
WATER SUPPLY IN PROTRACTED HUMANITARIAN CRISES

Reflections on the sustainability of service delivery models

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UNHCR estimates that the average time spent by a refugee in a camp is 10 years, while the average refugee camp remains for 26 years. WASH (water, sanitation and hygiene) is a crucial component of humanitarian response and longer-term recovery. Humanitarian agencies and host governments face many challenges in protracted situations and complex long-term humanitarian crises. One key issue is how water supplies should be managed in the long term. Who is best placed to operate and manage WASH services and which delivery model is the most viable?

At the end of 2019, there were 15.7 million refugees in protracted situations, representing 77% of all refugees. This report takes stock of the various alternative service delivery models, to enable humanitarian and development agencies to work together to smooth the transition from emergency relief to sustainable services.

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ABBREVIATIONS

ARRA	Agency for Refugee and Returnee Affairs
AFA	Area Focal Agency
CAPEX	Capital expenditure
CAPMANEX	Capital maintenance expenditure
CFA	Camp Focal Agency
CiC	Camp in Charge
CMT	Community maintenance teams
CRRF	Comprehensive Refugee Response Framework
DDC	District Development Committee
DOWSS	Divisional Office of Water Supply and Sanitation
DPHE	Department of Public Health Engineering
DWD	Directorate of Water Development
INGO	International non-government organization
IOM	International Organisation for Migration
IRC	International Rescue Committee
KAP Survey	Knowledge Attitudes and Practice Survey
LUC	Latrine User Committee
MoWIE	Ministry of Water, Irrigation and Energy
MSF	Médecins Sans Frontières
MWE	Ministry of Water and Environment
MWI	Ministry of Water and Irrigation
NGO	Non-government organization
NWSC	National Water and Sewage Corporation
O&M	Operation and maintenance
OPM	Office of the Prime Minister
RRRC	Refugee, Relief and Repatriation Commissioner
UA	Umbrella authorities
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations International Children's Fund
VDC	Village Development Committee
WASH	Water, sanitation and hygiene
WUC	Water User Committee
WWTP	Waste water treatment plant

1 INTRODUCTION

1.1 ABOUT THIS PAPER

How can water supply service delivery be improved when transitioning from emergency to post-emergency situations? What measures have humanitarian agencies taken to ensure more durable water supply service delivery? What are some of the current gaps? These are three of the questions at the centre of this paper.

The paper is divided into four parts: Part 1 is an introduction to the work that has been undertaken by Oxfam and UNHCR. Part 2 looks in more detail at the concept of sustainability and sets out a number of factors that should be considered if better service delivery arrangements are to be achieved. Part 3 provides insight into humanitarian crises in six case studies. These describe a wide range of contexts in which humanitarian agencies currently operate and draw attention to many of the common issues practitioners face. Part 4 highlights some gaps in current practice and reflects on areas to improve water supply service delivery.

1.2 BACKGROUND

Humanitarian crises come in many forms. They can happen gradually (as in the case of slow onset droughts) or suddenly (as in the case of rapid flooding or conflict). Clearly every emergency is different in its details and some have destabilized entire regions. They profoundly affect individuals, their families, communities, surrounding populations and the nations in which these devastating events take place. It may be that people reside with family members, or integrate into towns and cities which they do not know. Displaced populations may also survive in informal settlements or hastily constructed camps. People who live in camps face unique obstacles compared with those who live among host communities. Movement outside of the camps may be restricted and people may often remain in camps for many years, even decades. UNHCR estimates that the average time spent by a refugee in a camp is 10 years, while the average refugee camp remains in place for 26 years.

WASH (water, sanitation and hygiene) is a crucial component of humanitarian response and longer-term recovery. Humanitarian agencies work to high professional standards and adhere to the *Sphere Handbook: Humanitarian Charter and Minimum Standards in Disaster Response* (2018). Once the acute phase of the emergency is over, humanitarian agencies and host governments still face many challenges in the transition from emergency to post-emergency.

One key issue is how water supplies will be managed long term. Challenges are related to the changes in availability of human, material and financial resources, as well as capacity of institutions to address the requirements of programming for more durable services. For example, within refugee contexts UNHCR's *WASH Manual* emphasizes the early transition from emergency standards which often involves community-level services delivered by temporary infrastructure (e.g. communal latrines and water trucking) to more durable, and where appropriate, household level services (e.g. boreholes with solar water pumps and household sanitation facilities or water connections) (UNHCR, 2019).

Protracted situations¹ and other long-term humanitarian crises include an added layer of complexity for determining who is best placed to operate and manage WASH (water, sanitation and hygiene) services and what service delivery model is the most viable. At the end of 2019, 15.7 million refugees were in protracted situations, which represents 77% of all

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refugees (UNHCR, 2020). As a result, it is more relevant than ever to take stock of the various alternative service delivery models to enable humanitarian and development agencies to work together to smooth the transition from emergency relief to sustainable services.

1.3 SCOPE AND METHODOLOGY

This paper focuses primarily on water supply service delivery in post-emergency settings. The research was undertaken in three phases, which took place between November 2019 and June 2020. During the first phase, potential country programmes responding to WASH emergencies were identified as part of a pre-screening exercise. The focus was on locations where 'alternative' water supply service delivery models were used to deliver services to persons of concern. After this shortlist of countries and programmes was identified, staff from Oxfam, UNHCR and UNICEF within those countries were contacted and interviewed. The second phase was a review of reports and background information shared by key informants (Annex A). The main findings of these interviews and reports are captured in the case study examples in Section 3. In the third phase, the authors identified a number of key components that can contribute to sustainable service delivery. These are set out in Section 2. This drew on previous work that had been undertaken by the consultant with Oxfam and UNHCR in 2017 and 2018. These enable the reader to think about key factors that will contribute to better water supply service delivery.

1.4 TARGET AUDIENCE

This paper is for those who regularly work in providing emergency water supply services, but it should also be of interest to those who are involved in protracted humanitarian emergencies. It will be of value to people who are thinking about how to transition from emergency to long-term situations; and it highlights a range of issues that practitioners and policy makers will need to consider and address.

2 TOWARDS SUSTAINABLE SERVICES

2.1 WHAT SUSTAINABILITY MEANS

In emergency situations, people who reach the relative safety of camps or settlements may be there for many years before they are repatriated or integrated within host communities. This means the agreed standards of service delivery brought about by humanitarian agencies and host governments should continue indefinitely until permanent solutions are found. However, long-lasting crises can have an eroding effect on physical infrastructure and those institutions responsible for service delivery. This means service levels may decline and problems may persist if sustainability is not considered from the outset. Water supply is among the most essential services to establish and it requires relatively complex infrastructure, such as bulk water treatment and reticulation systems, especially as the scale of infrastructure required is often akin to an urban water supply system.

2.2 WHY SUSTAINABILITY IN POST EMERGENCY SITUATIONS IS A CHALLENGE

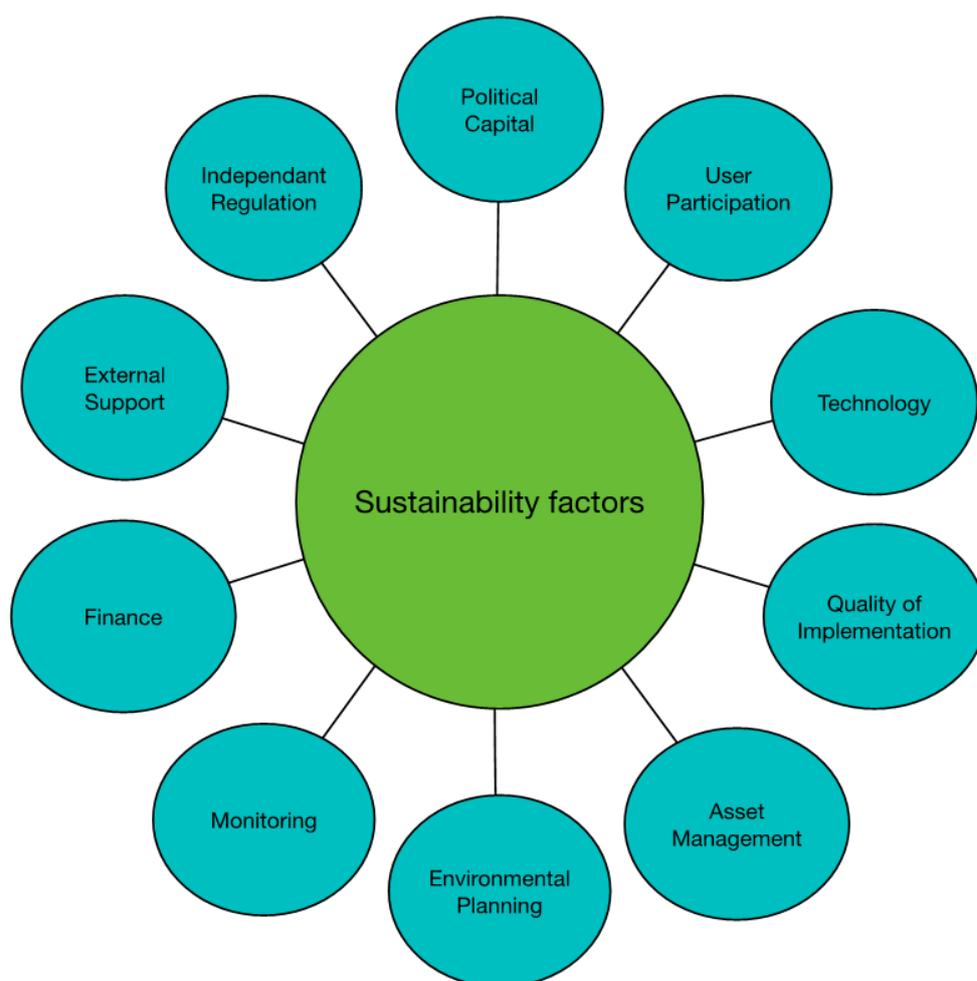
There are many inter-related reasons why sustainability poses such a challenge in the transition from emergency to post emergency. Five reasons in particular stand out. First, there may have been limited attention paid to political capital at the outset of the emergency. Collectively, humanitarian agencies may not have identified long-term options that are acceptable to the host government and there is limited understanding of government systems. Second, there may be limited consideration and/or scope for high quality design and construction before physical infrastructure and technology is handed over to another operating entity (such as a local institution). This may be carried out in a fragmented manner and asset management plans may be lacking. Third, there may be inadequate consideration for long-term sustainability. Humanitarian agencies often carry out their own needs assessments and implement directly. This is driven in part by organizational funding models, but it is also linked to the fact that engagement by humanitarian agencies, by default, means that the natural systems and procedures for emergency response have been overwhelmed, and local/national authorities are in need of assistance. As a result, humanitarian agencies often act in a general absence of independent assessments and analysis when planning longer-term services. Fourth, often limited attention is paid to national and local institutions. The level of human, equipment and finance resources available may be very different to the acute phase of an emergency, especially once media and donor attention has moved on. Fifth, it is common that displaced populations will have limited ability to pay for water. This means it is difficult to generate revenue to cover, or offset, operational costs and ensure financial sustainability. When infrastructure assets are handed over to another operator, humanitarian agencies may not know what the true operational and life cycle costs are. This means there are weak foundations for financial sustainability.

2.3 WHAT IS NEEDED TO STRENGTHEN SERVICE DELIVERY

The immediate response to an emergency is relatively short-lived. Emergency response work then needs to transition into longer-term solutions that will serve affected populations for many years or even decades. This will help to ensure that people can access better quality services and encourages practitioners and decision makers to think beyond camp situations.

A successful and timely post emergency transition will only work if the choices made by decision makers in donor institutions, humanitarian agencies and host governments focus on high quality services for all affected populations. This ambition raises questions about important factors that need to be considered if better service delivery is to be achieved. There are a number of particularly important issues that stand out. Here we outline ten factors (Figure 1) that we believe will help to ensure more durable service delivery arrangements. The opinion of the authors is that the existence of these components is essential when planning and designing emergency water supply services. If they exist, they will help to strengthen the conditions for better service delivery. They also provide a useful guide for evolving policy and strategy.

Figure 1: Ten factors for sustainable water supplies: from emergency to post emergency



Political capital: A deep understanding of service delivery options that are acceptable to the host government is an important first step to overcome management challenges that are likely to arise in the future. This means political economy or 'power' analysis is required to identify what service delivery arrangements a government will support, and why. How should the roles of local institutions evolve? What is their capacity to absorb additional responsibilities? What long-term support do national and local institutions require to manage and finance the services that displaced people and host communities require? This analysis should be used to find the best interim and long-term solutions that host governments will support. Inevitably this will require sound cost/benefit calculation.

