المياه في المستقبل وفقا لقانون البلديات.

سوف نحتاج للتركيز بشكل خاص على تقليل التسرّبات من الشبكة، والتي تمثل ما يصل الى ٥٠ في المئة من جميع إمدادات المياه العامة. وهذا الترتيب سيساعد على تعزيز الثقة المحلية

وملكية العملية، وتلبية المطالب الأساسية للبلديات لإجراء إصلاحات في البنية التحتية وزيادة شعبيتها بين الناخبين المحليين عندما تحدث زيادة في إمدادات المياه. من خلال خلق هذا التوافق يمكن للبلديات أيضا أن تشارك في عملية تثبيت وصيانة العدّادات خلال إصلاحات البنية التحتية.

مرة أخرى، ينبغي التأكيد من البداية على أن الغرض من العدّادات ليس هدفه تحصيل التعرفة بحسب الاستهلاك الحجمي بل لإدارة العرض والطلب كجزء من خطة موحدة لإدارة الموارد المائية. ان وجود هكذا بنية تحتية سيساعد في بناء توافق في الآراء حول الفوترة الحجمية لاستهلاك المياه لدى الأسر السورية في المستوطنات غير الرسمية.


OXFAM

INTRODUCTION

Lebanon enjoys a favourable water endowment, however throughout the country water resources are limited in terms of both quantity and quality, as a result of mismanagement, ageing infrastructure, inadequate investment within a confessional power sharing system, coupled with depleting water resources and climate change. The influx of some 1.5 million Syrian refugees since 2011 has put further strain on water resources incurring an increased demand on water provision by an estimated 8 to 12 percent.[21] This additional demand on the already limited public water supply has, over the years, become a source of contention in some localities between Lebanese citizens and Syrians refugees. The additional demand has also meant that existing and alternative water sources are being overly exploited to make up for the shortfall. The situation is particularly pressing during the dry summer months when water demand spikes, and public water supply drops by roughly half, from 13 hours per day to around 7.6 hours.[22] Communities have thus become more dependent on alternative sources such as water delivery by truck, an unregulated parallel water supply market that has further weakened the formal water providers. This has moreover resulted in Lebanese consumers spending an additional 200 to 300 percent more than public water fees to secure water. [23]

Syrian refugees living in informal tented settlements (ITS) are in an especially difficult position,[24] being at the back of the proverbial queue for public water and the unregulated water sources that are tapped by Lebanese, who unsurprisingly believe they have first drawing rights. To alleviate the problem of water sourcing for refugees, humanitarian aid agencies have been delivering water by trucks. While this has ensured Syrians have adequate and, importantly, non-contaminated water, it has come at a financial and environmental cost. Water sources are potentially being depleted in an unregulated and unsustainable manner, and aid agencies are spending considerable sums to provide a service that is not sustainable in the short or long run. For instance, Oxfam uses a voucher system to provide every refugee that does not have access to a safe and adequate water source with one cubic meter every month at a cost of some USD6.5/m3, which is estimated to be more than fourteen times the price of water from the public network, estimated at USD 0.43/m3 in the Bekaa region.[25]

As such, a reformulation of water service provision to achieve a win-win outcome for all concerned parties is required: For the Lebanese that are already experiencing water shortages and having to pay a high cost for water deliveries, for Syrian refugees dependent on local provision in whatever form it comes and that often pay out of pocket for water deliveries, and the aid agencies that are battling against the odds to source needed funds to assist vulnerable communities while operating within restrictive government policies and dealing with social tensions over water needs. The current arrangement has resulted in all parties unnecessarily sourcing water at a high cost and inadvertently empowering a parallel water market rather than the formal water service provider. Therefore in order to provide a safe and adequate water supply to all water users within the country, improving the estimated 50 percent of the water network that is in need of constant repair and maintenance, and lowering the rate of unaccounted for public water that is estimated at around 48 percent[26] is an essential starting point. However, this is easier proposed than done within the complex political-economic environment in which sectarian, regional and local particularities need to be taken into consideration while the country's legal framework is equally complex. Such complexities need to be identified to resolve the obstacles faced by the Lebanese, Syrian refugees, and the humanitarian aid agencies involved in the water matrix.

This study looks at building an evidence base on the socio-economic causes and impacts of current water service provision modalities to both Lebanese residents and Syrian refugees living in Informal Tented Settlements (ITSs), taking nine villages in North Bekaa as a case study area. Furthermore, these findings are utilised to unpack the obstacles to providing more sustainable solutions, namely extending piped public water to ITSs, by focusing on the financial, social and legal feasibility requirements. In light of the study findings, a multi-level governance approach will be recommended to address the water supply to all concerned communities.

RESEARCH METHODOLOGY

The feasibility assessment was built upon an action-oriented empirical research methodology specifically oriented to analyse institutional gaps, community perceptions, individual water expenditure and willingness to pay. The field research was conducted from April 1, 2016 to June 10, 2016. The methodology comprised of an initial desk review of all relevant development and academic literature. Data collection activities comprised of a total of 27 interviews, two Perception and Water Provision Dynamics Surveys with Syrian and Lebanese communities, and eight focus group discussions (FGDs) with relevant local stakeholders such as Lebanese community residents, Syrian ITS dwellers, municipality leaders, land-owners and water truckers. Interviews were also carried out with legal experts to better analyse the country's legal framework.

2.1. COMPREHENSIVE LITERATURE REVIEW

The research team conducted an in-depth adaptive literature review of all internal Oxfam project documents and reports, in addition to academic literature concerning the political economy of water provision in Lebanon and the various existing institutional and legal frameworks. The literature review proceeded to consolidate and refine its analysis during the field research phase with particular emphasis on:

- Existing legal and policy frameworks and comparisons with actual practices.
- Existing academic literature on Lebanon's political economy of water resource management/water administration, agriculture, irrigation and crop production as well as an analysis of ecological challenges focusing on water.
- Cost recovery mechanisms and water tariff systems in other parts of Lebanon, in addition to other potential financial mechanisms, such as vouchers and cash.
- Legal analysis of the needed permissions at the municipal, provincial and central government level to proceed with construction work.
- Review of decrees and laws that form the legal basis for governmental resistance to ITS's public water supply connection.
- Zoning regulations that affect water provision to ITSs, if available.

2.2. PERCEPTION AND WATER PROVISION DYNAMICS SURVEYS

The Perception and Water Provision Dynamics Surveys comprised of some 99 questions which were conducted with Syrian ITS residents and Lebanese communities. The surveys were based on a representative sample of 364 people for ITS and 378 people for Lebanese communities. The surveys provided an examination of Lebanese and Syrian communities' perceptions towards sharing water resources, impact of public water provision on ITS household income and wellbeing, and a comparative analysis of the Lebanese communities' and Syrian ITS residents' willingness to pay for public water supply.[27]

To conduct the Perception and Water Provision Dynamics Surveys for ITSs, the research team adopted an initial stratified sampling technique with two-stage cluster sampling method. The sample size was initially set at the level of the village hosting ITSs and followed by selecting clusters among the different ITSs within the village using a simple random sampling method. ITSs with less than four tents were excluded from the sample. ITSs were geo-located and validated by field teams.

The Perception Survey and Water Provision Dynamics Survey for Lebanese communities used an initial stratified sampling method at the level of villages. A random walk sampling was used to select households. Google Earth imagery and GIS software were employed to develop the sampling frame. Household selection with the village's area was randomly selected and assigned coordinates which were then located by the field team. The village area was defined by approximate polygon of village geographical extension and KML files were produced to guide enumerators.

The Perception and Water Provision Dynamics Surveys were treated and processed using research and data processing software (SPSS 20.0). Quantitative data underwent cross-tabulations across socio-economic information and were run in the form of tables on which percentages were compared, and graphs were created accordingly. Quantitative analysis delved into these results in search of further significance that could highlight particular findings, and build recommendations accordingly.

2.3. KEY INFORMANT INTERVIEWS

A total of 24 key informant interviews from various stakeholder categories were conducted by the research team. Interviewees included municipal leaders, representatives from political parties, Water Establishment officers, Ministry of Water and Energy representatives, and water policy experts Interviewees were selected using the snowball method which is a non-probability sampling technique.

2.4. FOCUS GROUP DISCUSSIONS

Eight FGDs were conducted with a variety of stakeholders to validate the results of the quantitative surveys and better inform the analytical process as well as the subsequent findings and recommendations. FGDs took place according to a purposive, stratified sampling method disaggregated on the basis of gender, employment and the creed of the community.

Data from FGDs was employed in three interconnected ways: Responses during FGDs were qualified for each focus group question stemming from the discussion guide. Then, each qualification provided insight into how responses meet the objectives of the research. Information from Key Informant Interviews was used to underline contextual elements and elucidate power players' positions so as to provide a complete and holistic understanding of the dynamics among and between different players vis-à-vis ITS water provision. (For the Full Methodology please see Annex A).

3 BACKGROUND & CONTEXT

3.1. POLITICAL ECONOMY OF LEBANON

Lebanon's confessional political structure ensures the distribution of decision making and, in turn, resource allocation according to sectarian quota, with relative weights accorded to each sect.[28] This principle was enshrined, but unwritten, in the 1943 National Pact which allocated the three top positions in the state to specific sectarian communities, whereby the President of the Republic is a Maronite Christian, Prime Minister is a Sunni and Speaker of Parliament is a Shiite.[29]

The Taff Accord of 4 November, 1989, which amended the Lebanese Constitution and effectively ended the 1975-1990 Civil War, served to further entrench the sectarian formula of 1943 by dividing the political power and institutional responsibilities.[30] In essence, the Taef Accord transferred the executive power from the Maronite Christian Presidency to the Council of Ministers (COM) as a collective body whose constituency is divided equally between members from Muslim and Christian sects.[31] According to the Constitution decisions should be made by consensus but if consensus cannot be reached, decisions can be taken by simple majority as long as there is quorum (two-thirds attendance). In practice, COM decisions are overwhelmingly taken by unanimous decision.[32]

This concentration of effective power in the hands of the COM has resulted in a distribution of public funds according to sectarian quotas with little regard for economic logic or social needs.[33] As a result Lebanon has witnessed growing inequality and disparity across development indicators and geographic regions, particularly in terms of rural and urban dimensions.[34] The overall poverty rate in Lebanon is estimated at 27 percent according to the latest nationally representative survey which took place over a decade ago.[35] Even according to those figures, rural areas such as the Bekaa and the North register the highest poverty rates (See Figure 2). According to the latest estimates, poverty rates are expected to have risen by at least 4 percent since the onset of the Syrian refugee crisis.[37]

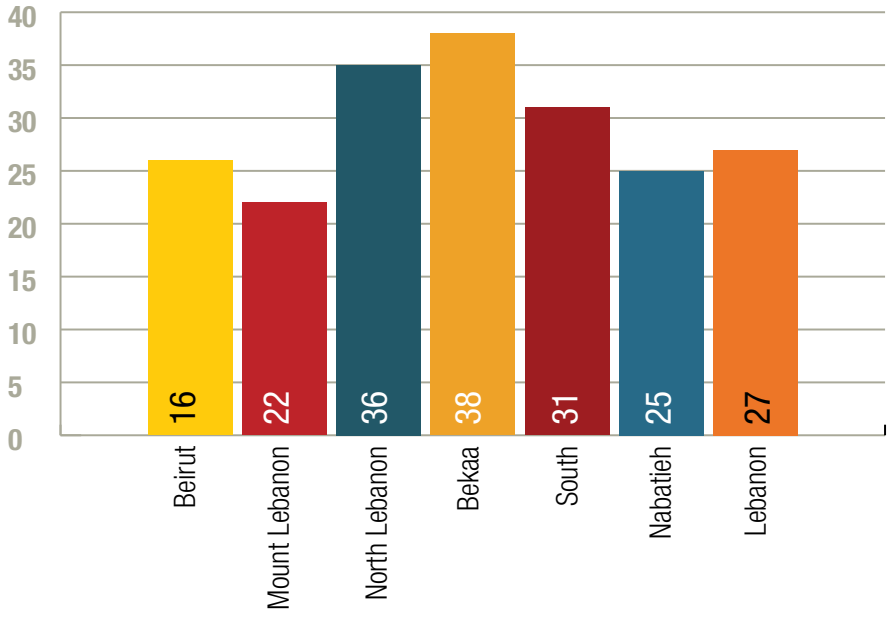


Figure 2: Geographic Poverty Rates in Lebanon (source: CAS)

In addition, public debt weighs heavily on the state's ability to finance basic services. Due to the fact that the government borrowed to finance post-war reconstruction at interest rates that peaked at around 35 percent, mostly from local banks, the state was saddled with a debt burden that stymied public sector investment in basic services.[38] This inefficient and unproductive spending on post-war reconstruction, coupled with an inability to rein in waste and corruption, has led to a peak debt-to-GDP ratio of 185.2 percent in 2006 and stood in 2016 at the third highest rate globally, behind only Greece and Japan, at 148.7 percent.[39,40]

Unlike Greece however, the majority of Lebanon's debt is held by the local banking sector and the Banque du Liban, Lebanon's central bank.[41] Interest payments on Lebanese debt totalled USD 4.4 billion, or around 37 percent of total government expenditure at the end of 2016.[42] By comparison, the amount the treasury paid to municipalities in 2015 totalled just USD 620 million.[43] At the same time, elite capture of the local banking sector is rife. Around 32 percent of the banking sector's assets are owned and/or controlled by current or former politicians: A total of 18 out of the top 20 banks (accounting for 99 percent of assets) have major shareholders linked to political elites and 15 out of the top 20 banks have the chair of the Board linked to current politicians.[44] While a substantial portion of Lebanese taxpayer's money goes to service locally owned debt, public and municipal services are slashed and continue to operate at substandard levels.

The lack of any true reform to address public service deficiency and funding can also be seen as a reflection of recurrent political gridlock and a law-making process that has been consistently delayed.[45] The Lebanese Government has not approved a national budget since 2005.[46] In the absence of a national budget, the state spends money based on the principle of the 'twelfth', which maintains a baseline for all expenditure to be the last month of the last year for which there was a budget in place.[47] Of course, the country has been spending and borrowing since 2006. Extra budgetary spending is processed through treasury advances, which are enacted by a cabinet decision and remain outside a budgetary framework with no oversight.[48]

3.2. EFFECTS OF LEBANON'S POLITICAL ECONOMY ON THE WATER SECTOR

The implementation of water laws and corresponding reforms should be understood in the framework of the power-sharing system and its dynamics of power allocation. For instance, Law 221 was part of the liberalization process championed by the government of former Prime Minister Rafic Hariri during the mid-to-late 1990s. These government promoted privatization as a tool to enforce financial efficiency and investment sustainability.[49]

To cope with a ballooning budget deficit during reconstruction, the Lebanese government increasingly began to rely on foreign aid flows that came in the form of soft loans, many of which were contingent on a reform package targeting several public services sectors under the Paris I, II, III agreements.[50] In line with the principle of sustainable development and good governance, water sector reform through integrated water resource management, decentralization and commercialization of water services was promoted by international donors.[51] However, despite international donors' recommendations, privatization was not adopted as part of water reforms because Lebanon's political class failed to reach a unanimous agreement.[52] Many leading politicians at the time did not see the benefit from merging the 21 water authorities into four Regional Water Establishments (RWEs) as stipulated in Law 221, as this act was seen to potentially threaten local politicians' control over their region's resources.[53] Instead, public private partnerships (PPP) were proposed as a halfway solution, which encourages delegation, decentralization, and financial sustainability, while maintaining public sector control over major institutions.[54]

However, the first attempt to implement a PPP in Lebanon's water sector between 2003 and 2007 in its second city of Tripoli demonstrates how the local governance system is "deeply marked by clientelism and cronyism".[55] Accordingly, the project was met with resistance by local politicians because it threatened to sever the link between local politicians and their population by replacing it with a functioning regional water establishment. Instead, in order to maintain their position as power brokers, local political elites use water authorities to distribute jobs and increase patronage while exercising control over the allocation of public works contracts.[56]

Indeed, the full implementation of Law 221 in its current form would limit the possibilities of intervention by turning the RWEs into financially autonomous entities, which are not fully controlled by the COM or the MoEW.[57] According to Law 221's bylaws, the MoEW has 'administrative supervision' over the RWE insofar

as 'orientation and recommendations'.[58] However, the MoEW can obstruct the ratification of decisions no more than one and a half calendar months, after which decisions are ratified by default. Only under certain conditions the COM can, however, issue the decision to dismiss the director of a RWE.[59]

In practice, however, RWEs have not been granted the administrative and financial autonomy necessary for them to build their capacity to manage water service provision; hence RWEs remain financially and administratively dependent on the MoEW and other actors such as the Council for Development and Reconstruction (CDR), with municipalities filling in the service provision gaps.[60] Additionally, institutional reforms that envision a nationwide metering programme and consumption based tariffs have not materialized.[61] Transitioning to volumetric pricing policies instead of the current flat rate, would incentivize users to conserve water and assist RWEs' cost-recovery schemes and financial autonomy.[62] However, the policy decisions to make this change lie in the hands of the MoEW, which has not adopted such measures.

3.3. WATER SUPPLY AND DEMAND

Compared to its regional peers, Lebanon enjoys a favourable water endowment estimated at an average of 926 cubic meters per capita per year (m3/capita/year), which places Lebanon accordingly just under the water scarcity line of 1000 m3/capita/year.[63,64] Per capita water supply figures, however, should be read with caution as Lebanon does not maintain accurate population figures, not least since an estimated 1.5 million Syrian refugees have entered the country since 2011. In fact, the 926 m3/capita/year does not take into account the recent refugee influx and supply figures published after the onset of the crisis vary. For instance, the country's National Water Sector Strategy (NWSS) issued in 2012 suggests a total water supply of 8.6 billion cubic meters per year (BCM/year) in 2009 while a more recent assessment conducted by the United Nations Development Programme (UNDP) in 2014 puts the total average annual water supply at about 9.9 BCM/year.[65]

Other estimates prior to the refugee crisis have put Lebanon's water supply as high as 10 BCM whereby estimates of total exploitable water also vary.[66] This is perhaps not surprising given that Lebanon's water resources are seen to be diminishing as a result of climate change while dry years are becoming more frequent, taking place in two to three year intervals.[67]

The NWSS estimates renewable water resources around 4.1 BCM/year in 2010, of which 2.7 BCM/year on average remain in Lebanon. Estimates for the total exploitable volume range from 2 to 2.2 BCM/year of which between 1.3 and 1.5 BCM/year are thought to be used for tourism, irrigation, industry and domestic water supply.[68]

Groundwater recharge rate is estimated at 0.5 BCM and Lebanon, while annual exploitation of groundwater is estimated at between 0.6 and 0.7 BCM.[69] The main cause of this overexploitation is and remains the largely unregulated drilling of private wells for domestic, industrial and irrigation use. The NWSS states that about 43,000 private wells (experts estimate the number to be significantly higher) extract over 0.44 BCM/year compared to the government's 650 public regulated wells (accounting for around 0.27 BCM/year).[70]

As far as consumption of public water for domestic use is concerned, the latest official projections from 2010 use demand estimates between 0.16 m3/capita/day (58.4 m3/capita/year) in rural areas and 0.18 m3/capita/day in urban areas (65.7 m3/capita/year).[71]

The implementation of the gravely required infrastructure and organizational reforms has experienced repeated delays. Although investments in water supply infrastructure averages around USD 100 million annually, results have been disappointing.[72] The current connectedness to the water network averages around 79 percent with significant regional differences, well behind several countries in the region such as

Morocco (90 percent) and Jordan (98 percent).[73] At the same time, the water distribution network remains inefficient as RWEs have little capacity to monitor water production and consumption.[74] Unaccounted for water is at a record high of 49 percent of water supply and the development of new water sources has been constrained by technical difficulties, popular opposition and budget constraints.[75,76]

3.4. REFUGEE CRISIS EFFECTS ON WATER PROVISION

Between the onset of the Syrian crisis in 2011 until the last quarter of 2014, Lebanon received an estimated 1.5 million refugees, the highest per capita in the world.[77] Between 2013 and 2014 the United Nations High Commissioner for Refugees (UNHCR) processed an unprecedented 47,000 refugees per month.[78] Lebanon currently hosts 1,048,275 registered refugees constituted into 253,302 households.[79] Officially, the Lebanese government estimates that both registered and unregistered Syrian refugees in the country number around 1.5 million.[80] With an estimated birth rate of some 19 per thousand per year, or around 28,500 persons per year using government estimates.[81]

Because Lebanon has not established formal refugee camps, Syrian refugees are dispersed throughout the country in 1,700 localities, which places particular stress on local economies and infrastructure.[82] In total 71% of Syrian refugees live in residential buildings (houses or apartments), while 12% live in non-residential structures (worksites, garages and shops) and the remaining 17% dwell in informal tented settlements.[83]

From the perspective of water provision, the Syrian refugee influx is estimated to have increased the demand for water by 8 to 12 percent by the time the flow of refugees stemmed at the end of 2014.[84] The figure is equivalent to a total increase of some 0.04 to 0.07 BCM by the end of 2014 with the Bekaa accounting for the highest share of this increase among regions.[85] On average, across the country 30 percent of Syrian refugees used piped public water as their main water supply source followed by wells (24 percent) and public reservoirs/standpipes (22 percent).[86]

3.5. WATER PROVISION UNDER THE REFUGEE RESPONSE

Refugees who reside in shelters, finished and unfinished buildings, can receive piped water to their homes. However, for the estimated 16 percent (2014) of those living in makeshift Informal Tented Settlements (ITSs), alternative means of water and wastewater service provision need to be put in place.[87] Refugees commonly rent the land where their settlements are then set up from Lebanese landowners with individual households, or groups of households, renting a plot for their living structure. Commonly one person from the settlement plays the role of intermediary with the landlord, and is known as a shawish.[88] Typically, the agreement to allowing a refugee household to rent plots of land are oral agreements which are terminated at the end of an agreed upon period or in case of non-payment.[89]

Legally however, only registered rights are enforceable against third parties.[90] To be registered, a building needs to meet the specifications of the building code as well as acquire a building permit from the municipality. The latter requires that those wishing to build on any land engage in a process: “submitting property records, evidence of the consent of all property owners, full drawings certified by a registered architect and engineer, a recent plan of all projected and approved planning regulations in the area, and the payment of various fees.”[91] In addition, the law also mandates that building structures that are not constructed in accordance with the law should be demolished.[92] For ITS residents, this means they have no legal claim to their dwellings nor can they prevent the authorities from demolishing their homes.

As such agreements do not commit landowners to provide services to refugee households, ITSs commonly lack basic sanitation facilities and access to safe water.[93] Along with help from the local community, international humanitarian organizations have stepped in to assist with shelter construction and provision of water to the majority of ITSs. These agencies work under the umbrella of the Lebanon Crisis Response Plan

(LCRP), which is a joint UN-Lebanese government approved framework to coordinate assistance directed at refugees and Lebanese community residents. As of June 2017, 839,151 individuals out of 1,765,000 targeted (47.5 percent) under the LCRP have been provided with sufficient water supply at an adequate and sustained level of service.[94] Similarly 164,742 individuals have access to appropriate sanitation facilities and services in comparison to the intended target at 194,462.[95]

The Bekaa region houses the largest number of Syrian refugees with a total of 357,303 or around 35.6 percent of Lebanon's total refugee population.[96] The region already experiences far more shortages in supply of public water than any other region in the country.[97] In addition, some 50 percent of Syrian households in the Bekaa continue to lack access to improved sources of drinking water.[98]

Compared to other sectors operating under the LCRP, the WASH sector has been relatively successful, even though by end of 2016, only $90 million out of $390 million requested was received.[99] A total of 800,000 people have received with water and sanitation services, which constitutes a total of 37 percent of the total targeted.[100] What is more, humanitarian response reapired and extended up to 9.5.5 km of water pipes and improving 4034 m3 of water storage infrastructure.[101] Lebanon's sector standards were set at 35 l/p/d, more than double the SPHERE Standard of 15 l/p/d.[102,103]

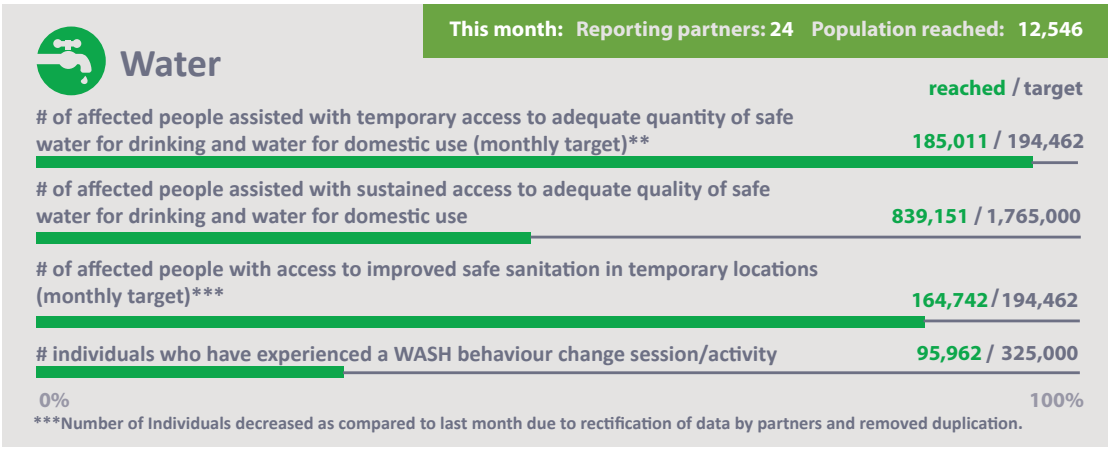


Figure 3: WASH Working Group Targets, July June 20162017.

