



# Water Market System in Balqa, Zarqa, & Informal Settlements of Amman & the Jordan Valley - Jordan

## August - September 2013



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## Section 1. Executive summary

### **Background**

As the Syria conflict enters its third year the influx of refugees into neighbouring countries continues to rise exponentially. In Jordan there are currently over 540,000 refugees registered or pending registration. The majority (75%) of refugees in Jordan is residing in host communities dispersed across the country; most are in renting accommodation whereas some are in tented informal settlements, both groups face significant challenges in meeting their needs due to limited income and high costs. At the same time the refugee influx, which currently constitutes over 5% of the total population in Jordan, is placing increasing pressures on service provision and infrastructure, particularly in areas with high concentrations of refugees. Tensions between refugees and Jordanian host communities thus are increasing.

Those living in rented accommodation are generally connected to the water supply system and have access to sanitation facilities. However, the water supply system is characterized by a chronic deficit with water supplied on a rotation basis, mostly once per week during winter time and lower frequency during summer time. The water deficit has been estimated at 16 l/p/d, with the remainder made up by purchase from private tankers, particularly during summer. Overall expenditure on water for drinking and other uses vary between 15 JOD and 80 JOD<sup>1</sup> per month. People tend to complement the need of water by purchasing directly from private water companies / vendors.. Water is generally insufficient for their needs, meaning many have reduced washing to once every 7-10 days, leading to increase in skin infections.

### **Rationale and Methodology for EMMA (Emergency Market Mapping and Analysis)<sup>2</sup>**

The rationale for carrying out the EMMA was the following:

- Recommend options for critical seasonal periods, discussion on triggers, as well as options for medium-longer term programming
- To inform response analysis and design of a WASH response in Jordan, identifying through a rapid market system analysis,
- appropriate water provision modalities (cash/voucher / in kind, market support, advocacy) – in order to meet critical household water needs for targeted populations in a) mobile Syrian refugees living in tented settlements b) those living in rented accommodation. The latter should consider support for both Syrian refugees and vulnerable Jordanian host communities during seasonal cycles
- Strengthen OGBs national capacity in market analysis and in its use in response. This is the first opportunity for the Jordan team to carry out an EMMA on a critical market.
- To build OGBs understanding of existing coping mechanisms and anthropological practices around water consumption/management and to inform programming on ways of reinforcing these mechanisms, defining targeting criteria

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<sup>1</sup> Lower range take into account no filtered water, water tap connection bill and purchase of 2-3 m3 water in a month. Highest range count water tap connection bill, about 8 m3 purchased from tanker and 1-2 bottles a day of 20L filtered water in a month

<sup>2</sup> The EMMA toolkit has been developed by Oxfam and IRC since 2007 and published in 2010, with the aim of supporting non- market specialists in analyzing market systems in emergencies. Since its launch more than 20 market assessments have been carried out around the world in rapid and slow onset. Reports and more information can be found on the EMMA website: [www.emma-toolkit.org](http://www.emma-toolkit.org).

The EMMA was planned and designed as part of a process to inform the ECHO-funded project *Humanitarian Response and Assistance for People Affected by the Syrian Crisis*, analyzing water access and the water market based on two comparisons; the pre-crisis and post-crisis water markets, and also winter months as compared to summer months in the current year.

Based solely on the existing water market system, the EMMA set the following key analytical questions:

- What is the capacity of the water market to provide the needed quality and quantity of water to targeted beneficiaries?
- What is the ability of people to access the water market? What are the limitations?
- What is the preferred modality for water provision among targeted beneficiaries?
- What are potential indirect WASH response activities?

### **Main findings**

#### ***Urban Areas of Balqa & Zarqa Governorates***

In Balqa & Zarqa Governorates of northern Jordan, the population covers its water needs through a mix of water from the government-run piped water network (via household connections), bulk water purchased from water trucks, and bottled water purchased from small shops. While the piped network is the preferred option for bulk water, a lack of continuous 24 hour water supply through this system requires people to supplement their water needs through private water vendors.

During the colder months of the year, water demand is reduced and a larger percentage of water needs are met through the piped water network, with additional demand met through the purchase of bottled and trucked water. During the hotter months of the year, water demand increases and piped water networks provide less water at the household level (both in terms of frequency of delivery and total quantity delivered). An increasing quantity of water is purchased from private water trucks and from shops selling bottled water.

Water from piped networks is paid, though at a price which is subsidized by the government and is affordable to the majority of households. However, as water supply is rationed and delivered according to a schedule (as little as once every 10 days during summer and up to 4 times per week in the winter), the quantity of water accessed from this system is primarily dependent upon the volume of water storage available at the household level, as well as the available water pressure at household locations.

Drinking water (supplied by local shops which filter and bottle water) and water from private trucks (supplied from private commercial wells) is also paid, at a rate that is 20 - 46 times higher than that from the pipe network. Those with less capacity to store water, as well as those who live in areas that receive less frequent delivery of water through the pipe network (either due to less frequent rationing schedule or their location in an area of weak water pressure on the network) pay significantly more for water on a per capita basis due to their decreased ability to store the more affordable piped water.

#### ***Informal Settlements of the Jordan Valley and Eastern/Southern Amman***

Migratory workers (mostly Syrian refugees and Bedouins) who live and work in informal tented settlements obtain some of their water from on-site wells or storage ponds (provided by their employer, sometimes free of charge and sometimes paid indirectly by way of a reduced hourly wage), though the majority of this water is of low quality (agricultural-grade water stored in open ponds, exposed to contamination). The remainder of their water needs

is purchased from private water trucks, with some also purchasing drinking water from small shops and supermarkets.

**As a consequence, people's access to water (particularly in the summer months of May - September) depends primarily upon their purchasing power, geographic location and water storage capacity.**

Overall the problem in Balqa and Zarqa (and Jordan as a whole) is a supply issue, as water is not sufficient to meet all of the demands. However, on a meso- and micro- level, it is a demand issue in terms of conditions of access - people do not possess the necessary purchasing power and linkages to market actors to access an equitable share of the water market.

Detailed market maps that illustrate the diversity of actors, linkages, and bottlenecks both in the summer and winter months are available on pages 9 – 11.

### **Response Recommendations**

Key recommendations for ensuring an optimal response in meeting the immediate needs for water in the host communities aim to ensure that the most vulnerable people receive their entitlement to water through using the market effectively. They include:

1. Support access to drinking water through vouchers linked to local water vendors – as a voucher system is already used by private vendors, these same vouchers can be distributed to beneficiaries to be redeemed at pre-approved vendor shops;
2. Support to water access for domestic use through increased access to water storage capacity – as storage for water from the piped network is a major impediment to accessing the most affordable water, portable storage tanks will be distributed to those households with less than 3m<sup>3</sup> of storage;
3. Provision of household water filters – to support those in the informal settlements without access to clean water, and also as an exit strategy for those receiving drinking water vouchers in urban areas;
4. Delivery of bulk water through water vouchers linked to local water truck operators – vouchers which are valid for a specified volume of water distributed to beneficiaries, to be redeemed with existing water truck operators. This shall only be considered in vulnerable areas where blanket targeting is appropriate, and ensuring that existing local trucks are utilized (no contracting of trucks external to the area of intervention);
5. Promotion of water conservation strategies and activities;
6. Public health promotion appropriate for areas of water scarcity.

## **Section 2. Emergency context / situation analysis**

### **Background**

The conflict in Syria, now entering its third year, has been displacing people into Lebanon, Turkey, Iraq, and Jordan since mid-2011. Over 540,000 Syrian refugees have fled to Jordan since the start of the conflict; of these, 120,000 are living in Zaatari Refugee camp, while the remainder (over 400,000) have integrated in host communities in northern Jordan.

### **The present situation in the host communities of Jordan: need for humanitarian response**

As the Syria conflict enters its third year the influx of refugees into neighbouring countries continues to rise exponentially. In Jordan there are currently over 540,000 refugees

registered or pending registration. The majority (75%) of refugees in Jordan is residing in host communities dispersed across the country; most are in renting accommodation whereas some are in tented informal settlements, both groups face significant challenges in meeting their needs due to limited income and high costs. At the same time the refugee influx, which currently constitutes over 5% of the total population in Jordan, is placing increasing pressures on service provision and infrastructure, particularly in areas with high concentrations of refugees. Tensions between refugees and Jordanian host communities thus are increasing.

An integrated needs assessment, carried out by Oxfam GB in March 2013, found several issues regarding access to safe water sources among vulnerable populations. Those living in rented accommodation are generally connected to the water supply system; however, the water supply system is characterized by a chronic deficit with water supplied on a rotation basis, mostly once per week during winter time and lower frequency during summer time. The water deficit has been estimated at 16 l/p/d, with the remainder made up by purchase from private tankers, particularly during summer. Overall expenditure on water for drinking and other uses vary between 15 JOD and 80 JOD<sup>3</sup> per month.

People tend to complement the need of water by purchasing directly from private water companies / vendors. The water consumption varies among families and governorates, according to the number of water supplies per week and the temperature. Generally estimated water consumption is estimated to be about 53 / litres / person / day<sup>3</sup> – not including drinking water. In informal settlements Syrians water supply is managed differently. People from larger settlements in Balqa governorate indicate to be supplied with water from the land owner. They fill 20 litres jerry cans daily for a total of 2 JoD / 200 litres.