User participation: During the earliest days of an emergency, water supply (and other) services are established quickly and user participation may be limited. Significant efforts need to be made from the outset to involve users in decision making when planning and designing services. There are some good examples of Community Health Clubs being established in emergencies. However, a clear distinction needs to be made between the roles that users can perform alongside those of service providers. When transitioning to long-term situations, users will also need to have representation and a 'seat at the table' when decisions are taken. Grievance-redress mechanisms will also need to be established before new institutions or operators take over service delivery arrangements.

Technology: There is no such thing as maintenance-free technology, and water supply systems that are established quickly will need to be upgraded and improved over time. Hardware (pumps, pipes, spare parts and water ATMs) installed in emergencies are often sourced and procured by humanitarian agencies directly. This means that links between suppliers of spare parts and local institutions need to be established.

Quality of implementation: Emergency water supplies are implemented rapidly which can lead to a fragmented approach in the absence of strong coordination. Humanitarian agencies often conduct their own needs assessments, apply for funding and implement water supply services directly. This differs from normal urban water supply where a single utility may oversee infrastructure planning and service delivery arrangements with advice and guidance from an independent regulator. As the acute phase of the emergency passes, corresponding improvements in water treatment, distribution and supply will need to be carried out. High quality design and construction is a crucial component for future sustainability.

Asset management: The purpose of an asset management plan is to ensure the required level of service is delivered in the most cost-effective manner, on a continuous basis. Asset management is a systematic approach, whereby a service provider will know the location, condition and status of the water supply assets; which assets are a priority for renewal; the realistic level of funding to provide a service and renew assets on an ongoing basis. When water supply services are handed over to other service provider, they should include a detailed asset management plan. If no information is provided on the status of assets, there is limited asset renewal and inadequate maintenance funding then service levels will deteriorate.

Environmental planning: Water supply systems can only be sustained if the groundwater or surface water resources on which they depend are not deteriorating in quality and quantity, relative to need. This means that national institutions or agencies will need to monitor and manage water and land resources continuously to ensure they are protected. Regarding the stewardship of water resources, service providers will need to know: whether the resource is deteriorating relative to demand; how groundwater or surface water responds to rainfall; what are the main contaminant pathways; what are the short-, medium- and long-term impacts on local natural resources (such as land, forestry and water). Sound hydrometric data will also help to ensure that water resources are used efficiently, and data should assist any future cost/benefit analysis.

Monitoring: It is unlikely that better sustainability will be achieved if monitoring is not routine. Here we outline three important monitoring functions. First, it is necessary to monitor service

levels such as water access, quality, quantity, reliability and affordability. This is the level of service that is to be provided to users and defines the level of service the assets have to achieve. Second, it is essential for humanitarian agencies to collect data on field repairs before any asset handover takes place. Typically, monitoring data should include the location where the failure occurred, the type and cause of failure, period of downtime, number of people affected and cost of repair. Third, the resources required to take timely corrective action should be identified. If funding levels decline post emergency, this information will help service providers to determine how future investment will affect the level of service.

Finance: The role of the service provider is to supply water on demand at the required pressure and quality. Wastewater will also need to be collected, treated and disposed of in accordance with local regulations. The service provider will need finance to enable them to do this. It is unlikely that refugees or internally displaced people (IDPs) will have the ability to pay for services from the outset. This means that service providers will need a business and investment plan to demonstrate cost-effective service delivery. This should detail the revenue required to carry out water supply and wastewater functions, such as capital expenditure, capital maintenance expenditure, operation and maintenance, direct and indirect support costs, as well as the cost of finance. Humanitarian agencies should support future service providers to calculate these costs. Donors will be more likely to fund humanitarian programmes if they demonstrate transparency, cost effectiveness and a commitment to financial sustainability.

External support: New service providers will likely experience many managerial, technical and financial challenges when they take over service delivery responsibilities from humanitarian agencies. If issues arise that exceed their capabilities, then service levels will decline, and users will suffer. There needs to be a clear phased transition between the rationalization of humanitarian agencies and handover of service delivery duties. The dividing line between the service provider duties and those providing external support needs to be clearly defined, and they will be context specific. As the capability of the service provider increases, judgements need to be made about the transfer of additional responsibilities. Regulators, service users and independent assessors all need to be involved in making this judgement call.

Independent regulation: Service regulators exist to protect the interests of displaced populations and host communities. For example, if emergency water supply systems do not evolve into solutions that will adequately serve displaced populations, how will users raise their concerns? Who will monitor service performance and ensure corrective follow-up action is taken? These questions highlight the need for users to have a voice and the ability to raise concerns to an effective independent regulator.

3 EXPERIENCES FROM HUMANITARIAN CRISES

3.1 OVERVIEW

This section consists of six case studies contributed by representatives from Oxfam, UNHCR and UNICEF all of whom are widely experienced in WASH and WASH in emergencies. Each case study brings examples from a different humanitarian crisis and some practical measures that have previously been, or are currently being, taken to deliver more durable water supply services. The following narrative and taxonomy (Table 1) provides an overview of each case study.

Table 1: Categorization of case studies

Hosting country	Bangladesh	Ethiopia	Ghana	Jordan	Nepal	Uganda
Source countries	Myanmar	South Sudan	Côte d'Ivoire	Syrian Arab Republic	Bhutan	South Sudan, DRC
Population displaced (approx.)	1,000,000	190,000	13,000	76,000	7,000	1,400,000
Year of last acute emergency	2017	2015	2010	2012	2000	2015
Years displaced	4	9	7-9	4	20	4-5
Transition to national service delivery model	No	Yes (partial)	No	No	Yes	Yes (partial)
Applying a comprehensive refugee response framework (CRRF)	No	Yes	No	No	No	Yes

In Bangladesh, humanitarian agencies are tackling the problem of massive human displacement and are in the process of trying to identify longer-term solutions that are acceptable to the Government of Bangladesh (GoB). This is important because previous Rohingya populations forcibly displaced to Bangladesh have remained since 1991. Section 3.2 describes experiences from this vast ongoing crisis.

The next case study is from Gambella, Ethiopia, and it highlights the real challenges organizations face when trying to establish new water utility services. A number of problems are highlighted in Section 3.3 and the need for ongoing technical, managerial and financial backstop support is clearly evident in order to prevent service levels declining.

The third case study describes the gradual emergency to post-emergency transition that has taken place in Ghana (Section 3.4). The current situation does not pose a risk to life, but the

example highlights the requirement for clear direction at an early stage of the emergency response.

The example from Jordan describes a clear transition from emergency to post-emergency water supply. In Section 3.5 the case study highlights some strong and decisive planning, but also draws attention to remaining challenges regarding finance and oversight of service delivery arrangements.

In Section 3.6, UNHCR describes the measures taken to support displaced populations in Nepal. Despite reasonable efforts, the time period is protracted, and it highlights a number of key areas requiring further research, notably finding acceptable solutions for people at an earlier stage to prevent them languishing in camps and informal settlements for many years.

The Uganda case study in Section 3.7 highlights a range of contexts and describes the various service delivery arrangements the government is supporting. The case study draws on a recent World Bank study that assesses user satisfaction with current service levels. The example shows that handover of emergency water supply service to national utilities takes time, and interim service delivery measures must be strengthened.

3.2 BANGLADESH

Background

In August 2017, up to 750,000 Rohingya crossed into Bangladesh and were settled in areas that were also previously used to host refugees. This ongoing Rohingya refugee crisis is striking for many reasons. First, the geographic scale of the settlements is vast and includes 34 camps, covering an area in excess of 26km². Despite the large geographic footprint, the population density is very high with only 8-10 square meters per person available in some camps.² Second, the Rohingya exodus is known to be a protracted crisis. Some of the affected populations displaced in the 1990s have remained in Bangladesh ever since, and the number of people displaced exceeds 25,000 every year since 2006. On-going military activities in Rakhine State, Myanmar, suggest that returns in the near future are unlikely. Third, the Rohingya people are more vulnerable given that new arrivals since 2017 are not classified as refugees, and there has been limited investment in permanent infrastructure. This makes the conditions for an effective long-term response extremely difficult.

Service delivery models

To manage the mass influx, a vast number of shallow and deep tube wells were constructed in the newly developed camps, beginning in 2017. According to UNHCR's database³ there are now 16,677 boreholes serving the refugee camps in the Teknaf Peninsula. Some are accessed as point water sources (such as handpumps) while others are connected to pumping systems and a larger piped water supply network. This includes solar powered pumping systems. The majority of these boreholes were constructed using local low-cost drilling techniques or self-supply, which was not regulated and often didn't follow standard practice in terms of sanitary seals and borehole design. This mix of thousands of tubewells, uncontrolled groundwater extraction and close proximity to sources of contamination (such as latrine pits) poses a serious threat to groundwater.

Under the present service delivery model, multiple humanitarian agencies install and operate their own water and sanitation systems in collaboration with the relevant Area Focal Agency (AFA), which is a UN organization, and the Camp Focal Agency (CFA), which is an NGO. Humanitarian agencies operate the systems on a day-to-day basis, and if major breakdowns occur they provide necessary operation and maintenance support to ensure infrastructure is maintained. The main measures which humanitarian agencies apply to deliver and manage

these services will likely vary, but the WASH sector in Bangladesh was unable to share details of the differences or nuances of these respective management systems.

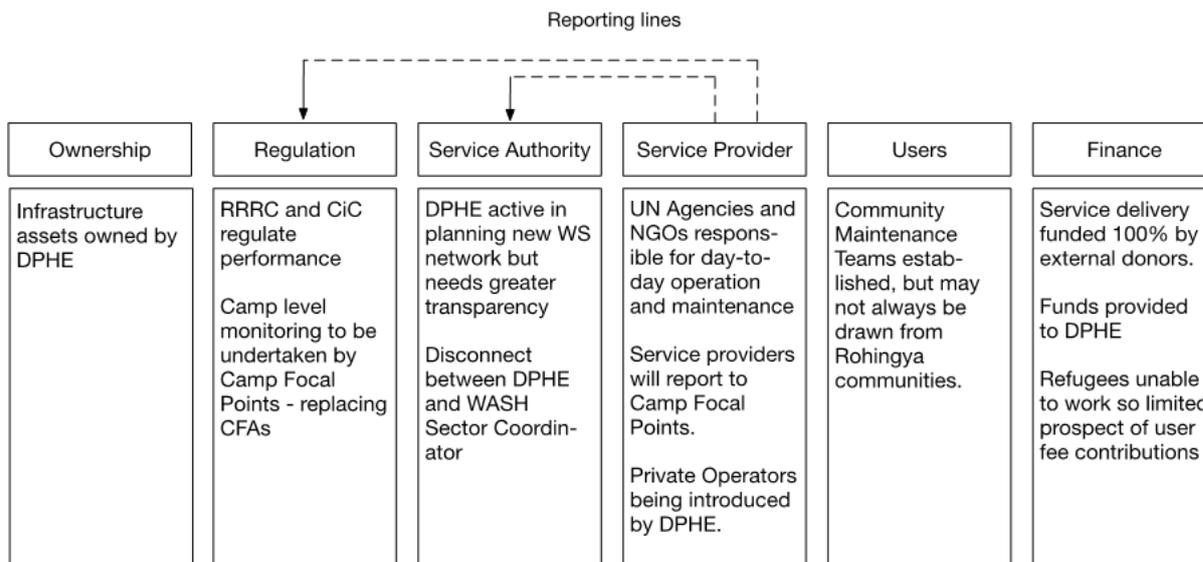
However, Water User Committees (WUCs) and Latrine User Committees (LUCs) are active participants in managing components of these systems. As part of their functions they try to ensure water and sanitation services are used appropriately and good hygiene practices are adhered to. Paid community members assist CFAs to repair handpumps and tubewells, as well as supporting faecal sludge management activities. In correspondence with senior UNHCR staff, the current service delivery models are described as 'ad-hoc' but the specific management details have not yet been documented by humanitarian agencies. This oversight needs to be corrected in future so that agencies can demonstrate what does and does not work. In terms of reporting, humanitarian agencies currently report directly to AFAs, the WASH Sector Coordinator and RRRC.