International agencies meet the water provision needs of vulnerable populations through a variety of interventions. First and foremost, supplemental water provision is delivered through a costly trucking system to the majority of the most vulnerable households (two thirds of 2015 appeals have been spent on water trucking).[104] Importantly, the LCRP is looking to find more workable and less costly solutions for water provision than water trucking.[105]

In the same vein, humanitarian aid agencies, such as Oxfam, provide thousands of refugees with water safe for drinking and domestic use. Under this scheme, Oxfam contracts water truckers to provide regular water supply to ITSs using a voucher system whereby every refugee is entitled to one cubic meter worth of vouchers per month. Only for comparison, Oxfam pays around 6.5$/m3, which is estimated to be more than fourteen times the price of water provision through the public network, estimated at 0.43 USD/m3 in the Bekaa region.[106]

GOVERNANCE OF WATER SERVICE PROVISION IN LEBANON

Inadequate supply, increasing demand, costly delivery and dwindling resources can in one way or another be attributed to water resource governance issues at almost every level. In fact, Lebanon's only real water sector strategy (the National Water Sector Strategy – NWSS) was endorsed at the executive level by a previous cabinet but has no legal basis in Lebanese law and can be easily rescinded by another government. While the NWSS remains an important framework for reform, its implementation has been constrained by weak accountability and continuous delays in the implementation of Law 221 that guarantees the institutional and legal autonomy of the RWEs. Humanitarian interventions that do not take into consideration the governance of water service provision in Lebanon run the risk of running unsustainable modalities of water provision that increases pressures on natural and institutional resources. However, if approached correctly they can help empower Lebanese institutions.

4.1. LEGAL AND REGULATORY FRAMEWORK FOR THE WATER SECTOR

Lebanon's main water laws, specifically Law 144/1925 for the protection of surface and groundwater, and Law 320/1926 for the protection of catchment areas, are all based on the Ottoman Mejalla code and later French Mandate laws. The Ottoman Mejalla laws enshrine two Islamic precepts that include the right for watering cattle and irrigating land (haqq al-shirb) and the right to drink water (haqq al-shafa).[107] The body of laws consider surface and groundwater as part of the public domain and are not to be sold for profit except for rainwater collected by individuals, and natural water sources found in private lands as long as the extraction output is less than 100 m3.[108] Unregulated private well drilling is a serious issues, as the number of unlicensed private wells is estimated at 43000 (extracting over 0.44 BCM/year), compared to the government's 650 public regulated wells (accounting for around 0.27 BCM/year).[109] Laws that regulate the drilling of wells on private lands possess several loopholes and a lack of enforcement which has led to serious violations as individuals dig illegally in many parts of Lebanon.[110]

Lebanon has ratified relevant human rights conventions such as ICESR, ICCPR and CEDAW in addition to several declarations such as Agenda 21 and the UN Millennium Declaration which all stress the right to water.[111] While the principle of a human rights approach to water is politically accepted and customarily guaranteed, Lebanon has not incorporated this acceptance into its legal and administrative frameworks in a meaningful way as thousands of citizens cannot access the public water systems.[112]

4.1.1 LAW 221/2000

Law 221 on the organisation of the water sector, adopted by Lebanon's parliament in 2000 is, in large part, the main law to which regulations around water policy should refer. Law 221 was later amended by Law 241/2000, which merged the previously mandated North and South Bekaa Water Establishments into one. Law 377 of 2000, amending Law 221 of 2000, sets the governance structure for handling wastewater between the MoEW and the RWEs. All these three laws unified 21 water authorities and 200 water committees into four autonomous RWEs – North Lebanon, Bekaa, Beirut and Mount Lebanon, and South Lebanon.[113] The Litani River Authority (LRA) was also given the status of a RWE and tasked with managing hydrometric gauge stations on all the Lebanese water sources under its jurisdiction.[114]

Law 221/2000 was intended to improve overall governance and efficiency of the water sector by empowering RWEs as well as defining the main duties of RWEs to:

1. Carry out studies, implement, invest, maintain and renew water projects for the distribution of public water according to the General National Master Plan for Water or according to a MoEW Resources permission to use a public water resource.
2. Propose tariffs for drinking and irrigation water services taking into consideration general socio-economic conditions.

3. Control the quality of the drinking and irrigation water.[115]
4. At the same time, the Law imbues the MoEW with wide ranging powers over the sector including to:
    a. Collect, control, meter, establish statistics and study water resources, to evaluate water needs and fields of its usage across all Lebanese territory.
    b. Control the surface and underground water quality and identify standards to be applied.
    c. Establish the general design and planning for hydraulic resources allocation and repartition for drinking and irrigation water resources at the national level, as well as to prepare the National Water Master Plan and update it continuously.
    d. Design, study and implement large water facilities and public works such as dams, artificial lakes, tunnels, watercourses and water networks.
    e. Carry out control and tutelage over public establishments and other bodies operating in the water field.

In 2005, four decrees 14596, 14602, 14600 and 14598, on the internal regulation of the BWE, NLWE, SLWE and BWE respectively, were enacted, which defined the mandates and bylaws of each RWE including size, management structure and personnel size.[116]

4.1.2 BOREHOLES' REGULATING FRAMEWORK

Decree 14438/1970 regulating water exploration and usage dictates that drilling wells and their operation requires ministerial authorization.[117] Decree 680/ 1998 for the preservation and protection of boreholes, affirms that licenses should be submitted to the MoEW, General Directorate for the Exploitation of Water and Electricity.

Decision 118/ 1977, necessitates that requests for licenses for water exploration and usage (drilling wells) have to be registered by decrees or vouchers of prior knowledge.[118] The decision requires a report from one of the firms that are approved by the ministry and which can provide oversight and auditing services. According to Decision 118/ 1977, the firm must affirm the exact location of the excavated well and ensure an adequate mapping of other wells or springs within a 2,000 meter radius.[119] The MoEW considers the report valid only when the firm confirms that it will undertake the excavation works on the location. After the finalization of the drilling, the request is then referred to the Authority of Geology and Groundwater in the MoEW for examination and technical study finalization. The request is then referred to the local RWE and the Expropriation Authority at the MOEW.[120] Article 2 of Decision 18/2012 stipulates that in case drilling reached 150 meters but no water source was found, the owner must immediately stop drilling and apply for a license by decree.[121] The decision also gives the MoEW the right to prohibit drilling in a 350 meter radius from any public well or seasonal spring, and in cases where it has been technically proven that drillings can negatively impact a public water source.[122]

4.1.3 DRAFT WATER CODE

Based on a French Law, the draft Water Code was prepared and approved by the COM in 2005 and still awaits ratification by parliament.[123] The Code envisions a National Council for Water headed by the MoEW as a regulatory authority for the water sector, mandated to prepare a six year development plan for the water sector. As the sector regulator, the council would issue licenses to private companies permitting them to engage in the management of potable water, wastewater and irrigation projects under a PPP scheme, which would need to be approved by cabinet.[124]

4.1.4 NATIONAL WATER MASTER PLAN

The draft National Water Master Plan (NWMP) is a set of regional plans to map and plan activities for regional water establishments. The plans are being put together with the support of international development agencies and seek to provide an overview of capital investments as well as priority actions to reach full

or near full coverage of potable water and wastewater as well as organized irrigation practices up to year 2035.[125] It is important to note that these plans, thus far, do not take refugee needs into consideration. The Bekaa Water Master Plan, whose status is disputed and awaits approval from the MoEW, estimates that by 2035 some 4,308 km of distribution networks would be required, constituting replacement or rehabilitation of one third of the existing 3,003 km of network as well as construction of 1,305km of network between 2015 and 2035, to serve the Bekaa area with adequate water and wastewater services.[126] In sum, the cost of these projects would be around USD429 million only for water supply infrastructure excluding the USD 113 million already committed by the CDR, Lebanon's quasi-independent donor-funded reconstruction agency (See Figure 4).[127] Wastewater infrastructure alone has been estimated to require around USD 714 million, including wastewater treatment plants and networks.[128]

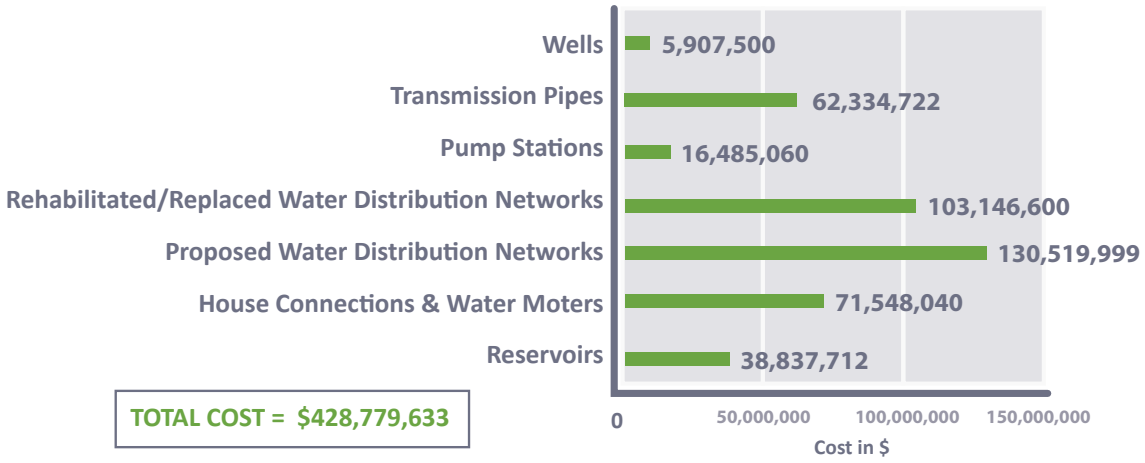


Figure 4-The Distribution of Total Costs for Water Facilities and Networks in The Bekaa by Year 2035

4.1.5 WATER DISTRIBUTION

The legal framework governing water distribution at the local level in Lebanon is typified by a mixture of applicable laws and customary practices which have little or no legal basis, mostly as a result of the fact that RWEs have not fully taken over their mandates.[129]

Law 221 does not contain provisions giving municipalities any authority regarding water resource management. However, the Municipal Act which comes in the form of Decree-Law 118/1977 mandates that municipal councils be "in charge, without limitation" of water projects in their municipal jurisdictions.[130] Moreover, municipal councils are also legally mandated to issue construction permits and certificates of completion for the routing of water and to authorize the excavation of public streets in order to lay water and wastewater infrastructure.[131]

Thus, in practice municipalities can legally contest and effectively refuse to grant permission to the construction of local water networks, including for ITSs. Indeed, municipalities are already involved in water supply in a number of ways. In some cases, municipalities address emergencies related to water supply and in others have actually run water supply operations. For example, in the village of Haouch Tal Safiah, which remains unconnected to the BWE network, the municipality provides water to residents.[132] As this study will show, all municipalities in North Bekaa are involved in water provision in one way or another and are considered one of the main managers of water resources in the area.

EXISTING	PLANNED
- Law 444/2012-Environmental Law - Decree 8735/1975-Public Cleanliness - Water Sector Reform Law 221/2000 (and its amendments) - MOE Decision 1996-52/1-Specifications to reduce air, water and soil pollution - MOE Decision 8/1-2001-Specifications and standards for air pollutants and liquid wastes generated by classified establishments and wastewater treatment plans - Article 20, Item 9 of Decree 8018/2002-Class I and II industries have to be 1000m from springs - Decree8633/2012- Fundamentals of Environmental Assessment - Law 251/2014-Establishing the Public Environmental Prosecutor - Municipal Law in Lebanon, Decree-law 118/1977 and its amendments	- Finalization of Water Codes - Modernization of Ottoman irrigation laws (1913)-Development of new irrigation Laws. - Developing required legislation to initiate Private Sector Participation (PSP) - TSE reuse standards and guidelines - MOE proposal to develop a master plan for the coastal zone, mountains, and other fragile ecosystems, and prepare a related SEA (Ref. 3461/8 dated 21 August 2012). Proposal has been endorsed by almost all relevant ministries including Defence, industry and Municipalities and interior and now awaits response from the Higher Council of Urban Planning.

Table 3: Main Laws (Existing/Planned) Regulating the Water Sector (source NWSS-SEA- 2015)

4.1.6 CONSTRUCTION REGULATIONS

In order to extend the water supply network to any structure, including ITSs, a construction permit is the first pre-requisite. Acquiring a construction permit is a convoluted process that usually requires the approval of local and regional government administrations

In theory, all construction permits should abide by the National Land Use Master Plan that was passed by the cabinet in 2005 or regional master plans that are known to have different standards for planning and land use.[133] In fact, around 80 percent of Lebanon has not been zoned, in large part due to the fact that 50 percent has not been surveyed.[134] In the case of informal settlements, the only precedent in the country lies in the 42 gatherings of Palestinian refugees (not to be confused with formally recognized Palestinian refugee camps), which have not been zoned and are not subject to any form of master plan. The legal status of these settlements remains contentious because there is no legal framework or mechanism with which to classify these buildings, something which has precluded residents in these settlements from basic services such as water and wastewater connection.[135]

Neither the central nor local governments recognize informal settlements as legal entities, and they restrict their expansion through limiting the size of ITSs to between 20 to 100 families, and each settlement needs to be approved by the Ministry of Social Affairs (MoSA).[136] This policy, however, has led to a fragmentation of the refugee community and increased the number of settlements across the country.

The MoSA has acknowledged the existence of informal settlements through its coleadership at the Shelter working group under the framework of the LCRP and implements a '2015 Shelter Strategy' alongside the UNHCR.[137] The strategy only allows Refugee Housing Units to be built according to government specifications, which preclude any "permanence".[138] Under the strategy, approved shelter activities include:

1. Rehabilitation/weather proofing of substandard buildings.
2. Rehabilitation of private/public collective centres.
3. Weather proofing, shelter enhancement and site improvement of informal settlements.
4. Cash assistance /cash for host families.
5. Increase of host families/collective centre capacities.[139]

4.2. INSTITUTIONAL FRAMEWORK OF THE WATER SECTOR

Given the convoluted legal framework governing the water sector in Lebanon, implementation on the ground is also fragmented. There are a number of de jure ministries and public agencies that are mandated to regulate the sector, even if their roles under the law are sometimes overlapping or unclear. At the same time, de facto other public and private bodies lend to the sector's organization and implementation across the country. Table 4 gives a basic breakdown of the key players and authority accorded to each in the various regulatory functions of the water sector

FUNCTION	MoEW	LRA/ Wes	MoE	MoPH	CDR	MoI	MoIM	OTHER GOVT.
Planning	x	x			x			
Licensing & permitting (Inc. EIAs)	x		x				x	x
Capital investment	x	x			x			x
Infrastructure construction	x	x			x			x
Operation & maintenance	x	x						
Financing (national)	x	x			x			
Financing (external funding)	x				x			
Regulations and guidelines	x			x		x	x	

Table 4: Regulatory Authority over the Water Sector (NWSS-SEA-REPORT 2015)

Because laws and strategies related to the water sector have not come into full effect, the sharing of authority by different agencies and bodies creates various overlaps in responsibility and a lack of effective coordination (See Figure 5).[140] Even so, the institutional framework of the water sector in the country can be encompassed by four main governing umbrellas: Administrative agencies, regulatory and management agencies, reconstruction agencies, and legislative and budgetary agencies.

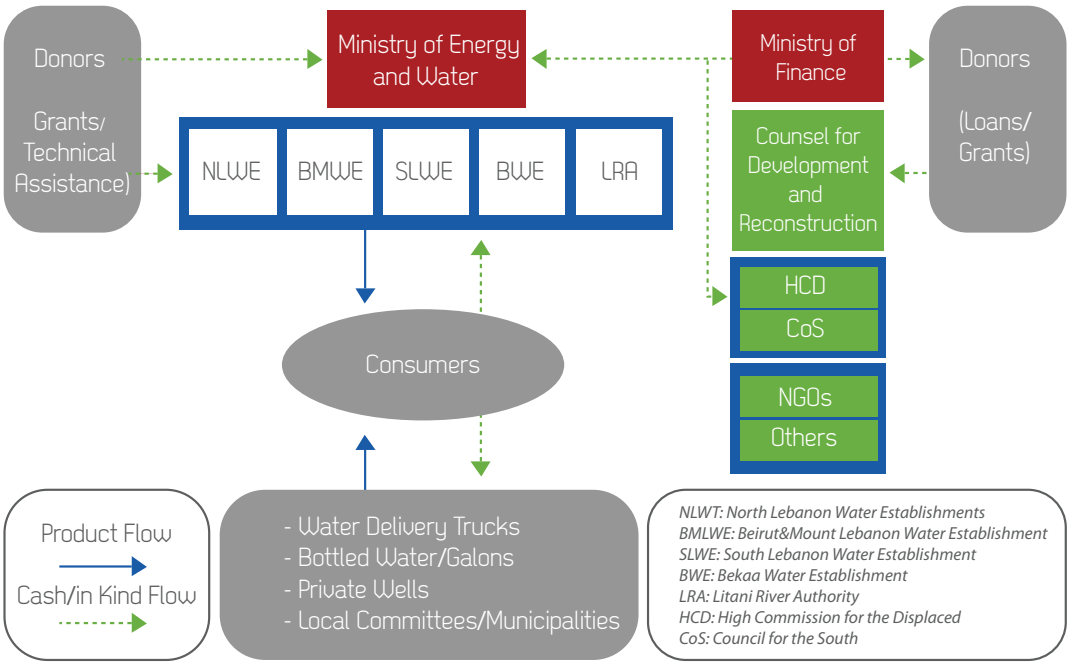


Figure 5: Administrative Framework of the Water Sector (source NWSS 2010)

4.2.1 ADMINISTRATIVE AGENCIES

Water administration governing bodies are composed of the administrative bodies explicitly charged with water resource management (WRM): The Ministry of Energy and Water (MoEW) and four Regional Water Establishments (RWE), in addition to the Litani River Authority.[141]

Under the MoEW, two directorates are responsible for water resource management. The General Directorate of Exploitation (GDE) administers the four RWEs, which replaced the 21 water authorities and more than 200 water committees before administrative reform took place in 2000.[142,143] The General Directorate of Hydraulic and Electrical Resources (GDHER) is tasked to administer the implementation of large scale projects and research.[144]

4.2.2 REGULATORY AND MANAGEMENT AGENCIES

Regulatory and management agencies are government institutions that affect water resource management through various policies and interventions such as irrigation, environmental standards, and local governance.

The Ministry of Agriculture is responsible for agricultural policy in Lebanon and possesses six directories of which three are crucial to a sustainable water policy.[145] The Directorate of Natural Resources and Rural Development is the authority that is responsible for the preservation of agricultural lands and forests through appropriate licensing and regulation.[146] The directorate is also tasked with increasing irrigated lands in rural areas and enhancing water use allocation and irrigation methods.[147] The Directorate of Research and Coordination is responsible for managing extension services to farmers and training personnel and dissemination of public policy to farmers.[148] The Green Plan is an important program at the MOA, tasked with land reclamation projects and construction of agricultural roads and rain water reservoirs.[149]

Law 690/2005 on the mandate of the Ministry of Environment (MoE), and Decree 2275/2009 on MoE's organisational structure, provides support to the MoEW by setting environmental standards and penalizing pollution violations.[150] The ministry uses several legal avenues to control pollution of water sources such as regulating construction permits near surface water sources. Apart from setting standards for water

pollutants (Decision 8/1, 30/1/2001)[151], the MoE is tasked with preparing legislation for wastewater treatment, developing projects to adapt to impact of climate change on natural resources as well as monitoring quality and quantity of water resources.[152] The MoE is also tasked with protecting water sources and riverbeds from unlicensed developments and waste discharge by engaging in environmental assessments and setting environmental conditions for construction permits in the vicinity of rivers protected by the MoE (MoE Decision 90/1,17/10/2000).[153] However, the ministry's enforcement capacity has been constrained by a lack of funding and inadequate human resources.[154]

In order to prevent the outbreak of waterborne diseases, the Ministry of Public Health (MoPH) is tasked with monitoring regular drinking water in order to ensure compliance with local and international standards.[155] The MoPH is also tasked with ensuring the quality of bottled water through quality certificates issued to private water companies as well as the enforcement of legislation with regards to wastewater collection and treatment.[156]

Municipalities in Lebanon number 1,100 and are generally small and possess insufficient financial resources, which hinders them from implementing large development projects.[157] As such, around 70 percent, or 750 municipalities, have joined up to form 51 municipal unions.[158] Although municipal councils have a limited role under law 221/2000, Law 118/1977 gives municipalities considerable mandate over water projects in their jurisdiction especially regarding issues of construction.[159]

4.2.3 RECONSTRUCTION AGENCIES

The Council for Development and Reconstruction (CDR) was founded in 1977 by decree and reports to the Office of the Council of Ministers. The CDR was originally tasked with accelerating reconstruction process during and after the 1975-1990 Civil War in Lebanon, but has since managed donor-funds and taken on the role of the largest development public authority in the country.[160] Since the mid-1990s, the CDR has funded several infrastructure projects, such as water and sewage pipelines, water networks and drainage facilities.[161]

The Council of the South was formally established in 2/6/1970 under law 70/9 and is tasked with reconstruction of the South and reports to the Prime Minister.[162] It currently implements several infrastructure projects such as water pumping, irrigation projects and several water networks and boreholes in the South and West Bekaa regions.[163] The Central Fund for the Displaced People (CFD) was formally established in 4/12/1993 under law 193 and tasked with ensuring the returns of IDPs to their villages following the Lebanese civil war (1975-1990).[164] The CFD also reports to the Prime Minister and has constructed and rehabilitated water supply systems in Chouf, Baabda and Aley regions.[165]

These reconstruction agencies tend to operate in an independent manner as they are not subject to oversight and are generally autonomous and coordination with the MoEW and RWEs remains largely informal.[166]

4.2.4 LEGISLATIVE AND BUDGETARY AGENCIES

The legislative and budgetary bodies have considerable influence on public policies related to the water sector, as they can facilitate implementation and/or obstruct planned reforms. These bodies include the Cabinet or Council of Ministers (COM), the Prime Minister's Office (PMO), the Lebanese Parliament, the Parliamentary Subcommittee for Public Works, Energy and Water, the High Council for Privatization (HCP) and Public Recruitment Council (RRC).

Table 5 provides a summary of the bodies involved in regulating the water sector in Lebanon. It is important to note that Law 221 which gives RWEs considerable autonomy is yet to be fully implemented and hence creates unnecessary overlaps. By giving RWEs financial autonomy, the MoEW and other ministries could focus on sector regulation and overarching infrastructure projects.

NAME	ACRONYM	CATEGORY
High Council for Privatization	HCP	Legislative & Budgetary Agencies
Parliament		
Prime Minister's Office	PMO	
Parliamentary Committee for Public Works. Energy and Water		
Council of Ministers	COM	
Public Recruitment Council	PRC	
Public Accounting Board	PAB	
Ministry of Finance	MoF	
Ministry of Agriculture	MoA	Regulatory & Management Agencies
Ministry of Environment	MoE	
Ministry of Public Health	MoPH	
Ministry of Public Works and Transport	MoPWT	
Ministry of Energy and Water Resources	MoEW	Administrative Agencies
Before 2000 Ministry of Hydraulics and Electric Resources (MHER)		
General Directorate of Hydraulic and Electrical Resources	GDHER	
General Directorate of Exploitation	GDE	
21 Water Authorities and 209 Water Committees (Before Reform Law 221)		
Regional Water Establishments	RWE	
Beirut Mount Lebanon Water Establishment	BMLWE	
North Lebanon Water Establishment	NLWE	
South Lebanon Water Establishment	SLWE	
Bekaa Water Establishment	BWE	
Litani River Authorities	LRA	
Council for Development and Reconstruction	CDR	Reconstruction Agencies
Council of the South	CoS	

Table 5: Government Authorities and Institutions Involved in Regulating Lebanon's Water Sector

4.3. THE NATIONAL WATER SECTOR STRATEGY

In March 2012 the Council of Ministers, Lebanon's cabinet, formally approved the National Water Sector Strategy (NWSS), drafted by the MoEW[167] The NWSS constitutes the official policy of the government with respect to how it seeks to institute reform and develop the sector. However, the NWSS is not a binding document and does not oblige different actors to implement its objectives. Furthermore, it should be noted that the NWSS is not the National Water Master Plan that is mentioned in Law 221 and thus does not constitute a framework under which regional water establishments can exercise their right under the law to invest and implement projects in their areas without the approval of the MoEW.