Refugees living in tented informal setting purchase water either from the landlords (via open ponds) or water trucks. Consumption in informal settlement can be estimated between 25 and 50 l/p/d including water for drinking and cooking. Water is generally insufficient for their needs, meaning many have reduced washing to once every 7-10 days, leading to increase in skin infections.

### **The EMMA, market analysis to inform the design of the host community response activities**

To address humanitarian needs identified through the integrated assessments, Oxfam GB intends to intervene for a period of one year through an ECHO-funded project entitled *Humanitarian Response and Assistance for People Affected by the Syrian Crisis*. One of the primary outcomes of the response is to “improve access to WASH and protection services for 6,100 Syrian refugees and vulnerable households in host communities”, with specific WASH indicators including:

- At least 80% of targeted families (4,880 people) will have improved access to safe drinking water;
- 80% of women & girls (4,880 people) express satisfaction with the improved water access;
- At least 75% of the targeted beneficiaries (4,575 people) maintain key hygiene practices with limited access to water.

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<sup>3</sup> Lower range take into account no filtered water, water tap connection bill and purchase of 2-3 m<sup>3</sup> water in a month. Highest range count water tap connection bill, about 8 m<sup>3</sup> purchased from tanker and 1-2 bottles a day of 20L filtered water in a month

The design of the WASH activities, and most particularly the water access component, raised the question of the commercial water market system's capacity to deliver the anticipated quantities of water to affected populations if cash transfer programming was utilized. In particular, Oxfam aims to identify appropriate modalities that would be more efficient, cost-effective, and would reduce the risk of dependency on a parallel system created for chronic humanitarian responses.

The findings of the initial WASH assessment highlighted the need for an **in-depth understanding of the water market systems in the host communities**. To assist with the identification of appropriate response modalities, more information was needed on the following:

- Access to water and water sources and the main constraints people face in relation to access. Is the most limiting factor the availability of water, people's ability to access it and/or their purchasing power?
- The water sources on which the population depends during the dry season and the capacity of these to produce the quantity of water needed by the entire population;
- The water market and its capacity to deliver quantities of water sufficient to meet the target population's needs.

The EMMA methodology is based on the value chain development logic, and is adapted to the speed and information needs of humanitarian response design. It provides the analytical framework to determine if a market system can support in delivering the response, and therefore if cash transfer programming is feasible and appropriate in the specific context. It is based on the principles of 'Do No Harm' and sustainability, as it looks to use and reinforce market systems, rather than building parallel systems that could create dependency. It thus identifies the relevance and feasibility of market support responses.

#### **The EMMA assessment in Oxfam GB operational areas in Jordan**

This report presents the results and recommendations of the EMMA which was carried out in Jordan from the 22<sup>nd</sup> of August to the 3<sup>rd</sup> of September 2013. The assessment was carried out by a team of 11 staff from Oxfam GB. It comprised one trainer / facilitator and 2 team leaders. All but two staff was based in Jordan.

The assessment focused on Balqa Governorate (Baqaa, Ayn Al Basha and Salt), Zarqa Governorate (Ruseifa, Haj Al Hussein and Hay Al Maasoum, and informal tented settlements located in the Jordan Valley and eastern/southern Amman. The selection of areas covered was carefully done to ensure that the different types of access to water were represented within the selected areas.

### **Section 3. The target population and gap analysis**

#### **Baseline & Emergency Market Maps**

In order to inform the Host Community team's interventions for the humanitarian response to Syrian refugees in Jordan, the EMMA focused its analysis on several main scenarios:

- The emergency scenario: the summer season in Balqa & Zarqa (urban areas) when water demand (and water scarcity) is at its peak, looking specifically at 2013;
- and a baseline scenario: the winter season in Balqa & Zarqa (urban areas) when water demand (and water scarcity) is reduced, looking specifically 2012/13;
- the current situation in the informal settlements, looking at both informal settlements in factory settings (where migrant workers tend to work in the winter months) and those on farms in the Jordan Valley (where migrant workers tend to work in the summer months).

The analysis aims to inform the design of emergency water provision activities through the comparison of the scenarios.

The winter and summer months were chosen for comparison as both water availability and the price of water vary considerably between the two seasons.

#### **Situation analysis and current needs**

The majority of the population (over 98%) are connected to the municipal water supply system, which is characterized by a chronic deficit (currently estimated at 457 million cubic meters per year<sup>4</sup>) with water supplied to neighbourhoods on a rotational basis, mostly once per week during the winter (October – May) and at a lower frequency (once every 1 – 2 weeks) during the summer (June – September). This system is plagued by leakages and illegal connections, with some sections of the network experiencing water losses surpassing 50%. In order to meet water needs, people supplement this intermittent water supply with water purchased from private vendors (water trucks and bottled water vendors). As the price of water from private vendors is substantially higher than that of the municipal system, households can pay upwards of 80 JD (113 USD) per month to meet household water needs during the hot summer months when water demand peaks. Water is generally insufficient for their needs, meaning many have reduced washing to once every 7-10 days, leading to increase in skin infections.

Overall, the needs of Syrian refugees are significant and expected to worsen in the coming months due to increasing numbers, limitations in funding available relative to population size and needs, increased water stress during dry summer months, and lack of resources to prepare for winter. The situation is especially precarious for unregistered refugees not yet eligible for any (UN or Government) assistance. The coping capacities of refugees who have been in Jordan for longer periods are increasingly stretched and an overall rise in vulnerability is projected.

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<sup>4</sup> Fourth World Water Development Report, 2013.

### **The target group in an emergency response to a water shortage**

The target groups for this project are vulnerable (very poor and poor) Syrian refugees and host community members, who are considered as the more affected groups in terms of access to water. It is estimated that approximately 30% of targeted beneficiaries will be members of the host community.

The target groups in the Balqa Governorate are residents of Ruseifa, Baqaa and Ayn Al Basha; in Zarqa Governorate, target groups are residents of Ruseifa, Haj Al Hussein and Hay Al Massoun.) These areas have been selected as they have seen the biggest influx of Syrian refugees, while also suffering from high levels of water stress.

### **Gap analysis**

The market analysis requires the calculation of the gap between what the population needs and what it has access to: ie the unmet needs of the target group. Indeed the EMMA approach compares the unmet needs and the total needs of the population with the market capacity to discuss if the market can cover the needs.

Households access water for two distinct uses: drinking and domestic use. The WASH Cluster in Jordan has created a Technical Working Group to address WASH issues in the host communities; this group has agreed upon an indicator of 30 L/P/D for the minimum quantity of water needed by vulnerable households in host communities. Of this, a minimum of 3 L/P/D is necessary for drinking water needs.

Assessments have shown that the majority of the target group receives a minimum of 30 L/P/D of domestic water, though larger households (or those living in areas which are especially underserved by the piped water network such as Baqaa and Ruseifa) only access 25 L/P/D. In terms of drinking water, a shortfall of 3 L/P/D is present as the majority of households struggle to afford this water.

During the course of the EMMA, it became apparent that this indicator may need to be revisited to consider the water needs associated with the flushing of toilets. Due to water shortages at the household level, people have been forced to ration their water with the result, with hygiene practices being compromised as a result. The Water Authority of Jordan stated that people are coping with water stress by flushing with small quantities of water; the result is a higher incidence of blockages in the sewer systems due to the increased solids content. The potential public health impact of such sewer blockages should be considered when revisiting the minimum water indicators for host communities.



**Table 2: Gap analysis**

Target group	HH shortfall	Other aid	Total gap	Likely Gap duration
Total Beneficiaries: 4,880 people				
Areas to be targeted in 2013-14 4,880 people	<b>146,400 L per day (domestic water)</b> (X 30 litres / p / day)	No other aid or minimal	146.4 m <sup>3</sup> per day for 5 months  1,025 m <sup>3</sup> / week (205 truck trips <sup>5</sup> )	5 months = 150 days
	<b>14,640 L per day (drinking water)</b> (X 3 litres/p/day)	No other aid or minimal	732 bottles (20L) per day for 5 months  5,124 bottles / week	5 months = 150 days

#### Section 4. Critical market systems

To address the central rationale for the design of the EMMA, namely, to better understand the water market system to inform the design of emergency water provision response, the single critical market system selected for analysis was the **water market system**. This was selected on the understanding that this includes people's access to both domestic and drinking water.

Key analytical questions were designed to guide the analysis, in line with the information needs identified.

#### Key analytical questions:

- What is the capacity of the water market to provide the needed quality and quantity of water to targeted beneficiaries?
- What is the ability of people to access the water market? What are the limitations?
- What is the preferred modality for water provision among targeted beneficiaries?
- What are potential indirect WASH response activities?

The following section highlights the findings from the assessment.

#### Section 5. Water market system - Key Findings

Data analysed from the assessment led to a number of key findings. These are summarised very briefly here. The market maps which demonstrate these key findings can be found on pages 9 – 11..

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<sup>5</sup> For 5 m<sup>3</sup> trucks.