A Water Supply Masterplan has been under development since early 2018. Under this plan there are more than 140 water distribution zones, spread across the newly developed camps. Each zone is allocated to a humanitarian agency partner. However, given this is a protracted emergency, national and local institutions will also need to take on greater management responsibility, alongside participating service users. These partnerships with government are largely absent in Cox's Bazar, which makes the management of WASH services particularly difficult. The long-term service delivery arrangements are yet to be finalized, but initial planning is described in the following narrative:

The new proposed water supply network is co-funded by the Asian Development Bank and World Bank. These donors are funding DPHE directly and they will be responsible for overseeing the construction of the new water supply network. But DPHE will not become service providers, which means this approach does not address the problem of how services will be managed and financed in the future. The Masterplan will be implemented via three national contractors (namely Sultana Navana, Monir Traders and ABM Water Networks) who will design, build and operate the water supply system for an initial two year period. Full details of the design, construction and service delivery model remain uncertain and UN representatives acknowledge stronger partnerships between the WASH Sector Coordinator (led by UNICEF) and DPHE need to be established. It may also be case that the new water supply network is reliant on surface water, which increases uncertainty as to how the system will be financed in the long term, or how thousands of existing boreholes and tube wells will be managed or even decommissioned in future. Existing reticulated water supply systems will also have to be either phased out or handed over to new operators, such as the national contractors.

In the meantime, UN agencies are keen to evolve the existing service delivery arrangements (Figure 2). There is general agreement that service users need to remain active participants in the form of Community Maintenance Teams (CMT), carrying out the minor operation and maintenance duties. At present these CMTs consist of people from both the refugee and host communities, but DPHE are proposing that individuals from the host community are paid to take over all minor maintenance duties. This arrangement could potentially be problematic if accountability mechanisms are not put in place or if there are no mechanisms for refugee feedback or participation in decision making regarding the contracting arrangements for technicians from the host community. These CMTs will almost certainly experience multiple challenges that exceed their capabilities. This means ongoing external support will be required from humanitarian agencies, particularly as details of private operator service delivery arrangements remain uncertain.

Figure 2: WASH service delivery management arrangements in Rohingya crisis



As shown in Figure 2, the role of Service Authority is undertaken by DPHE in partnership with UN agencies; however, collaboration between these groups has reportedly declined in recent months, partly because DPHE are now funded directly by external donors. In terms of ongoing monitoring and regulation, the performance of CFAs is considered mixed, and this arrangement will now be replaced by the introduction of Camp Focal Points. These posts are being recruited by the national NGO BRAC, and they will work and report directly to Camp in Charge (CiC) and RRRC. It is understood that each camp will have two camp monitors in place with the aim of establishing a localized regulatory system. In the recent humanitarian crisis, CiC and RRRC have not been directly involved in service provision or service authority duties other than requesting and overseeing a response from humanitarian agencies. However, RRRC are the default Service Authority for the two registered camps (Nayapura and Kutupalong) This arrangement has been in place for some time. For example, in the Nayapura refugee camp which started informally in 1991, when major service delivery problems occur, typically UNHCR intervenes and assists following a direct request from either RRRC or CiC.

Since the onset of the recent crisis in 2017, planning for long-term service delivery solutions has been challenging. For example, massive infrastructure investment is underway without sufficient clarity on the long-term service delivery arrangements. Rohingya refugees do not have the legal right to work and earn a living and therefore are dependent on humanitarian aid. This means that all basic services including WASH services must be fully subsidized. Increased food prices, decreased wages, environmental degradation, increased competition over natural resources, and other factors have contributed to social tensions and increased political pressure on the GoB to facilitate the return of refugees to Myanmar. This makes it difficult for UN agencies to identify how best WASH services can be modified and managed in the medium and long terms.

This also means that UN agencies and NGOs will most likely need to formalize management options among themselves with a 3-5 year outlook, and determine which institutional arrangements are most effective, efficient and acceptable to the GoB. Any service delivery plan will also need to remain flexible with the distinct possibility that it will be required beyond the initial 3-5 year period. This problem is not unique to WASH service delivery but applies to all basic services currently managed by humanitarian agencies. These agencies will face a range of complex barriers in providing and maintaining services if longer-term development plans are not developed. In the following section some of the specific problems that practitioners and decision makers are experiencing are highlighted.

Service delivery issues

It is understood that setting out a long-term vision is problematic in the Rohingya crisis. In correspondence with the consultant, UNHCR has admitted that there is much uncertainty regarding future planning, design and implementation. The UN and Bangladesh authorities have not yet agreed how the camps will be managed in the future: 'a mega city' or 'hundreds of villages'. There is no clear vision regarding the future operation and management of water supply networks, and the implementing partners recognize they need to undertake a number of important studies to inform their work.

The Rohingya population has not been afforded refugee status, and only around 34,000 Rohingya persons are officially registered as refugees in Bangladesh, and this was as a result of earlier displacement in the 1990s. It is also imperative that humanitarian coordinators (UNHCR, UNICEF and IOM) can strengthen the foundations for sustainability by giving clear directions during the emergency response. Detailed political analysis should have been undertaken so there is a better understanding of what future management options may be acceptable and more appealing to government institutions. The strategy, such as it exists, is 'WASH assets belong to GoB, but all management is undertaken by NGOs'. A new strategy will be required for the long term.

Although not explicitly set out, there are plans to rationalize the number of humanitarian agencies that are present. It is understood that some humanitarian agencies are handing over WASH systems to national NGOs, and providing ongoing human, technical and financial support. However, it is uncertain what the wider plan or objective is, and the exact details of any handover process remains unclear. The transition from international to national NGOs is yet to begin and there is still high dependency on international planning systems and staff. 'Capacity building' is also a difficult area to assess because it often remains opaque. Typically, this may include basic training to operate and maintain a water supply system, rather than fulfilling wider service provider functions.

From correspondence with UNHCR representatives it is understood that post-emergency service delivery arrangements need to be determined, and basic guidance for many of these elements is still required. For example, pre-assessment handovers, asset management plans, and a broader financial sustainability plan appear particularly important. UN agencies need to work with DPHE to face the asset management and finance challenge to develop a clear understanding of the demands a future operator will face and the true costs that will be incurred. Having said that, UNHCR acknowledges that much learning and analysis still needs to be generated.

So far, humanitarian agencies have referred extensively to Sphere minimum standards in determining service levels, but it is less certain what future service delivery levels and timeframes have been set. Given the multitude of agencies which operate different parts of the water supply networks, it is less clear whether they will all agree to common performance standards.

Given the desperate situation there is clearly high demand for emergency WASH services, and the Rohingya people have been active in demanding better services. However, their active participation in establishing services and subsequent involvement in management duties is limited. This shortcoming is acknowledged by UNHCR, which highlights that refugee communities are primarily responsible for keeping tap-stand areas clean, but their participation is much less in planning or management duties. Where they are involved in maintenance duties, they are increasingly engaged in a voluntary capacity rather than paid operators, which is likely to be problematic in the long term. This suggests the foundations for future sustainability are weak.

WASH design and implementation activities are coordinated by UNHCR, UNICEF and IOM, working in partnership with the Bangladesh authorities. The acute emergency phase was characterized by dozens of humanitarian agencies and entities taking the initiative to install thousands of boreholes and dozens of water supply systems. This includes international NGOs, UN agencies, national NGOs, and local authorities (such as RRRC) in partnership with UNHCR. Various types of WASH technology hardware have been installed. They include water supply systems that are reliant on surface water sources (ponds); thousands of shallow and deep tube wells; electrical-grid connected and solar pumping systems; as well as chlorine dosing systems and tapstands. Water supply networks (pipes) are also extensive. There is also a complex system in place to collect, remove, treat and dispose of faecal sludge. It is difficult to ascertain the quality of the hardware and software provided, but what is clear is that services were provided rapidly and will need to be upgraded and strengthened over time. Furthermore, many humanitarian agencies have been involved with a wide range of capacities (human resources and finances) and inevitably quality of design and construction and standards of hygiene promotion will vary. Currently, services are being managed by many different agencies in what is described in correspondence with UNHCR as an 'ad-hoc' manner. This suggests that repairs are undertaken once breakdowns occur rather than routine preventative maintenance being carried out. With such a large number of organizations with differing degrees of expertise, there is inevitably the danger that some agencies will perform well and others less so. This puts into question the issue of high-quality design and implementation.

Environmental planning really focuses on considerations for water resources, both quality and quantity aspects. Consideration for water resources appears to have been reasonably well handled in the Rohingya crisis by DPHE and the WASH sector, with various studies commissioned starting as early as 2017 during the immediate influx. This includes the presence of Dhaka University, Ground Water Relief and private consultants who are providing technical support. Regular ground water monitoring was initiated in a small number of boreholes by MSF and IOM in 2018, with additional piezometric monitoring carried out in 2019. However, the density of shelters and toilet facilities across the camp, combined with the potential for flooding, makes it a challenging context. It is uncertain how professionally tube wells have been constructed below ground, so rigorous water quality testing will need to be routine.

Discussion

In summary, while there is recognition that humanitarian agencies are working in some very testing conditions, the transition from emergency to post-emergency really needs strong direction if a preferred service delivery model is to emerge. The strategy at the moment is unclear, with government authorities working in relative isolation of humanitarian agencies. It is also unclear what role national and local institutions will play in future service delivery alongside humanitarian agencies. This is an area the WASH Sector Coordinator, donors and DPHE will need to address.

This section is informed by an earlier literature review and country visit undertaken in 2018. This included consultation with Service Authorities (such as the Refugee, Relief and Repatriation Commissioner (RRRC) and Department for Public Health Engineering or DPHE) and Service Providers working in the emergency response. More recent follow-up interviews were carried out with representatives from UNHCR in 2019.

3.3 ETHIOPIA

Background

Ethiopia has a long history of hosting refugees, who mainly originate from Sudan, South Sudan, Eritrea and Somalia. At the time of writing, Ethiopia hosts a large number of refugees and IDPs, estimated at 700,000 and 1.7 million respectively (UNHCR 2019). Ethiopia was one of the first five African countries participating in the CRRF, and the government and its donor partners are serious about finding better strategies for dealing with large-scale human displacement. One example points to the establishment of the Agency for Refugees and Returnees Affairs (termed ARRA) that is responsible for overseeing and coordinating emergency response activities in collaboration with UNHCR and other lead humanitarian agencies.

The town of Gambella in south-west Ethiopia has been one of the worst affected regions with more than 310,000 South Sudanese arriving since 2014 (UNHCR 2019). This was triggered by a political dispute in South Sudan's ruling party in December 2013. In total more than four million people were forced from their homes seeking refuge in the bush and neighbouring countries. Gambella was once a thriving port, but this year-on-year influx of refugees has placed real pressure on its water supply and other services. It has also caused tensions with locals, which makes Gambella a challenging working environment. Nevertheless, establishing a cost-effective and sustainable water supply system has been a priority in Gambella. Reasonable efforts have been made to establish a new rural water utility, but there have been significant challenges and lessons to learn.

Service delivery models

In the initial phases of the 2014 acute emergency, water was trucked to the camps, which lay some distance from Gambella town. This was conducted by many international NGOs. This had significant cost implications and a comparable economic assessment was carried out by UNICEF to determine whether water trucking activities could be replaced by a more permanent water supply solution. As a result, it was proposed to upgrade the water services in nearby Itang Town. This involved building a water supply system and extending the distribution network to Tierkidi and Kule refugee settlements and the contiguous host communities in Thurpham and Itang. In 2017, the network was further extended to Nguenyiel Camp. As an indication of the scale of the distribution network, Nguenyiel is 19 kilometres from the water source.

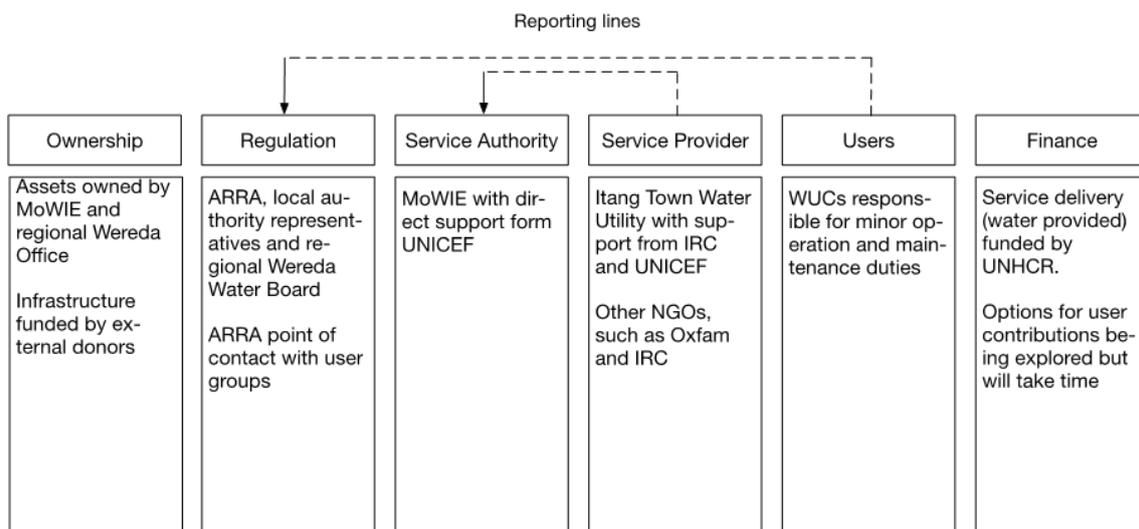
Itang water supply scheme provides access to 190,000 refugees in three camps (namely Nguenyiel, Tierkidi and Kule) and an additional 30,000 host community members in Thurpham and Itang Town. The water is pumped from seven boreholes located along the Baro River at Itang to a collection centre where it is pumped to a booster station at Thurpham and a separate line to Itang host community reservoir. From the booster station, the water is then pumped through four separate lines; to the three camps' reservoirs and Thurpham host community reservoir. The pumping system has a total of 22 generators. On average, the scheme is expected to operate for 16 hours (at source) and 12 hours at the booster pumping station to discharge about 3.5 million litres per day. This equates to slightly above the emergency standards of 15 litres per person per day (LPD) but below the UNHCR post emergency standard of > 20 LPD (UNHCR, 2020). It is also certainly true that this large-scale water supply system exceeds other service delivery arrangements in Gambella.