Nonetheless, the NWSS's stated goal is to 'ensure water supply, irrigation and sanitation services throughout Lebanon on a continuous basis and at optimal service levels, with a commitment to environmental, economic

and social sustainability'.[168] In addition, by reforming water resource management, the NWSS envisages a legal institutional framework whereby management of water provision is delegated to the RWEs with the view to increase overall financial sustainability and viability.[169] The NWSS infrastructure reforms are also cantered on increasing supply through increasing the number of water storage and supply sources, enhancing conveyance through additional investments in water transmission and distribution, as well as bolstering wastewater collection and treatment.[170]

The long-term objectives of the NWSS can be summarized as:

1. Maximize the potential and improve the quality of surface water resources.
2. Improve the management and protection of groundwater resources.
3. Close water deficits through groundwater replenishment and/or surface water collection.
4. Ensure proper and continuous access to high quality water supply.
5. Provide adequate quantities and quality of water for irrigation.
6. Increase coverage of wastewater collection networks and treatment capacities.
7. Optimize current wastewater treatment processes and sludge disposal.[171]

To achieve these objectives the NWSS lays out infrastructure and management components under three areas: Production (additional water resource supply), Conveyance (water supply transmission and distribution) and Wastewater (wastewater collection and treatment).[172] The infrastructure and management components, as well as their estimated costs, are summarized in Table 6 and Table 7.

While the NWSS was an intrinsic and important step in the development of the Lebanese water sector, it remains a non-binding executive order that does not impose any legal requirement on public or private entities to take actions to implement it.

STRATEGY INITIATIVES	DESCRIPTION	COST ESTIMATE (MILLION USD)
1. Optimizing surface water storage	- 64 million CM of additional water	$2,206 (29% of total CAPEX)
2. Artificial recharge of groundwater aquifers	- Up to 200 million CM of additional water by artificial recharge (during wet season/ excess flow)	
3. Surface storage- dams and hill lakes	- Up to 670/880 million CM of water storage (static/ dynamic) at identified sites - 46 sites identified as suitable for surface storage incl. dams and hill lakes (< 1 million CM)	
4. Water supply transmission	- 2,800 km of transmission pipes - 191,000 m3 of storage in 561 tanks	$1,790 (23%)
5. Water supply distribution	- 9,600 km of distribution pipes - About 1 million water meters	
6. Irrigation rehabilitation and expansion	- Up to 30,000 ha irrigated by 2020 - Additional 60,000 ha irrigated by 2035	$577 (7%)
7. Wastewater collection and treatment	- 12 coastal STPs planned to serve 5,597,000 people-equivalent - 42 inland STPs planned to serve 1,977,750 people-equivalent	$3,104 (40%)

Table 6: Summary of the NWSS Infrastructure and investment Plans (source: NWSS-SEA REPORT-2015)

STRATEGY INITIATIVES	SUMMARY DESCRIPTION	COST ESTIMATE (MILLION $)
Institutional and organizational	° Priority actions to complete the restructuring of RWEs. ° Improve operating model between MoEW and WEs (to ensure integrated water resource management). ° Improve performance of WEs (including monitoring and evaluation). ° Improve coordination among the various players in the water sector (MoEW, WEs, LRA, CDR, etc.) with a clear delineation of authorities. ° Create formal Water Users Associations (WUAs) and define their roles and responsibilities with respect to water management.	$62
Financial and commercial	° Implement consumption-based tariff. ° Apply wastewater tariff to customers connected to network and STP at a first stage (to cover, at a minimum, O&M costs); Apply wastewater tariffs based on water consumption at second stage. ° Adjust irrigation water tariffs based on the specificities of existing and anticipated irrigation schemes. ° Promote private sector participation	
Legal and Regulatory	° Ratification of the Water Code. ° Complete implementation of Law 221/2000 and its amendments. ° Develop wastewater collection and disposal regulations. ° Improve irrigation regulations. ° Review and update standards for wastewater discharge. ° Develop standards for wastewater reuse in agriculture and sludge reuse. ° Provide adequate legal environment to promote private sector participation.	
Environmental Concerns	° Conduct an SEA of the NWSS. ° Refine climate change knowledge. ° Develop and implement a concept for protecting recharge zones. ° Develop and implement a comprehensive water quality monitoring network (surface water, groundwater and irrigation water) to improve water quality, centralize data and ensure communications with consumers. ° Implement pollution control programs. ° Develop an integrated flood management plan and assess the potential use of flood water in groundwater recharge. ° Develop and implement water conservation initiatives on domestic, industrial and irrigation demands.	

Table 7: Management Plan of the NWSS (source: NWSS-SEA REPORT-2015)

5

WATER SERVICE PROVISION TO ITSS IN NORTH BEKAA: ANALYSIS AND DISCUSSION

5.1. THE NORTH BEKAA CONTEXT AND THE SYRIAN REFUGEE CRISIS

This case study deals with nine villages located in the Northern Bekaa Valley and considers provision, consumption, expenditure and sourcing of water among refugee and Lebanese households to provide quantitative benchmark recommendations to best address the water needs and service provision to both refugee and Lebanese communities. The nine villages of Btedaai, Deri El Amar, Boudaai, Califia, Haour Taala, Haouch Tal Safiyeh, Houach Barada, Jebaa, and Saaide are located in the Caza of Baalbeck, at the bottom of Mount Lebanon around 10km from the historical city of Baalbeck and around 100km from the capital Beirut. The Lebanese population of these nine villages is estimated to be around 23,310 and the area currently hosts approximately 9,000 refugees.[173] The villages of Deir El Ahmar, Chlifa, and Btedaai are predominantly inhabited by Maronite Christians with political leanings of Christian villages largely aligned with the Lebanese Forces and the Free Patriotic Movement, while the villages of Boudaai, Saaide, Hour Taala, Haouch Tal Safiyeh, Houach Barada, and Jebaa are mainly populated by Shiite Muslims that mostly lean towards Hezbollah and the Amal Movement.

These rural villages are renowned for their fertile soil and the wide range of crops produced, ranging from potatoes and onions to apples and cherry orchards. However, by far the region's most infamous crop is cannabis, which is illegal to grow and harvest in Lebanon.

The region's main water sources are the Yammouneh and Oyoun Orghoush springs. The Yammouneh spring flows down from the highlands of Dar Al Wasaa, an area where water resources are controlled by cannabis farmers, who divert water supplies to the major plantations in the area. The Yammouneh spring is the main source of water for the villages of Btedaai, Boudai, Chlifa, Jebaa, and Saaide in addition to private and public well water. The Oyoun Orghoush and Ain Daher springs are the main water sources for Deir al Ahmar while Haouch Tal Safiyeh, Haour Taala, and Houach Barada are mainly supplied by boreholes and wells. Both Haour Taala and Haouch Tal Safiyeh can receive water from infrastructure connected to the Nabi Sbat and Ain el Dibbe springs, but municipal leaders say that this is not taking place.[174] Table 8 shows the population distribution for the nine villages considered under this case study and their respective water sources.

VILLAGE	LEBANESE POPULATION	SYRIAN REFUGEE POPULATION	WATER SOURCE
Btedaai	715	1,028	Yammouneh/Boreholes
Deir El Ahmar	3,595	2032	Oyoun Orghush/Boreholes
Bouday	5,475	1,485	Yammouneh/Trucking
Chlifa	5,000	406	Yammouneh/Boreholes/Trucking
Haouch Tal Safiye	725	757	Boreholes/Water treatment facility
Haouche Barada	200	1,252	Boreholes/Trucking
Haour Taala	6,000	242	Boreholes/Trucking
Jebaa	400	167	Boreholes/Trucking
Saaide	1,200	1,631	Yammouneh/Boreholes/Trucking
Total	23,310	9,000	

Table 8: Village Population, Network Connection and Main Water Sources.

Farmers in the riparian highlands of the Yammouneh spring, the largest water source in the areas, use the same water source as the villagers for agricultural purposes and employ flood irrigation, which results in water scarcity issues across the nine lowland villages. According to municipal council presidents, water

truckers, local community residents, landowners, ITS residents and farmers interviewed in these villages, agricultural practices have not only increased water scarcity, but also contributed to water contamination. The Yammouneh water canal passes through agricultural areas and commercial enterprises, all of which directly dispose of their waste into the canal before water reaches the lowland villages. The municipal council presidents of Chlifa, Btedaai and Deir al-Ahmar (which are not fed by the Yammouneh canal but by Oyoun Orghoush) also said that previous attempts to re-route the canal so that water would be supplied directly from the Yammouneh spring's source were vetoed by the riparian residents of the area. According to local residents, the farmers of the highland village of Dar al-Waasa that use this water for irrigating their agricultural areas, have no access to water storage or irrigation facilities. This in turn has resulted in a reluctance of Dar al-Wasaa farmers to forgo their perceived riparian rights and exercise hegemony over the water source depriving the downstream villages of water during the summer months.

Relatively higher upstream water consumption has meant the region's downstream farmers have had to invest in more modern drip and sprinkler irrigation systems or increase their usage of well water. As these villages become more reliant on groundwater the water table has continued to recede, according to water truckers who drill and pump groundwater to supply the area's residents and businesses. Indeed, the most recent national studies show that the groundwater budget (the net difference between groundwater recharge and discharge) in most of the Bekaa region is under stress (see Figure 6). According to these figures, the continuous haphazard and unregulated extraction of water from groundwater resources in the North Bekaa Water Basin, where this study's nine villages are located, is contributing to a net rate of depletion equal to 4.7 MCM per year during the wet season, and over seven times that figure (34.3 MCM) during the dry season.[175]

Overuse of precious groundwater resources in the area is likely to continue in the near term given that public water supply and subscription to the public network remains insufficient to satisfy local demand, especially in the dry season (June-October). Due to a lack of operational metering and monitoring infrastructure, credible disaggregated demand and supply figures are not available for the nine villages in question. However, according to the Bekaa Water Establishment (BWE), the institution serves a total of 23,310 residents through 1,690 household subscriptions. Among these subscriptions however, the BWE is only able to collect payments from 62 percent of subscribed households. Non-collection of fees contributes to the lack of cost recovery at the BWE. These unaccounted for losses in the public network due to theft and dilapidation in the area is estimated by the BWE at around 50 percent of water provision.[176] Survey results show a slightly different picture as more people report to be paying for their annual subscription. The discrepancy in numbers between BWE and survey results are largely due to methodological reasons. The research team conducted the fieldwork in the spring, which produces a sampling bias towards permanent residents and excludes those who live in Beirut and use the village as a country getaway for short-periods during the summer (July-August). Our qualitative research confirms that those who come in summer are more likely not to pay their fees due to low availability during the dry season.

With the onset of the Syrian refugee crisis, water supply and provision has been stretched across the Bekaa Valley, not least in the nine villages under study. Syrian refugee communities have settled in ITSs on the outskirts of these villages and are reliant on a combination of sources to secure their water needs, both through individual effort and humanitarian aid. As depicted in Table 6, the total number of Syrian refugees in the nine villages amounts to 9,000 people, with the largest number settled in Deir Al Ahmar and Saaide respectively.

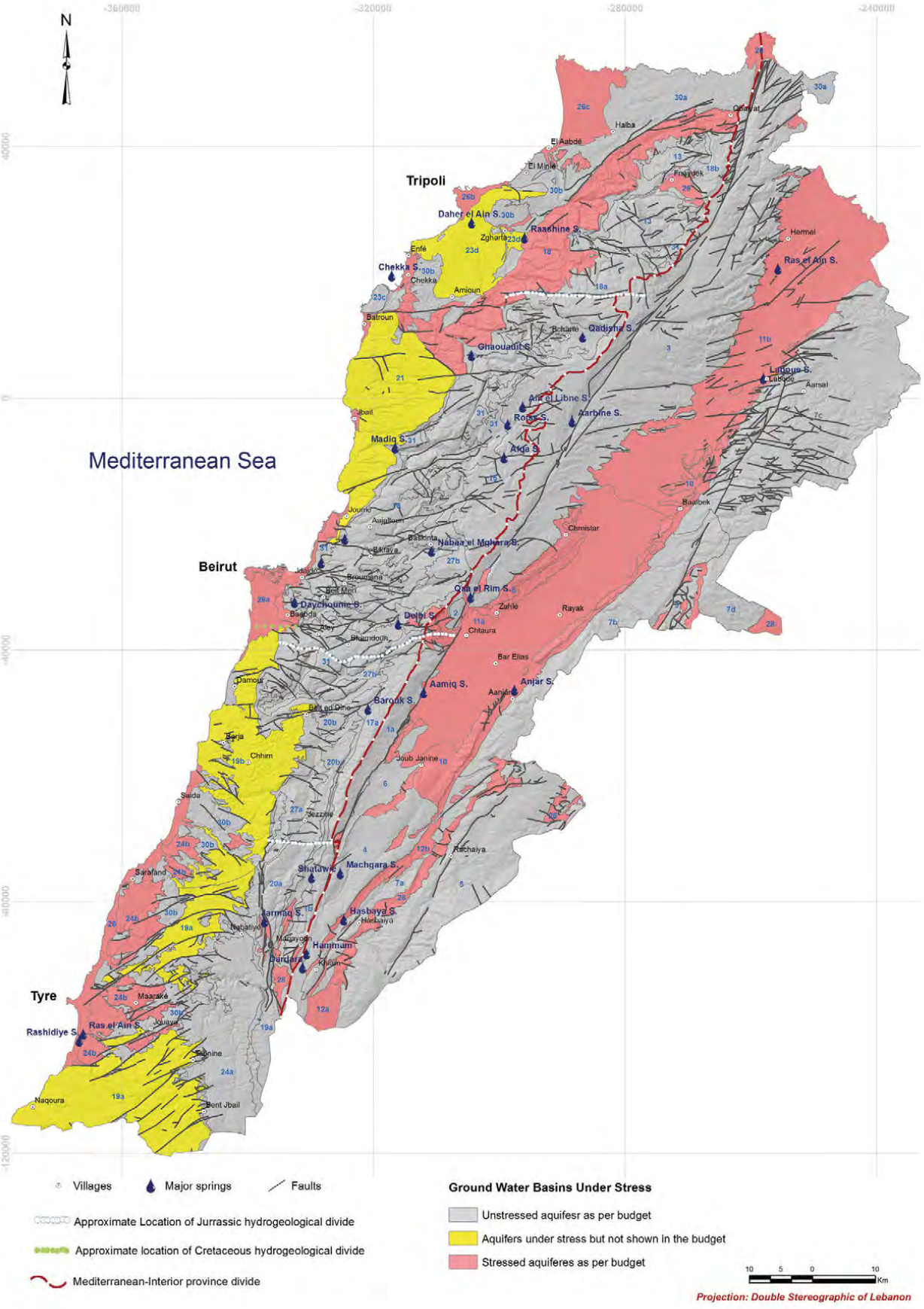


Figure 6: Groundwater Budget of Lebanon (source: UNDP Assessment of Groundwater Resources of Lebanon, 2014)

Refugees who reside in ITS across the Bekaa are some of the most vulnerable in the country.[177] For example, in the Northern Bekaa, Oxfam provides safe drinking water through a voucher system to a total of 8,169 individuals under a scheme that entitles each member of the ITS household to one voucher per month, equivalent to one cubic metre or 1,000 litres worth of water. Vouchers are redeemable from private water truckers who are contracted by Oxfam to provide adequately chlorinated water to Syrian refugees. Oxfam ensure water safety through regular quality checks and monitoring visits.

Yet humanitarian aid agencies operate in an environment where the water provision to ITS households is highly inefficient compared to public water supply to Lebanese households. This high level of inefficiency is reflected in the amount paid per cubic metre of water to truck water from wells and boreholes around the Bekaa to ITSs. For Example, Oxfam presently pay around $6.5 per cubic metre on average to supply water to ITSs.[178] But if that water was to be supplied through the public network at the current tariff structure (1 cubic metre of water per day per household at a flat yearly fee of $158, or $0.43 per day), humanitarian agencies could pay up to 15 times less, on average, than they do today. It's important to also note that, because public water supply is inconsistent and the BWE does not accurately calculate demand and supply of water to the network, calculating the value of potential cost savings is not possible.

Future cost savings could be increased, if only marginally. The BWE's official policy is to transition out of the current controlled flow method of provision to volumetric metering, whereby consumers pay for what they use. While this method would be charged at a higher rate than $0.43 per cubic metre (almost 15 times lower than what humanitarian aid agencies currently pay), it would also ensure more regular supply and better overall management of water resources in the area.[179] These estimates still rely on the assumption that it is possible to provide a pressurized constant supply of water through the public network.

In addition to the gross discrepancy in water provision costs, the current system is rapidly depleting the precious groundwater reserves. Private water truckers source their water from the same collective groundwater sources as the BWE and other private suppliers which results in extraction levels that are unregulated and uncertain, especially given the rise in demand caused by the influx of Syrian refugees to regions such as the Bekaa. Due to over-exploitation of groundwater resources, water truckers say that they have had to drill deeper and deeper, from around 10 metres a decade ago to anywhere between 150 and 400 metres as of summer 2016. At the same time, this has increased the cost of extraction, from around 10,000LL ($7) to 15,000LL ($10) for around three to four cubic metres at the point of extraction, according to the municipalities. Once costs of transport, labour and overheads are factored in, the final retail price averages around 40,000LL ($27) to 50,000LL ($33) for some three to four cubic metres of groundwater.

5.2.THE LIMPING MULE: DWINDLING WATER RESOURCES STRESSES BOTH COMMUNITIES

The effects of continuous water cuts and the unreliability of public water networks on household consumption and expenditure affect all of Lebanon, not least the Northern Bekaa. In this section, this study finds that the majority of Lebanese households who are subscribed to the public water network also pay their subscription fees and, by and large, these households are permanent residents of the region. At the same time, Lebanese non-users both consume considerably less water than their subscribed counterparts, and pay less for that water in total. Nevertheless, those who are subscribed remain better off: The cost per cubic meter for Lebanese households who use public water is cheaper than those who do not use public water. Perhaps unsurprisingly, the Lebanese who are both subscribed to public water and do not pay their subscription fee enjoy the best financial standing amongst their fellow citizens.

As for Syrian refugees living in ITSs, this section's findings also prove that those who benefit from water vouchers have higher water security, as they pay considerably less to provide their households with basic water needs.

Relative to Non-users of public water, Lebanese Public Water Users report significantly higher levels of confidence in their ability to secure water for their households.

Ultimately, both Lebanese and Syrian ITS households are prepared to pay slightly more for cleaner, constant and more reliable public water supply. However, the amount they are willing to pay is only slightly higher than the amount they presently allocate for water procurement.

5.2.1 WATER CONSUMPTION AND EXPENDITURE PATTERNS

5.2.1.1 WATER CONSUMPTION AND EXPENDITURE PATTERNS OF LEBANESE HOUSEHOLDS

The Lebanese households in the area fall into two distinct categories:

1. Public water users: Households who are connected to the public water network and consume water provided by the BWE.
2. Non-users of public water: Households who do not consume water provided by the BWE and are completely reliant on alternative water sources.

It is through this paradigm in which the dynamics of subscription to, and payment for public water, are assessed in this section (See Figure 7).

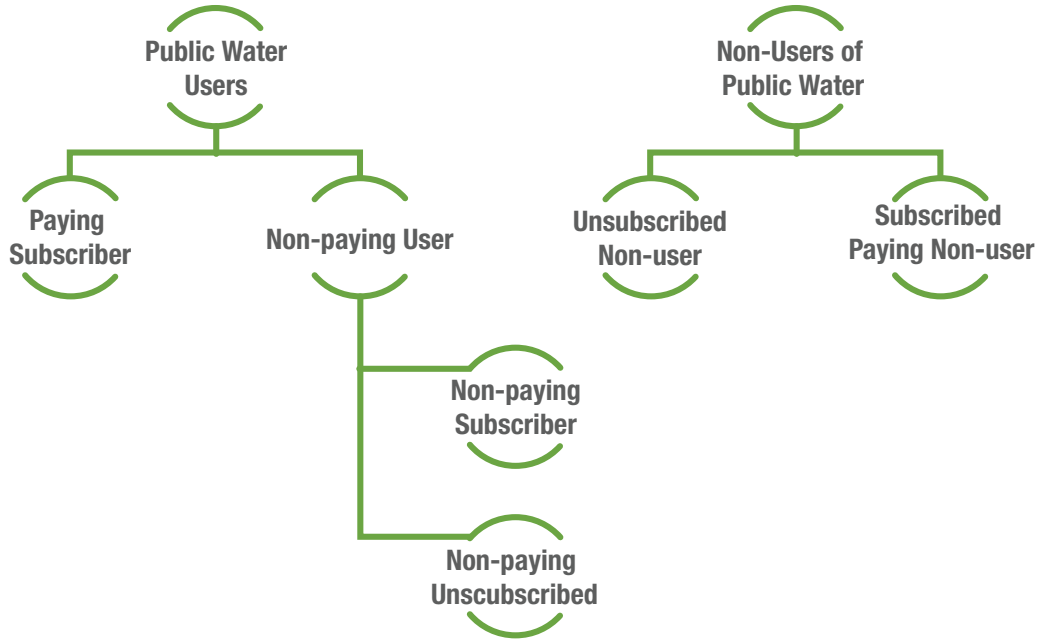


Figure 7: Division of Lebanese households according to usage of public water.

Based on self-reported survey results from this study, a total of 82.4 percent of Lebanese households from the nine villages are Public Water Users. Among Public Water Users (275 households), paying subscribers constitute 73 percent of all households in the area. At the same time, a further 9 percent of all households are non-paying users: They are connected to the public water network but do not pay their dues to the BWE. These non-paying users can either have an official subscription to the public water network (5 percent of total households) or not (4 percent of all households).

Lebanese households that do not use the public water network constitute 18 percent of all households in the area under study (66 households). Among these Non-Users of Public Water, 15 percent of all households are not subscribed and do not use public water. The remaining 3 percent of households are subscribed to the public water network, pay their annual dues but claim not to use public water.[180] Figure 8 provides a breakdown of all Lebanese in the area under study according to their usage, subscription and payment status.

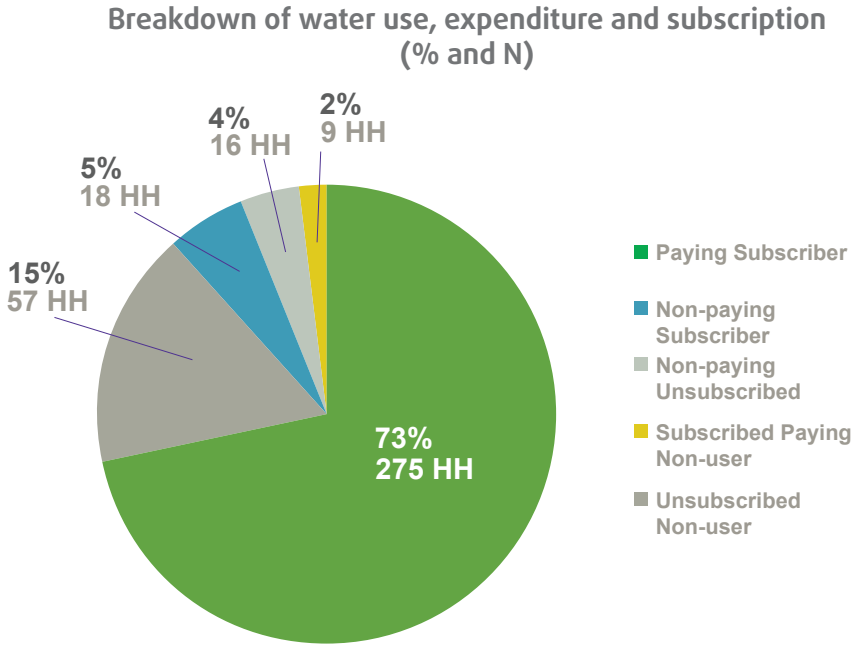


Figure 8: Breakdown of water use, expenditure and subscription survey results.

***Refers to subscribers which are paying public water subscriber that do not use public water**

As is the case across Lebanon, public water supply falls during the dry season (June-October) where water availability from the network averages around 2.75 days per week compared to around 4.75 days per week during the wet season (See Figure 9). Due to the lack of demand and supply data at the BWE for the area, it remains difficult to determine the exact quantity of water consumed through the public water network. It is estimated that the rate of unaccounted for water is around 50 percent for the whole area covered by the BWE. The BWE does not employ meters to monitor production and supply and locations where meters have been installed remain largely un-operational. Hence, the BWE cannot distinguish between water lost in the network due to leakages and illicit withdrawal or non-payment of bills.