The water problem in Balqa and Zarqa (and Jordan as a whole) is a supply issue, as water is not sufficient to meet all of the demands; however, on a meso- and micro- level, it is a demand issue in terms of conditions of access - people do not possess the necessary purchasing power and linkages to market actors to access an equitable share of the water market.

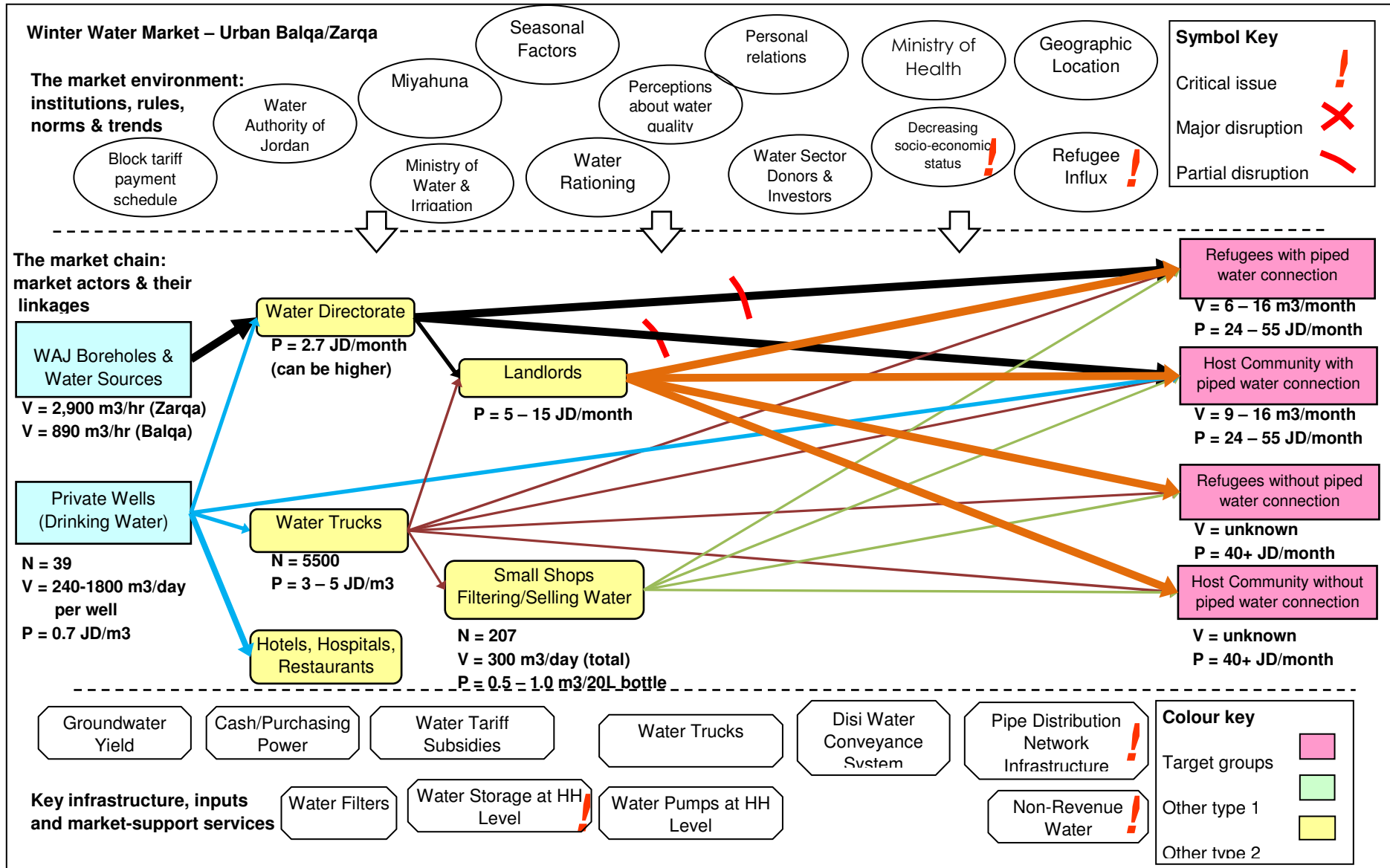
The market can cover the unmet drinking and domestic water needs of the target population as water can be available in sufficient quantities (from water shops and private wells) and transportation capacity is sufficient to bring the domestic water from water points to users. This is demonstrated by the fact that even during the time of peak water demand (August, when the EMMA was conducted), these water vendors possessed an additional scale-up capacity which can meet the water gap in Oxfam's target population.

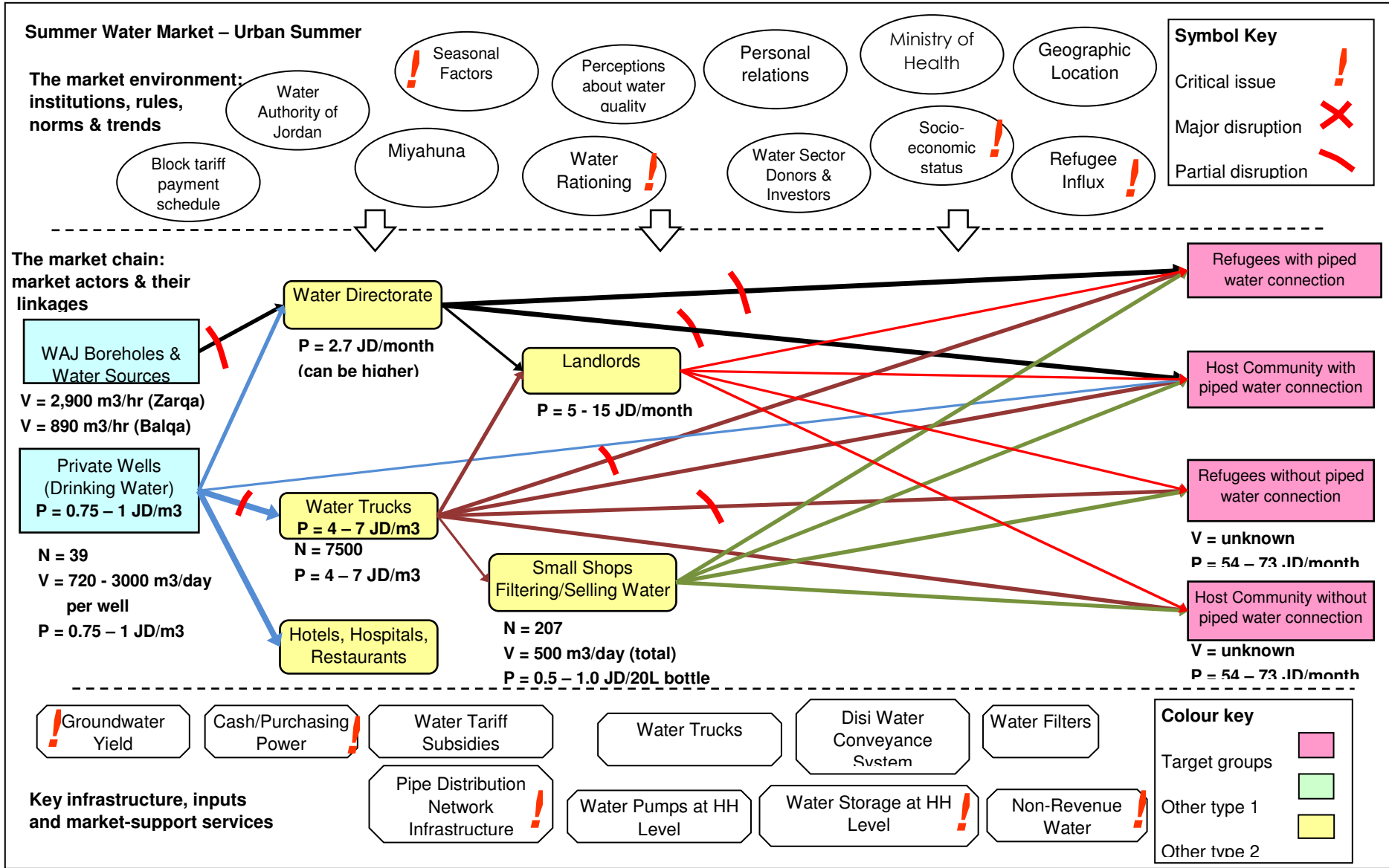
In Balqa & Zarqa Governorates of northern Jordan, the population covers its water needs through a mix of water from the government-run piped water network (via household connections), bulk water purchased from water trucks, and bottled water purchased from small shops. While the piped network is the preferred option for bulk water, a lack of continuous 24 hour water supply through this system requires people to supplement their water needs through private water vendors.

During the colder months of the year, water demand is reduced and a larger percentage of water needs are met through the piped water network, with additional demand met through the purchase of bottled and trucked water. During the hotter months of the year, water demand increases and piped water networks provide less water at the household level (both in terms of frequency of delivery and total quantity delivered). An increasing quantity of water is purchased from private water trucks and from shops selling bottled water.

Water from piped networks is paid, though at a price which is subsidized by the government and is affordable to the majority of households. However, as water supply is rationed and delivered according to a schedule (as little as once every 10 days during summer and up to 4 times per week in the winter), the quantity of water accessed from this system is primarily dependent upon the volume of water storage available at the household level, as well as the available water pressure at household locations.