During the post emergency transition period, the long-term thinking was that humanitarian agencies would gradually step-back from operating water supplies and a new rural water utility called Itang Town Water Utility would be established. After a period of education and training the utility would be responsible for service delivery. The remainder of this short review focuses on the utility's performance and the experiences of refugees and host communities so far. In

many ways it provides an example of how managerial and technical problems can arise that exceed service providers' ability to cope. A summary of roles and responsibilities is shown below in Figure 3 and they are described in the following narrative.

In Gambella the following service delivery transitions were proposed: first, humanitarian agencies would gradually phase out and a new water utility would be established. The Itang Town Water Utility would be responsible for service delivery functions and they would need to maintain service levels and address breakdowns and routine operation and maintenance. They would also need to manage commercial, financial and monitoring arrangements. It was recognized that the utility might face some major challenges in the beginning, and IRC and UNICEF provided education, training and external support. As part of the second transition, the Service Authority functions (such as planning and financing) were to be shifted to the Ministry of Water, Irrigation and Energy (MoWIE) with direct support from both UNICEF and UNHCR. Third, issues of regulation and oversight were to be conducted by three entities: ARRA, the local administrative authorities based in Gambella, and the Wereda Water Board. ARRA serves as a link between service users (zonal committees) and service providers and helps to coordinate and solve problems. The local administrative authorities have limited technical expertise but assist in resolving disputes between the utility and users, for example if utility technicians are believed to have acted improperly. The Woreda structure serves to support the water board and utility management on technical matters. Service users had a reduced voluntary role, which typically focusses on maintaining water points, safe water usage and hygiene promotion. The rural water sector in Ethiopia is one in which decentralized authorities (such as Wereda Water Offices) oversee the delivery of rural water supplies for identified communities. Community Management is a central theme of Ethiopia's national water policy, but Wereda offices are often constrained by a lack of human, financial and equipment resources. Sustainability of rural water supplies is a challenge in Gambella, and this applies to small town water supply operators as well.

Figure 3: Water service delivery functions in Gambella, Ethiopia



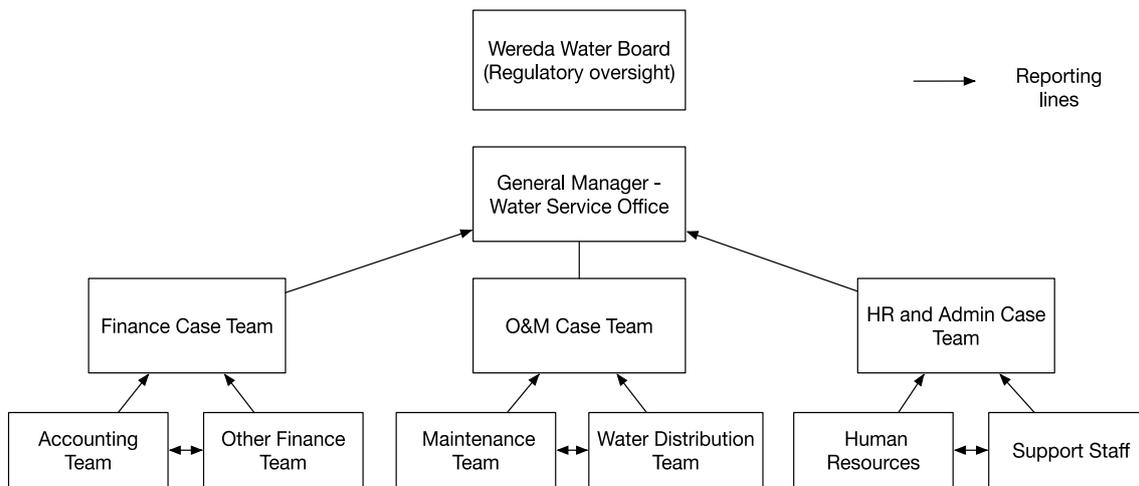
Service delivery issues

The establishment of Itang Town Water Utility has been the central component of the emergency to post-emergency strategy in Gambella. But following the completion of the utility strengthening activities spearheaded by IRC and UNICEF, in the absence of extensive external support there is evidence of the weakness of the utility. Indeed, the notion that a Woreda Water Office, with limited or timebound external support, would be able to oversee the establishment of a new rural water utility was difficult for many humanitarian professionals working in Gambella. They were directly involved in extending the new water supply network

and knew that service delivery was difficult work that demanded many resources and continuous external support.

In this study we identified that the Itang Town Business Plan written in 2017 devoted just three pages to the organizational or management set-up arrangements (Figure 4). In the plan, a three-tier management structure was proposed. A water utility structure was identified consisting of finance, technical and administrative units reporting to the General Manager. The Woreda Water Board provided regulatory oversight in partnership with ARRA and other local authorities. Making the transition to a utility model is difficult work and a statement in the business plan provided this stark warning: *‘One of the limitations could be finding technically capable professionals and key staff that are competent enough to handle complex systems like the Itang water supply system. In addition the utility doesn’t only provide its services to Itang and Thurfam but also to the refugee population’.*

Figure 4: Itang Town water utility structure



A number of assessments of the utility have taken place since it began operating. These include: two perception assessment surveys conducted by UNICEF and Sachsen Wasser, the most recent in September 2019; an analysis and optimization study by the same organizations in March 2019; an internal briefing paper carried out by Oxfam in 2019, and a study conducted by Water and Sanitation for the Urban Poor (WSUP) in 2020. The following points emerge:

- The initial design of the water system had considered the refugee population in Kule, Tierkidi and the host community in Thurpham and Itang. However, the extension of the distribution system to Nguenyiel Refugee Camp did not appropriately account for the impact on the water demand.
- Although training and education support was provided to the utility, it is understood to have been inadequate. The timeframe was limited in duration and no ongoing external support has been provided when problems exceed the capabilities of utility staff. The utility has been understaffed and has struggled to recruit engineers and technicians. This is due in part to differing salary scales between INGOs and the utility.
- It is understood that there has been a steady decline in service levels since the utility took over. Standards of water supply have deteriorated in terms of water pressure, quantity, quality and reliability. This has led to people having to access water from distant unprotected water sources and to a gradual decline in social cohesion. As one focus group informant interviewed by Oxfam put it *‘I will walk back to South Sudan. It is better to die going back than waiting for the water here in the camp’.* This finding in service levels concurs with the initial perceptions of other humanitarian professionals.
- Both the networks operation and the utilities performance have fallen well short of humanitarian professional standards. An analysis done by the Gambella Water Sector found that in 2019, for almost half of the entire year the water supply to Nguenyiel and

Tierkidi fell below 10 LPD. Water supply even dropped to critical levels below 7.5 lpcd in Tierkidi (26% of the year), Nguenyiel (22% of the year) and Kule (5% of the year) refugee camps respectively.

- A separate assessment report made the following observations: The Itang Water Board needs to appoint people in the utility with proven experience and expertise. It was highlighted that transparency and corruption were problematic, and that a transparent plan for improving the utilities' performance needs to be developed and shared with users to rebuild trust and accountability. Users highlighted that there was widespread mistrust of the initial Itang Water Utility staff who were described as technically incompetent, irresponsible, disrespectful and lacking transparency.

Refugees and host communities have called for accountability mechanisms to be established. Users cited that transparent links, (in the sense of user feedback loops, grievance redress mechanisms and corrective action), between users and the utility need to be established and tracked periodically (on a monthly basis). It was also commented on that the Wereda Water Board, that is acting as a regulatory and oversight body, needs to establish grassroots structures so user concerns can be raised directly to the utility.

Discussion

Numerous problems have been raised with the water supply services in Gambella. Most relate to the decline in service levels once operational responsibility has been transferred to the utility. Many respondents and assessment reports highlight a gradual decline in water access and quality, and a breakdown in trust between service users and service provider. This highlights the requirement for ongoing external support for an inexperienced service provider and the importance of monitoring so that corrective action can be taken quickly.

Arguably, the most important learning experience from Gambella is to recognize that new service providers will likely face numerous challenges in relation to skills and knowledge, relationships and trust. When management issues arise, they should expect external support. Demand pressures have clearly been a challenge, and the scale of service delivery resembles a municipality rather than a rural Woreda water board structure. Many service users have highlighted problems, but the utility has been slow to respond. Furthermore, Service Authorities have made judgements to respond to donor pressures rather than the concerns of displaced populations. There is genuine concern as to why UNICEF did not spot this problem sooner, which undermines attempts to show that sustainable WASH service delivery models can be developed. Itang Town Water Utility has never been fit-for-purpose, it was never tested and the components for sustainability were never adequately addressed. It is also questionable whether a new initiative should have been tested in Gambella, which is a particularly difficult working environment and suffers from insecurity, remoteness and limited available resources. These experiences also raise questions about regulation. Humanitarian agencies, external donors or governments may be keen to roll out new management approaches, but this will aggravate problems if done badly. The experiences from Gambella, and testimonies from displaced people, suggest that self-regulation in the emergency to post-emergency transition should not be used.

3.4 GHANA

Background

Protracted political crises in Côte d'Ivoire and other neighbouring West African countries has led to thousands of asylum seekers and refugees entering Ghana. Today Ghana has approximately 13,000 registered refugees and asylum seekers spread over four camps and a number of informal urban settlements nationwide. The refugee camps have existed for many years, and the finalization of long-term service delivery models seems long overdue. For example:

- Krisan Refugee Camp was established in 1996 in response to Liberians fleeing civil war. From 2000 to 2002 the camp also hosted refugees from Sierra Leone. Today it hosts 754 people.
- The Ampain, Egyeikrom and Fetentaa Refugee Camps were established in 2011 to help Ivorians fleeing presidential election violence in 2010. Ampain camp hosts around 3,400 people, while Egyeikrom and Fetentaa hold 1,400 and 967 people respectively.
- Refugees outside of the camps include those living in urban settlements in the Volta, Greater Accra and central regions. These localities hold around 6,500 people and were established to assist Ivorian and other refugee populations.

Compared with other countries in Africa, the number of refugees hosted in Ghana is relatively small. This suggests that inclusion of refugees in local WASH services might be easier to achieve. Refugees in Ghana have the same legal rights as ordinary citizens, including the right to work and freedom of movement, giving them a greater opportunity to rebuild their lives. When refugees arrive in Ghana it is the responsibility of the Ghana Refugee Board (GRB) to deliver humanitarian assistance, coordinate international protection and integrate refugees in partnership with UNHCR.

During this assessment, conversations with key informants from UNHCR were held. The aim was to gather information regarding the WASH services in the camps and obtain considered views on the types of water supply service delivery models in use. Although the refugee situation in Ghana is significantly smaller than in other countries, such as Uganda and Ethiopia, it appears that significant challenges still exist.

Service delivery models

WASH services in four of the refugee camps (Ampain, Egyeikrom, Fetentaa and Krisan) and urban settlements are operated by a mixture of UNHCR, NGO partners and the Ghana Water Company (Figure 5). Water supply systems typically consist of mechanized boreholes fitted with submersible pumps, iron removal plants, and overhead storage tanks for distribution. It is understood these systems are managed by either UNHCR, NGO partners, GRB or the Ghana Water Company.