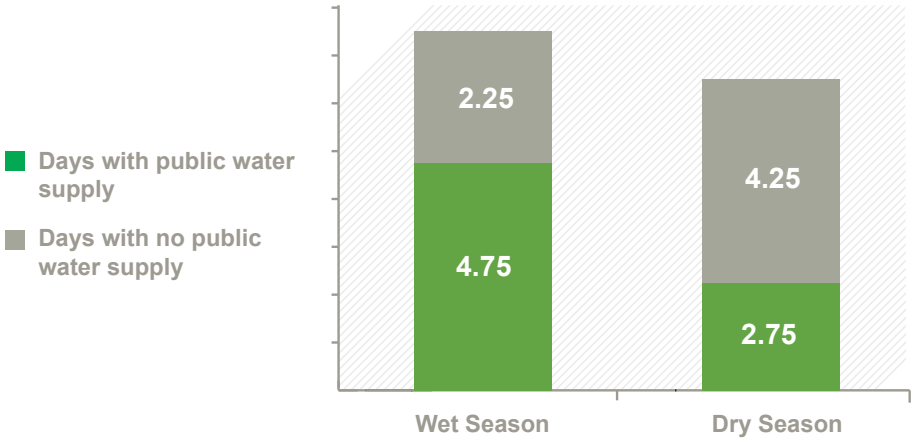


Figure 9: Availability of Public Water per Season

As previously mentioned, the BWE is working on a transition to volumetric metering across its coverage area, instead of the current controlled flow method. Yet, as of this writing, the BWE has not instituted operational water metering in the North Bekaa. Therefore, under the current controlled flow method, subscribers pay an annual fee of 23700LL ($158/year) as a flat-water tariff for a theoretical 365 m3/household/year. However, irregular supply means that subscribers substantially get less than 1 m3 per day on average. For the purpose of this study, we conservatively assume that households receive 0.8 m3 per day when water is available during the dry season (80 percent of the 1 m3 commitment of the BWE) and 1 m3 during the wet season.

Table 9 details consumption and expenses by source for different consumption and expenditure categories.

Table 9: Annual Water consumption and expenditure categories for Lebanese households

Lebanese Households	Public Water Sources				Non Public Water Sources													
					Truck Water				Well Water				Bottled Water				Other Sources		Total Non Public Water Sources	
	Volume		Expenditure		Volume		Expenditure		Volume		Expenditure		Volume		Expenditure		Volume		Volume	Expenditure
	L	%	LBP (000)	%	L	%	LBP (000)	%	L	%	LBP (000)	%	L	%	LBP (000)	%	L	%	L	LBP (000)
Paying Subscriber	184,721	85.6	237	30.1	22,629	10.48	208	26.4	4,660	2.15	4	0.5	2,339	1.1	338	43.0	1,457	0.67	31,085	550
Non-Paying Users	179,576	88.9	0	0	19,322	9.56	143	31.2	0	0.0	0	0	2,948	1.45	315	68.8	184	0.09	22,454	458
Unsubscribed Non-Users	0	0.0	0	0	36,377	30.3	276	44.3	52,211	43.5	29	4.7	2,864	2.4	318	51.0	28,577	23.8	120,029	623

Lebanese Households	Total Annual Water Consumption	Avg Price per m³	Total Annual Water Expenses		**Total Annual Household Expenditure**
	L	LBP	LBP (000)	% of Total Expenditure	LBP (000)
Paying Subscriber	215,806	3,647	787	4.34	18,110
Non-Paying Users	202,030	2,267	458	2.86	16,003
Unsubscribed Non-Users	120,029	5190	623	4.93	12,626

On average, paying subscribers, spend a total of 550,000LL a year ($367/year) to cover their **extra** water needs, which is more than double the official rate they pay for public water (237,000LL/$158). Among paying subscribers, public water constitutes 85.6 percent of total water consumption and just 30.1 percent of the total cost of annual water provision. Indeed, for paying subscribers, additional water sources cover just 14.4 percent of consumption and cost these households a staggering 69.9 percent share (550,000 LL/$367) of total water costs (787,000LL/$525). For their part, non-paying users spend significantly less and receive marginally smaller volumes compared to paying subscribers: The average annual spending on water among non-paying users amounts to 458,000LL/$305.

Overall, paying subscribers spend around 21 percent more (787,000/$525) than unsubscribed non-users (623,000 LL/$415) a year. But, at the same time paying subscribers consume around 55.5 percent more annually (216 m3/year) than unsubscribed non-users (120 m3/year). Thus, based on this study's volumetric assumptions for public water supply, for paying subscribers the effective price for public water comes to $0.86/m3, rather than $0.43/m3 as it would be the case if the water supply was reliable and sufficient according to the subscription (365 days at 1m3 a day).[181]

Survey results also show that unsubscribed non-users draw about 23.8 percent of their water from other sources. Qualitative research reveals that these households acquire water from a variety of sources including illicit withdrawal from the public water network, destruction of water meters, supply from neighbouring households as well as neighbouring licensed and unlicensed wells. These other sources were not associated with significant monetary costs. Such practices are often protected through patronage networks (refer to section 5.4. for social analysis).

Practically there seems to be little incentive for unsubscribed households to subscribe to the public water network, as these households are able to cover a significant portion of their water needs free of cost. Furthermore, 20 percent of unsubscribed non-users currently have no way of accessing the public water network. Around half of unsubscribed non-users say they are not connected to the public water network, either because the network does not extend to their domiciles or because there is no water in the public water network.

Bottled water also has significant effects on water expenditure across the board. In fact, bottled water constitutes the highest relative cost across all water categories: Lebanese households spend between 43, 68.8 percent and 51 of their total water expenditure on bottled water, an average of 120,797 LL/$81 per cubic meter of bottled water annually.[182]

5.2.1.2 WATER CONSUMPTION AND EXPENDITURE PATTERNS OF SYRIAN REFUGEES IN ITSS

Survey results show that 68 percent of Syrian ITS households benefited from the voucher system while 32 percent were not covered by the system. The average value of water provided to Syrian ITS households who benefit from vouchers is 609,211LL/$406 annually. In addition, Syrian ITS households spend a yearly average of 227,000LL/$151 on alternative sources to cover their water needs. What's more, ITS households using vouchers spend only 3 percent of their total expenditures on water, whereas ITS households who do not have access to the voucher system spend roughly double (441,680 LL/$294) per annum amounting to 6.45 percent of their total annual household expenditure.

Cost savings are unsurprisingly highest during the dry season when Syrian ITS households use 30 percent more water each month than they do during the wet season. This assertion is also supported by the fact that water provided to Syrian ITSs through the voucher system covers around 79 percent of the

average annual water needs of a Syrian household in the areas under study. The remaining 21 percent of a household's annual water needs is generally supplemented by the households using various methods such as purchasing water trucks or tapping into irrigation networks and/or spring wells.

It is important to note that for both Lebanese and Syrian ITS households the cost of acquiring water is higher than international standards. According to the UN General Assembly Resolution Recognising Access to Clean Water, Sanitation as a Human Right (28 July 2010), to which Lebanon voted in favour of, the share of household income on water should not exceed the 3 percent threshold.[183] While Lebanese and Syrian ITS households income dynamics were not collected during this study for methodological reasons, expenditure and debt dynamics indicate that the Lebanese households pay around 4.34 percent average share of their total monthly expenditure on water (4.34 percent to those who are connected and 4.93 percent to those who are not), while Syrian ITS households without water vouchers pay up to 6.45 percent on average of their total expenditure to water. Those who use water vouchers spend on average according to international standards (3 percent).

Indeed, among Syrian ITSs covered by the water voucher program, vouchers cover 79 percent of total consumption. In fact, those who benefit from vouchers consume 6 cubic metres per annum less than those who have no access to the voucher system (almost 7.2 percent less). This could be the result of ITS households covered by the voucher system rationing their consumption, in order to avoid additional costs. Furthermore, ITS households who benefit from vouchers spend less on bottled water than Syrians who do not benefit from vouchers. This is due in part to the fact that Syrian households trust the quality of water provided by the voucher system, which is chlorinated and undergoes regular quality testing.

One reason for lower water consumption among ITS households who benefit from the voucher programme seems to be that they have less need to acquire costly drinking water from other sources. Indeed, ITS households report using the water provided through the voucher system for drinking as well as domestic uses (cleaning, washing, etc.).

Accordingly, the voucher system also decreases the effort required by an average ITS household to acquire water from local springs. As demonstrated in Table 8, ITS households who do not benefit from the voucher system acquire up to 15 times more water (44.2% of total consumption) from local springs than those who do, and thus spend considerably more time and energy on water provision, which is potentially of inferior quality. Thus, the decrease in the level of effort and time, and reduced health risk represents an additional saving for ITS households.

Focus group discussions and interviews with Syrian ITS households that do not benefit from vouchers say their main alternative water sources include drawing water from irrigation canals or being provided water through the public water network, usually from a neighbour's house or from the landowner where the ITS is located. Such practices constitute even greater losses for the BWE, as public water used by Syrian ITS households is not being charged or measured according to any volumetric tariff.

The voucher system has considerably alleviated economic pressure on Syrian ITS households. Before the voucher system, trucking was the water provision modality used most among ITS households: 84 percent of Syrian ITS households relied on trucking to source water prior to the voucher system (See Figure 10).

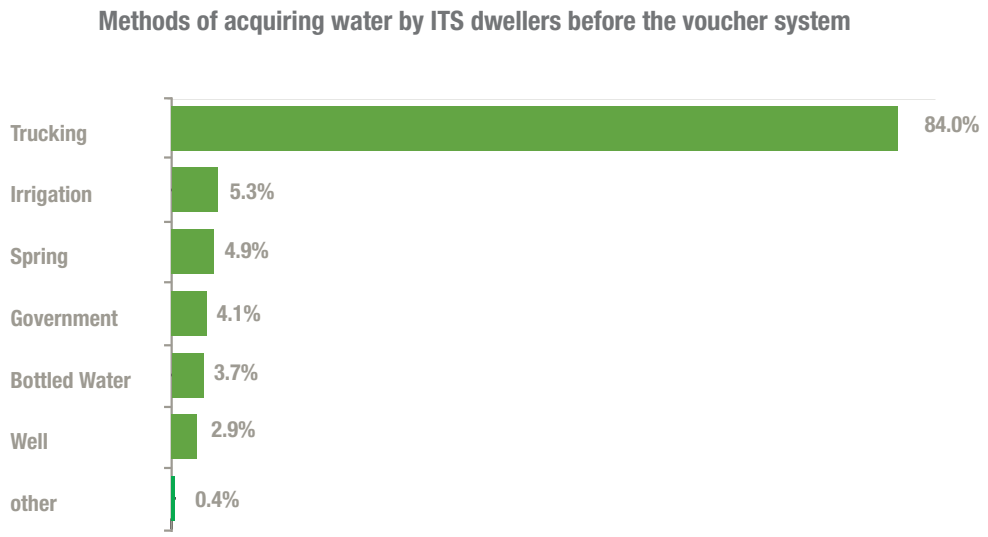


Figure 10: Methods of acquiring water by ITS dwellers before the voucher system.

In terms of volume of water used, Syrian ITS households consume substantially less water on an annual basis than Lebanese households both connected or unconnected to the public network. On average, Syrian ITS households were found to consume 64 percent less than an average Lebanese household connected to the network and 42 percent less than those who are not connected to the public water network. As table 10 demonstrates, an average Lebanese household connected to the network uses 215,806 litres per year, while an average Syrian household covered by the voucher system uses around 77,424 litres. A Lebanese household uses approximately 3 times more water than an ITS household.

The difference in share of expenditure and total usage between Syrian ITS and Lebanese households is understandable for several reasons: Firstly, many Lebanese households have access to the public network at rates below the cost of water service provision according to the BWE as opposed to Syrians who must either buy expensive bottled or trucked water; employment rates are generally higher among Lebanese households, something which is reflected in the Lebanese household's average monthly spending of around 1,437,000 LL ($958), compared to 607,143 LL ($401) among Syrian ITS households.

Table 10: Annual Water consumption and expenditure categories for Syrian ITS households.

Syrian Households	Voucher Water				Non-Voucher Water															
					Truck Water				Well Water				Bottled Water				Spring Water		Other Sources		Total Non- Voucher Water	
	Volume		Expenditure		Volume		Expenditure		Volume		Expenditure		Volume		Expenditure		Volume		Volume		Volume	Expenditure
	L	%	LBP (000)	%	L	%	LBP (000)	%	L	%	LBP (000)	%	L	%	LBP (000)	%	L	%	L	%	L	LBP (000)
Use OXFAM Vouchers	61,252	79.1%	609	72.8	11,195	14.5	105	12.6	175	0.2	0	0	649	0.8	122	14.6	1,666	2.2	2,487	3.2	74,937	227
Do not use OXFAM Vouchers	0	0.00%	0	0	16,018	28.7	193	43.6	7,405	13.2	1	0.1	1,726	3.1	248	56.2	24,695	44.2	6,000	10.7	55,844	442

Syrian Households	Total Annual Water Consumption	Avg Price per m³	Total Annual Water Expenses	Direct Water Expenses on Refugee		**Total Annual Household Expenditure**
	L	LBP	LBP (000)	LBP (000)	% of Total Expenditure	LBP (000)
Use Vouchers	77,424	10,814	836	227	3	7,486
Do not use Vouchers	55,844	7,903	442	442	6.45	6,854

5.2.2 PERCEPTIONS OF QUALITY AND QUANTITY OF WATER

5.2.2.1 PERCEPTIONS OF QUALITY

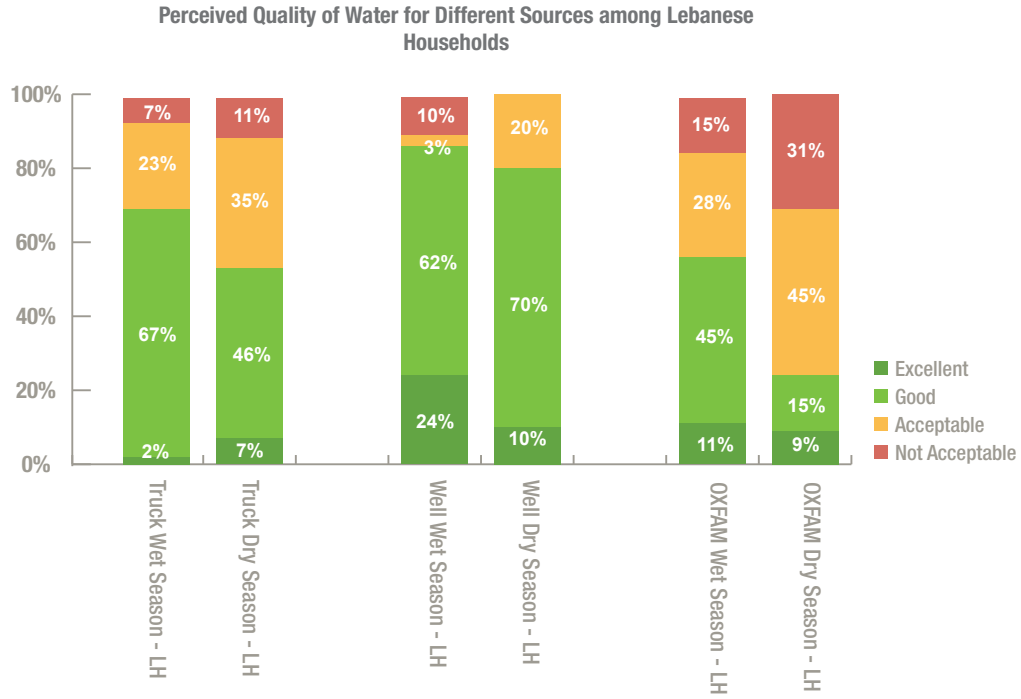


Figure 11: Perceived quality of water for different sources among Lebanese households.

On average, only 55 percent of Lebanese households use the public water for drinking purposes, something which is affected by a perceived fall in the quality of public water between the wet and dry seasons: The proportion of Lebanese who feel that the public network water quality is unacceptable doubles from the wet season (15 percent) to the dry season (31 percent). Indeed, the proportion of Lebanese households who feel that water is good also falls during the dry season (15 percent) to one third of its value in the wet season (45 percent). These perception trends are also reflected across other water sources, including water trucking and well water (See Figure 11).

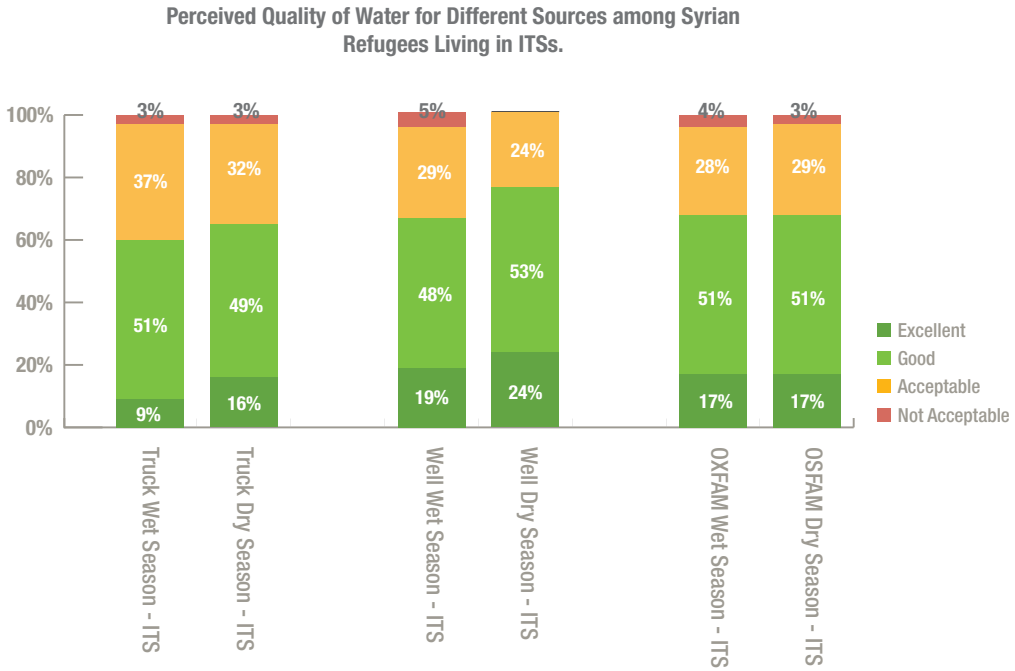


Figure 12: Perceived Quality of Water for Different Sources among Syrian Refugees Living in ITSs.

In general, Syrian ITS households' have a more favourable perception of water quality than their Lebanese counterparts, notwithstanding the fact that they have comparatively little access to public water. Across both wet and dry seasons only 3 percent of Syrian ITS households who purchase their needs via trucking consider the water quality to be unacceptable (compared to 7 percent and 11 percent among Lebanese households, respectively). Water from truckers that are part of the voucher programme is also perceived to be of higher quality than trucked water purchased by Syrian ITS households directly. Across wet and dry seasons, 68 percent of Syrian ITS households consider the quality of water from truckers which are part of the voucher programme as good or excellent (compared to 60 percent and 56 percent for water from trucks that are not part of the voucher programme, respectively). Indeed, qualitative findings show that Syrian ITS households consider the water from truckers which are part of the voucher programme to be clean specifically because international agencies such as Oxfam regularly monitor water quality and ensures chlorination. In addition, focus groups discussions with truckers who are part of the voucher programme indicate that hygiene procedures are being followed accordingly, and that they are monitored regularly.

5.2.2.2 PERCEPTIONS OF WATER SECURITY

In this section, the concept of water security is measured according to the perception of households' ability to secure a sufficient quantity of water to meet its past or current needs, as well as confidence in being able to secure sufficient quantities of water in the future.

Even though public water is not regularly available to households in the area, more than 82 percent of Lebanese households feel that they have been able to secure sufficient water quantities to meet their needs (see Figure 13). In general, this notion is consistent for both drinking and domestic uses.

Among public water users, a total of 19 percent considered they were unable to meet their needs at some point in the past. However, among non-users of public water only 13 said they were unable to meet their needs at some point in the past (See Figure 13).

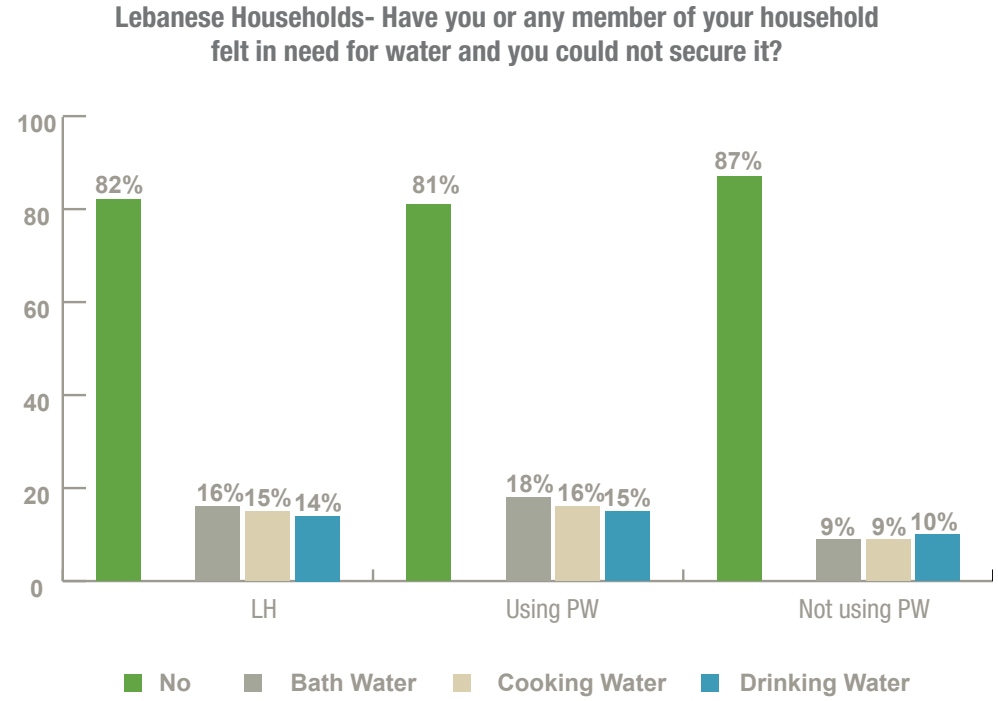


Figure 13: Lebanese Households - Have you or any member of your household felt in need for water and you could not secure it?

The higher inability to meet water needs among public water users reflects the unreliable nature of public water supply. Interestingly, this stands in contrast to non-users of public water, who feel they have a more ability to secure their water needs, something which is correlated to a greater reliance on alternative water sources. In essence, because non-users of public water have to source water from alternative water sources, they are not prone to the disruptions that public water users must contend with.

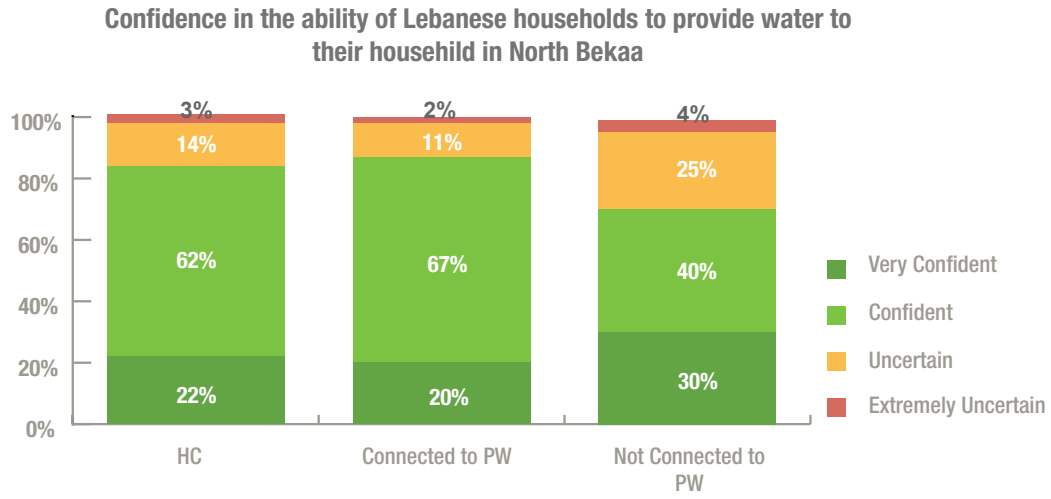


Figure 14: : Confidence in the ability of Lebanese households to provide water to their household in North Bekaa.

In contrast to water needs being met in the past, public water users are more optimistic in their ability to secure water in the future than non-users of public water. A total of 29 percent of non-users of public water felt they were either uncertain or extremely uncertain in their ability to secure sufficient water quantities in the future; conversely, only 13 percent of public water users felt the same.

Qualitative research supports these findings: Generally, the perception that water resources are dwindling contributes to a general anxiousness about the future. Particularly, non-users of public water are acutely aware of the fact that the groundwater table is receding. These residents point to the fact that wells in the area are running dry and residents are having to dig deeper to reach water aquifers. In contrast, public water users seem to feel less exposed to the effects of receding water resources, as their perceptions of dwindling resources is mediated in a large part by the state's infrastructure (despite its unreliability).