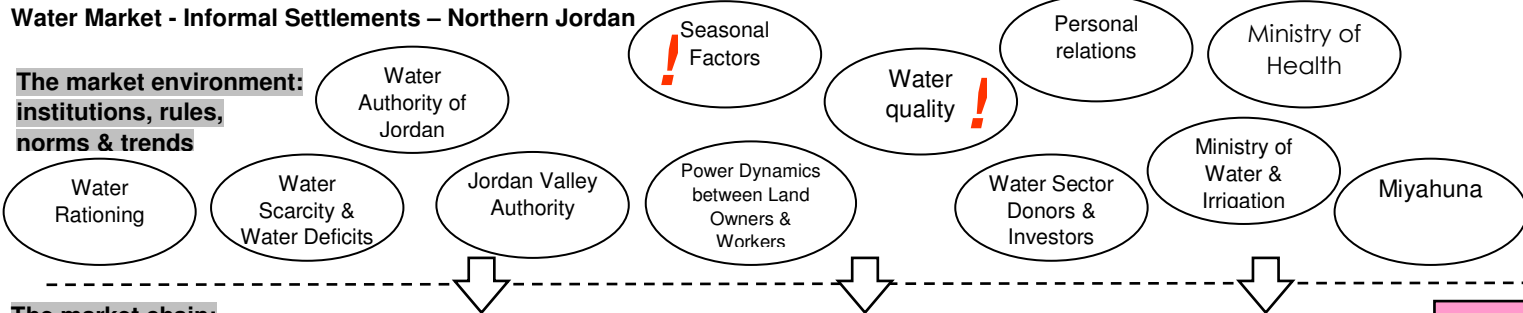
Drinking water (supplied by local shops which filter and bottle water) and water from private trucks (supplied from private commercial wells) is also paid, at a rate that is 20 - 46 times higher than that from the pipe network. Those with less capacity to store water, as well as





# Water Market - Informal Settlements – Northern Jordan

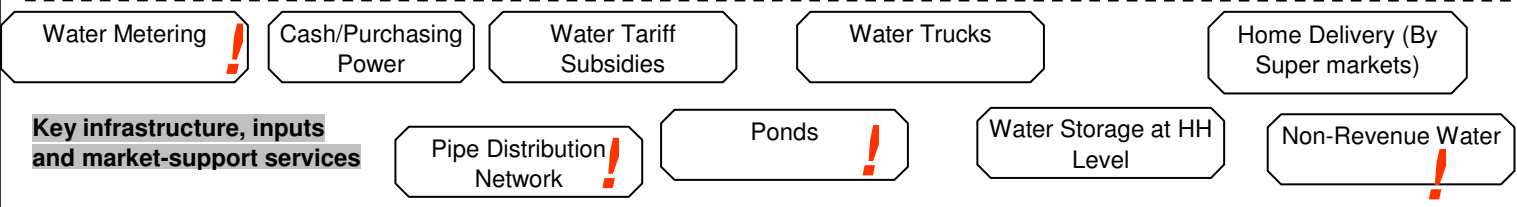
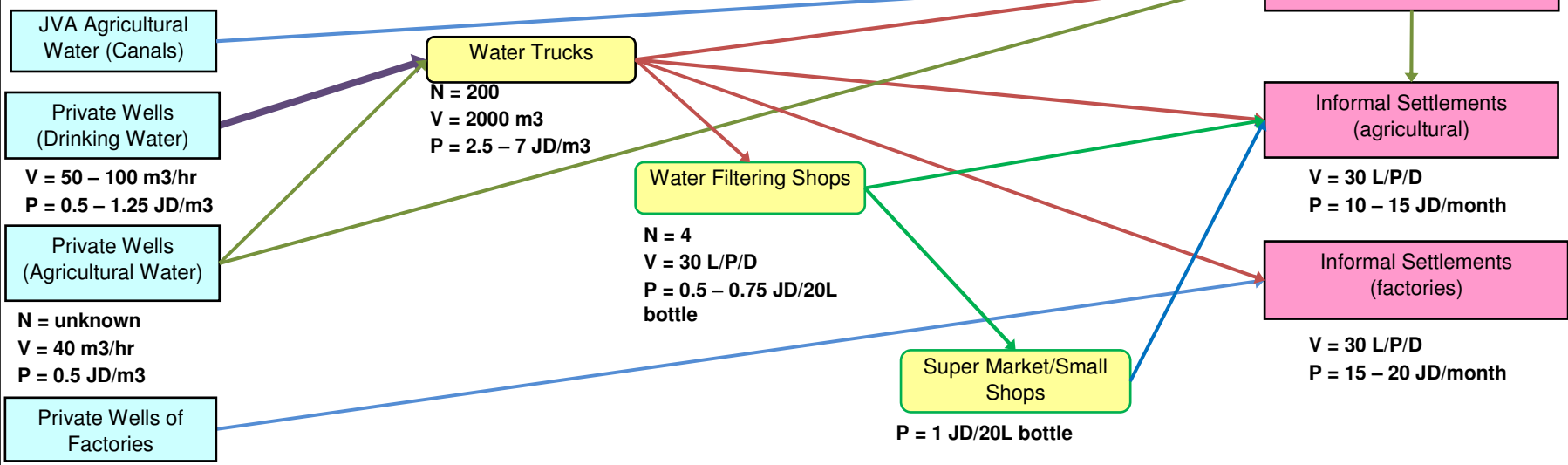
## The market environment: institutions, rules, norms & trends



**Symbol Key**

- Critical issue
- Major disruption
- Partial disruption

## The market chain: market actors & their linkages



**Colour key**

- Target groups
- Other type 1

those who live in areas that receive less frequent delivery of water through the pipe network (either due to less frequent rationing schedule or their location in an area of weak water pressure on the network) pay significantly more for water on a per capita basis due to their decreased ability to store the more affordable piped water. Thus, access to water is strongly determined by purchasing power. Furthermore, not all communities have equal access to these water sources, due to limited linkages to water trucks.

Migratory workers (mostly Syrian refugees and Bedouins) who live and work in informal tented settlements obtain some of their water from on-site wells or storage ponds (provided by their employer, sometimes free of charge and sometimes paid indirectly by way of a reduced hourly wage), though the majority of this water is of low quality (agricultural-grade water stored in open ponds, exposed to contamination). The remainder of their water needs is purchased from private water trucks, with some also purchasing drinking water from small shops and supermarkets – necessary due to the poor quality of the water provided by the land owners. While the quantity of water accessed by these migrant workers appears to be sufficient, the quality is of concern. Similar to vulnerable in host communities, the access to safe water is strongly determined by purchasing power.

**The central findings of the assessment were that, while water is available to meet the minimum needs of the targeted population, people’s access to water (particularly in the summer months of May - September) depends primarily upon their purchasing power, geographic location and water storage capacity.**

This following section presents the market assessment findings, looking at detail at:

- Water suppliers and operators,
- Water Trucking,
- Water Vendors & Shops,
- End Users

## **1. Water suppliers and operators**

Water in Jordan is supplied through the following suppliers:

- Water Authority of Jordan
- Private Wells

### **Water Authority of Jordan**

Over 97% of households in Balqa and Zarqa have a household connection to the municipal water system which is overseen by the Water Authority of Jordan (WAJ) (a government body in charge of design, construction and operation of all domestic and municipal water systems, as well as wastewater disposal services; they are also in charge of implementing policies related to the same). The municipal water system is a piped network supplied by both groundwater sources (70% of the supply) and surface water sources.

Water sources utilized for the piped network operate at near 100% capacity year-round. As an uninterrupted water supply is not possible, water is supplied on a rotational basis in 24-hour blocks; during the summer months, different areas will receive water anywhere from once every 10 days to 3 times per week; during the winter months, supply improves to 1 – 4 times per week (due to decreased demand). The refugee influx which began in 2011 saw Balqa and Zarqa experience an increased demand for water, and as a result the overall per capita consumption reduced (in Balqa, per capita consumption reduced from 88 to 66 liters/person/day<sup>6</sup>). The recent inauguration of the Disi Water Conveyance Project has seen

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<sup>6</sup> Water Authority of Jordan, Balqa Water Administration, Ain Basha Water Directorate, 2013.

an increase in water availability in the piped network since its commissioning in July 2013; Zarqa Governorate in particular has benefitted, as it has begun receiving an additional 1,500 m<sup>3</sup> per day, with Ruseifa receiving an additional 300 m<sup>3</sup> per day on top of that; an additional 500 m<sup>3</sup> per day shall supply Zarqa when additional wells become functional. At current estimates, this should ensure that almost all households receive water a minimum of 1 – 2 times per week.

Apart from water insecurity, intermittent supply has a number of negative impacts, including damage to the network, increased probability of meters under-reading because of air entrainment, increased non-revenue water due to high pressure while mains are live, and public health risk (skin diseases, diarrheal disease, kidney problems). The water supply system is also plagued with illegal connections, further exacerbating the problem. In total, non-revenue water (physical losses from leakages and administrative losses from lost payment, summarized in Table 1) is estimated to result in water losses in pipe distribution networks of over 50% in the majority of the country<sup>7</sup>.