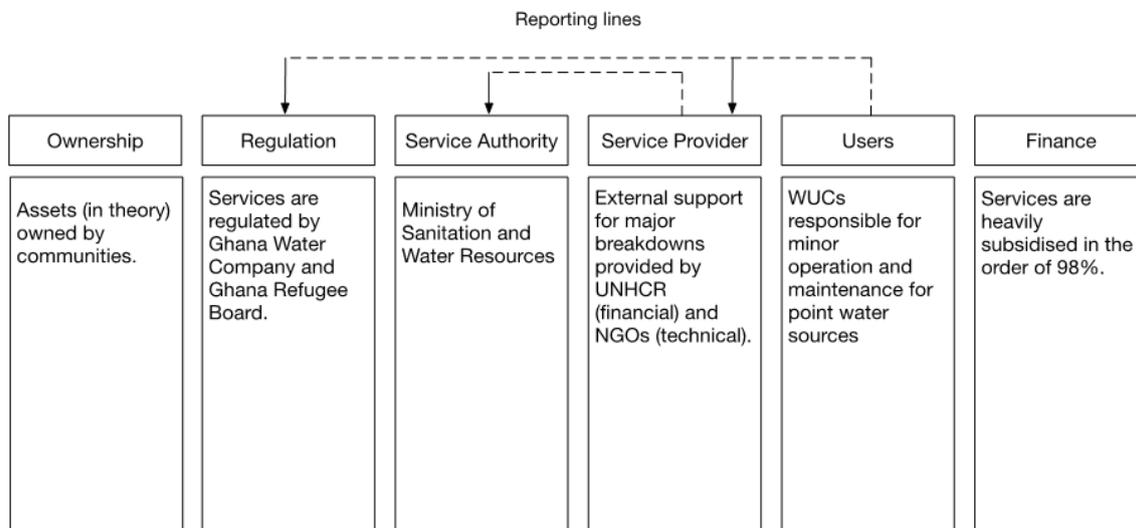
However, service users still participate in some management activities, particularly for minor operation and management duties. Community-based management (CBM) structures have been formed by the partners in charge of WASH at the various camps. The partner agencies include the National Catholic Secretariat (which implements WASH at the Fetentaa Camp), and the GRB which implements WASH for Ampain, Krisan, and Egyeikrom camps. Refugees living outside the camps also pay for water and sanitation services as Ghanaians do.

Refugees in camp settings carry out minor operation and maintenance repairs of water points and latrines. These structures vary in their size and scale across the four camps, but typically consist of between 3 and 16 members, with a mix of male and female participants. These management structures are expected to mobilize other refugees so that they keep water points clean, and they act as focal points with the water supply operators and camp managers

in case problems arise. UNHCR and humanitarian agencies provide awareness raising support in relation to water storage and hygiene. They also provide external support if major breakdowns occur that exceed the capabilities of CBM committees. Increasingly, UNHCR is interested in transitioning responsibility for these services to the GRB.

Project data suggests these service delivery arrangements provide an average of 20 litres of water per person per day. In the cases where water quality testing has been conducted, the water supplied was reported to be adequate and there were no reported cases of water-borne diseases within the camps. However, in some camps open defecation was reported. There is some belief this is caused by limited sensitization and a lack of toilet facilities, although it should be borne in mind that refugees receive training and education on hygiene and sanitation matters on a quarterly basis. With regard to participation, it is understood that the majority of refugees have little involvement in day-to-day water management activities, other than being requested to keep water points clean. They are required to act in a voluntary capacity. External financial support for any problems that arise is provided by UNHCR, with operational NGOs and GRB providing technical and managerial support.

Figure 5: Dominant service delivery model in Ghana refugee camps



The figures in Table 2 show that refugee populations remain relatively small. In Ampain and Egyekrom camps access is problematic and the number of users per functioning water point remains high, although the figures at tapstands are much better. In Ampain and Krisan camps people collect on average 22 l/p/d, although in Egyekrom camp this appears to have increased considerably to over 100 l/p/d. Water quality tests are also mixed and fall below the desired standard in Ampain, Krisan and Fetentaa. This suggests that adequate water quality is only being achieved for chlorinated supplies. The figures for the number of people per latrine and shower facility are also mixed. Figures for Ampain suggest that targets have not been met, while figures for Krisan imply that every individual has a bath or shower, which would be unusual.

The general picture emerging is that there is no clear direction of trends. It is reasonable to assume that there should have been gradual improvements across all four camps. Some progress has been made, but overall service levels appear mixed. There are also no data on periods of downtime and hours of service. Given the relatively small numbers of refugees in these camps, there should be an opportunity to adopt more progressive, longer-term service delivery approaches. The risk is that refugee assistance lacks a clear vision, and that known problems are addressed piecemeal with low intensity.

Table 2: Partial data from UNHCR's WASH monitoring Dashboard

Location Name	Ampain	Egyekrom	Krisan	Fetentaa	Target
Reporting period: Monthly indicator	Feb 2020	Feb 2020	Feb 2020	Dec 2019	n/a
Refugee population	3262	1412	669	848	n/a
No. of persons per usable handpump/well/spring	362	706	112		≤250
No. of persons per usable tap	54	78	84	55	≤100
Average l/p/d of potable water	22	105	22		≥20
% water quality tests non chlorinated water collection locations with 0 CFU/100 ML	71		67	50	≥90%
% of water quality tests at chlorinated collection locations with FRC in the range 0.2-2.0 MG/L and turbidity < 5 NTUs	80		100	33	≥95%
% of households with toilet or latrine (monthly data)	-	-	-	2	≥95%
No. or persons per toilet or latrine facility	23	13	10	10	≤20
No. persons per bath and shower facility	34	13	1	24	≤20

Service delivery issues

The prospects of service levels improving and adequate external support to community management structures appear uncertain. As one report explains, one major problem experienced by refugees in Ampain, Egyekrom, Fetentaa camps is the delay by NGO partners in repairing water supply facilities, such as taps, pipes and pumps. It is understood that delays in repairs have occurred that lead to refugees collecting water from more distant water points. Low water pressure in the camps is also an issue that results in areas of the camp not being adequately served. High iron content in Ampain and Krisan camps is also a reflection of the water problems faced by refugees. It is reported that the frequency of water quality testing has also declined, and now it is undertaken every six months. This probably reflects a reduction in donor funding.

It is understood that there is a desire for the management arrangements to evolve. The requirements will be for refugees to contribute to paying for WASH services, which includes paying for water quality testing. The monies raised will be reinvested into water supply operations within the camp, although it is unclear what percentage of operational costs these contributions will cover, or what the banking facilities will be. If refugees are paying for water quality testing, then they should also be promised higher quality services.

GRB partners UNHCR to oversee activities and has responsibility for the delivery of WASH services, along with shelter, education, income generation and skills training. UNHCR provides funds to GRB to provide services for people of concern in Ampain, Fetentaa and Egyekrom camps. However, it is not clear how the provision of WASH services has evolved over the past decade. There appear to be three main issues to consider. First, there appears to be a number of operational WASH issues that make it increasingly difficult for service levels to improve. Factors that have persisted for many years include: no clear vision for evolving WASH service delivery models; and limited external support for breakdowns and service failures.

Second, a number of institutional weaknesses persist, and it is uncertain what additional support and reform local institutions have received. WASH service delivery is still heavily

subsidized (approximately 98%) by UNHCR and it is unclear how GRB or the Ghana Water Company will assume greater responsibility or whether another operator model is considered viable. There is a growing demand on refugees to pay for WASH services in 2019, but it is uncertain how this will be applied in practice. Refugees have the right to work but it is unclear whether user contributions and tariffs will cover the full service delivery costs.

Third, it is unclear how refugee services will be incorporated into host community WASH systems. Although improvements in water supply service delivery are planned by UNHCR it is less clear how this will be achieved without ongoing subsidies. The inclusion of refugees into host community services has not been completed yet for example, because refugee WASH systems are still considered inadequate and refugees have limited ability to pay. Fetentaa camp is the most advanced locality, with solid waste management services included in government systems. However, without further financial subsidies the possibility of inclusion into wider government WASH systems appears difficult. Under government arrangements, refugees would be expected to pay to access water, sanitation and waste services.

Summary

There appears to have been a partial handover of service delivery arrangements and an interest in encouraging refugees to contribute to service costs. Some service delivery standards are being met, but clearly not all, and the picture across the four camps is mixed. It is difficult to see if there is real consensus on how service delivery arrangements can be strengthened and what the immediate and long-term priorities are. For example, what long-term institutional support do local authorities and national service providers need to improve service levels? While this review is not all encompassing, the input from UNHCR in Ghana provides useful insight into the topic of post emergency water supply and the need for a clear long-term vision and strategy.

3.5 JORDAN

Background

At the end of 2019 the number of refugees in Jordan was estimated to be around 745,000. These people of concern consist of approximately 655,000 Syrians, 67,000 Iraqis, 15,000 Yemenis, 6,000 Sudanese and 2,500 refugees from a total of 52 other nationalities. Zaatari is the largest Syrian refugee camp in Jordan and is situated in the north of the country.

Zaatari Camp was established in 2012. Today the camp consists of more than 76,000 refugees who have fled the war in Syria (UNHCR 2020). Nearly 30% of households in the camp are headed by women, and 20% of the population are under 5 years old. Zaatari Camp is under the joint administration of the Syrian Refugee Affairs Directorate and UNHCR. The overall response to the Syrian refugee influx has been a collaborative effort between the donor community, UN agencies, international and national NGOs, community-based organizations, refugees, and Jordanian host communities.

WASH interventions in Zaatari Camp started with a series of interventions by NGOs and UN agencies. This approach has gradually shifted to a centralized service delivery model. For example, emergency WASH operations initially focussed on life-saving measures, before transitioning to communal and household-level WASH services. Water supply services began with water trucking activities serving communal water tanks. Water trucking was gradually phased out and three boreholes were introduced in Zaatari camp with a combined daily capacity of 3000m³. This led to the development of a camp-level water supply network and the addition of private water tanks. This system reportedly provides each refugee with 35 l/p/d. Similarly, the provision of safe sanitation has transitioned from mobile latrines to communal services and the introduction of private latrines. A waste water network has also been

constructed within the camp and includes a Waste Water Treatment Plant (WWTP) with a daily treatment capacity of 3600m³. Treated water is provided to local farms for re-use in agriculture. Underlying this transition was a high demand from refugees for better service levels and a desire to shift to a more centralized and cost-effective service delivery model from UNICEF.

To achieve this transition, UNICEF and its partners worked with the Government of Jordan (GoJ) to develop a clear range of long-term options for water supply, sanitation, hygiene promotion and waste management. Three key factors informed the decision to invest in more permanent services. First, an initial cost-benefit analysis carried out by UNICEF identified that infrastructure improvements would have a beneficial impact for both host communities and refugees. This would be achieved by providing higher quality services, resulting in corresponding health improvements and reducing operational expenditure. Second, it was also considered necessary because refugees were growing dissatisfied with communal facilities (such as kitchens, toilets and water tanks) and they demanded household-level services. Damage (including vandalism) to communal WASH facilities also meant they were susceptible to disease outbreaks and the aquifer was at risk of contamination. Both of these factors were deemed unacceptable. Third, decision making and planning also benefitted from extensive donor support from the German, USA and UK governments. These factors combined led to the establishment of household-level services.

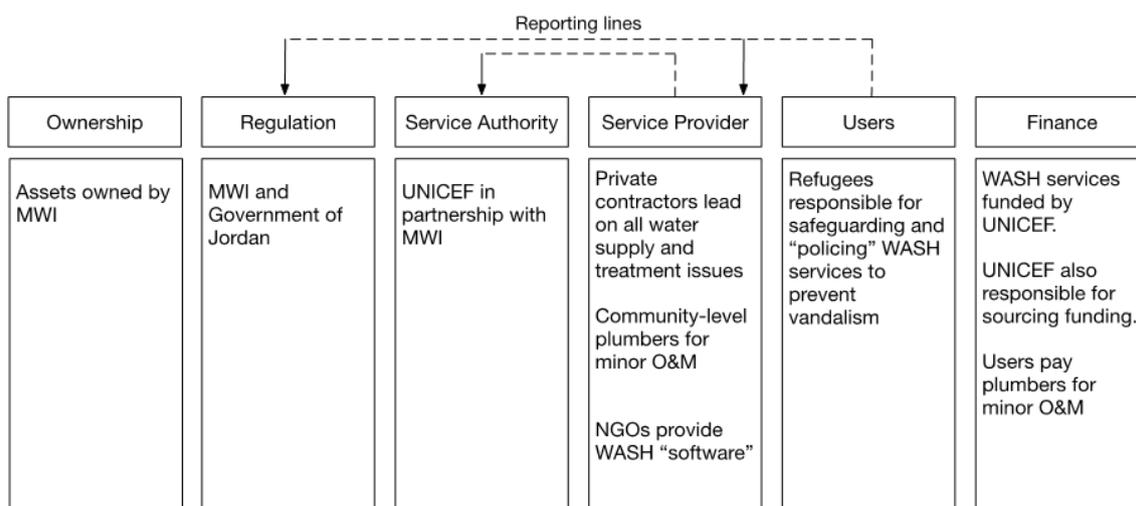
Service delivery models

Originally, services were provided by humanitarian agencies (UN and NGOs) under the authority of GoJ. However, there has also been a strategic plan to evolve service delivery and management arrangements to the current model (Figure 6). This was necessary for a number of reasons. First, under the initial service delivery model refugee caretakers were provided a small 'incentive' for carrying out operational activities. This amount was not equivalent to a wage and there was little interest from the workers for continuing under that arrangement. Additionally, the ability of these refugee caretakers to manage complex WASH services was considered low and programme managers determined that a more professionalised service delivery model was required. Furthermore, skilled contractors were available in Jordan who could provide the necessary technical support and guidance.