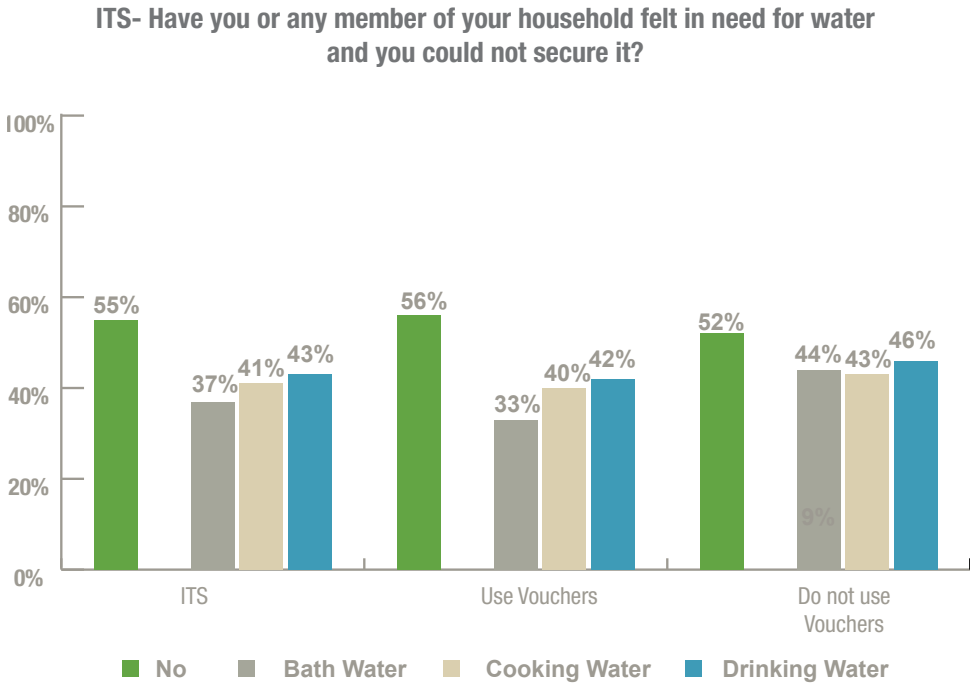


Figure 15: ITSs - Have you or any member of your household felt in need for water and you could not provide it?

In comparison with Lebanese households, Syrian ITS households have considerably higher perceived water insecurity. In total, 45 percent of ITS households identified themselves as having been unable to access sufficient water quantities to meet their needs at some point in the past. Yet, those who benefit from

vouchers tend to be more water secure: 56 percent say they are able to meet their household water needs. Conversely, 48 percent of Syrian ITS households who do not benefit from vouchers feel they were unable to provide water for their households at some point in the past.

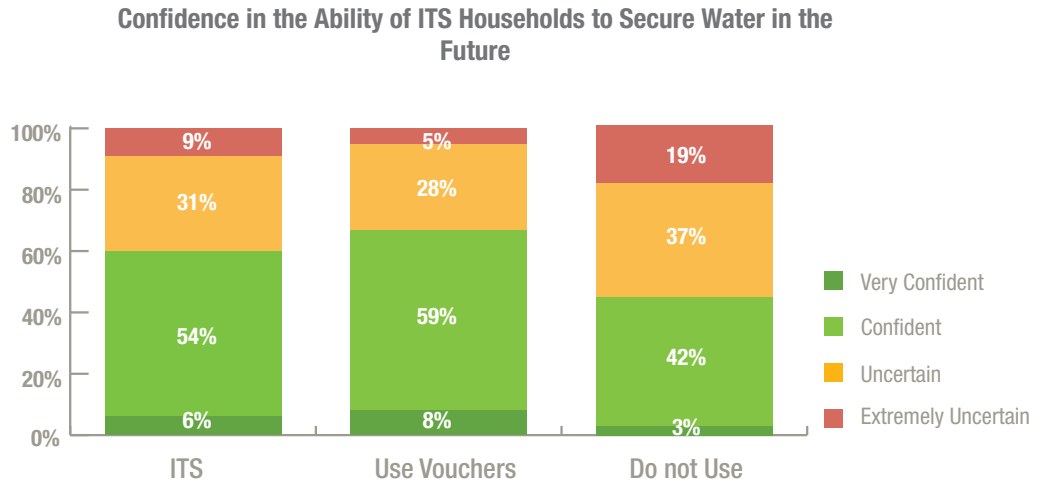


Figure 16: Confidence in the Ability of ITS Households to Provide Water to their Household in the Future in North Bekaa.

In total 56 percent of Syrian ITS households who do not benefit from water vouchers were either uncertain (37 percent) or extremely uncertain (19 percent) in their ability to secure sufficient water quantities in the future. Indeed, the effects of the voucher system on water security is apparent: More than 67 percent of Syrian refugees who use water vouchers said they were confident in their ability to secure sufficient water to for their households in future. Findings also show that ITS households are highly dependent on the voucher system, which manages to both alleviate considerable financial burden, free up valuable time, and reduce anxiety about the future.

Indeed, a total of 33 percent of Syrians ITS households who do benefit from the voucher programme feel uncertain about their ability to secure sufficient water quantities in the future. However, this uncertainty should be understood in the context of dependency on the voucher programme, coupled with the recurrent rumours that humanitarian agencies may halt the voucher programme.

5.2.3 WILLINGNESS TO PAY FOR WATER SERVICES.

5.2.3.1 WILLINGNESS TO PAY FOR GOOD QUALITY WATER AMONG LEBANESE

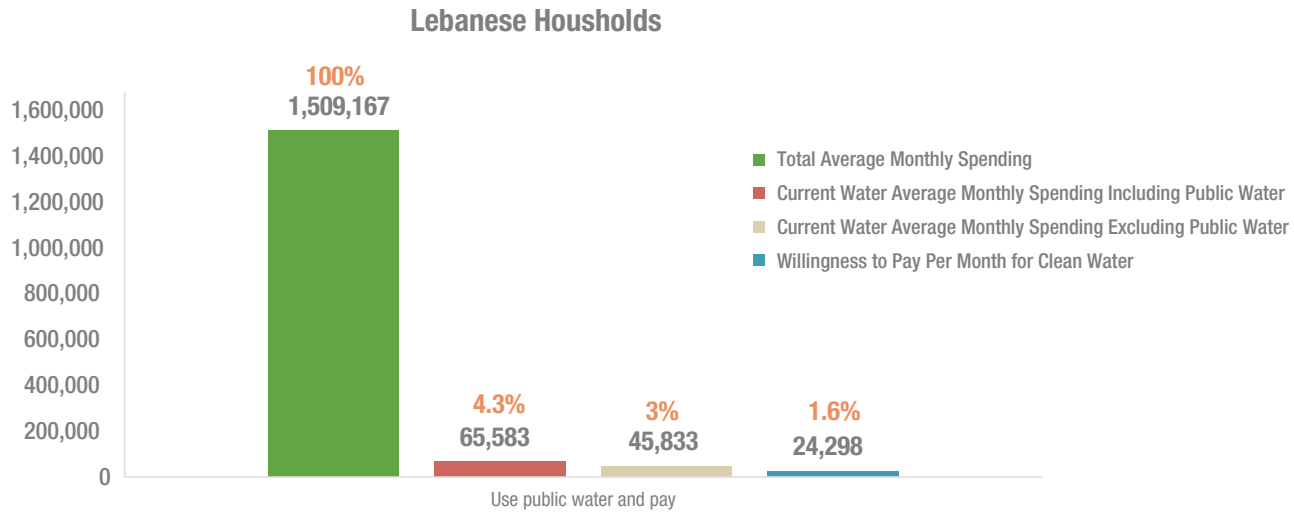


Figure 17: Willingness to Pay for Clean and Reliable Water Supply (Lebanese Households- paying users).

According to survey results, 94 percent of subscribed Lebanese households reported paying their water bill. Those using public water but not paying cited constant water cuts or the fact that they can access water for free as the main reasons for not paying their bill or not subscribing with the BWE. According to the BWE, the rate of non-payment in the area amounts to 62 percent on average varying by village. The discrepancy between reported number and that of the BWE is certainly partly due to a sampling bias that favours permanent residents over seasonal summer residents, and to a much smaller degree misrepresentation on the part of the respondents.

Results indicate that only 90 percent of surveyed Lebanese households are willing to pay where only 9.1 percent said they are not willing to pay anything. These results show that there is considerable willingness to pay among the Lebanese if they receive a reliable and good quality water supply.

On average a Lebanese household is willing to pay 24,298 LL /$16 (check figure 17) a month to receive a constant supply of clean water. This amounts to 291,576 LL/$194 annually which corresponds to 23 percent more than the annual subscription rate paid to the BWE. Results show that those who are not paying for public water but illicitly use it are willing to pay 435,000 LL/ $290 annually or approximately 50 percent more than those who are paying for their subscriptions (check table 9). In other words, this category of users is willing to spend as much as they currently pay for their water drawn exclusively from alternative sources for reliable good quality public water supply (check expenditure in table 9 in section 5.2.1.1).

LEBANESE LOCAL COMMUNITY	N	AVERAGE MONTHLY HOUSEHOLD EXPENDITURE LL	MONTHLY WATER EXPENSES LL	WILLINGNESS TO PAY/ MONTH FOR CLEAN WATER LL	WILLINGNESS TO PAY/ YEAR FOR CLEAN WATER LL
Use Public Water & Pay	275	1,509,136.36	65,637.10	24,298.00	291,576
Use Public Water without Paying	34	1,333,552.63	38,110.72	36,250.00	435,000
Do not Use & Not Subscribed	57	1,052,205.88	51,935.57	20,825.00	250,000
Do not Use Public Water but Pay	9	1,341,666.67	35,680.56	27,500.00	330,000

Figure 18: Willingness to pay for clean water among Lebanese Households (disaggregated by consumption category).

Those who are not using the public water, and do not pay (also unsubscribed) are willing to spend on average 250,000 LL /$167 annually or just about the cost of subscription. This also indicates that there is a wish for reliable, good quality public supply which is verified by qualitative data.

An average household that is connected and pays for public water, generally spends 4.3 percent of its total monthly expenditure on water (check figure 18). Results indicate that the same household is willing to pay only 1.6 percent of its expenditure on securing water. Focus group discussions reveal that, because Lebanese residents have long-paid the official rate for water, they believe that making up the water deficit should not cost them a great deal more. This further indicates that in the absence of service improvement higher tariff rates for water are unlikely to be accepted by Lebanese.

5.2.3.2. WILLINGNESS TO PAY FOR CLEAN WATER AMONG SYRIANS

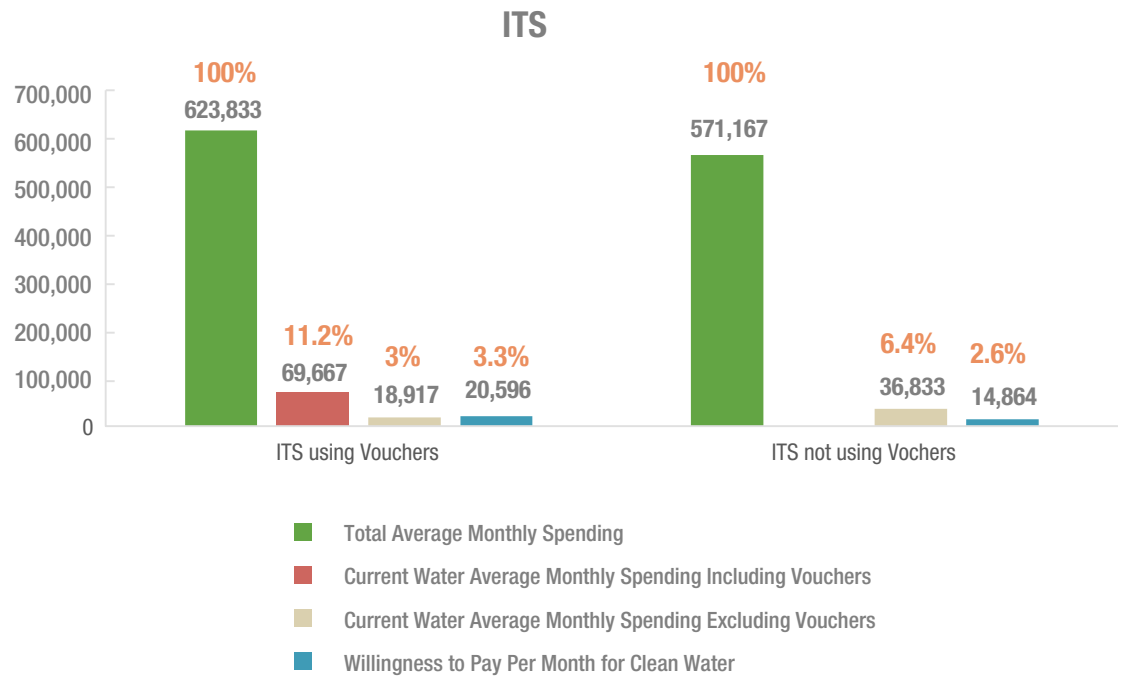


Figure 19: Willingness to Pay for Clean and Reliable Water Supply (ITS household)

As for Syrian ITS households, their willingness to pay for reliable and good quality water supply is lower than that of the Lebanese. On average an ITS household that uses vouchers is willing to pay 20,596 LL ($14) per month, which amounts to 247,152 LL ($165) annually. An ITS household that does not use vouchers is willing to pay a total of 14,864 LL ($10) per month, which amounts to 178,368 LL ($119), about 28 percent less than a voucher using household. As indicated in figure 17, ITS households that use vouchers are willing to pay slightly more than what they currently spend (18,917 LL ($13) month). Whereas ITS households not using vouchers wish to reduce their spending on water, which already hovers around 6.45 percent of their total monthly expenditure.

5.3. THE THIRSTY DRINK FIRST

The question of whether Syrian ITS households should be connected to the public water network divides public opinion among the Lebanese of the Northern Bekaa region under study. Approximately half of them believe that the notion itself is a non-starter. Yet more than 40 percent of this cohort also feels that they could change their opinion if there were to be a palpable improvement in the provision of reliable and good quality water supply in the area. Accordingly, this section finds that there is potential for up to 71 percent of Lebanese in the area coming to accept Syrian ITS households being connected to public water.

5.3.1. MIXED PERCEPTION AMONG LEBANESE TO CONNECTING SYRIANS

While cost savings of transitioning to the provision of public water to Syrian ITS households, are clear for Oxfam and vulnerable Syrian ITS residents, the position of Lebanese residents is anything but. Survey results demonstrate that 51 percent of Lebanese respondents believe that ITSs should be connected to public network. The 49 percent who refuse this idea do so for an array of reasons including fear of settlement, diminishing water supply and the belief that refugees have no right to use the network (See Figure 21). The highest disapproval rates were found among the residents of Chlifa, Haouch Tal Safieh and Jebaa respectively.

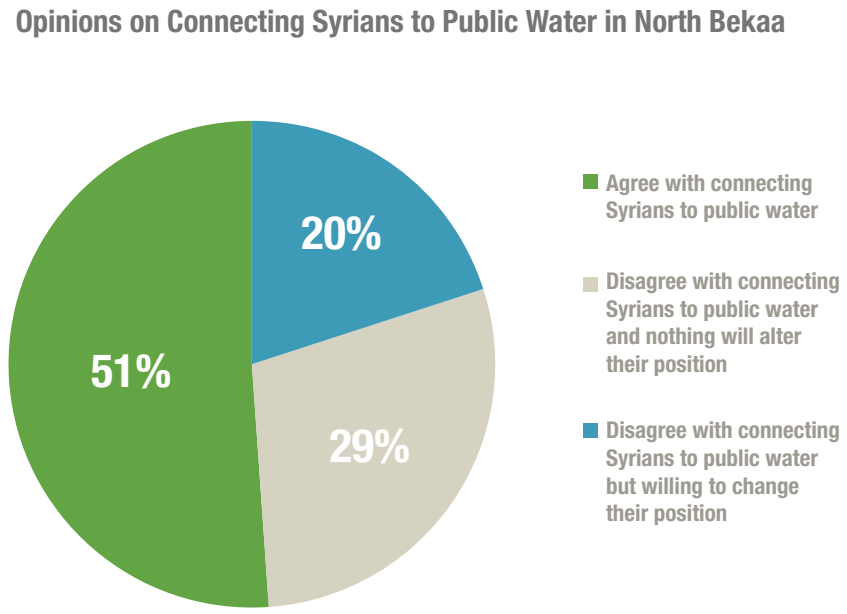


Figure 20: Opinions on connecting Syrians to public water in North Bekaa

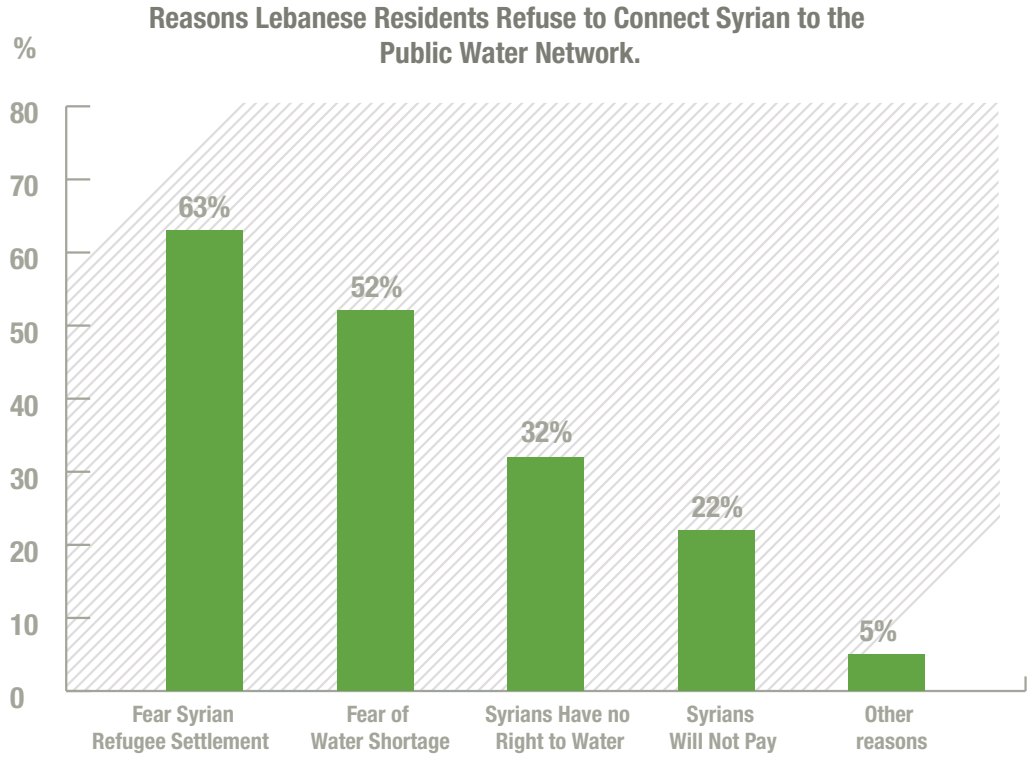


Figure 21:Reasons Lebanese Residents Refuse to Connect Syrian to the Public Water Network.

Those who refuse to extend public water to Syrian ITS households cite three primary concerns, chief among them the fear that public water provision may encourage Syrian refugees to permanently settle in Lebanon. While 63 percent of negative responses identified the fear of settlement as their primary reason, results were more pronounced in Christian-dominated villages such as Deir al Ahmar, Chlifa, and Haour Taala. Lebanese residents also fear that connecting the ITSs to the network might decrease water supply (52 percent). At the same time, 32 percent claimed that Syrian refugees have no right to water provision in the area.

Focus groups discussions confirm these concerns. Lebanese community members continually reiterate their belief that building durable infrastructure gives Syrian refugees a greater material basis to demand

settlement in future. Residents also felt that moves in this direction de-incentivise the international community from enacting relocation programmes for refugees in Europe or the wider Middle East. Interestingly, both FGDs and interviews reveal a dichotomy between Lebanese residents over how to deal with refugees in their villages. Lebanese residents who benefit from the Syrian refugee presence, such as landowners, water truckers, farmers, teachers and aid workers were more positive towards the Syrian presence. Those who did not directly benefit from the Syrian presence were more vocal about measures involving deportation and transfer.

Survey results also indicate that a considerable section of those who are opposed to connecting the ITSs to the public water network could change their minds given certain conditions. If certain measures were put in place, a total of 42 percent of Lebanese residents that currently oppose connecting Syrian ITS households to the public water network would change their position. These measures include improving public networks to satisfy local needs, in addition to enforcing a system whereby Syrian refugees pay a part of public water provision expenses (See Figure 20). FDGs and interviews with Lebanese community members and municipal leaders also show that repairs to the disjointed water supply system remains a top priority for Lebanese communities and, in the absence of a comprehensive solution to the water supply, many Lebanese will continue to oppose any project to connect Syrian ITS households to the public network.

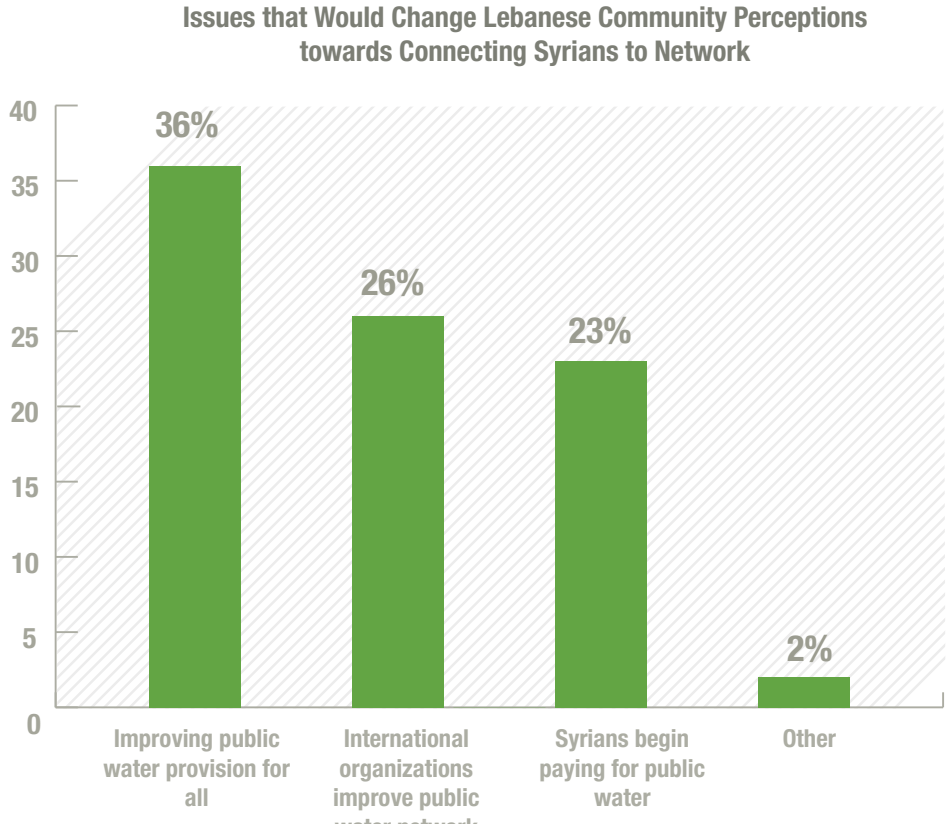


Figure 22: Issues that Would Change Lebanese Community Perceptions towards Connecting Syrians to Network.

As for municipalities' their initial reaction is to refuse any activity that could entrench the Syrian presence in their respective communities. Nonetheless, qualitative findings indicate that municipal leaders are open to trade-offs and could be convinced with the right incentive scheme to implement a more socially beneficial water provision modality. After all, municipalities are interested in solving the water crisis in their areas. The majority of municipal leaders suggested solutions such as constructing reservoirs or funding generators that could run water pumps on solar energy. Thus by constructing new, rehabilitating, and or upgrading existing water networks for all and installing a financially sustainable system of water provision, results indicate that it is possible to considerably increase Lebanese communities' approval of Syrian refugee water provision through the public water network.

5.3.2. PERCEPTION OF LEBANESE TO SYRIAN REFUGEES

The majority of Lebanese community members and Syrian refugees understand the endemic problems of water provision in their areas and tend to share whatever little resources that are available. Generally, Lebanese communities and Syrian refugees consider incidents of water related conflicts to be infrequent. Nonetheless, Lebanese have slightly differing perceptions over the existence and nature of water-related conflicts in comparison to refugees. Only five percent of Lebanese community respondents claim that water-related conflicts between Syrians and Lebanese exist, while Syrians perceive higher instances, at 10 percent. The two main reasons for such conflicts cited by Syrian refugees were Lebanese fear of refugee settlement and consistent water shortages.