**Table 1 Breakdown of non-revenue water in piped water systems.**

Authorized Consumption	Billed Authorized Consumption	Billed Metered Consumption	Revenue Water
		Billed Unmetered Consumption	
Water Losses	Unbilled Authorized Consumption	Unbilled Unmetered Consumption	Non-revenue water
	Apparent Losses	Unauthorized Consumption	
		Customer Metering Inaccuracies	
	Real Losses	Leakage on transmission & distribution mains	
		Leakage and reservoirs at reservoirs	
		Leakage on service connections up to the metering point	

Miyahuna, a company owned by the WAJ, was established in 2007 and provides water and wastewater services in the Greater Amman Area, including Balqa and Zarqa. Miyahunu is in charge of day to day operation, routine operation and maintenance, and billing.

**Private Wells**

Private wells (deep boreholes), owned and operated by private individuals as businesses, sell water to the Water Authority to supplement the water in the piped network, and also sell water to businesses, water transporters (water trucks) and individual households. Private well owners sell water for both agricultural and commercial use; clients include farmers, construction projects, hotels, hospitals, and households. Wells are licensed by the Ministry of Water; licenses are renewed on an annual basis. The Ministry of Health ensures water quality and chlorination standards through monthly water quality monitoring.

<sup>7</sup> Review of Water Policies in Jordan and Recommendations for Strategic Priorities, USAID, 2012.



Since the refugee influx in 2011, several private wells began selling water to the Water Directorates to increase the flow of water in the piped network. Demand at private wells fluctuates between the summer and winter months; the majority of wells operate at 100% capacity during the summer months, and then scale down by 50% during the winter months, though some wells operate at 100% capacity year-round. The recently-started Disi Water Conveyance Project, however, has resulted in decreased demand at some wells this summer (up to a 50% at a small number of wells). The average private well produces 40 – 60 m<sup>3</sup>/hour, though many stated that they have the capacity to scale up to 80 – 100 m<sup>3</sup>/hour. Balqa and Zarqa have a total of 39 licensed private wells, with typical production rates of up to 1800 m<sup>3</sup>/day in the winter, increasing to up to 2400 m<sup>3</sup>/day in the summer. There are no limits on water extraction. Water is generally sold at a price of 0.7 JD/m<sup>3</sup> during the winter, increasing to 0.75 JD/m<sup>3</sup> during the summer; some wells do, however, charge up to 1 JD/m<sup>3</sup> during times of high demand or due to a higher level of water treatment on site (typically reverse osmosis systems).

Some private wells own water trucks for water delivery, and almost all can organize a large number of trucks to facilitate delivery of water. Their largest clients include the Water Authority, hospitals and hotels, and these are prioritized for access at the wells. These clients have contracts with the well owners to supply a specified volume water per day; as such, the trucks transporting this water are not made to wait in the queue at the well, which can be quite long during the summer months. Independent water trucks are also major clients; they pay from 0.7 – 1.0 JD/m<sup>3</sup> for water, which they then sell to their clients (water filtering & bottling shops, restaurants, hotels, and households). During peak summer months, hundreds of trucks per day collect water from each private well, with long queues sometimes forming.



Figure 1 Water filling point at private well, Zarqa.

## 2. Water transporters

A private water transportation market exists in Balqa and Zarqa Governorates, consisting of approximately 5,500 trucks, ranging in capacity from 3 – 20 m<sup>3</sup>. A similar system exists in the areas of the informal settlements in the Jordan Valley.

Water trucks are operated by individual owners, who own from one to several trucks. There also appear to be “middle men” who are capable of rapidly organizing large groups of trucks (hundreds if necessary) to serve large contracts. Most water trucks have “regular” customers to whom they regularly supply water. Large businesses (water filtering shops, hotels, hospitals, restaurants) and some households (long-standing customers who regularly procure water through trucks) are connected to local trucks, and as such are prioritized in terms of delivery during times of high demand.

During the winter months, the water trucking market operates at approximately 50% of its capacity (anecdotal evidence suggested approximately 6 trips/day), as demand is low during this period. Better-off households which receive water several times per week from the piped network, and possess adequate storage volume, many times do not require water trucking services during this time. Those with smaller storage capacities and who do not receive water as frequently engage the trucks during this time. The price paid for trucked water ranges from 3 – 5 JD/m<sup>3</sup>, based primarily on the distance the water is transported. Also,



larger capacity trucks (20 m<sup>3</sup>) charge a lower rate (per unit volume) than small capacity trucks (5 m<sup>3</sup>).

During the summer months (June – September) when water demand peaks, water trucks typically operate at near 100% capacity, with trucks operating up to 24 hours per day during times of peak demand (approximately 12 trips/day). Nearly the entire population engages the water trucking market during this period. The price increases to 4 – 7 JD/m<sup>3</sup>, based not only on the distance the water is transported but also on the level of demand.



Figure 2 Water truck, Balqa.

During these times of high demand, it sometimes becomes difficult for lower-income and refugees people to organize a water delivery, and can involve a wait of 1 – 2 days. This is exacerbated by the fact that trucks will only sell the entire quantity of water that they are transporting (a minimum of 3 – 5 m<sup>3</sup>, though more often 6 – 10 m<sup>3</sup>), and most refugees and vulnerable households only possess 1 – 2 m<sup>3</sup> of water storage capacity. This means that these vulnerable households either purchase more water than they actually receive (purchasing the truckload but only receiving 1 – 2 m<sup>3</sup>), or must organize themselves into groups with neighbors to share a water delivery. This proves especially

problematic for Syrian refugees, who do not have strong contacts/linkages with their neighbors (for sharing water deliveries) and who have limited water storage capacity.

The fleet of water trucks in Zarqa and Balqa is sufficient in volume to ensure the transportation needs during the peak summer months, for two reasons: (1) the recent start of the Disi Water Conveyance Project has seen demand for water trucks decrease across Balqa and Zarqa, with some truck operators reporting a 50% decrease in demand for their services; and (2) there exists a scale-up capacity in terms of the number of trucks, as businessmen will sometimes utilize flat-bed trucks equipped with large plastic water tanks to transport water.

Water transporters do have a position of power within the market chain as they can be a limiting factor with regards to water access of refugees and vulnerable households.

This does not mean that they are not enough in number to cover the demand, but that the demand is not sufficiently attractive and connected to them to access directly all the capacity.

In the informal settlements of the Jordan Valley, the water trucking market operates in much the same manner, though the demand is not quite as high. Water tankers serve individual households as well as agricultural land owners and the migrant workers that they employ. The price of water varies from 2 – 7 JD/m<sup>3</sup>, dependent upon demand and the distance the water is transported.

### 3. Drinking Water Bottlers

Several small shops filter and bottle water into 20 liter containers for sale as drinking water. As of August 2013, there were 84 registered shops in Balqa and 123 in Zarqa. They are supplied through water trucks which obtain their water from private wells, and as regular customers, their deliveries are prioritized by the trucks. The shops have water filtration units installed on their premises (typically reverse osmosis systems), which they use to filter water

and then bottle it. This is an industry which has grown substantially over the last several years, as several instances of contamination of the piped water system has sparked widespread fears concerning the quality of this water for human consumption. A 2012 Jordan Times article reported that “[a] customer satisfaction survey carried out by the Jordan Water Company (Miyahuna) showed that customers avoid drinking tap water, fearing it is contaminated”.<sup>8</sup> As such, nearly all households (of all socio-economic levels) in the Greater Amman areas purchase bottled drinking water in varying quantities.

The Food & Drug Administration (FDA) regulates the operation of these shops, which must possess a license to operate. The FDA tests the water quality on a monthly basis (though anecdotal reports suggest that it is more likely bi-monthly) to ensure that the water meets Jordanian standards for drinking water. Those who do not meet these standards run the risk of being shut down.

Water is sold in returnable 20 liter plastic bottles; the cost ranges from 0.5 – 1 JD per bottle, with the most common price being 0.75 JD. The cost remains constant throughout the year, regardless of the season; the price difference in water is based more on geographic location the lower-priced bottled water was found in Salt, in Balqa Governorate). For a small additional cost (typically an extra 0.05 – 0.1 JD) the water can be delivered to individual households. Booklets of vouchers are also available for sale at these shops, with each



Figure 3 Bottled drinking water shop, Zarqa.

voucher redeemable for a bottle of water; booklets are pre-paid and a small cost savings is earned through this purchase.

During the summer, shops typically produce between 80 – 430 bottles per day (dependent upon production capacity and demand); shops produce 40 – 70% less water during the cooler winter months, when demand decreases. The majority of shops reported that they would be able to increase their production capacity a further 20 – 30% during times of peak demand.

#### 4. Landlords as Water Vendors

While people who own their place of accommodation pay the Water Directorate directly for the quantity of water consumed through the piped network, the majority of those in rented accommodation pay this bill through their landlord. A blanket cost of 2.1 JOD is charged for the first 18m<sup>3</sup> of water taken from the piped network; any quantity exceeding 20m<sup>3</sup> is charged a higher unit rate per m<sup>3</sup>. The minimum monthly rate for water & sewerage connection is 5.13 JOD; however, due to the fact that the overwhelming majority of users do not pay the Fixed Usage Fee of 2.43 JD, the minimum rate that is paid each month is actually 2.7 JD. This is the amount charged to the majority of households, as the network does not allow for more than 18m<sup>3</sup> of water per month to be delivered to the majority of households.