Today, the Ministry of Water and Irrigation (MWI) serves as the regulating authority along with other entities within GoJ. UNICEF serves in a Service Authority capacity, in the sense that they source funding and select the best modality to implement WASH service delivery. Project documentation shows that the water supply network is operated and maintained by a Jordanian Private Contractor (GAMA) and the Water Authority of Jordan operates the WWTP. In time, the intention is that WWTP duties will be handed over to a contractor. The remaining NGOs in Zaatari Camp (such as ACTED and Oxfam) focus on WASH software activities, such as hygiene promotion and community mobilization.

Service users are understood to play a limited role in day-to-day operation and maintenance. If problems arise at household level (i.e. within their compound or adjacent pipe connection) they can pay for the services of community-level plumbers to carry out minor repair work. The main involvement of users focuses on safeguarding WASH infrastructure from vandalism and placing high emphasis on appropriate use of water, sanitation and hygiene promotion services.

Figure 6: Water service delivery functions in Zaatari Camp, Jordan



Service delivery issues

Achievements in Zaatari Camp appear impressive and a recent knowledge, attitudes and practices (KAP) survey carried out in 2019⁴ provides an indication as to how WASH services are performing today. This is the latest in a series of annual user assessments that have been undertaken. The main findings that emerge from the KAP survey (2019) are as follows: virtually all households are connected to the new water supply network (> 99%) and use water for drinking and domestic purposes, such as washing, cooking and laundry. However, it was reported that 18% of households still purchase potable water for domestic use rather than using the water supply network, particularly in the summer months. The water supply network complies with Jordanian standards for drinking water, but some refugees have their own user preferences for water quality and supplement their water needs by purchasing bottled water. At household level, 88% of households reported having significant household water storage in excess of 1000 litres. Ninety-five percent of people mentioned they were aware of the schedule for receiving water and there is reportedly a high level of satisfaction. There also appears to be a high level of awareness regarding water conservation with 82% of households reportedly trying to minimize water wastage and 62% actively recycling water. These are all positive outcomes, although survey responses also highlighted issues with illegal connections and leakage. Just 51% of people mentioned they would report illegal activity. UNICEF has experienced multiple problems with aggression, violence, and theft of water supply hardware, such as taps. The KAP survey makes no reference to tariffs and water supply is free for refugees, which means the entire operation is still heavily subsidized by UNICEF and its external donors. Currently refugees do not have the right to work, so payment for ‘lifeline’ water services would not be reasonable at this stage.

On the issue of sanitation, 97% of households reported being connected to a wastewater network in both kitchen and bathroom spaces; 99% of households also reported having their own toilet facilities. Inevitably there have also been some challenges: 35% of households reported that they lack adequate handwashing facilities, and desludging of sanitation pits was a growing issue, with the number of complaints doubling in percentage terms from 15% of households in 2018 to 28% in 2019. UN managers acknowledge these issues and highlight that these problems occurred in the transition from desludging activities to building the wastewater network. Overall, responses related to solid waste management and hygiene promotion remain positive: 98% of households reported they are satisfied with solid waste management services and virtually all households reported using soap for handwashing.

It is difficult to gauge the prospects of sustainability, but the following information provides some insight. According to the 2019 KAP survey the responsibility for operation and maintenance of the water supply network (at household level) lies with individual households.

This refers to the pipe connections and taps at compound or household level. The report makes reference to the presence of community-level plumbers who can be used for minor repairs, with an approval rating of 88%. UNICEF has also set up a reporting hotline for wider problems with the transmission and distribution lines and there is apparently high level of satisfaction with the repairs being undertaken. These are under the responsibility of the two Jordanian contractors with UNICEF oversight; 89% of respondents report being satisfied or very satisfied with WASH services in 2019 compared with 69% in 2018.

In the preceding sections the performance of the water supply network in Zaatari camp appears exceptionally high. The performance of the network and levels of satisfaction appear to contrast significantly with water scarcity problems faced by other communities in Jordan. Today, water supply services in Zaatari camp provide in excess of 3,000m³ per day. However, it is evident that problems do exist. For example, in correspondence with UNICEF representatives in Jordan it was stated that there is not sufficient water available to supply people in Zaatari at a level they desire. This problem is not unique to Zaatari camp, but reflects the wider issues of water scarcity in Jordan and funding constraints during protracted emergencies. It also reflects the higher service levels that people experience elsewhere in Jordan and Syria.

One approach UNICEF has taken to reducing the demand on the water supply system has been to require institutions (such as NGOs and the businesses of refugees) within the camp to procure their own water via private tankers. Institutions are considered to have greater ability to pay for trucked water than households and should not receive free water from humanitarian agencies. Furthermore, UNICEF has tried to suppress demand for water by enforcing an equity and rationing programme. This aims to promote water conservation by users and greater proportionality, so that all households get their fair share based on the number of household members. However, this is difficult to control and inevitably those households situated at a greater distance from the water supply network experience water shortages. UNICEF has also circulated guidance for water usage and safeguarding the network. Reasonable efforts have been made to enforce operating principles and graduated sanctions (such as fines) for rule breakers or even exclusion from the water network. This initiative is also an attempt to reduce vandalism to the piped network. However, UNICEF representatives in Jordan acknowledge this is difficult to enforce and really requires communities to take collective action and establish their own operating principles. The prospect of users adhering to 'external rules' if no sanctions are imposed seems unlikely.

Discussion

According to UNICEF representatives the government is not currently willing to take over full control of the water supply services. This is perhaps understandable if they have limited recurrent budgets, users are unable to pay for services and the prospect of continued funding is unclear. Therefore, although Jordanian water utilities are considered proficient, if major service problems occur (such as reduced availability of water) the spotlight invariably falls on UNICEF, rather than the government, to resolve these issues. Jordanian sub-contractors are responsible for network (hardware) problems under the guidance of UNICEF, but user complaints and feedback are addressed directly by NGOs and UNICEF. It is difficult to see how UNICEF will extract themselves from this service delivery model, if they so choose, in the future.

3.6 NEPAL

Background

In the late 1980s and early 1990s over 100,000 ethnic minority Lhostshampa (Bhutanese of Nepali descent) left Bhutan and sought asylum from ethnic and political repression in Nepal. One of the largest influxes occurred in September of 1990 following violent clashes between the Government of Bhutan (GoB) and a minority political movement. This influx led to the establishment of seven refugee camps in eastern Nepal by the Government of Nepal (GoN) with support from UNHCR.

Many of the refugee settlements were constructed in designated forest land that was provided by the GoN. Due to the land's protected status there were certain regulations that limited the type of infrastructure that could be developed, and the result was that temporary materials were used for housing construction, and infrastructure investment favoured short life-span designs. Service levels targeted emergency standards, with communal facilities for water supply and sanitation common.

A large resettlement programme was announced by UNHCR in 2007. Over the next decade the refugee population in the camps was reduced by 90% through voluntary returns, third country resettlement facilitated by UNHCR, or migration to other parts of Nepal or India. In 2012, the remaining refugees were consolidated into two of the camps, Sanischare and Beldangi, with recent estimates suggesting that the population of refugees is 1,384 and 4,967 respectively (UNHCR, 2020b).

Major investments in both water and sanitation have occurred over time, with specific water supply projects in Beldangi and Sanishare occurring in 2000, 2011, 2013, and 2018. These upgrades included drilling of boreholes, expansion of water storage tanks, extension of distribution networks, and improvements of community access points.

Service delivery models

Nepal's Water Supply Corporation Act 1989 (2046 BS) created the Nepal Water Supply Corporation (NWSC) as an autonomous government-controlled corporation responsible for the supply of drinking water and sanitation services. In practice, NWSC operates piped drinking water supply systems in cities, while in intermediate⁵ and small towns⁶ and rural areas piped drinking water supply is operated by private water utilities or public cooperatives (water user committees/associations). The legal basis for this is rooted in the Water Resource Act 1992 (2049 BS), which establishes a system of licensing for the exploitation of water resources in the country. This legislation combined with the Drinking Water Regulation 1998 (2055BS) provides a legal framework for responsibilities, powers and duties of service providers, including private operators and water user committees. These responsibilities include the duty to supply water, maintain minimum quality standards, not pollute, repair and maintain infrastructure, and compensate the government. The legislation gives power to the service provider to enter into legally binding contracts with users, to reduce or cease service, and to impose tariffs (subject to the approval of the regulator). Regulation of water supply, including the approval of tariffs and the establishment of minimum service levels, is conducted by the National Water Regulatory Board. Finally, the Local Self Governance Regulation 1999 sets out the service authority powers, functions and duties in relation to the water and sanitation services of village development committees (VDC), district development committees (DDC), and municipal governments.⁷

Overview of WASH services

Beldangi Settlement: Beldangi refugee settlement is in the northern part of the Municipality of Damak, in the District of Jhapa. Initial water supply infrastructure was handpumps and later

motorized pumps powered by diesel generators. The high operating costs, as well as contamination as the settlement and surrounding host community populations grew, led to an expansion and integration project (2013-2015). Water supplies were developed from the Ratuwa River which bounds the settlement to the east, and the Dumse River to the west. The project also involved drilling an additional deep borehole and the construction of an additional storage tank to increase the system's capacity and to address seasonal water shortages. UNHCR funded the capital investment along with some additional financial contributions from the local community. The Divisional Office of the Water Supply and Sanitation (DOWSS) developed the technical design and the Lutheran World Federation oversaw implementation of construction. Currently the Ratuwa and Dumse schemes each have a 100m³ elevated water storage tank from which the water is distributed via gravity to Wards 2 and Ward 3 respectively. There are 2,015 refugee households and 1,623 host community households benefitting from the system with approximately 40% of the water produced from both systems going to the refugee settlement.

Sanichare Settlement: Sanishchare refugee settlement is in the Pathari Sanischare Municipality, in the District of Morang. The water supply system is composed of 2 boreholes which provide water to the refugee population (549 households, 1,530 people) as well as a portion of the nearby host population (700 households, 3,000 people) in Pathari. The boreholes pump water to two elevated storage tanks (100m³ and 75m³) which distribute via gravity to communal tap stands as well as some private connections for refugee households that have people with special needs, and host community households that could afford the connection costs.

Each of the three water supply systems (Dumse, Ratuwa, and Sanichare) is managed by a separate Water User Committee (WUC). The WUC is a legally recognized entity with the responsibility for the day-to-day operation and maintenance of the system, as well as financial and administrative management. The WUC is composed of individual representatives of each household within the geographic area covered by the system. Members vote on key issues; however voting rights are limited to individuals who have Nepali citizenship, so the refugees do not have voting rights, but may participate in discussions. The WUCs employ three paid staff (plumbers and technicians) per committee to manage day-to-day operations and maintenance of the system.

Sanitation services in Beldangi and Sanischare settlements are limited to latrines (pour flush or dry 'direct drop' latrines). There is no sanitary sewer or wastewater treatment plant in either municipality. When latrines fill up, the household is responsible for covering the costs of pit emptying. The last monitoring report confirmed that all refugee households in both locations had latrines. UNHCR has provided targeted subsidies for pit emptying for refugee households.

Transfer of authority

All water supply infrastructure in both settlements, including that constructed with UNHCR funding has been transferred to the Municipality of Damak and Sanischare (see Table 3). The municipal governments in both areas are the service authorities mandated with ensuring the provision of water supply to the refugee and host communities. The municipalities also carry out monitoring and compliance with GoN service standards, water quality testing, etc. The District Water Supply and Sanitation office provides technical backstopping to each of the municipalities. Table 3 summarizes the roles and responsibilities of each of the stakeholders.

At the end of 2020, after three decades, UNHCR will be closing its sub office in Damak. For the past few years, as a part of the transfer of authority, UNHCR has implemented a concerted campaign to strengthen the capacity of the local authorities to facilitate the inclusion of refugees into health, education, and WASH systems. Specifically, with regards to water supply, an MoU was developed between UNHCR and Damak Municipality⁸ that outlines the responsibilities of each organization to ensure sustainability of the services after UNHCR withdraws its operational presence. In addition to water supply there has been an increased

emphasis on improving the capacity of the Municipality and District Authority to regulate solid waste management in the areas.