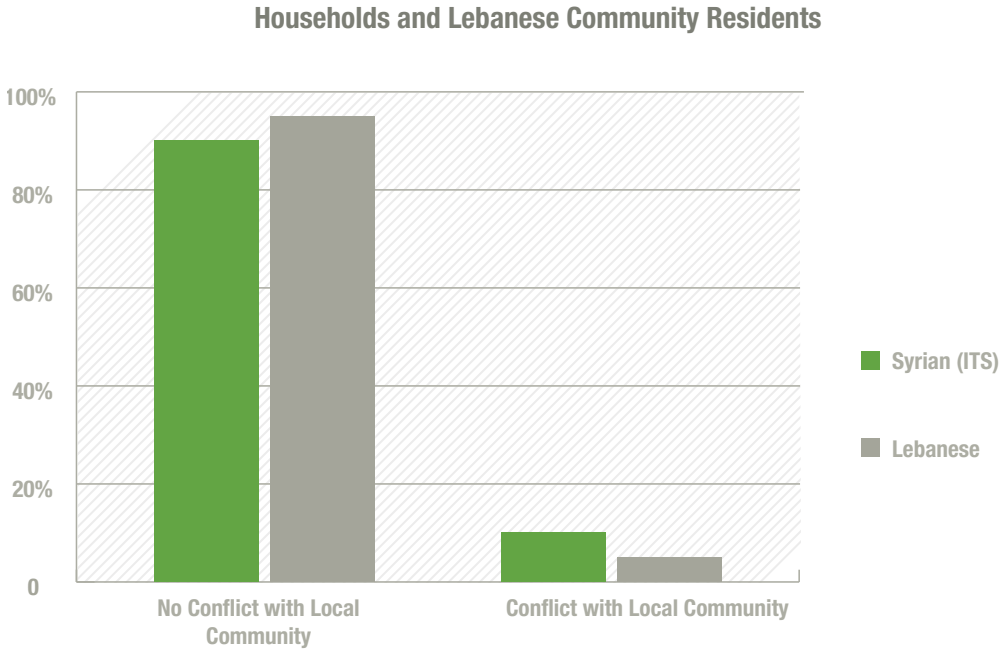


Figure 23: Perception of Water-Related Conflicts Between Syrian ITS Households and Lebanese Community Residents.

While the Lebanese express deep frustration about the demographic change in the area during FGDs, they tend to be sympathetic to the humanitarian misfortunes of Syrian refugees. When probed, Lebanese reveal that the main source of their frustration is the pressure on water sources, waste collection and the perceived injustice in terms of international aid distribution, which is seen to favour Syrians. What is more, the Lebanese show little enthusiasm about connecting ITSs to the public water network, unless there is a tangible trade-off. Such trade-offs include increasing water supply to Lebanese communities in addition to rehabilitation of existing networks, both of which are emphatically regarded by the Lebanese as a possible win-win situation.

Local Lebanese residents frequently appealed to their normative water rights to both preclude Syrian refugees from access to water and explain the water crisis in the region under study. Across focus groups and interviews with municipal leaders, research participants continually reiterated an old Arab adage that states: “The water does not pass the thirsty,” which roughly translates into “The thirsty drink first”. Normative customs give water rights to upstream riparian residents and grant them complete right to deal with water as they see fit. Under this logic, research subjects stated, those upstream of a water source has the right to decide what to do with it.

Even if de jure the Lebanese state claims to own all of the water that flows and falls in its territory, in practice normative practices prevail and this is certainly the case in the nine villages under study. According to focus group discussions, the families of the upstream village of Dar al Waasa enforce this normative custom, while the lowlands do the same vis-à-vis Syrian refugees in the area.

In short, Syrian refugees are perceived to have rights to water only after satisfying the needs of local Lebanese. In fact, Lebanese community residents rejected the logic and any sort of rationale related to connecting the Syrian ITSs households to the public network before their needs are satisfied. Interestingly, belief in the normative custom that water does not pass the thirsty is also held by Syrian ITS household members, who feel Lebanese have the full right to water in their areas and do not begrudge them for acting as they currently do.

5.4. CLEANING THE STAIRS STARTS FROM THE TOP:

The relative absence of the state from the area under study, results in weak infrastructure and management of water resources. Upstream families maintain effective control over the water from the Yammouneh spring by diverting its supply to their agricultural land and cannabis farming. Farmers employ inefficient flood irrigation techniques which uses up the majority of water during the driest periods of the year.

In addition, the only public institutions that maintain some form of credibility over improving water services in the area are the municipalities. Municipalities are actively involved in water service provision, at times through management of public wells to both Lebanese households and Syrian ITS households. Municipalities have also been involved in providing public water infrastructure such as pipes and water storage facilities.

Local communities feel that the funds and technical capacity of aid agencies should be channelled towards a more affordable and sustainable solution to the water provision problems affecting the area. As such, the only way that local communities would eventually accept to share public water with Syrian ITS households is through a holistic and sustained improvement in the provision of clean, reliable and affordable water for Lebanese citizens.

5.4.1. A BRIEF HISTORY OF WATER CONFLICT IN NORTH BEKAA

In the early 20th century, subsistence in the Bekaa Valley was significantly more dependent on agricultural activities than today, particularly in the Northern Bekaa, being removed from urban centres such as Zahle and Baalbek. The area surrounding the mouth of the Yammouneh spring was settled by semi-nomadic clans such as the Jaafars and, further downstream, the Chammas clans. The surrounding villages were predominantly inhabited by Maronite Christian communities and, to a lesser extent, Shiite Muslim communities. The French colonial occupation of Lebanon brought with it two important changes to water resource management in the area under study.

Firstly, at the political level the French authorities empowered national and local Maronite Christians over Shiite Muslim communities. Secondly, the colonial authorities constructed a canal system fed by the Yammouneh spring which supplied the villages in question, mostly for use in irrigating crops, but also for domestic use. Water was apportioned according to the measured area of each village. Indeed, the French colonial authorities replaced Ottoman riparian customs with the legal classification of water as a public good, something which persists until today in Law 144/1925 and 320/1926. It is worth noting that provision of water at the time was not as problematic as it is today; consumption was lower due to a smaller population and groundwater resources were more abundant.

During the 1950s local communities, with the acquiescence of national elites, began to utilise the area's abundant water resources to illegally grow cannabis around the mouth of the Yammouneh spring as well as its foothills.[184] In general, less well-off Shiite Muslim communities would work the land and process cannabis while Maronite Christians would facilitate its sale to end users and for export.[185] This cooperation between communities, often portrayed as adversaries, resulted in the area becoming increasingly removed from central government influence, a process which continued during the Civil War (1975-1990).[186]

During the Civil War, Maronite Christian communities largely migrated to urban centres in the Bekaa or other cities along the coast. Thus, less affluent Shiite Muslim communities cemented their hold on the areas around the mouth of the Yammouneh spring, often through armed conflict and intimidation. Primary among these communities were the Jaafar and Chammas farming clans from Dar al Wasaa and Boudaai, respectively. As the years of conflict progressed, both clans continued to grow in size and influence, while forging ties with emerging Shiite political movements. By the end of the Civil War, the Jaafar clan had moved closer to the sphere of allegiance and protection of the Amal Movement, while the Chammas clan became closer to Hezbollah, which remains generally true today.

5.4.2. THIRSTY FROM THE TOP-DOWN, AND BOTTOM-UP.

The absence of the state from the region controlled by these two clans also results in the absence of infrastructure and management of water resources. While figures are not available, under the threat and intermittent use of force, the upstream families maintain effective control over the water from the Yammouneh spring by diverting its supply to their agricultural land. According to local community members and municipalities, the farmers of Dar el Wasaa and Boudaai employ the Yammouneh spring's water in the cultivation of cannabis as well as various fruit trees, particularly in the summer when cannabis nears harvesting. In order to irrigate their crops, these clans employ water intensive flood irrigation techniques which uses up the majority of water during the driest periods of the year.

The inhabitants of Boudaai play a pivotal and divisive role in the management of water in the area. In general, Boudaai is one of the more water insecure villages in the region. However, whenever there is a need to water the cannabis crop in Boudaai, village elders negotiate the transfer of water to the lowlands underneath Dar al Wasaa. Once water reaches the lowlands, Boudaai farmers divert the canal towards their cannabis crops and, only when they are satisfied, do they allow the other villages of the area access to water. Due to their relative power and good relations with the rest of the lowland communities, the Boudaai farmers also play the role of interlocutor between the other seven villages of the area and Dar el Wasaa. Whenever water resources become overly scarce, the members of the other lowland villages consult with powerful Boudaai farmers who, in turn, negotiate exceptional access to water for the area from the Dar el Wasaa families. However, this water is also regarded to be of low quality given that it runs through an open irrigation canal which passes near homes and businesses that use the canal to discharge untreated wastewater.

These actions should not be seen as purely an act of maleficence on the part of the Boudaai and Dar el Wasaa farmers. Both communities lack access to any modern forms of irrigation, water storage capabilities or access to alternative livelihoods. Earnings from the illicit sale of cannabis have not resulted in the widespread accrual of wealth in the area in general. Instead, some powerful farmers of both clans accrue most of the wealth from such sales. The presence of the Lebanese Armed Forces and law enforcement in the area is largely considered as symbolic by local communities because the law is rarely applied against illegal farming and customary law is seen to supersede state law. In turn, government intervention to resolve water issues is also considered symbolic.

The only notable intervention was made by the BWE in 2010. At the time, the BWE proposed constructing an underground pipe to the source of the Yammouneh spring in order to provide lowland villages under study with public water. However, the initiative was effectively halted by the Dar al-Wasaa farmers who insisted on their traditional upstream riparian rights to the water source.[187] These riparian rights are relics of local customary laws and have no basis in the current Lebanese legal framework. The notion that a community holds monopoly rights to water sources are not legal but are still practiced as an informal custom. Focus group discussions confirm that these customary rights were held up by local community members as an established norm.

In order to compensate for the lack of water from springs, lowland villages under study began to exploit groundwater resources, both with and without borehole drilling licences. In turn, this meant that local

residents became more dependent on private initiatives and water supply sources, while also losing faith in the ability of the BWE or any other public institution to provide residents with a reliable, good quality and affordable source of water. Without water to supply and revenue from subscriptions, the BWE has also become less financially capable of rehabilitating the public water network, investing in storage capacity or moving towards cost recovery.

According to Law 221, RWEs were intended to be autonomous and financially independent institutions that cover the water production and operational costs through local subscription fees. Indeed, cost recovery mechanisms are an integral part of the reform agenda envisioned by Law 221 and the NWSS. The process required to reach cost recovery has, however, been delayed for several reasons.

The RWEs do not possess sufficient technical capacity to monitor their water supply or measure volume of consumption or demand.[188] The BWE for example does not account for the volume of water it pumps into the public network. As such, their supply curve is plotted based on rough estimates of the volume of a spring multiplied by the hours of pumping. Also, since the BWE has not installed operational water meters for subscribers, there is no way to concretely measure consumption.[189] In turn, demand figures are loosely based on rough estimates based on the number of subscribers and collected payments.[190] In the absence of metered consumption and the continuation of illegal connections and leakages, the BWE depends on water rationing or controlling supply to manage the financial obligations of the BWE and to deal with water shortages.

It is important to note that RWEs install a rubber volumetric valve to limit the flow of water to one cubic metre per day. However, many Lebanese tamper with the valves to consume more than their allotted share. The lack of law enforcement to counter this practice limits the capabilities of the BWE to monitor the water network or enforce regulations, especially in areas such as the Northern Bekaa, which is notorious for weak law enforcement.[191] Lacking the ability to increase collection and the dependence on water pumps powered by public electricity has resulted in the BWE accumulating a debt worth 70 billion LL ($46.5 million) to the country's public electricity company (EDL) since its establishment in 2001.[192]

5.4.3. LOCAL ACTION, NATIONAL POSTURING: THE ROLE OF MUNICIPALITIES

As previously mentioned, the only public institutions that maintain some form of credibility over improving water services in the area remain municipalities and this is primarily because they are locally elected. While their legal mandate to improve or rehabilitate water infrastructure remains contested (See section 3.2), to varying degrees, municipalities are actively involved in water service provision, at times through management of public wells to Lebanese households and Syrian ITS households. Municipalities have also been involved in providing public water infrastructure such as pipes and water storage facilities. As such, municipalities are seen as one of the few visible actors who manage public goods and affairs, particularly since the Syrian refugee crisis. This sentiment is even more pronounced among Syrian refugees as municipalities constitute their first and most regular point of contact with the Lebanese government.

As part of the Lebanese state and electoral system, municipalities are naturally predisposed to political parties, albeit to varying degrees. In general, municipalities are underfunded from state resources as tax revenues, which are legally earmarked for the Independent Municipal Fund, are apportioned to various segments of regional government public service provision, such as solid waste collection.[193]

According to local community members, the political influence over municipalities in the area under study is not typically overt in nature. Rather, municipalities in the area are a reflection of the familial makeup of villages, which are at times associated with different political parties, again to varying degrees. Even within families there are often schisms over allegiance to the influential political parties in the region, namely the Lebanese Forces and the Free Patriotic Movement among Maronite Christians, as well as the Amal Movement and Hezbollah among Shiite Muslims. In parallel, political parties require the support of local communities to maintain their power bases, as was evident in the municipal elections of March 2016. Thus, municipalities also hold some influence over the political positions of parties with respect to local issues.

5.4.4. MORE THIRST THAN WATER

From the perspective of local communities, the arrival of Syrian refugees has, in general, posed a demographic existential issue. The issues are rooted in the underlying fear and uncertainty over the duration and extent to which the Syrian conflict will affect the nature of Syrian settlement in Lebanon. All Lebanese actors seek to avoid any form of permanent settlement but also have to deal with the evolving needs of Syrians as they progress from purely humanitarian aid to livelihoods and self-actualisation.

These existential issues are particularly pertinent with regard to water. The silver lining to the crisis is that with the Syrian refugees also comes the financial and technical capacity of aid agencies with a mandate to support both refugees and Lebanese residents under the LCRP. Syrian refugees directly benefit several constituents of the Lebanese community: Landowners can now rent their land, even if it is not connected to public services. Water truckers now have a much larger consumer base to supply in the form of Syrian ITS households, as well as the financial resources from aid agencies to fund that service provision. Finally, while they must manage the Syrian refugee crisis with scant resources, municipalities have also gained access to funds and technical expertise from aid agencies.

Local communities feel that the funds and technical capacity of aid agencies should be channelled towards a more affordable and sustainable solution to the water provision problems affecting the area. However, first and foremost, all actors involved reiterated that if this were to take place, the only way that local communities would eventually accept to share public water with Syrian ITS households is conditional on "the thirsty drink first." By this, Lebanese actors across the board insist that before any action is taken on the ground to connect Syrian ITS households with public water, there must be palpable and sustained improvement in the provision of a reliable, good quality and affordable water supply for Lebanese citizens. Lebanese local community members and authorities repeatedly expressed an old adage, "you can't clean the stairs from the bottom."

This Lebanese expression repeated by focus group participants effectively describes a problem that cannot be solved by isolated and piecemeal actions, which is how the proposal to install volumetric meters was perceived. To the majority of participants, volumetric metering was perceived as a bottom up solution that puts the onus of fixing the ineffective water system on them rather than on policy makers and public service providers. Volumetric metering without the necessary public policy reforms that address the perceived systemic corruption and incompetence was considered illogical.

As such, Lebanese municipalities and residents said that any solution to the water issues in the Northern Bekaa needs to be holistic and take into account the various interests through incentives schemes to allow public water to reach Syrian refugees. Only by doing so would the position of those who oppose Syrian ITS households' public water connection be swayed and local communities accept the principle of such a modality.

5.4.5. DYNAMICS OF INTERACTION

Interviews and focus groups with local community members, Syrian refugees and local leaders demonstrate the divergent interests between various stakeholders. As Table 10 indicates, political parties are either neutral or outright opposed to providing Syrians with public water. The main political parties in the area have political concerns related to the fear of Syrian settlement in the area. Connecting Syrian refugees to the network is seen as 'creating facts on the ground' by laying the infrastructure for permanent Syrian presence in the areas in question.

As seen in Figure 22, political parties have considerable power to enforce their decisions when it comes to changing the current provision modality but have no specific interest to do so. In effect, their main interest remains keeping the local population satisfied, the cannabis farmers under control and the Syrian refugee

situation contained. Furthermore, research shows that the MoEW is highly opposed to connecting ITSs to the public network. The BWE, on the other hand, is highly supportive of connecting the ITSs to the public water supply networks at an agreed tariff rate, as it was seen as bringing needed revenue that would assist the BWE in its drive for further financial sustainability.

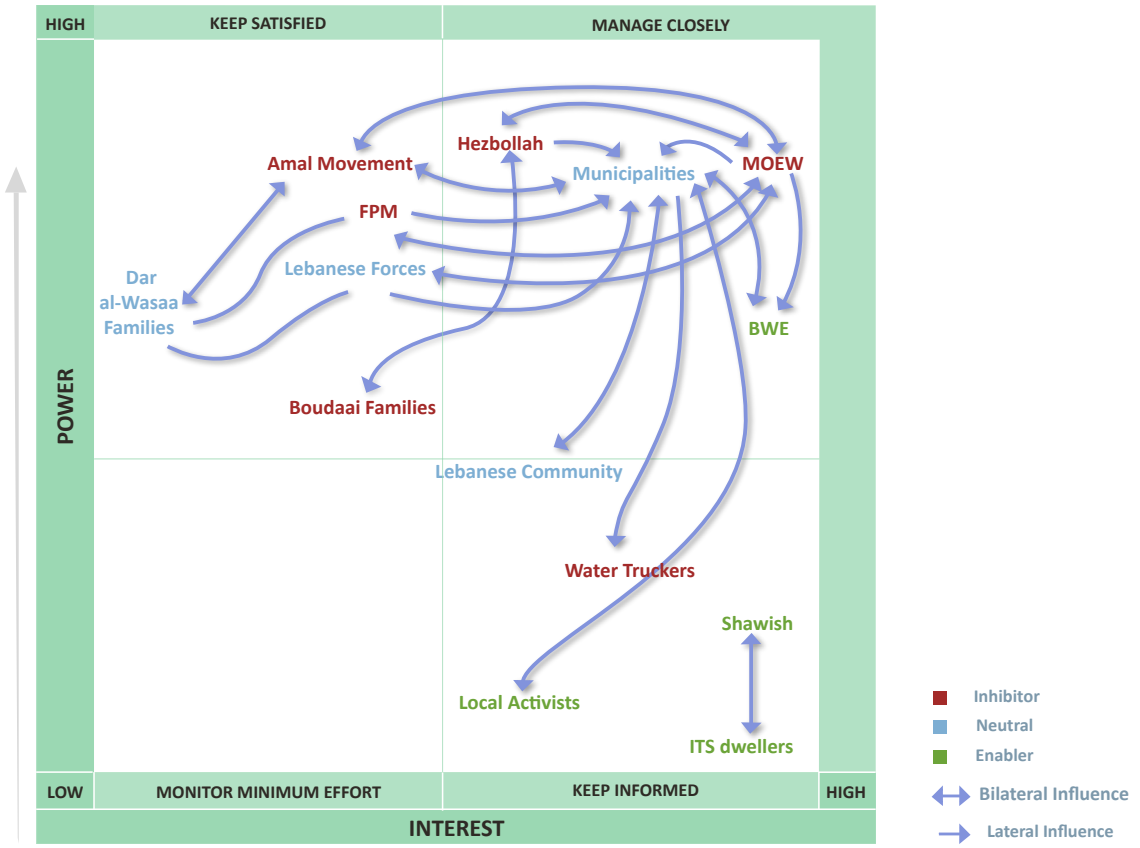


Figure 24: Stakeholder Analysis Matrix.

The municipal position is more nuanced, as they tend to conditionally oppose connecting ITSs to the water network. Since municipalities have to deal with the day to day needs of Syrian refugees, they have a strong interest to implement a sustainable solution that could resolve water provision for both Lebanese and Syrians. At the same time, as figure 22 shows, municipalities have considerable power and leverage as an elected body to change the situation on the ground and affect other players' actions (i.e. political parties and MoEW).

The Lebanese community remains divided as the survey and focus group results indicate, and could be swayed if the right package of incentives and trade-offs were presented. The stakeholder analysis shows that by taking an approach aiming to consolidate a unified position between BWE, municipalities, Syrian ITS households and Lebanese communities could prove feasible due to the convergence of their long-term interests in a sustainable water provision system in North Bekaa: A win-win solution for all actors.

Table 11: SWOT Analysis of Major Stakeholders in Northern Bekaa.

ENTITY	POSITION ON ITS PUBLIC WATER SUPPLY	STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
Hezbollah	- Opposed - Fears Syrian refugee settlement - Supply Lebanese first	- Local community allegiance - Partial influence over local authorities - Influence over national policy - Influence over Shiite Muslims - Influence over cannabis farmers in Boudaai (Chammas)	- Susceptible to local family dynamics - Low influence over Dar al Wasaa cannabis farmers (Jaafars) - Low influence over Maronite Christians	- Could change position if local acquiescence - Increase in supply to Lebanese scores political points	- Effectively halt any action that opposes position
Free Patriotic Movement	- Opposed - Fears Syrian refugee settlement - Supply Lebanese first	- Local community allegiance - Partial influence over local authorities - Influence over national policy (specifically MoEW)	- Susceptible to local family dynamics - Moderate influence over municipalities	- Could change position if local acquiescence - Increase in supply to Lebanese scores political points	- Significantly complicate any action that opposes position through the MoEW
Lebanese Forces	- Neutral - Supply Lebanese first - Fears Syrian refugee settlement	- Local community allegiance - Partial influence over local authorities	- Susceptible to local family dynamics - Low influence over Shiite Muslims - Moderate influence over municipalities	- Could change position if local acquiescence - Increase in supply to Lebanese scores political points	- Delay project at national level
Amal Movement	- Opposed - Fears Syrian refugee settlement - Supply Lebanese first	- Local community allegiance - Partial influence over local authorities - Influence over national policy - Influence over Shiite Muslims - Influence over cannabis farmers in Dar Al Wasaa	- Susceptible to local family dynamics especially Dar El Wasaa families. - Low influence over Boudaai cannabis farmers - Low influence over Maronite Christians	- Could change position if local acquiescence - Increase in supply to Lebanese scores political points	- Effectively halt any action that opposes position

Dar el Wasaa Families	- Neutral - Refuses to relinquish rights to source water - Pro-Amal movement	- Controls source of water supply - Has strong military presence - Strongest family/clan in the area	- Underdeveloped and poor - Lack developed irrigation methods or storage capacity - Direct conflict with the police	- Potential to increase water supply, if proper storage and irrigation methods are developed - If on board, can sway the decision of political parties and municipalities	- Cut water supply to the lowlands - Halt any project that opposes their interests
MoEW	- Opposed - Fears Syrian refugee settlement - Supply Lebanese first	- Influence over BWE - Influence over national policy	- Low presence on the ground - Low influence over municipalities	- Increase in supply to Lebanese scores political points	- Significantly complicate any action that opposes position
Lebanese community	- Divided - Fears Syrian refugee settlement - Supply Lebanese first	- Influence over municipalities - Influence over political parties - Significantly complicate action	- Divided over issue - Susceptible to political and sectarian influence	- Open to trade-offs and incentives	- Significantly complicate any action that opposes position
Syrian refugees	- Supportive - Fear of angering local community and authorities	- Attract aid agency funds	- Low power or influence	- Success dependent on usage - Attract funds for aid agencies	- Refuse certain future modalities

RECOMMENDATIONS

Water sector reform in Lebanon and, in particular, the Northern Bekaa has always presented a formidable challenge for actors in the sector. With the arrival of Syrian refugees to the area, new impetus and opportunity for reform now present themselves as alternatives to an unsustainable situation. The financial and technical support of the humanitarian agencies working in the Northern Bekaa has helped refugees to meet their basic water needs. However, as this report has shown, continued depletion of renewable water resources in the area, normative customs of water usage as well as the differences in how water is sourced by Syrian ITS households and Lebanese residents are all creating a situation that is becoming more untenable from socioeconomic, financial and resource management perspectives. As such, the following set of recommendations aim to provide the parameters for sustainable reform, not just in the area under study, but also in terms of how the Syrian refugee crisis can be transformed into a win-win situation for Lebanon's water sector, while also providing refugees living in ITSs with the water they need to live a decent and healthy life until they are able to return to their homeland.

6.1 GENERAL RECOMMENDATIONS FOR THE WATER SECTOR IN LEBANON

Without a serious effort to reform the structural issues that have long-plagued water resource management in Lebanon in general, and the Northern Bekaa in particular, programmatic interventions by humanitarian and water sector actors can only have a limited effect. At the heart of these structural issues is the long-awaited implementation of Law 221, which is the legal basis of governance of water resource management in Lebanon. Accordingly, efforts need to be made by the executive branch of the Lebanese government, specifically the MoEW and the CoM, to empower the RWEs with the authority they require to guarantee their institutional and legal autonomy, manage their coverage areas as well as work toward cost recovery and more sustainable water resource management.

A principle element of these reforms is related to the political will to empower RWEs with the financial, human and technical resources they require to fulfil their mandate under Law 221. Part of this effort will involve transitioning parallel and existing modalities of local water resource management under the authority of the RWEs. To do so, local water committees, which are comprised of different actors under municipal council management, should work with RWEs in their areas to merge their activities and eventually fall under the complete management of RWEs. In order to assume their legally-mandated role in local water service provision, this process will need to be led by RWEs themselves. By actively engaging local communities, RWEs can play a positive leadership role to engage with its various institutions, as well as encourage collaboration, empowerment, local buy-in and consensus building.