Those who pay through their landlords, however, typically pay 5 – 15 JD per month for this same water. In this sense, landlords are sometimes acting as water vendors, earning a profit

<sup>8</sup> Namrouqa, Hana (May 22, 2012). "[Amman residents remain distrustful of tap water - study](#)". *The Jordan Times*. Retrieved June 18, 2012.

on the water consumption of their tenants. Those who rent their accommodation thus pay a higher unit rate for piped water than those who own their accommodation and those who are able to pay their own water bill.

## 5. End Users

The assessment showed that the determining factors for water access for the populations in Balqa and Zarqa were:

- purchasing power and wealth ranking;
- water storage capacity available at the household level;
- geographic location (in relation to frequency of piped water delivery as well as water pressure).

5 different types of end users were defined

- Refugees in urban areas with a piped water connection;
- Refugees in urban areas without a piped water connection;
- Host community in urban areas with piped water connection;
- Host community in urban areas without a piped water connection;
- Migrant workers in informal settlements.

All types of end users were visited and interviewed as part of the EMMA process.

When comparing community types, the assessment demonstrated that poorer groups pay significantly more for water (per unit volume) than better-off groups. This is due to the fact that poorer households are only able to access a limited amount of water from the piped network, which is the most affordable water available to the population, due to their limited storage capacity and their tendency to live in areas with low water pressure. This forces poorer households to purchase a greater percentage of their water from more expensive private vendors.

As there is a blanket fee of 2.1 JD for the first 18 m<sup>3</sup> of water accessed from the piped water system, those who access less water actually end paying more per m<sup>3</sup> of water than those who can access greater quantities through increased storage capacity and water pumps (which pump water from the network).

### **a. Refugees in urban areas with piped water connection**

**Winter Months** - Most refugees live in rented apartments, with an average household size of 5 people. Each household typically has a 1 or 2 m<sup>3</sup> water storage tank installed on the roof (though sometimes multiple households will share one tank), which is filled from the piped water network. The piped network is the preferred choice of water, as it is the most affordable; however, due to intermittent supply from this system (24 hour periods of supply, typically 1- 2 times per week in the winter); water delivery is dependent upon geographic location, as areas experience improved water pressure. It is critical to store the supplied water in household-level storage tanks to ensure water security between periods of water delivery. Due to the limited storage capacity available – it is estimated that a minimum of 3m<sup>3</sup> storage is necessary to serve the minimum needs of a household for one week – refugees must purchase additional water must be purchased from private water vendors.

Additional water for domestic use is purchased from private water truck operators, who purchase their water from private wells in the area. Refugees, being relatively new to the area, tend not to have good contacts/linkages with water truck operators, and as such they must seek out the contacts of these trucks from their neighbours or

landlords. Water trucks for household delivery are typically 3 – 10 m<sup>3</sup> in capacity, and the entire volume must be purchased; therefore, for those households with small storage capacities, they must organize to share the water delivery with several nearby households, or else pay for the excess water that they do not physically receive. While many households are capable of organizing themselves into groups, some refugee households do not have personal connections to neighbours with whom they can share the trucked water.

As the quality of water from the piped network and private wells is viewed as unsuitable for drinking by the majority of the population, drinking water is typically purchased from supermarkets or, much more commonly, from small shops which sell filtered water in 20 liter bottles. As drinking water is seen as a priority for the majority of households, purchase of bulk domestic water is reduced in order to purchase more expensive drinking water (typically a minimum of one 20L bottle every 2 days). The price of a 20L bottle varies from 0.5 – 1.0 JD, averaging 0.75 JD.

Refugee households tend to access 9 – 16 m<sup>3</sup> of water per month during the winter, at a price of 24 – 55 JD per month.

**Summer Months** – During the hotter summer months, the frequency of water supply from the piped water network decreases to once every 1 -2 weeks. The small storage capacities available to refugees at the household level results in the need to purchase an even greater percentage of water from private vendors; as water vendors set prices according to demand, the price paid for water during the summer months (May – September) is significantly higher than that paid during the winter months (October – April).

Water trucks become more difficult for refugees to access, as the regular customers are prioritized, sometimes resulting in waiting times of 1 – 2 days to receive the requested water. The problem of insufficient storage capacity to purchase the entire quantity of a water truck is exacerbated during these months.

The purchase of drinking water is prioritized for most households, and as this water is the most expensive (per unit volume), purchase of bulk water is reduced and coping mechanisms generally include reduced frequency of bathing and washing, as well as reduced flushing of toilets. The small percentage of people who do drink the water from the pipe network report that they only do so due to a lack of money to purchase bottled drinking water.

Water consumption of refugee households ranges from 6 – 16 m<sup>3</sup>/month, at a price of 33 – 80 JD/month in the summer due to higher consumption and increased unit prices for water (price fluctuates with demand).

**b. Refugees in urban areas without piped water connection**

Very few households do not possess a household connection to the piped water network. Only two households were found which do not possess this connection; this small sample size makes it difficult to generalize about this group of users.

These households do spend significantly more money on water (per unit volume), however, as 100% of their water supply is purchased from the more expensive private vendors. Expenditure on water is in the range of 40 JD/month in winter, increasing to 54 – 73 JD/month in summer; while this is in the range of the price paid

by refugees with piped water connections, they also appear to consume significantly less water by volume.

**c. Host Community in urban areas with piped water connection**

**Winter Months** – As the households in the host community visited in the EMMA were mostly lower-income residents, most of them live in rented apartments, with an average household size of 5 people. Each household has a water storage tank(s) installed on the roof; poorer households possess 1 – 2 m<sup>3</sup> of storage, while better-off households possess up to 6 – 8 m<sup>3</sup> of storage. These tanks are filled from the piped water network; this storage is to ensure water security between periods of water delivery. The piped network as the preferred choice of water, as it is the most affordable; however, due to intermittent supply from this system (24 hour periods of supply, typically 1- 2 times per week in the winter); water delivery is dependent upon geographic location, as areas experience improved water pressure. Due to the limited storage capacity available – it is estimated that a minimum of 3m<sup>3</sup> storage is necessary to serve the minimum needs of a household for one week – poorer households must purchase additional water must be purchased from private water vendors; those with increased storage receive sufficient water supply from the piped network to meet their domestic needs.

Additionally, many better-off households own a tank on the ground level (to collect water at an area of higher water pressure) and a water pump to pump the water to tanks of the roof top; this allows them to access significantly more water from the piped water network.

Additional water for domestic use is purchased from private water truck operators, who purchase their water from private wells in the area. Many long-term residents in the host communities have long-standing relationships with specific water truck operators who provide water to them on a regular basis, while others have relationships with private well owners, who will organize trucks to deliver water on a regular basis (or upon request). . Water trucks for household delivery are typically 3 – 10 m<sup>3</sup> in capacity, and the entire volume must be purchased; therefore, for those households with small storage capacities, they must organize to share the water delivery with several nearby households, or else pay for the excess water that they do not physically receive.

As the quality of water from the piped network and private wells is viewed as unsuitable for drinking by the majority of the population, drinking water is typically purchased from supermarkets or, much more commonly, from small shops which sell filtered water in 20 liter bottles. As drinking water is seen as a priority for the majority of households, purchase of bulk domestic water is reduced in order to purchase more expensive drinking water (typically a minimum of one 20L bottle every 2 days). The price of a 20L bottle varies from 0.5 – 1.0 JD, averaging 0.75 JD. A small number of households own water filters to treat their bulk water at the household level.

**Summer months** - During the hotter summer months, the frequency of water supply from the piped water network decreases to once every 1 -2 weeks, though some areas with better water pressure receive water 2 – 3 times per week. Almost all households are required to purchase additional water from private vendors, though poorer households with smaller storage capacities purchase an even greater percentage of water from private vendors. As water vendors set prices according to demand, the price paid for water during the summer months (May – September) is significantly higher than that paid during the winter months (October – April).

Water trucks prioritize their regular customers during this time, sometimes resulting in waiting times of 1 – 2 days for those who purchase water less frequently. The problem of insufficient storage capacity to purchase the entire quantity of a water truck is exacerbated during these months.

The purchase of drinking water is prioritized for most households, and as this water is the most expensive (per unit volume), purchase of bulk water is reduced (among the poorer groups) and coping mechanisms generally include reduced frequency of bathing and washing, as well as reduced flushing of toilets.

Poorer households in the host communities tend to access 6 – 16 m<sup>3</sup>/month, at a cost of 33 – 80 JD/month. Better-off households access a greater quantity of water, while paying significantly less (per unit volume), mostly due to their improved access to the piped water network.

**d. Host Community in urban areas without piped water connection**

Very few households do not possess a household connection to the piped water network. No host community households were found which did not have a piped connection, though it is assumed that their water access is similar to that of refugees without a piped connection.

**e. Migrant Workers in Informal Settlements**

**Winter months** – Migrant workers, composed primarily of Syrian refugees (but also small numbers of Bedouins), spend the months of October – April working in the farms of the Jordan Valley. These informal settlements, extremely small prior to the refugee influx, have grown significantly since the arrival of large numbers of refugees seeking employment.