Table 3: Service delivery arrangements in Nepal

Ownership	Regulation	Service authority	Service provider	Users	Finance
Assets transferred to municipal government	Municipal government DOWSS	Municipal government	Water User Committee Community oversees day to day operations. Contract technicians for operations and minor maintenance. UNHCR/NGOs provide WASH 'software'. DOWSS provides technical backstopping and assistance for major repairs.	Refugees are non-voting members of water user group.	CapEx- UNCHR and Municipal government OpEX- covered partially by user tariffs with subsidies provided by Ward government from annual budget allocated by municipality. CapManEX- Municipality covers

Service delivery issues

The estimated quantity of water currently supplied to refugees and host communities is 35-40 lpcd (UNHCR, 2020) which is above UNHCR targets used for protracted situations (20 lpcd) but below national standards (≥ 45 lpcd⁹). There is seasonal variability in the water provided in both settlements, with decreased quantities available at the end of the dry season, particularly in Beldanghi which relies mainly on surface water from the two rivers.

In Beldangi, during the 2013 expansion project, plans were developed to install metered connections at household level and to charge a block tariff structure, indicated below. The objective was to generate enough revenue to cover the operations and minor maintenance of the systems.

Although this tariff structure was initially proposed, it has not been implemented (Table 4). One challenge is due to the conditions of the housing structures, particularly in the refugee settlement. Initially built as temporary structures, there have been incremental upgrades to the shelters, both through targeted assistance provided by UNHCR but also by the refugees themselves. This has resulted in difficult conditions for facilitating household connections, with specific challenges over how to manage the greywater and wastewater that is produced by household connections. UNHCR has been carrying out shelter improvements to targeted households with special needs. By the end of 2020, more than 340 households will have been reached with shelter improvements and household level connections. However, no meters have been installed, and therefore tariffing has still been a flat fee of 80 NPR/household/month for host community and 30 NPR/household/month for refugees.

Table 4: User fees in Nepal

Units	Fee Amount		Structure
	Nepali rupee	USD	
0-10	80 flat fee	0.66	Flat fee
10-30	+10	+0.08	per additional unit
30-60	+15	+0.12	per additional unit
60 or more	+20	+0.17	per additional unit

The current National Water Supply and Sanitation Policy actually requires all service providers to ‘set discounted tariff rate for targeted poor and disadvantaged group of consumers distributing the financial burden to other consumers. The service providers shall be allowed to compensate losses through tariff to be paid by other consumers.’ (GoN, 2014). The refugees and host community have a shared language, culture and history, so social cohesion is high. Currently refugees do not have the legal right to work, although many work in the informal sector and so would qualify for the social tariff. However, a continued differential in terms of tariff structure could cause problems in the future. In Sanichare, where water is pumped using electricity, the costs of operation have been subsidized by the municipal government through their annual allocations to the Wards. It is unclear if efforts will be made to increase tariffs or switch to a consumption-based tariffing system.

The critical risks to services include impacts on water availability due to climate change. Global climate change has made water supply sources vulnerable as water table fluctuations have increased, rendering water supply services inadequate or defunct (e.g. where perennial streams have become seasonal). This is most pronounced in areas where the water supply systems have been designed and constructed based on small sources with marginal flows (GoN, 2014). In addition, water quality for many sources, particularly shallow aquifers, continues to be an issue. Many of the cities and towns in Jordan face similar problems, and water quality is an issue of growing concern caused by intermittent supply, leakage and a lack of safely managed sanitation services. Under UNHCR management there was regular water quality testing carried out by an NGO partner: daily free residual chlorine and turbidity tests at the point of collection, and weekly microbial testing at the source. However, at the end of 2018, the lab equipment was handed over to the WUCs with support provided by the municipality.

Discussion

In the refugee hosting areas, there has been and continues to be good political capital to facilitate the establishment of refugee services and their eventual inclusion into national/local systems. Planning, design and implementation sustainability components seem to have been addressed adequately with potential exceptions for sound water resources management. Considering the operation and maintenance of the systems, there seem to be gaps in terms of asset management planning and financial planning. Although there were proposed tariff structures for water supply for both systems, the planned block tariff structure was not rolled out, and therefore the systems are reliant on subsidies to manage basic operational costs – or more likely, a decrease in service levels over time. In addition, although refugees can participate in the WUC, they are non-voting members and therefore additional independent regulation and consumer feedback loops should be explored. In theory, most of the aspects of external support are covered by the municipality, with DOWSS providing the technical support and equipment and spares. However, this support is resource-dependent, and it is clear that both entities are stretched in terms of financial and human resources. Although there have been reports documenting the process, no learning studies have been carried out.

In summary, there are areas for improvement in the water services (e.g. continuity of service, water quality monitoring, regulation) and in terms of the refugees obtaining the right to work, which would be a good entry point into implementing the block tariff. However, in general Bhutaneses refugees in Nepal are accepted and, to a certain extent, integrated with service levels in the refugee settlements in parity with the host community. Therefore, although there are areas for improvement in WASH services provided to refugees, in general the refugees experience the same challenges with regards to WASH services as the host community. Following the transfer of authority of the WASH services in the refugee camps, the GoN now has the primary responsibility for addressing these challenges.

3.7 UGANDA

Background

Uganda is one of the largest refugee-hosting countries in the world, with more than 1.38 million people displaced into its territory, as of December 2019. This is largely made up of refugees from South Sudan's ongoing conflict, the ethnic violence in the Democratic Republic of Congo and political instability and violence in Somalia and Burundi. The majority of refugees reside in twelve of Uganda's 121 districts, living in gazetted refugee settlements or alongside host communities.

Uganda's CRRF was formally launched in March 2017 and it actively seeks to address the needs of both refugees and host communities. For example, refugees are afforded freedom of movement within Uganda, they are able to gain employment, establish businesses, as well as access national services. Refugees are also encouraged to settle alongside host communities and are allowed to work. There is general awareness among refugees about the CRRF and it is consistent with the principles of political support from the host government. This is important, because it has direct implications for the subsequent management of refugee and host community services, and the future ability of users to pay for WASH services. This case study examines the wider post-emergency service delivery arrangements promoted in Uganda, for example, in both camp and rural settings.

Service delivery models

Uganda has many refugee settlements with varied populations. These range from less than 10,000 people in locations such as Lobule and Oruchinga, to well in excess of 200,000 people in the larger settlements (such as Adjumani and Bidibidi Camps). Refugees and asylum seekers are to be found in urban areas and densely populated camps, while others are settled in rural localities. The varied contexts mean that a range of water supply technologies are used, and different service delivery options also need to be considered. This situation is not unique to Uganda, but it is helpful to focus on the service delivery options considered by government.

The roles and responsibilities of water service providers are well defined in Uganda. The Ministry of Water and Environment (MWE) has overall responsibility for setting policy, strategy and standards. Within MWE the Directorate of Water Development (DWD) provides technical oversight for planning, design, implementation and supervision of urban and rural water supplies.

National Water and Sewage Corporation

The National Water and Sewage Corporation (NWSC) is a government-owned utility which is positioned under MWE. It is responsible for the provision of urban water and sanitation services in all large towns and cities and a growing number of small towns. Its aim is to achieve 100% water supply coverage in towns and cities entrusted to it. Its remit is to supply water and sanitation services in cities and towns across Uganda in a reliable and cost-

effective manner. Typically, these towns have populations in excess of 30,000 people, and NWSC currently operates in 253 towns across Uganda and is increasingly expanding its coverage. This represents a four-fold increase in the population served since 2011.

Reforms in the utility carried out in the 1990s mean that today NWSC is well respected and the most viable service provider for densely populated urban centres, where there is real demand and ability to pay for services. For densely populated localities, NWSC is probably the preferred management option, but this will only be viable if service levels are high and revenue generation is assured.

However, the transition from humanitarian agencies to NWSC taking over the management of a water supply system is certainly not rapid. The first example is Rwamwanja refugee settlement in Uganda's Kamwenge district. This system has been operated by UNHCR and the Office of the Prime Minister (OPM) since 2012. The recent handover of services from UNHCR to NWSC is a desirable step, but it has taken many years and represents just 6% of the refugee population in Uganda. The direct involvement of NWSC is likely to be the preferred post-emergency option for many, but this is unlikely to be a rapid solution and long-term interim measures will most likely be required.

Umbrella authorities

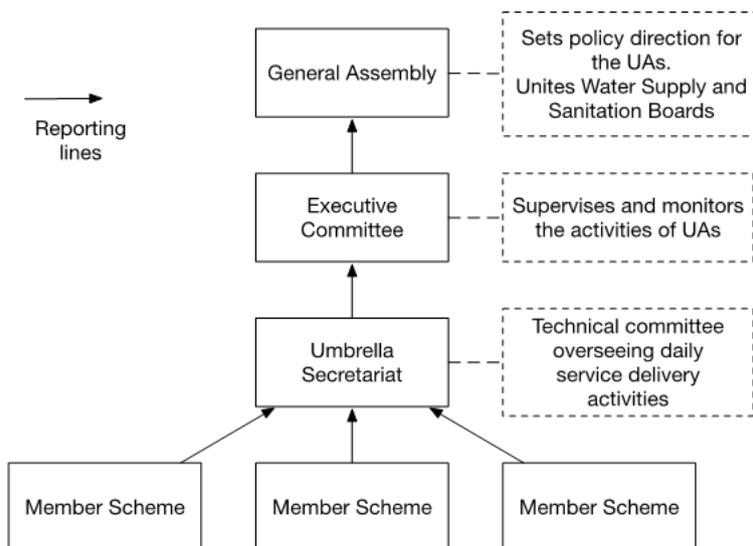
In small towns and rural areas that are not served by the NWSC, alternative service delivery arrangements exist. Previously local authorities (town councils) were responsible for service delivery arrangements. For example, they could choose to provide services directly, appoint a Private Operator or promote Community-Based Management Systems (CBMS). Typically, they provided operation and maintenance support to Water Boards and operators.

However, since July 2017 the government has introduced umbrella authorities (UAs) for gazetted¹⁰ areas. The new model (Figure 7) foresees a more prominent role. The UAs are appointed as water authorities, and the rationale behind these gazetted organizations is that regional resources should be amalgamated to help manage WASH services more effectively. They also have the power to appoint other local scheme operators and are in charge for overall revenue generation.

The UAs operate as private companies regulated by the Companies Act and they derive their mandate by appointment, as per gazette, from MWE (in accordance with the powers given to the Minister under the Water Act). UAs operate under a performance contract with MWE. The first UA was established in 2013, and the model has now been rolled out across six regions in Uganda (Mid-West, East, Central, South West, North and Karamoja). Performance contracts are introduced, and management systems should be improved through better planning and budgeting. The pooling of resources may typically focus on increased technical, financial and managerial support to operate and maintain WASH services on a regional scale. Typically, this could include both centralized WASH systems (such as mechanized water supply systems) or dispersed point water sources. However, under the UA system, MWE is actively discouraging the use of point water sources, with some limited exceptions. MWE generally wants people to use motorized systems that are operated by professional entities.

However, it has been suggested that UAs often lack utility experience and capacity. Indeed, the prospects of sustainability in the UA model relies on a number of factors: their transparency, their technical, managerial and financial capability, the level of utility experience they possess, their ability to mobilize water users and the willingness of the water users to pay for the water. It is also dependant on the willingness of central government to provide increased financial, equipment and human resources. If there is limited capacity, or demand, to manage emergency WASH services then their ability to provide ongoing external or regulatory support will be undermined. For that reason, they will likely need ongoing technical and financial backstop support from NWSC or specialist humanitarian agencies with operational utility experience.

Figure 7: Organization of umbrella authority model

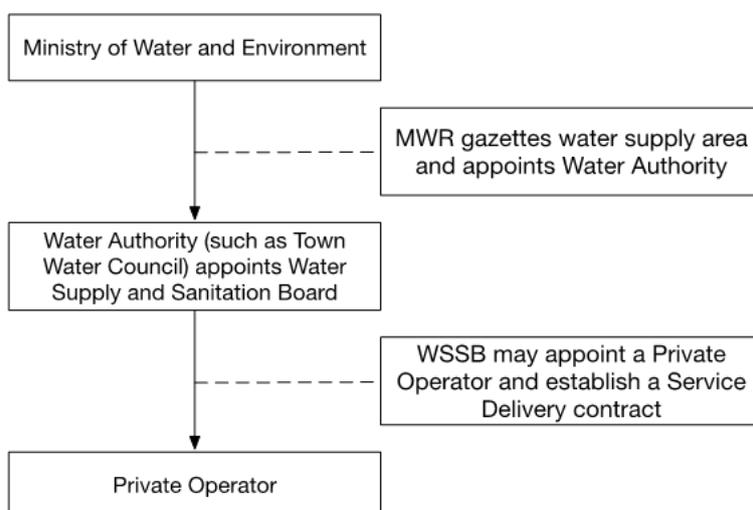


Private operators

Since the early 2000s, GoU has supported the introduction of private operators to manage water supply services in small towns. This would be achieved through management contracts with the local authorities. Typically, the private sector is viewed as a stop-gap solution until UAs have adequate capacity to manage water supply systems directly. The envisaged benefit of the private sector is that it can bring a high level of expertise and proficiency in areas where public sector capacity is limited and CBMS are not viable.