Another stumbling block to be overcome so that Law 221 can finally come into full effect will be the compilation and finalization of a comprehensive National Water Master Plan (NWMP). Already, efforts by international development agencies to map and plan out a NWMP have begun, and a recent study published on the Bekaa region has created momentum in this direction.[194] As such, there should be an effort on the part of the MoEW and the CoM to work with the existing data to finalise the NWMP according to their legal mandate as the regulatory body that sets the general policy of the sector.

Doing so will require the MoEW to facilitate the process of regional water master planning which accurately reflects supply and demand water balances, instead of the current system where demand and supply are based on assumptions and incomplete information. Indeed, the process of accurate water master planning in RWEs areas of coverage will have to include agricultural water use, the sector which consumes more water than any other, as well as the licensing of illegal wells, and the institution of public water metering. In line with the commitment to empower RWEs, the MoEW will need to assign the RWEs to conduct water master planning and support the establishments to institute required reforms.

Indeed, to be effective such action would also need to be taken in tandem with efforts by Parliament to institute the draft Water Code, approved by the CoM in 2005. By expressing such a commitment, the Government of Lebanon will be able to fulfil its stated objective to further administrative decentralisation and allow the RWEs to assume administrative and financial autonomy. Having seen that political will is in place, momentum can be built for the international community to support capacity building at RWEs and implement the National Water Sector Strategy (NWSS).

Efforts to affect cost recovery and environmental sustainability will need to be at the forefront of such support, especially in light of the Syrian refugee crisis effects on water resource management in the region. Several programmatic responses should form the basis of such efforts, particularly those that enhance the deficient management of water resource demand and supply. One of the first will need to be a country-wide metering program to facilitate a transition to volumetric pricing policies instead of the current flat-rate continuous flow tariff, especially for irrigation water which makes up the bulk of unmetered water usage in the Bekaa. As a matter of principle and policy, however, changes in tariff structures will need to reflect improvements in the provision of reliable good quality water supply to subscribers to ensure collection as well as measured and equitable supply.

As this transition to more sustainable decentralised institutional management takes place, there will also be a need to manage resources more sustainably, particularly groundwater resources. According to the NWSS, the number of unlicensed wells outnumbers licenced wells by a factor of 66. The NWSS's plans to reduce the number of wells by 6 percent each year over a decade can be put in place as long as the institutional capacity of the RWEs is also continually enhanced to implement this change. This transition will require the enforcement of strict regulations for well licencing already drawn up by the MoEW, as well as the political will to allow law enforcement to monitor and implement the policy of formalisation and cessation of illegal groundwater extraction.

6.2. RECOMMENDATIONS FOR THE PROVISION OF WATER SERVICES FOR ITSS

Faced with an unprecedented challenge of supplying the influx of refugees, international agencies needed to adopt emergency measures to provide vulnerable Syrian ITS households with an adequate supply of safe water for consumption and basic needs. However, now that refugee flows are relatively stable, those same agencies will need to work to reverse unsustainable practices and support Lebanese communities in line with the LCRP. At the heart of this challenge will be a transition to water provision modalities, which are increasingly sustainable, not just from a resource management perspective, but also from a financial perspective. Through doing so, agencies will also need to support national institutions, such as the BWE, instead of contributing to unplanned and unregulated private sector initiatives to fill supply gaps.

In tandem, the Government of Lebanon will also need to take ownership over water resource management and assume responsibility for provision of water to any and all populations on its territory. Doing so will increase confidence in the state among the citizenry and, in turn, the government's ability to impose its authority over informal water resource extraction, provision, diversion and use. However, for the government to be able to do so, water provision to Syrian ITSs households will need to be viewed as an opportunity to strengthen state institutions, achieve cost recovery and increase socioeconomic returns, instead of a move toward greater permanence of refugees in Lebanon.

The results of this study have shown that the current system whereby international agencies cover the costs of informal water trucking is unsustainable from financial, institutional, and resource perspectives. The current water trucking provision modality fills a crucial gap in terms of water provision, results in lower living costs for refugees and, in turn, lowers refugee vulnerability. However, by purchasing water from truckers in the informal market that largely depend on unlicensed wells, international agencies

are contributing to increased informality, haphazard management, overall deterioration of groundwater resources and deepening the structural problems of the water sector. This notwithstanding the fact that the water trucking modality is around six times more expensive than public water as supplied by BWE. Given continuous funding shortfalls coupled by the very real possibly that donor fatigue increases or other issues require governments to invest more at home than abroad, this is a cost that, eventually, the international community may not be willing or able to absorb.

Before that takes place, the Government of Lebanon as well as the international community will need to transition to water provision and resource management, which contributes to greater sustainability as well as alleviating the financial burdens on households that pay significantly higher rates for additional water provision, both among Syrian refugees and the Lebanese communities.

To order to affect such a transition, four potential scenarios have been identified:

Scenario 1: **Where a public supply network is present and is operated by the RWE, Humanitarian agencies should gradually work towards connecting as many Syrian ITSs as possible to the public water network.** This should be done only if the existing water supply in the system can sustain the needs of Lebanese populations in the area, and the additional needs of the Syrian refugees in ITSs. In case the supply is insufficient, then technical water supply systems upgrades should be undertaken, such as expansions in networks coverage, rehabilitation of networks with technical water losses, improvements in water production capacity (pumping or the development of new water sources) and improvements in water storage capacity. **The provision of public water to the ITSs should be supplied to centralized water points in each ITS depending on the total number of persons residing in it**. Each water point should be equipped with a volumetric meter to allow no less than 35L/person/day to be drawn. The fixed output of the volumetric meters will ensure that refugees are provided with sufficient quantities of water while also assuaging any concerns that connecting the Syrian ITSs to the public network will increase water consumption that would in turn result in wastewater production beyond the capacity of existing water infrastructures on site. **The Humanitarian agencies should ensure cost recovery to the RWEs, in payments to the RWEs for measured quantity of water provided**. Humanitarian agencies will need to work closely with the RWEs to agree a metered tariff system appropriate for water provision to ITSs, and reach an agreement on an effective and equitable billing system, which determines who pays for the service as well as at what rate and frequency. Furthermore, humanitarian agencies will need to enhance engagement with Syrian ITS households to improve community level water management and conservation practices.

Scenario 2: **Where a public water supply network is present but is managed directly by the Municipality or Water Committee rather than the RWE**, a similar technical approach to Scenario 1 should be adopted. However, to ensure a gradual transfer of responsibilities to the RWEs, an agreement between the RWE and the Municipalities needs to be reached whereby the Municipality is given operation and maintenance rights for a set duration after which a handover process to the RWE will ensue. Ideally under this agreement, a cost recovery sharing scheme should be developed whereby a percent of the water consumption payments are allocated to the RWE. In addition, technical units need to be established within the municipalities to coordinate with the WEs. These local units would communicate any challenges in the implementation of the project and report technical problems such as leaks, bursts or electrical faults. This would decentralise the operation and maintenance of the rehabilitated and expanded network while maintaining the supervision and oversight of the WEs.

Scenario 3: **Where a public water supply network is not available or the technical upgrades are financially prohibitive, then a local borehole (ideally licensed) can be used or developed**. The newly developed boreholes can also be used to increase the water production capacity in the area benefitting the Lebanese community as well. The humanitarian organisations need to work with the RWEs and the MoEW to legalise and formalise in a sustainable manner the network of unlicensed boreholes, which are currently both

haphazard and unsustainable in nature. Similar to Scenario 1, water supply is to be piped from the existing or newly developed borehole to a centralized water point in the ITS. The Humanitarian agencies should ensure cost recovery to the RWEs, in payments to the RWEs for the measured quantity of water provided.

Scenario 4: **Where it is not possible to connect Syrian ITSs to public water networks or licensed boreholes, humanitarian agencies can rely on water trucking**; however, not as it is currently practiced. Instead, humanitarian agencies should collectively adopt an approach that contractually binds water truckers to source water from sources managed by the RWEs at an agreed upon tariff per cubic meter, which is payable to the RWEs.

CONSENSUS BUILDING PLAN

If international agencies tried to connect the Syrian refugees to public water today, many local communities and municipalities would thwart such an effort. Before any such action is taken, international agencies will need to formulate a consensus building strategy centred on local community buy-in as well as participation. However, merely building infrastructure may not be sufficient to garner consensus around provision of public water to Syrian ITS households.

Hence, it should be understood by humanitarian actors that any action which contributes to the perception that refugees are being provided with services that could increase their permanency will result in staunch opposition by actors across the board. Instead, the intervention logic should be understood in the following manner: International agencies will increase reliable and good quality public water supply to Lebanese households and subsequently to Syrian refugees, even if in effect agencies contribute to reforms that increase supply to both.

Only then can international agencies feasibly begin to work with local authorities and RWEs on technical issues related to the dwindling water supply, cost recovery, volumetric metering, reducing the proliferation of unregulated boreholes, lack of network rehabilitation and the dearth in law-enforcement related to water theft. In turn, addressing these key reforms will need to form the main objectives of an intervention, which integrates short, medium and long-term strategies across a pragmatic multi-stakeholder platform. Such a platform will also need to provide different incentive schemes for different actors who play a role in reliable, good quality and affordable water supply to Lebanese communities and refugees alike.

In turn, humanitarian actors will need to empower this approach through funding schemes which incorporate forward looking prioritization of interventions. The basis of such support would need to continue to be a two-fold commitment: To invest in sustainable infrastructure development that can serve both refugee and Lebanese communities, as well as undertake comprehensive water provision to ITSs while empowering the local institutions, as opposed to only working with the informal private sector.

As such, international agencies will need to institute an integrated consensus building plan before the implementation of any service provision modality. Such a plan should initially target the enablers and neutral stakeholders (as identified in Section 6.3) and then expand to engage with inhibitors. It is also recommended that the plan commence by engaging with the following actors:

- **Municipalities**: Municipalities should represent the core consensus building entity as they enjoy popular legitimacy and maintain solid relations with local power brokers, such as large families and clans. Through these relations municipalities provide crucial access to political parties, who require their allegiance to maintain power at the local level. If municipalities spearhead the proposed initiative, it will be increasingly difficult for potential disruptors to halt any initiative they do not agree with.
- **Local families**: Municipalities can provide crucial access to influential local families and networks that maintain irrigation as well as perceived water riparian rights. Given the need

to combine any acceptable trade-offs for local communities, municipalities and RWEs, it is recommended that municipalities are empowered to engage local communities in order to build consensus towards the ultimate goal of providing reliable good quality water to all.

- **Agreement between municipalities and RWEs**: International agencies should lead a process of dialogue and agreement between municipalities and the RWEs. Regular meetings and a memorandum of understanding that brings international agencies and these intrinsic institutions together will prove crucial to implement required reforms, local buy-in, and the required exchange of expertise. Through cooperation between these two entities, money saved from private water trucking could be utilised to empower both the BWE and municipalities.
- **Public Consultation**: In order to complement the aforementioned consensus building, international agencies need to work with municipalities to foster local buy-in through public consultations. Such consultations can be conducted in order to monitor public opinion as well as help push the reform agenda forward.

NORTHERN BEKAA STRATEGY

The area under study provides an archetypical example of how each region of the country will require a pragmatic and localised approach to address long-standing issues in a manner which leads to improved water supply for all communities. Indeed, in order to begin to resolve the multitude of issues affecting water supply in the nine villages under study, international agencies will need to start at the source of the water and the problem.

As this study has shown, water supply deficits in the nine villages are predominantly rooted in a lack of storage capacity, inefficient irrigation systems and diversion of the Yammouneh spring in Dar Al Wasaa. Addressing the water needs of the Dar Al Wasaa families so they can maintain sufficient supply for irrigation and residential use will be the first step towards releasing enough supply to accommodate for required levels of public water provision downstream.

What is seen at first sight as an intractable water dispute between competing families and clans can be resolved through sound water resource management. Interventions should take into account the actual water balance by mapping the water supply of all available water sources and water demand by all water users, including municipal and agriculture. Only following that, can suitable investment be made in improving water storage capacity and irrigation systems, which contributes to improved water balance and in consequence higher water availability for public use.

By providing the area with this infrastructure to meet agricultural and municipal water demand in the upstream villages, water can be made available to villages downstream. Doing so will require increased irrigation efficiency with serious investment in sprinkler and drip irrigation techniques as well as rainwater harvesting and storage facilities over the short-to-medium term (one to three years). More extensive storage capacity in these areas over the longer term (four plus years) will also need to be proposed as a way to maintain local interest in longer-term solutions.

To build water infrastructure in all areas concerned, international agencies should aim to implement a consolidated irrigation development plan led by local municipalities, the LRA as well as the Green Plan and the Ministry of Agriculture.[195] For obvious reasons international agencies cannot engage in a direct conversation with families and clans on illicit agricultural production. vThat is why working primarily through the local municipality is a pragmatic approach given that they are in close contact and maintain familial relations with the clans.

In order to build consensus around this idea, actors such as international agencies will need to prove that the trade-offs for families are real. This will require international agencies and their partners in local government to introduce the concept of water production metering at the mouth of the Yammouneh spring

as a means to measure how much water will eventually be received in storage facilities provided as well as how much is being used when new irrigation techniques are put in place. It should be stressed that the meters are not a precursor to volumetric tariffs, which would not be reasonably accepted until sustainable supply is provided for extended periods of time. Once residents receive the amount of water they actually require to grow their crops using modern irrigation methods and see that works on storage infrastructure are progressing, upstream families would consent to share more water with downstream villages.

Naturally, the nine villages in question will also need to see palpable results in order to allow Syrian refugees to access public water. At first, villages should be informed of the plan to build infrastructure upstream to release water to their villages. In tandem, under the management of the BWE, local municipalities should be encouraged to play their role as implementers in future water sector infrastructure under the Municipal Act. Particular focus will need to be placed on reducing network losses, which account for up to 50 percent of all public water supply. This arrangement will help to foster local trust and ownership of the process, meet municipalities' primary demands for infrastructure reforms, and increase their popularity among the local electorate once water supply increases.

By creating this consensus, municipalities can also be engaged in the process of ensuring volumetric meters are installed and remain operational during infrastructure reforms. Again, at the start it should be stressed that the purpose of meters is not to charge volumetric tariffs but rather to manage supply as part of a consolidated water resource management plan. Having this infrastructure in place will also build consensus around volumetric metering for Syrian ITS households provision.

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8. ANNEXES

ANNEX A
WATER EXPENDITURE SURVEY - HOST COMMUNITY

For Surveyor:			
	Indicate geographical area/location. Specify ITS	[Enter response]	Enter response
	Indicate gender	Male Female	Choose one
	Are you the head of household?	Yes No	Choose one, if no stop and save
	Do you have a house in this village?	Yes No	Choose one, if no stop and save
Household Characteristics			
	What is your age?	[Enter Value]	Enter Value
	What is the number of HH members?	[Enter Value]	Enter Value
	Number of Children (<5 years old)?	[Enter Value]	Enter Value
	How many HH members contribute to HH income?	[Enter Value]	Enter Value

	What is/are the source(s) of the income of all HH income earners?	Farming Local industry Self-employment Government employment Private employment Pension No Source of Income	Choose multiple
	What is the monthly expenditure of your household (LL)?	LL. 0- 225,000 LL. 226,000-450,000 LL. 451,000-750,000 LL. 750,000-1,500,000 LL. 1,500,000- 3,750,000 Over LL. 3,750,000	Choose one
	Do you have any debt?	Yes No	Choose one
	Type of dwelling	Apartment House Others	Choose one
	Dwelling tenure status	Owned Rented Others	Choose one
	Accommodation surface	[Enter Value] m^2	Enter Value
	Is it your primary dwelling?	Yes No	Choose one
Water provision			
	Do you use the public water network?	Yes No	Choose one
	Do you have a public water supply subscription from the Bekaa Water Establishment?	Yes No	Choose one

	If No, Why not?	The hose is not connected to network Quality of water is bad Irregular connection No water in network BWE does not cover village Water is too expensive I can get water for free	Choose Multiple [If Q17, No]
	Do you pay municipal water fees?	Yes No	if Q17 yes]
	Why not?	Quality is bad Water cuts Water does not reach my house. BWE does not provide water to my town I can get it for free	If Q19 No
	How much do you pay for water provided by public water network per year?	[Enter Value]	Enter Value (if Q16 yes)
	In which season do you use the water provided through the voucher system?	Summer Winter	Choose multiple (if Q16 yes)
	For what purpose do you use the water provided through the public network winter?	Drinking Cooking Services	Choose multiple (if Q16 yes and if Q22 is winter)
	How often is the water service running from the network per days per week in winter?	[Enter value] d/week	Enter value (if Q16 yes and if Q22 Winter)
	How do you perceive the quality of the water provided by public water network in Winter?	Excellent Good Acceptable Unacceptable	Enter Value (if Q16 yes and if Q22 Winter)

	For what purpose do you use the water provided by public water network in the summer?	Drinking Cooking Services	Enter Value (if Q16 yes and if Q22 Summer)
	How often is the water service running from the network per days per week in summer?	[Enter value] d/week	Enter Value (if Q16 yes and if Q22 Summer)
	How do you perceive the quality of the water provided by public water network in Summer?	Excellent Good Acceptable Unacceptable	Enter Value (if Q16 yes and if Q22 Summer)
	Are you satisfied with the water provided by the public water network in the summer?	Yes No	Enter Value (if Q16 yes and if Q22 Summer)
Other sources of water provision			
	Do you purchases water from private trucks ?	Yes No	Choose one
	In which season do you use the water provided through trucks paying on your own?	Summer Winter	Choose multiple (if 30 yes)
	For what purpose do you use water provided by trucks in the winter?	Drinking Cooking Service	Choose multiple (if Q30 yes and if Q31 Winter)
	How much water provided by truck delivery do you use (l) per month in the Winter?	[Enter Value]	Enter Value (if Q30 yes and if Q31 Winter)
	How much do you pay for water provided by truck delivery per month in the winter?	[Enter Value]	Enter Value (if Q30 yes and if Q31 Winter)
	How do you perceive the quality of the water provided by truck delivery in Winter?	Excellent Good Acceptable Unacceptable	Enter Value (if Q27 yes and if Q28 Winter)
	For what purpose do you use the water provided by truck delivery in the summer?	Drinking Cooking Services	Enter Value (if Q30 yes and if Q31 summer)

	How much water provided by truck delivery do you use per month (liter) in the Summer?	[Enter Value]	Enter Value (if Q30 yes and if Q31 summer)
	How much do you pay per month for water provided by truck delivery in the Summer?	[Enter Value]	Enter Value (if Q30 yes and if Q31 summer)
	How do you perceive the quality of the water provided by truck delivery in summer?	Excellent Good Acceptable Unacceptable	Enter Value (if Q30 yes and if Q31 summer)
	Do you have a private well or purchase water from private wells on your own (other than truck delivery)?	Yes No	Choose one
	In which season do you use the water provided from private wells?	Summer Winter	Choose multiple (if Q40 yes)
	For what purpose do you use the water provided from private wells in in the winter?	Drinking Cooking Services	Choose multiple (if Q40 yes and if Q41 Winter)
	How much water provided from private wells do you use (l) per month in the Winter?	[Enter Value]	Choose value (if Q40 yes and if Q41 Winter)
	How much do you pay for water provided from private wells per month in the winter?	[Enter Value]	Enter Value (if Q40 yes and if Q41 Winter)
	How do you perceive the quality of the water provided from private wells in Winter?	Excellent Good Acceptable Unacceptable	Choose multiple (if Q40 yes and if Q41 Winter)
	For what purpose do you use the water provided from private wells in the summer?	Drinking Cooking Services	Choose multiple (if Q40 yes and if Q41 Winter)
	How much water provided from private wells do you use per month (liter) in the Summer?	Enter Value]	Enter Value (if Q40 yes and if Q41 summer)

	How much do you pay per month for water provided from private wells in the summer?	[Enter Value]	Enter Value (if Q40 yes and if Q41 summer)
	How do you perceive the quality of water provided from private wells in summer?	Excellent Good Acceptable Unacceptable	Choose one (if Q40 yes and if Q41 summer)
	Do you purchase water in bottles or gallons from the shop?	Yes No	Choose one
	In which season do you use bottled water or gallons from the shop?	Summer Winter	Choose multiple (if Q50 yes)
	For what purpose do you use bottled water or gallons form the shop in the winter?	Drinking Cooking	Choose multiple (if Q50 yes and if Q51 winter)
	How much bottled water or water from gallons do you use per week in the winter (liters)?	[Enter Value]	Enter Value (if Q50 yes and if Q51 winter)
	How much do you pay for bottled water or gallons per week in the winter?	[Enter Value]	Enter Value (if Q50 yes and if Q51 winter)
	For what purpose do you use bottled water or gallons form the shop in the summer?	Drinking Cooking	Enter Value (if Q50 yes and if Q51 winter)
	How much bottled water or water from gallons from the shop do you use per week in the summer (liters)?	[Enter Value]	Enter Value (if Q50 yes and if Q51 winter)
	How much do you pay for bottled water or gallons from the shop per week in the summer?	[Enter Value]	Enter Value (if Q50 yes and if Q51 winter)
	Do you use water from a spring (publicly accessible/facility)?	Yes No	Choose one

	In which season do you use water from a spring (publicly accessible/facility)?	Summer Winter	Choose one (if Q58 is yes)
	How much water from a spring (publicly accessible/facility) do you use in the winter?	[Enter Value]	Enter value (if Q58 is yes and Q59 winter)
	How much water from a spring (publicly accessible/facility) do you use in the summer?	[Enter Value]	Enter value (if Q58 is yes and Q59 winter)
	Do you use water from other sources?	Yes No	choose one
	From which other sources do you get water?	Public network Irrigation networks Other	Choose multiple (if Q62 is yes)
	In which season do you get water from other sources?	Summer Winter	Choose multiple (if Q62 is yes)
	How much water do you get from other source?	[Enter Value]	Enter value(if Q62 is yes)
	What are they?	Municipal Water Network Irrigation Network Other	Choose multiple
	In which season do you use water from other sources	Summer Winter	Choose multiple If Q66 answer other
	How many litres do you use from other sources	[Insert Value]	If Q 66 answer other

Water expenditure			
	How much did you pay for drinking water last month?	[Enter value] LL	Enter value
	What do you think about your current expenses on water?	Too high Moderate Low	Choose one
	How much do you think the Bekaa Water establishment charges for 1 m3 of water ?	[Enter value] LL/ m3	Enter value
	If you had access to clean and permanent drinkable water service, how much would you be willing to pay for it per m3?	[Enter value] LL/m3	Enter value
	If you had access to clean and permanent drinkable water service, how much would you be willing to pay for it per month?	[Enter value] LL/month	Enter value
	How would you spend the money saved by not having to buy water?	Education Home repairs Food Consumer goods Medical fees Other	Choose one
Water use and equipment			
	What is your total water storage capacity?	[Enter value] Barmil/ khazzan/ m^3	Enter value
	What is your total water storage capacity of drinking water?	[Enter value] days	Enter value
	How do you rate the tap water pressure?	Strong Weak Generally strong Sometimes weak	Choose one
	Do you use the public water supply for irrigation	Yes No	Choose one
Water security and health			

	Have you or any member of the family felt in need for water and you could not afford it?	Yes Drinking water Yes Cooking water Yes Shower water Yes Ablution (wudu) No	Choose multiple
	How many days per month do you not have any water?	[Enter value] days	Enter value
	Rate your confidence to provide the water needed for your HH?	Very confident Confident Insecure Very insecure	Choose one
	Did anyone (>5 year of age) have unusual diarrheal symptoms in the past month?	Once Several times Never	Choose one
	Did anyone (<5 year of age) have unusual diarrheal symptoms in the past month?	Once Several times Never	Choose one
	Do you think that there is any relation between the quality of water and illnesses in your household?	Yes No	Choose one
Water and community			
	Water supply in the village is managed by	Municipality Land Owner Water Establishment Private Local community other	Choose multiple
	Is there a ITS close to where you live?	Yes No	Choose one
	Is there conflicts over water between refugees and the local community?	Yes No	Choose one
	Do you think Syrian Refugees receive clean water?	Yes No	Choose one

	Do you know how much they pay for water?	Yes No	Choose one
	How much do you think they pay for water per month? (Estimate the cost of water per month)	[Enter value] LL	Enter value
	Who do you think should be responsible for water-provision for ITS?	Aid Agencies Municipalities Water authorities Landowner Local committees Others:	Choose multiple
	Do you think Syrian refugees should be connected to the public network?	Yes No	Choose one
	If no, why? (do not read answers to interviewees)	Afraid of Syrians settling permanently. Afraid of water shortages for HC Syrians have no right to water. Syrians will not pay Other specify	Choose multiple
	If no, what would make you change your mind?	Water provision is improved for every one. If they pay. Nothing will change my mind Other, specify	Choose one
	Would you like to participate in decision making for improved water provision?	Yes No	Choose one