Water is normally provided to the workers free of charge by farm owners. This water is typically agricultural-grade water supplied from open canals and agricultural wells, and is stored in open ponds which are open to contamination and commonly filled with algae & fish.

Due to the poor quality of this water, workers supplement it with water purchased from water trucks and drinking water purchased from local shops. The trucks are either organized by the farm owner or one of the workers, and the payment is shared between the workers.

When purchasing water, households working in the farms typically spend 10 – 15 JD per month. Water storage is done with 20-liter jerry cans (most households have 10 – 20 jerry cans, providing 200 – 400 liters of storage capacity). In general, water available seems to meet the basic needs (30 liters/person/day) though water quality is lacking.

**Summer months** – Migrant workers spend the months of May – September working in the farms of Eastern Amman, Irbid and Mafraq, and factories in Southern Amman.

During the months when working in the factories, workers receive water from the factory – a tap or hose is provided which is shared by all workers; the source of water is typically a factory-owned well, though many workers expressed concerns that they were receiving wastewater from the washing of vegetables. Similar to the farms, water quantity appears sufficient (30 liters/person/day) though there are many complaints regarding the water quality.

While this water is seemingly provided free of charge, the workers actually receive a reduced hourly wage (0.9 JD/hour, as opposed to the normal 1 JD/hour) in return for provision of land use, water and electricity. Occasionally, additional bulk water needs are met through water



purchased from water trucks, and drinking water is purchased from local shops and supermarkets.

In general, factory workers pay 15 – 56 JD per month on additional water trucking and drinking water needs during summer months.

### **Urban Areas**

In summary, poorer households tend to pay more for water (per unit volume) than better-off households, with refugees typically paying the most. The primary reason for this inequity is that in order to fully take advantage of the most affordable water available on the market (water from the piped network), households must possess adequate storage in their home in order to collect as much water as possible during days of the week when the piped network is providing water. While better-off households typically possess enough storage to supply an amount of water sufficient for one week, refugees and vulnerable host communities only possess storage to last a few days. As there is a blanket fee of 2.1 JD for the first 18 m<sup>3</sup> of water accessed from the piped water system, those who access less water actually end up paying more per 3 of water than those who can access greater quantities due to increased storage capacities.

During the summer months nearly the entire population relies on private water vendors to supplement water received from the piped network (which supplies significantly less water per household during the summer months due to increased demand stresses). Poorer households must buy a higher percentage of their water from these more expensive water vendors; they cope with the higher prices by reducing the quantity of water used for bathing and hygiene purposes at the household level.

Refugees tend to have limited access to water truck operators, and rely on their neighbours and landlords in order to get in contact with them. As clients must purchase the entire volume of water in the truck, households with smaller storage capacities organize themselves into groups to share the water, though refugees with limited contacts with their neighbours struggle to set up these types of arrangements.

Nearly the entire population purchases drinking water from small shops selling bottled water; this water is purchased the entire year. This water is also the most expensive (per unit volume) yet its purchase is prioritized by almost all groups regardless of socio-economic status.

The richer the individuals, the more access they have to the most affordable water from the piped network - as they have access to more storage. They are also better able to afford water from water truck operators. Purchasing power is seen as the primary determinant for water security in the urban areas, with access to the water trucking market a secondary determinant.

### **Informal Settlements**

While most water is provided by employers in the informal settlements, this water is mostly of poor quality and is supplemented by water purchased from water trucks and bottled water shops. While purchasing power is the primary determinant of water security with regard to private water vendors, the quantity of water supplied by employers is sufficient if the quality could be improved.

## Section 6. Comparing the gap in water needs with the market capacity

Overall the problem in Balqa and Zarqa (and Jordan as a whole) is a supply issue, as water is not sufficient to meet all of the demands (Jordan suffers from an estimated annual water deficiency of 500 million cubic meters). However, on a meso- and micro- level, it is a demand issue in terms of conditions of access - people do not possess the necessary purchasing power and linkages to market actors to access an equitable share of the water that is available on the market.

**The market can cover the unmet drinking and domestic water needs of the target population** as water can be available in sufficient quantities (from water shops and private wells) and transportation capacity is sufficient to bring the domestic water from water points to users. **The response can rely on the market and its actors.**

The most limiting factors for people to access water are their purchasing power and access to sufficient water storage. While the market system is able to provide water and transportation services to cover unmet needs, the population is not able to afford sufficient amounts of water to reach water security. **On the micro-level, it is then a demand side problem. This is particularly the case for poor and very poor socio-economic groups.**

- ⇒ Cash transfer programming for water provision should therefore be considered rather than in-kind to make use of the private sector capabilities, transfer risks where relevant and mitigate the risk of distorting the market;
- ⇒ Direct cash grants delivered to the beneficiaries would not translate fully into equivalent water access due to the diversity of needs for the very poor and poor, as well as their limited access to water transporters. Other cash transfer modalities shall therefore be considered.
- ⇒ In-kind provision of water storage containers should be considered, as lack of storage is a major barrier to people accessing equitable quantities of water from the piped network.

The crisis **is not only a water crisis but also a livelihood crisis** as what limits people's access to available water is **purchasing power and livelihoods**, in addition to the larger problem of availability of water:

***In addressing the main requirements of the response, the analysis highlighted the following opportunities:***

### **a) Support access to water for vulnerable populations**

Coverage of water needs is not limited by water availability or water transportation capacity but by purchasing power and storage capacity, especially for the poor socio-economic categories.

As a consequence, since the market functions, cash transfer programming and involvement of the private sector at different stages should be considered as an alternative to in-kind distribution of water.

### **b) Support access to water storage for vulnerable populations**

As adequate water storage capacity at the household level limits water access for vulnerable households, support to increase their storage should be considered.

***The analysis also highlighted learning from past responses that was integrated in response analysis:***



**a) Use of vouchers:**

Oxfam has distributed hygiene items through a voucher system, enabling refugees to exchange vouchers for a selection of pre-identified hygiene items available through local suppliers. Feedback from beneficiaries on this modality has been overwhelmingly positive, stating that they liked the ability to choose their own items (according to their individual need), as well as the freedom of choosing the vendor (from among a group of pre-selected vendors).

Recent NGO interventions in Mafraq governorate have utilized a voucher approach for the provision of water through water trucks; however, instead of utilizing the local market of water trucks, a single businessman was contracted, who then was responsible for dispatching trucks to the beneficiary households as requested. This essentially established a parallel water trucking market, as opposed to utilizing the existing market to meet needs.

Beneficiaries were unable to freely select their water vendor, experienced waiting times of up to 48 hours, and there were anecdotal reports of the supplier abusing the system (demanding multiple vouchers for a single delivery; purchasing the vouchers from beneficiaries at a reduced price). This may have an unintended consequence of taking away business from water trucks which were already working in the local areas of intervention.

Engagement of Water Trucks: While the market for water trucks is expandable and is sufficient to meet additional demand, it is also true that many trucks have regular /ongoing customers. Any type of intervention which contracts a group of trucks for a prolonged period of time should analyze if these trucks are engaged with other ongoing customers, and what impact an intervention would have on these other ongoing engagements. The Yarmuck Water Company experienced an issue in which their regular trucks (which transported water from private wells to the Water Directorate distribution tanks) were contracted by an NGO, causing conflicts in the scheduling of water deliveries.

**b) Power in the market system:**

It has been noticed that by contracting external trucks and providing favorable conditions, NGOs can distort the market, and reduce the negotiating power and market access of other clients to water trucks.

The response shall use the private sector capacity – as appropriate - and avoid creating too specific conditions that distort the market. This shall be done in coordination with all actors involved in emergency water provision to avoid incoherence in contracting conditions and transportation actors taking advantage of them.

**Section 7. Main response recommendations**

In the context of understanding the water market system in Balqa, Zarqa and informal settlements, the aim of this EMMA assessment is to inform the design of the response that shall be carried out in host communities in the current response activities.

While the response analysis carried out here has focused on the water component, on the basis of the results of the water market system analysis, programmatic integration with other technical areas of expertise (in particular public health) has remained a critical driver in the process.

During the response analysis a wide range of options were considered, on the basis of WASH assessment results for past responses and EMMA results. Advantages,

disadvantages, feasibility, timing and risks for each option were analysed leading to the response recommendations below.

The Annex 9 details the response recommendations. The main components are highlighted here:

### **Targeting:**

Since water access is mainly determined by households' purchasing power – especially during the summer months - targeting should focus at least on very poor and poor categories, not only of refugees but also the host community. However blanket targeting should be considered for any activity focusing on water trucking activities, so as not to disrupt (and to build upon) community-organized “grouping” to share water trucking deliveries.

#### **1.1 Support to drinking water access through water vouchers linked to local water vendors in urban areas of Balqa & Zarqa**

In urban areas, the response will aim at ensuring that vulnerable refugees and host community residents have access to 3 liters/person/day of drinking water from local water bottling shops. To do no harm and make use of market dynamics, this will be ensured by linking affected groups with local market actors (local licensed water bottling shops).