There are few documented examples of private operators managing emergency water supply systems in non-gazetted areas. However, key informants in Uganda advise that in such circumstances the operator would be responsible for the day-to-day management of the water supply system, but there would also be direct oversight of operations by a newly formed Water Supply and Sanitation Board and local government (Figure 8). This is required for regulatory purposes and to safeguard user interests. Water supply assets would remain under the ownership of government represented by MWE.

Figure 8: Institutional arrangements for establishing a private operator



The government’s preferred approach is to gradually transfer service delivery responsibilities back to the private sector, either through NWSC or UAs. The private sector is therefore viewed as a short-term option as these transitions take place. In such circumstances, the prospects of

the private operator model succeeding is dependent on many factors, such as user participation and trust, regulatory oversight, technical competence, ongoing external support and financial subsidies. The competence of Water Boards and local government to manage private operators has been identified by GoU as an area for increased attention. With regard to trust, there is also a danger that refugees will be uncomfortable with a private operator if there is inadequate oversight and regulation. This puts into question the ability of water boards and local government to regulate effectively.

Community-based management system

Rural populations are often reliant on point water sources, and CBMS is widely promoted in Uganda's national WASH policy. It is an approach whereby significant operation and maintenance responsibility is placed on host communities and refugees to sustain their water supply systems. It is also widely understood that these systems will only be effective if WASH services are constructed to a high standard and there is meaningful external support by NGOs or local government. Sub-County extension workers or district authorities often lack the technical knowledge and resources to provide effective external support to multiple CBMS. This means Sub-County extension workers can do very little. A lack of transparency coupled with weak coordination also undermines the workings of local government, which suggests ongoing technical assistance and subsidy from government or NGOs is required for the CBMS model to work.

It is still considered the most viable option for remote, rural or dispersed communities that are reliant on point water sources. The model is primarily applied in a development context, but it has also been applied in emergency settings, such as the districts of Kitgum and Pader. In these northern regions, demand for water far exceeds access and availability levels, which means water trucking is still required.

In camp or refugee settlement settings, the involvement of communities in managing parts of emergency water supply systems is encouraged and community participation is incorporated into humanitarian agency service delivery approaches. In some localities, refugees pay user fees, but these incidences are considered very low. However, differences between emergency and development contexts means this management model is less viable in a humanitarian context. In camp and refugee settlement settings, community members are not active participants when water supply systems are designed and constructed, and the context is not static. Existing refugees may be repatriated, move to other states, and there may be new refugee arrivals. User challenges, which are in fact many, also breed wider dissatisfaction. Effective external managerial, technical and financial support is vital if CBMS are to be viable in post-emergency settings.

Service delivery issues

A recent World Bank review¹¹ of water services in refugee settings in Uganda identifies a number of important considerations if the transition from emergency to post-emergency is to be successful. Four in particular stand out. First, good coordination of humanitarian agencies is required, with an ability to integrate humanitarian aid with the principles of long-term development. Second, high quality emergency response is a necessity, leading to high service delivery levels. Next, a roadmap with clear time bound performance targets for transitioning towards utility-based management models is required. Fourth, appropriate and effective capacity should be in place from those entities that will assume management responsibility.

There is general awareness that this process is not straightforward, and the World Bank review (2019) identifies a number of areas in particular to consider.

On the issues of planning, design and implementation:

- During the acute emergency phase, user participation is considered inadequate. People may not be involved in technology selection and the process is not fully participative. There

is also the danger that people are called on to act in a voluntary capacity indefinitely. This calls into question their long-term motivation.

- Water supply systems vary considerably in terms of their technology, design and construction. This results in a lack of systematic planning and inadequate outlook for sustainability. This results in subsequent difficulties undertaking maintenance and accessing spare parts.
- Environmental aspects are reported to be particularly challenging given the high water demands and problems associated with vulnerable environments. However, the figure of 40% abandonment of wells and boreholes in Rhino camp suggests issues of professional siting and design are also vitally important.

On the issue of user satisfaction:

- The reality in Uganda is that many users (refugees) are dissatisfied with emergency water supplies. Both access and water quantity (production) are particularly problematic, and in some areas (such as Bidibidi camp) only 60% of water supplies meet Sphere minimum standards. Often, minimum water demands are only met by ongoing water trucking.
- Standards of distribution are also inadequate. There is extensive over-crowding at water points and the water networks' operating hours are limited. Furthermore, repairs are not carried out in a timely manner by humanitarian agencies, which results in declining service levels. This is particularly apparent in refugee camps where maintenance budgets are not readily available or are declining.
- Limited provision for vulnerable and marginalized groups, such as elderly and disabled people.
- Sanitation and hygiene promotion facilities are also deemed inadequate, which implies that refugees want better access to toilet facilities and hygiene products. They have justifiable concerns regarding their own personal health.
- Income generation opportunities are limited, thus hindering the possibility that users will pay for services.

Discussion

Uganda is a signatory of the CRRF, and on paper it has identified clear service delivery options for refugees in post-emergency situations. However, the practical reality lags behind this ambition. There appear to be three broad issues to consider. First, humanitarian budgets are under threat, which has a direct impact on service delivery by humanitarian agencies. There appear to be a number of problems with emergency response by humanitarian agencies, and refugees report being dissatisfied with the standards of WASH services that are considered inadequate in a number of localities. Second, it is evident that local institutions in particular struggle to absorb new responsibilities. Better planning skills and management capacity, coupled with increased human, equipment and financial resources are all required. Aside from forming UAs, there does not appear to be a wider reform strategy to improve operational effectiveness. Third, the picture emerging is one where a) refugees are broadly dissatisfied with current service levels, b) local institutions have limited capacity and c) the transfer of services to NWSC (such as in Rwamwanja) takes considerable time. This means increased learning and a strategy is required to address this known problem.

4 CONCLUSIONS

This report provides some experiences and reflections on how to do water supply better in humanitarian situations. It is not comprehensive in its scope, but it does point to a range of country case study examples. The six case studies demonstrate the challenges decision makers and practitioners face in meeting water supply requirements in the transition from emergency to post-emergency. There is a strong argument that better monitoring, learning and documentation is required. Action also needs to be taken on many of the key components for sustainability, as outlined in Section 2. Six broad issues are highlighted here.

1. Post-emergency solutions will only be viable if they are fully supported by the host government. Two factors have persisted for many years: coordination in humanitarian emergencies is notoriously difficult and requires strong leadership; and humanitarian agencies may be detached from those whose expertise is in long-term development. This can result in inadequate attention to political capital and power analysis to help create the conditions for more durable service delivery.
2. The quality of planning, design and construction will have a major impact on future sustainability. It is true that humanitarian agencies conduct their own needs assessments, secure funding and implement services directly. This operating model means there can sometimes be little incentive to include independent needs assessments to determine what long-term options may be best for both displaced and host populations.
3. A number of weaknesses appear to exist in phasing out or handing over water supply services. It is still the case that physical infrastructure is handed over to another operator or institution without detailed asset management plans. This means service providers do not know the condition and risk associated with assets and the realistic level of funding required to sustain service levels and renew assets.
4. Government institutions will need considerable reform and support if they are to support sustainable service delivery. The issue of post construction external support is a pressing one in long-term development contexts. The pressures on national and local institutions is considerable when they need to assume far greater responsibilities post-emergency.
5. Financial sustainability is crucial if the desired service levels are to be achieved and maintained. An enormous amount of resources are spent on supporting displaced populations – such as refugees in refugee camps. Yet often agencies do not know the true cost of service delivery, and struggle to advise on tariffs and payments. Financial subsidies from donor partners are common in humanitarian situations, but all service providers will need to demonstrate a commitment to cost effectiveness and financial sustainability.
6. Refugees, IDPs and host communities must have a voice and meaningful representation to ensure their needs are met. With strong independent regulation and a seat at the table, their voice can grow louder. If this is absent, then tensions between service providers and users can grow, as observed in Gambella, Ethiopia.

RECOMMENDATIONS

In concluding, we highlight a small number of recommendations for decision makers and practitioners working in some very difficult situations.

- Knowledge and learning from a range of humanitarian contexts needs to be better documented, so that a wider audience can learn and benefit from many of the initiatives taking place. Our experiences from compiling the various case studies shows more systematic learning and documentation would be beneficial.

- The CRRF encourages countries to integrate refugees and IDPs into national systems. But donors and humanitarian agencies are wary of entrusting refugee management to national institutions due to their limited capability. This means donors need to be prepared to fund national and local systems and support institutional reforms. Better cost-benefit calculation and independent assessments would help to make this case to donors.
- Stronger links need to be established with displaced refugees. It is important that they have a voice and practitioners listen and learn from their experiences of remaining in camps or informal settlements for many years. Wherever possible, solutions need to be found that go way beyond large-scale camps that are restrictive and often have low service levels.
- There is also a requirement to build links between humanitarian specialists and those development practitioners who specialize in urban water supply, asset management and regulation. Those working in long-term development are now focussing more on strengthening rural and small-town utilities, as well as in larger urban settlements. This provides learning opportunities.
- Further resources are also required to investigate sustainability issues in greater depth. So far, UNHCR and Oxfam have established linkages to investigate emergency to post-emergency transitions, but more support and analysis is required.
- Host governments and humanitarian agencies should be particularly concerned about long-term funding in protracted emergencies. There is a need to improve independent cost-benefit analysis so decisions can be made over what long-term options are most viable.

ANNEX: LIST OF PEOPLE INTERVIEWED OR CORRESPONDED WITH

Country	Organization	Designation
Bangladesh	UNHCR	WASH Officer
Ethiopia	UNICEF	Chief WASH
Ghana	UNHCR	Senior Protection Assistant
Jordan	UNICEF	Project Manager
	UNICEF	Senior WASH Advisor
	Oxfam	Water and Sanitation Engineer
	UNHCR	WASH Manager
	UNHCR	WASH Associate
Nepal	Oxfam	Water and Sanitation Engineer
	UNHCR	Assistant Protection Officer
	UNHCR	Programme Officer
	UNHCR	Senior Programme Associate
Uganda	Oxfam	Water and Sanitation Engineer
	Oxfam	Water and Sanitation Engineer

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NOTES

- 1 UNHCR defines a protracted refugee situation as one in which 25,000 or more refugees from the same nationality are in exile for five consecutive years or more in a given host country. (UNHCR, 2019).
- 2 SPHERE standards are 45 square meters for each person in camp-type settlements, including household plots and 30 square meters for each person, including household plots, where communal services can be provided outside the planned settlement area.
- 3 UNHCR's GIS Portal: <https://wash.unhcr.org/wash-gis-portal/> (Accessed June 3, 2020)
- 4 UNICEF Reach KAP survey, July 2019: https://www.impact-repository.org/document/reach/90af6ab6/reach_jor_1901_zaatari_wash_kap_0.pdf
- 5 Intermediate town: having population of between 10,000 and 50,000.
- 6 Small town: having population of between 5,000 and 10,000.
- 7 Municipality: incorporated settlement with a minimum population of 20,000 and with at least \$2m in annual revenue. It should have public utilities including electricity, drinking water, telecommunication and similar services. In mountain and hill areas, a population of 10,000, annual revenue of \$1m with limited infrastructure can also be declared a municipality depending on the situation.
- 8 A formal MoU has not yet been signed between UNHCR and Sanichare.
- 9 'Basic' service as defined by National Water Supply and Sanitation Policy 2014.
- 10 The process of gazetting requires a water and sewage authority to bid to take responsibility for a specific area and enter into a performance contract with the Minister of Water and Environment. The process includes a rapid assessment and determines whether the service area would benefit from being managed by the local umbrella authority or NWSC. Criteria include: technical complexity of the infrastructure, whether the locality falls under NWSC remit or the infrastructure is shared with NWSC. Financial sustainability is also considered.
- 11 Assessment of Water Service Delivery in Refugee Settlements in Uganda, October 2019, World Bank Study.

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