ANNEX B
WATER EXPENDITURE SURVEY - ITS

For Surveyor:			
1.	Indicate geographical area/location. Specify ITS	[Enter response]	Enter response
2.	Indicate gender	1. Male 2. Female	Choose one
3.	Are you the head of household?	1. Yes 2. No	Choose one, if no stop and save
4.	Do you live in this ITS?	1. Yes 2. No	Choose one, if no stop and save
Household Characteristics			
5.	What is your age?	[Enter Value]	Choose one
6.	What is the number of HH members?	[Enter Value]	Choose one
7.	How many HH members contribute to HH income?	[Enter Value]	Choose one
8.	What is/are the source(s) of that income for the HH members contributing?	1. Farm labour 2. Local industry 3. Self-employment 4. Private employee 5. International aid 6. Savings 7. Others	Choose multiple
9.	Specify the occupation of Head of HH ?	1. Farm labour 2. Local industry 3. Self-employment 4. Private employment 5. Unemployed 6. Other	Choose all applicable

10.	What is the monthly expenditure of your household (LL)?	1. LL. 0- 225,000 2. LL. 226,000-450,000 3. LL. 451,000-750,000 4. LL. 750,000-1,500,000 5. LL. 1,500,000- 3,750,000 6. over LL. 3,750,000	Choose one
11.	Do you have any debt?	1. Yes 2. No	Choose one
12.	How many months have you been in this ITS?	[Enter Value]	Enter value
13.	Do you pay rent for your shelter?	1. Yes 2. No	Choose one
14.	If yes, how much rent do you pay per year?	[Enter value] LL	If yes Q11, enter value
15.	If no, how do you compensate for land use?	1. There is no landlord 2. landlord does not know 3. Work on field 4. Other work or services	Choose one, If Q 13 No.
Water provision			
16.	Do you use Oxfam vouchers?	1. Yes 2. No	Choose one
17.	How many vouchers does your HH get per month?	[Enter value]	Enter value (if Q16 yes)
18.	In which season do you use the water provided through the voucher system?	1. Summer 2. Winter	Choose multiple (if Q16 yes)

19.	For what purpose do you use the water provided through the voucher system in the winter?	1. Drinking 2. Cooking 3. Services	Choose multiple (if Q16 yes and if Q18 Winter)
20.	How many Oxfam vouchers do you use per month in the Winter?	[Enter Value]	Choose multiple (if Q16 yes and if Q18 Winter)
21.	How many tanks (1m2/1000l) do you get per month in the Winterr?	[Enter Value]	Choose multiple (if Q16 yes and if Q18 Winter)
22.	How do you perceive the quality of the water provided through Oxfam in Winter?	1. Excellent 2. Good 3. Acceptable 4. Unacceptable	Choose multiple (if Q16 yes and if Q18 Winter)
23.	For what purpose do you use the water provided through the voucher system in the summer?	1. Drinking 2. Cooking 3. Services	Choose multiple (if Q16 yes and if Q18summer)
24.	How many vouchers do you use per month in the Summer?	[Enter Value]	Enter Value (if Q16 yes and if Q18 Summer)
25.	How many tanks (1m3/1000l) do you get per month in the Summer?	[Enter Value]	Enter Value (if Q16 yes and if Q18 Summer
26.	How do you perceive the quality of the water provided through Oxfam in summer?	1. Excellent 2. Good 3. Acceptable 4. Unacceptable	Choose one (if Q16 yes and if Q18 summer)
Voucher system			
27.	Is the water supply sufficient under the voucher system?	1. Yes 2. No	Choose one (if Q16 yes)
28.	If not all vouches are used, what do you do with the remainder?	1. Sell 2. Exchange 3. Throw away 4. Confiscated by a third party	Choose multiple (if Q17 yes)

29.	Do you save water to be able to sell vouchers	1. Yes 2. No	Choose one (if Q17 yes)
30.	If you sell voucher, how much do you get for it?	[Enter value]	Enter value (if Q17 yes)
31.	Are you satisfied with the voucher system implemented by Oxfam?	1. Yes 2. No	Choose one (if Q17 yes)
32.	Before the Oxfam voucher system for water provision was implemented, who was responsible for providing water?	1. The landowner 2. Public authorities (Municipality, Bekaa water authority) 3. Other aid agencies 4. Personal water	
33.	Before the Oxfam voucher system for water provision was implemented, how did you get water?	1. i don't know because I was not presentation 2. Municipal network 3. Private Truck delivery 4. Private well 5. Spring 6. Irrigation scheme 7. Bottled water or jugs 8. Others	Choose multiple (if Q17 yes)
34.	Before the Oxfam voucher system for water provision was implemented, how much did you pay?	1. Less 2. The same, 3. More 4. I don't know	Choose one (if Q17 yes)
Other than Oxfam voucher sources of water provision			
35.	Do you purchases water from trucks paying on your own (other than Oxfam vouchers)?	1. Yes 2. No	Choose one
36.	In which season do you use the water provided through trucks paying on your own?	1. Summer 2. Winter	Choose multiple (if Q35 yes)

37.	For what purpose do you use the water provided through trucks paying on your own in the winter?	1. Drinking 2. Cooking 3. Services	Choose multiple (if Q35 yes and if Q36 Winter)
38.	How much water privided by truck delivery you use (l) per month in the Winter?	[Enter Value]	Enter Value (if Q35 yes and if Q36 Winter)
39.	How much do you pay for water provided by truck delivery per month in the winter?	[Enter Value]	Enter Value (if Q35 yes and if Q36 Winter)
40.	How do you perceive the quality of the water provided by truck delivery in Winter?	1. Excellent 2. Good 3. Acceptable 4. Unacceptable	Choose multiple (if Q35 yes and if Q36 Winter)
41.	For what purpose do you use the water provided by truck delivery in the summer?	1. Drinking 2. Cooking 3. Services	Choose multiple (if Q35 yes and if Q36 Summer)
42.	How much water provided by truck delivery do you use per month (liter) in the Summer?	[Enter Value]	Enter Value (if Q35 yes and if Q36 Summer)
43.	How much do you pay per month for water provided by truck delivery in the Summer?	[Enter Value]	Enter Value (if Q35 yes and if Q36 Summer)
44.	How do you perceive the quality of the water provided by truck delivery in summer?	1. Excellent 2. Good 3. Acceptable 4. Unacceptable	Choose one (if Q36 yes and if Q37 summer)
45.	Do you purchases water from private wells on your own (other than truck delivery)?	1. Yes 2. No	Choose one
46.	In which season do you use the water provided from private wells?	1. Summer 2. Winter	Choose multiple (if Q46 yes)
47.	For what purpose do you use the water provided from private wells in in the winter?	1. Drinking 2. Cooking 3. Services	Choose multiple (if Q46 yes and if Q47 Winter)
48.	How much water provided from private wells do you use (l) per month in the Winter?	[Enter Value]	Enter Value (if Q46 yes and if Q47 Winter)
49.	How much do you pay for water provided from private boreholes per month in the winter?	[Enter Value]	Enter Value (if Q46 yes and if Q47 Winter)

50.	How do you perceive the quality of the water provided from private wells in Winter?	1. Excellent 2. Good 3. Acceptable 4. Unacceptable	Choose one (if Q46 yes and if Q47 Winter)
51.	For what purpose do you use the water provided from private boreholes in the summer?	1. Drinking 2. Cooking 3. Services	Choose multiple (if Q46 yes and if Q47 summer)
52.	How much water provided from private wells do you use per month (liter) in the Ssummer?	[Enter Value]	Enter Value (if Q46 yes and if Q47 summer)
53.	How much do you pay per month for water provided from private boreholes in the summer?	[Enter Value]	Enter Value (if Q46 yes and if Q47 summer)
54.	How do you perceive the quality of water provided from private boreholes in summer?	1. Excellent 2. Good 3. Acceptable 4. Unacceptable	Choose one (if Q46 yes and if Q47 summer)
55.	Do you purchases water in bottles or gallons from the shop?	1. Yes 2. No	Choose one
56.	In which season do you use bottled water or gallons from the shop?	1. Summer 2. Winter	Choose multiple (if Q56 yes)
57.	For what purpose do you use bottled water or gallons form the shop in the winter?	1. Drinking 2. Cooking	Choose multiple (if Q56 yes and if Q57 winter)
58.	How much bottled water or water from gallons do you use per week in the winter (liters)?	[Enter Value]	Enter Value (if Q56 yes and if Q57 winter)
59.	How much do you pay for bottled water or gallons per week in the winter?	[Enter Value]	Enter Value (if Q56 yes and if Q57 winter)
60.	For what purpose do you use bottled water or gallons form the shop in the summer?	1. Drinking 2. Cooking	Choose multiple (if Q56 yes and if Q57 summer)

61.	How much bottled water or water from gallons from the shop do you use per week in the summer (liters)?	[Enter Value]	Enter Value (if Q56 yes and if Q57 summer)
62.	How much do you pay for bottled water or gallons from the shop per week in the summer?	[Enter Value]	Enter Value (if Q56 yes and if Q57 summer
63.	Do you use water from a spring (publicly accessible/facilty)?	1. Yes 2. No	Choose one
64.	In which season do you use water from a spring (publicly accessible/facility)?	1. Summer 2. Winter	Choose one (if Q64 is yes)
65.	How much water from a spring (publicly accessible/facility) do you use in the winter?	[Enter Value]	Enter value (if Q64 is yes and Q65 winter)
66.	How much water from a spring (publicly accessible/facility) do you use in the summer?	[Enter Value]	Enter value (if Q64 is yes and Q65 summer)
67.	Do you use water from other sources?	1. Yes 2. No	choose one
68.	From which other sources do you get water?	1. Public network 2. Irrigation networks 3. Other	Choose multiple (if Q67 is yes)
69.	In which season do you get water from other sources?	1. Summer 2. Winter	Choose multiple (if Q67 is yes)
70.	How much water do you get from other source?	[Enter Value]	Enter value(if Q68 is yes)
Water expenditure			
71.	How much do you think the government charges for 1 m3 of water ?	[Enter value] LL/ m3	Enter value
72.	If you had access to clean and permanent drinkable water service, how much would you be willing to pay for it per m3?	[Enter value] LL/m3	Enter value

73.	If you had access to clean and permanent drinkable water service, how much would you be willing to pay for it per month?	1. 5000 2. 10000 3. 15000 4. 20000 5. 25000 6. 30000 7. 35000 8. 40000 9. other	Choose one
74.	If ITS was connected to the Network, do you trust that service will be provided?	1. Yes 2. No	Choose one
75.	If ITS was connected to Network, do you trust that the quality of water would be drinkable?	1. Yes 2. No	Choose one
76.	How would you spend the money saved by not having to buy water?	1. Education 2. Home repairs 3. Food 4. Consumer goods 5. Medical fees 6. Other	Choose one
Water use and equipments			
77.	What is the capacity of your khazzans in total?	[Enter value] Barmil/Litres/m^3	Enter value
78.	What is your total drinking water storage capacity if you use a different source of water for drinking?	[Enter value] Litres/Barmil	Enter value
Water security and health			

79.	Have you or any member of the family felt in need for water and you could not afford it?	1. Yes Drinking water 2. Yes Cooking water 3. Yes Shower water 4. Yes Ablution (wudu) 5. No	Choose multiple
80.	How many days per month do you not have water?	[Enter value] days	Enter value
81.	Rate your confidence to provide the water needed for your HH?	1. Very confident 2. Confident 3. Insecure 4. Very insecure	Choose one
82.	Did anyone (>5 year of age) have unusual diarrheal symptoms in the past month?	1. Once 2. Several times 3. Never	Choose one
83.	Did anyone (<5 year of age) have unusual diarrheal symptoms in the past month?	1. Once 2. Several times 3. Never	Choose one
84.	Do you think that there is any relation between the quality of water and illnesses in your household?	1. Yes 2. No	Choose one

Water and community			
85.	Water supply in the ITS is managed by	1. Municipality 2. Landowner 3. Water Establishment 4. Individual households 5. Local community 6. others	Choose multiple
86.	Do you get water froma collective water points?	3. Yes 4. No	Choose one
87.	Distance of community/ household from collective points of water (if applicable)	[Enter value] min	Enter value (if Q85 is yes)

88.	Time to collect (round trip, including queuing)	[Enter value] min spent	Enter value (if Q85 is yes)
89.	Number of trips per day	[Enter value] trips	Enter value (if Q85 is yes)
90.	Are there conflicts between landowner and refugees over water?	1. Yes 2. No	Select
91.	Are there conflicts between refugees and local communities over water?	1. Yes 2. No	Select
92.	If you go to get water outside your ITS, do you feel safe while accessing water?	1. Yes 2. No	Select
93.	Who do you think should be responsible for water-provision for ITS?	1. Aid Agencies 2. Municipiality 3. Water authorities 4. Shawish 5. Landowner 6. Local committees 7. Others:	Choose multiple
94.	How do you think water provision should be organised	1. Everybody to organise for themselves 2. Tankering to individual tanks 3. Artesian Well for the settlement 4. Public water supply to central water reservoir 5. Public water supply to individual tents	Choose one
95.	If your dwelling would be connected to the public water supply from the Bekaa Water Establishment, would you use this water for drinking	1. Yes 2. No	Choose one
96.	Would you like to participate in decision making for improved water provision?	1. Yes 2. No	Choose one

ANNEX C
FOCUS GROUP DISCUSSION GUIDE - ITS

May 2016

Introduction:

i. Inform participants of the purpose, scope and process of the research.
ii. Inform that session is recorded and their participation is anonymous and voluntary.
iii. Information collected is used solely for research purposes.
iv. Structure of the conversation:

   a. General.
   b. Safety and community dynamics.
   c. Cost dynamics.

Questions:

[Icebreaker question- Around the Room (ask if they all know each other)] Go around the room and ask each participant to speak to the person next to them and introduce them to the group and how they feel about water provision in their ITS.

General

1. How is the water provided to the settlement?
   a. Who pays for your water?
2. Do you have enough water?
3. What is the frequency of delivery in summer and winter? How many trucks are coming?
4. Where do trucks source their water from?
5. How does water supply vary between season summer/winter? Do you experience shortages?
   a. How often are there shortages?
2. What are the main uses of water? [elaborate]
3. How do you save water? How do you make the water last? [elaborate]

Safety and Community Dynamics

4. Do you consider the quality of water to be clean and safe?
5. Are there problems with waste water disposal?
6. What kind of problems do you have when you went/ go to pick up water? (probe for violence, conflict, safety of women, harassment)
7. How is the water supply organized in the ITS?
8. How do you know the shaouish and since when? How was he selected? Who appoints the shaouish?
9. What is the relation between shaouish / land owner and international organizations?
10. Who do you go to when you have problems with water supply?
11. How do you characterize your relationship to the host community?
12. Is their Tension between ITS and host community with regards to water supply?

Cost Dynamics

13. We know that you don't pay humanitarian organizations, how was it before the humanitarian organizations started providing water?
14. How much do you pay now for which kind of water? How much did you pay in the past (3-4 years ago)
15. Probe for mode water supply [probe for costs, breakdowns and problems)
16. How do you use the extra money that you have now? [probe for coping strategies].
17. Do you increase investment in food? Medical needs? Education?
18. Do you sell or trade Oxfam vouchers to get money to cover other needs?
19. Would you be willing to pay for receiving an improved government supply? How much would you be willing to pay per month/year for how much water?
20. If you are going to stay for a long period of time, what do you think is the most sustainable solution?
21. What kind of problem do you envision arising if water supply is centrally distributed (Pipe water towards ITS and distribution from main tank).
22. If it were metered:
    a. Individually: what kind of problems do you see arising?
    b. Collectively: what kind of problems do you see arising?
    c. Would you prefer to have a fixed rate? Why?
    d. Would you prefer to have it metered? Why?
    e. How would you describe your relationship to the host community?
    f. How would connecting ITS to the public water supply network influence relationship between Syrians and host community?

ANNEX D
FOCUS GROUP DISCUSSION GUIDE - TRUCKERS

May 2016

Introduction:

i. Inform participants of the purpose, scope and process of the research.
ii. Inform that session is recorded and their participation is anonymous and voluntary.
iii. Information collected is used solely for research purposes.
iv. Structure of the conversation:
    a. General.
    b. Safety and community dynamics.
    c. Cost dynamics.

Questions:

[Icebreaker question- Around the Room (ask if they all know each other)] Go around the room and ask each participant to speak to the person next to them and introduce them to the group and how they feel about water provision in the area. Hand out Truckers information sheet [collect information on source of water supply, area of operation, volume of operation, customer profile and cost breakdown].

General:

1. How long have you been working in Trucking?
2. How did you get that job? Who decides on which ITS to serve?
    a. The municipality?
    b. Humanitarian organization?
    c. Upon demand from ITS?

3. How much you charged before oxfam? (the price remained the same)
    a. How much do you charge Lebanese?
    b. How much do you charge Syrians?

4. How do you negotiate areas of coverage among yourselves? Does it depend on political connections?

5. How is the relationship to Oxfam organized?
    a. What do you think of Oxfam?
    b. What do you think of the voucher system?
    c. What are the main weaknesses, strengths? [probe for trading vouchers, robbing, gun point].

        i. How do you think it can be improved?
        ii. How do you think it can be improved?

6. Did you increase your fleet (do you have more than one truck) since the Syrian crisis started?
7. What is your main source of water for delivery?
    a. Did that change with the Syrian crisis? [probe if they installed wells, probe if they buy water from a well that does not belong to them]
    b. Do you take it from the network? Which point?
    c. If they have a well, how much does it cost them to maintain the well?
        i. How much they pay on fuel.

   ii. Investment in machinery
   iii. Do they clorenate?
d. If they don't have a well, how much do you pay for water ?

8. Do you have enough water to cover demand? What do you do when there is excess demand?
9. How often are there shortages in public water supply for you area? What are the main reasons for these shortages?
10. What are the main uses of water you supply?
    a. Service water?
    b. Drinking?
    c. Irrigation?

Safety and Community Dynamics:

11. Do you consider the quality of water to be clean and safe?
12. Is somebody testing the water you deliver regularly? Who and how often? Do you chlorinate the water?
13. Who controls the water disposal in the ITS? Where is it thrown?
14. Are there problems with other truckers in your area? Is there competition over who supplies Syrian refugees? How is this resolved?
15. Would you oppose a project to connect Syrian refugees to the public water supply?
16. How would connecting ITS to the public water supply network influence community dynamics between Syrian refugees, host communities and truck drivers?
17. What are the main problems of supplying Syrian refugees from the public water supply?
    a. How would you react if Syrians were connected to the public water supply network?

Cost Dynamics:

18. How much of your income depends on trucking?
    a. How much of the income depends on trucking to Syrian refugees?
    b. How would it affect you if Syrian refugees would be connected to the Public water network?

19. How much does 1 trip cost you? How many m3 per/trip do you deliver? What is the major cost factor in your water supply?

20. What is the price limit (per m3) at which you would stop trucking?

21. What is your monthly income from trucking?

22. Do you have to pay somebody to get the permission to truck water in the area?

23. How was it before the humanitarian organizations started providing water?

ANNEX E
FOCUS GROUP DISCUSSION GUIDE - HOST COMMUNITY

May 2016

Introduction:

v. Inform participants of the purpose, scope and process of the research.
vi. Inform that session is recorded and their participation is anonymous and voluntary.
vii. Information collected is used solely for research purposes.
viii. Structure of the conversation:
    a. General.
    b. Safety and community dynamics.
    c. Cost dynamics.

Questions:

[Icebreaker question- Around the Room (ask if they all know each other)]

Go around the room and ask each participant to speak to the person next to them and introduce them to the group and how they feel about water provision in their village.

General:

27. Do you have enough water?
28. How do you get water? What are the main sources of your supply? [probe for private borehole/trucking/public network/bottled water and others].
    a. Who provides water, the Bekaa water establishment or is there an independent water committee in the village?
    b. If there were a water committee in the village, are there conflicts with the Bekaa water establishment.
29. How does water supply vary between season summer/winter? Do you experience shortages?
    a. How often are there shortages?
    b. How do you deal with these shortages?
30. Where do trucks source their water from?
31. How do you save water? How do you make the water last? [elaborate]
    a. Do you use public water for drinking?
    b. Do you know people who public water for irrigation?

Safety and Community Dynamics:

32. Do you consider the quality of water to be clean and safe?

33. Are there problems with wastewater disposal? Do you know who disposes water for ITS or how?
34. Are there problems arising from water supply?
    a. Between neighbors?
    b. In the village?
    c. Between villages?
    d. With Syrians?

35. How is water supply organized in your community?
    a. Who are the main providers of water?

   i. [probe- municipalities, private network, WE, boreholes, and trucking].
b. Who do you go to when you have problems with water supply?

36. How do you characterize your relationship to the Syrian community?
37. Is their Tension between host community and ITS with regards to water supply? Why?
38. Where do Syrians get there water from?
    a. Who supplies the water to ITSs?
    b. Do you think the Water Establishment or the municipality should provide water to them? [Why?/why not?]

Cost Dynamics:

39. How much do you pay now for which kind of water?
    a. Do you pay for public water supply? How much?
    b. Do you pay for private water supply? How much?

40. Would you accept to pay according to consumption [measured by water meters] if there was water supply 24/7? How much would you be willing to pay per month/year for how much water?
41. What do you think is a sustainable solution to provide water to Syrians in your area?
42. Do you see problems arising if Syrians are connected to the public network?
    a. Probe: trucking/ private interests.
    b. Probe: Water shortage.
    c. Probe: fear of settlement.

ANNEX F
KEY INFORMANT - INTERVIEW QUESTIONNAIRE

I. Impact of Water Provision on Local Economy:

1. What is the actual quantity of water used by Syrian refugees, women and men, residing in Informal Tented Settlements (ITS)? (in m3).
2. What are the main sources of water you get your water from?
   - 2.1. What percentages are from the government network?
   - 2.2. What percentage of your consumption is from water trucking?
   - 2.3. How much do you pay per month for extra water?
3. How much does a household need in terms of water per/day or per/month?
4. Do you consider the quality of water provided to be clean and safe?
5. If ITS, when you go to get water outside your household (ITS), do you feel safe while accessing water? What can be done to improve safety?
6. What are the various sources of water that refugee women and men rely on?
7. How safe do women and men currently feel when accessing water? What could be done to improve safety? What is the perceived water quality of different water sources amongst refugees, women and men?
8. What is the quantity and cost of the water provided by international humanitarian aid?
9. What is the quantity and cost of water for refugee households beyond that provided by international humanitarian aid?
10. What would be the alternative cost for the provision of all, domestic and drinking, water requirements by the formal public water supply network?
11. How would the provision of water by formal public water supply networks impact refugee women and men financially?
12. How would refugees, women and men, spend the money saved by not having to buy water?
13. What is the willingness to pay among Syrian refugees, women and men, residing in ITSs for adequate quality and quantity of water services?
14. What would be the alternative cost for the provision of water services to refugees on the authorities (national/Governorate/municipal/utilities)? [analysis- KIIs].

II. Community Perception:

15. What is the status of formal and informal water service provision to the host community in the target areas? [KIIs].
16. What is the cost of water per household among the host community of the target area? [KIIs-Householdsurvey].
17. What is the willingness to pay among host community for water provided in adequate quality and quantity by the formal water supply network?
18. How do water supply patterns vary seasonally through the year? What is the financial impact on families of these seasonal variations?
19. What are the perceptions of the host community with regards to the Syrian refugees residing in informal tented settlements in the target area?
20. What are the perceptions of the host community with regard to the water service provision to Syrian refugees in the target area?
21. What is the level of acceptance among the host community of Syrian refuges in the target area?
22. What is the level of acceptance among the host community of providing Syrian refugees with water from the formal water supply networks?
23. What are the alternative solutions proposed by the host community for the assistance of Syrian refugees with water services?

III. Policy Gaps and Legal Framework:

24. What legislation regulates water service provision in Lebanon?
25. How is 'water is a human right' reflected within the Lebanese legislation and how is it applied to refugees?
26. What are the prevalent policies of the Lebanese authorities regarding water service provision to Syrian refugee communities?
27. What is the administrative framework that governs water service provision in Lebanon?
28. How do administrative and institutional frameworks overlap and how does this affect water service provision?
29. What are the other sectors that compete for potable and domestic water, in Lebanon in general and the study areas in particular?
30. What are the approved cost recovery mechanisms for water tariffs (flat and metered)?
31. Is there a financial mechanism to provide assistance for water services to the vulnerable populations (Government or other)?

IV. Power analysis:

32. Who are the water service stakeholders, formal and informal, in the target area?
33. What are the power dynamics exhibited by the various water service stakeholders in the target area?
34. What is the SWOT analysis of the water service stakeholders in the target area?
35. What are the risks associated with providing Syrian refugees with water from the formal and informal water supply networks?
36. Are there any likely negative impacts associated with such service provision?
37. Who are the most likely inhibitors and enablers for the provision of such services?

This paper was written by Nizar Ghanem, Karim Eid Sabbagh, Sami Halabi, and Oxfam. It is part of a series of papers written to inform public debate on development and humanitarian policy issues.

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