- Oxfam contracts pre-identified drinking water vendors that have the necessary trading capacity and experience (similar to the process undertaken to pre-identify vendors for the hygiene kit vouchers). They must also possess a valid license for operation, and demonstrate that they meet or exceed Jordanian drinking water standards and perform the mandated water quality testing on a monthly basis.
- Water vouchers (commodity vouchers) for bottled drinking water are distributed to beneficiaries, to be redeemed from contracted vendors. As water vouchers are already utilized by the vendors (booklets of vouchers purchased by customers to be redeemed for individual bottles), these same vouchers shall be utilized in the response. Beneficiaries shall be given a central role in the choice of the shops.
- Vendor selection process shall also ensure market competition (use of multiple vendors where possible).
- Payment is ensured by Oxfam to contracted local traders upon reception of beneficiaries' vouchers;
- If the situation analysis concludes that people have the capacity to purchase a portion of their water needs, then the response could consider subsidizing the water by asking people to “buy” the vouchers: ie pay a portion of the water.

#### **1.2 Support to drinking water through provision of water filters at household level**

In the urban areas of Balqa and Zarqa, the distribution of vouchers for drinking water is not a permanent solution; the distribution of water filters at the household level is seen as a viable exit strategy, due to their presence in the local market as well as feedback from beneficiaries who requested them. In the informal settlements, where water quantity is not nearly as problematic as water quality, the provision of a portable and low-maintenance filter was clearly preferred by potential beneficiaries.

### **Informal Settlements**

7. As water quality is the primary water issue facing beneficiaries, context-appropriate and portable water filters shall be distributed to allow for the treatment of water for drinking in farm and factory settings.
8. Selection of water filters shall take into account: portability, ease of use within the tented accommodation, and the cost and availability of replacement parts.

9. To ensure sustainability of the filters, the supply chain for candle filters shall be explored, with the possibility of helping to stock local suppliers with an initial stock of candles.

#### **Urban Areas of Balqa & Zarqa**

10. Water filters shall be distributed to those households receiving drinking water vouchers, serving as an exit strategy as people shall have the ability filter water from the piped network.
  - This activity shall include training on installation and maintenance of the filters.

#### ***Cash grants or vouchers?***

- Both are cash transfer programming, so both make use of the market system to deliver the emergency response;
- The present paper is proposing vouchers rather than cash grants for the simple reason that needs from vulnerable groups are multiple, leading them most probably to cover their food and other basic needs as well, and therefore not reaching the minimum water access;
- And this of course does not mean that water needs should be covered in preference to food and other basic needs, it clearly means that all needs should be taken into consideration in the design of the response;
- So, if the water emergency support is clearly provided complementarily to an EFSL support to food and basic needs, then water could be counted as one of those basic needs and be included in a cash grant for example. Further understanding on people's decision making for the spending of a cash grant is required to make sure that people would then access their water requirement in addition to their food and other basic needs. In all cases, this requires a careful and appropriate calculation of the cash grant amount. This could be the purpose of a pilot comparing (Cash grant for food and other basic needs + voucher for water) and (cash grant for all basic needs = food, water and others);

### **1.3 Support to water access for domestic use through increased access to water storage capacity**

A clear outcome of the EMMA is that a household's water security is directly linked to their ability to store an adequate volume of water which can last them through the days in which the piped network is not providing water. As the Disi Water Conveyance project has now provided enough extra water into the piped water supply to allow for all users to fill a minimum tank size of 3 m<sup>3</sup> during times of water supply, the aim is to increase the storage capacity of those households who possess less than 3 m<sup>3</sup> of storage capacity.

- Targeting shall focus on those households that possess less than 3 m<sup>3</sup> of water storage capacity.
- In-kind distribution of plastic storage tanks to increase households' storage capacity to 3 m<sup>3</sup>.
- Storage tanks shall be portable such that households can retain them in the event that they move residences.
- Type of storage tank distributed shall be dependent upon the type of dwelling and available space (roof tanks, smaller tanks that fit inside the home, etc.). Tanks can be given in-kind (with beneficiaries having the option of choice among some pre-selected options), or commodity vouchers can be given if the appropriate tanks are available in sufficient quantity on the local market(s).
- In informal settlements, jerry cans shall be distributed (2 per household), as space does not allow for larger tanks.

#### **1.4 Support to domestic water access through vouchers linked to local water transporters**

- In areas of high vulnerability in terms of water access (Rusaifa and Baqa'a), blanket targeting of refugee and vulnerable host community households. Blanket targeting shall be used to ensure that local coping mechanisms, which involve neighbouring households "grouping" themselves to share large deliveries of water, are not damaged, and in fact can support refugees with limited contacts to more easily involve themselves in this grouping;
- Water vouchers (commodity vouchers) which are valid for a specified volume of water distributed to beneficiaries, are to be redeemed from local water truck operators;
- The community shall be given a central role in the choice of water trucks, with preference given to trucks that are already working in the intervention area in order to avoid disrupting the existing market.
- Multiple truckers that typically work in the locality shall be selected to ensure market competition. Mapping of operating water trucks can be conducted (e.g. with mixed community groups) and pre-selection can be done based upon tariffs, coverage area, and service quality; these results can be shared with other contractors in order to make them aware about their current limitations. It is critical that Oxfam not distort the current market and/or take away business from water trucks normally operating in the intervention areas.
- Payment is ensured by Oxfam to contracted traders upon reception of beneficiaries vouchers.

#### **1.5 Promotion of water conservation strategies and activities**

11. The present project includes the facilitation and support of mixed community groups (refugees and host community residents). Priority activities with these groups will include the development of water conservation strategies at the household and community level, and the design of communication/promotional methods for the same.
12. Foster the development of creative water management solutions through technical forums and competitions with local universities, private companies and entrepreneurs.
13. Collaboration with the Water Authority of Jordan and the Ministry of Education on promoting water conservation in schools.

### **2. Public Health Promotion**

14. PHP appropriate to areas of water scarcity, with an emphasis on the safe water chain and maintenance of water storage tanks.
15. Sensitization on the appropriate use of water filters (only to be used for drinking water, not domestic water).

### **3. Setup of an community accountability system**

16. Broad sensitization of the community should be ensured so that the community can hold involved market actors accountable.
17. An accountability system should be put in place where beneficiaries and community members can share comments and complaints with Oxfam. The complaint mechanism should be managed by Oxfam as the actor ultimately accountable to the donor; the existing phone hotline used in the Host Community programme (for cash distributions and hygiene voucher distribution) can be utilized.

### **4. Preparedness**

18. Design of vouchers and analysis of different delivery mechanisms in the event of a scale-up of response activities;

19. Identification of community groups and local traders and capacity analysis; linkage with water transporters where needed;

**5. Advocacy and coordination with other actors**

20. Advocacy towards other NGOs to avoid market distortion and for use of market actors

**6. Monitoring & definition of triggers for emergency water provision**

The EMMA has shed light on several indicators which should be monitored in order to gauge the level of vulnerability to water insecurity at the household level.

21. Early warning indicators

- Household expenditure on water
- Water trucking prices
- Water delivery in the piped network (frequency of deliveries & quantity delivered)
- Water consumption at household level

22. Trigger for response:

23. Water consumption at household level < 30 L/P/D

**7. Further Analysis**

24. Update the market map prior to next summer (May 2014)

**Section 8. Future Outlook & Scenario Planning**

**Likely Outlook & Scenarios**

Refugees already experience an income-expenditure gap, which they cover through personal savings, selling of assets, and remittances from abroad; as these resources become depleted, purchasing power for water (as well as other staples) is likely to decrease further. Electricity tariffs have been raised several times in the recent past, and water tariffs are predicted to rise in the near future (due to the high pumping costs of the Disi Water Conveyance Project), and this will further exacerbate the problem on inequitable access to water.

The recent inauguration of the Disi Water Conveyance Project has substantially increased the quantity of water available in the piped network in both Balqa and Zarqa; the benefit will especially be felt in Zarqa, which is planned to receive 30% of the newly available water supply (30 million m<sup>3</sup> per year). This shall decrease demand for water at both private wells and water trucks, and as a result the expandability of these market actors shall possess an increased capacity to expand to meet the needs of any additional refugee influx. This expandability is finite, however, and is difficult to estimate with precision. It is likely that any additional influx which matches or exceeds the numbers of the initial influx (from 2011 to present) would stretch the capacity of the system to its limits once again.

Construction of large-scale water infrastructure, while having a significant impact on water availability, is also limited in effectiveness if losses in network distribution systems exceed 50%. Additional investment is necessary for operation, maintenance and repair of existing piped networks in order to reduce both physical and administrative losses in the system.

**Longer-Term Programming**

In terms of preparation for future influxes of refugees into host communities, immediate response activities (with regards to provision of safe water) could focus on provision of drinking water through vouchers, possibly supplemented with vouchers for bulk water

through water trucks. Pre-selection of suppliers can be done as a contingency planning measure.

In terms of more longer-term programming, possibilities identified by the EMMA team include the following:

25. Advocacy and technical support on innovative and sustainable water conservation measures;
26. Collaboration with the Water Authority and the Ministry of Education on water conservation education in school curricula;
27. Reduction of non-revenue water in urban areas.

## **ANNEXES**

**Annex 1: EMMA Terms of reference**

**Annex 2: List of locations and respondents for the EMMA**

**Annex 3: EMMA survey tools**