Urban WASH in Emergencies

This document was prepared by John Bryant and Leah Campbell, with the support of Toby Gould, Niall Roche, Paul Knox Clarke and participants in the March 2014 RedR Urban WASH Training Pilot.

Introduction

From the 24 – 28 March 2014, RedR held a pilot course for 24 WASH experts on the subject of addressing the social, institutional and technical gaps that currently exist for water, sanitation and hygiene provision in the urban emergency context. This document, produced as a partnership between ALNAP and RedR, captures the key messages, lessons and experiences of both course facilitators and participants on the topic of WASH in urban emergency response.

1.1: Understanding urban disasters

Key lessons

- A large, highly mobile and dynamic population make finding and working with defined communities a challenge in the urban context, although some rural to urban migrants recreate their communities successfully. This diversity also results in a more diverse set of needs, with groups sharing similar vulnerabilities not restricted to geographical areas within defined boundaries.

- Urban contexts are potentially more vulnerable in times of emergencies, owing to this dynamism coupled with comparatively fewer coping strategies and higher reliance upon services.

- It is particularly difficult in urban contexts to separate WASH from any other sector: land tenancy issues, environmental factors, livelihoods, individual vulnerabilities, and ethnic, gender and economic inequalities are all interconnected.

- There are often more local authorities in urban areas which must be worked with, rather than circumnavigated. This can mean a shift in the role of humanitarian actors, often to become 'enablers' rather than providers.

- Those in urban contexts have a greater access to markets; a major asset to reinforcing local capacities. However, the 'informal economy' may be a challenge to 'map' and analyse.

- Generally there are higher levels of education within the urban context, which is a potential asset, although higher standards may mean unrealistic expectations about service quality.

- A larger population means some WASH solutions are no longer realistic due to the need to avoid public health risks.

Case study examples

Urban drainage risks: In Cebu, a large city in the Philippines, there was no city-wide sewage system, so most drainage went into septic tanks and out to rivers. In the case of flooding, septic tanks would fill up, overflow and pollute the bore holes where most drinking water was drawn from. As in other cities in developing contexts, there was a lack of knowledge among the population about what these risks entailed; 'it goes out of the toilet, disappears and people don't care'.

Multiple stakeholders: In an urban environment, it can be difficult to know who is responsible for making decisions and what makes these decisions legitimate. Understanding and working effectively within the local urban government, institutional and commercial structures can be particularly demanding. Practitioners have faced challenges of corruption, for example when working in the Philippines alongside a private company, several stakeholders wanted payment in order for their cooperation in a sewage infrastructure project.

Further reading

- _World Development Report 2014: Risk and Opportunity,_ World Bank
- _Ready to Respond: Skills Gaps for Responding to Humanitarian Crises in Urban Settings in the WASH and Shelter Sectors,_ RedR, 2013 (for definitions of city, peri-urban, slum etc.)
- _Learning from the City: British Red Cross Urban Learning Project Scoping Study,_ 2012
- _Responding to Urban Disasters: Learning from Previous Relief and Recovery Operations,_ ALNAP November 2012

1.2: Understanding WASH in urban contexts and setting priorities

Key lessons

- Defining priorities in the urban setting can be difficult considering overwhelming and diverse needs in WASH alone. In this context however, applying WASH in emergencies includes not only the technical, but social and institutional aspects of hygiene promotion, water, sanitation, drainage and vector control, amongst other sectors. Cross-cutting areas include community engagement and gender issues.

- Who deals with fires, industrial accidents, air pollution, non-communicable diseases or health and safety? Traffic accidents kill twice as many people as malaria every year in developing countries, yet who has authority for road safety? Responsibility over these crucial areas can often be unclear, especially in urban areas.

- When defining WASH, the need to stress the links between water, hygiene and sanitation becomes clear, as well as wider links to economic, social and environmental factors.

Key example: Urban WASH capacity building, Tacloban City, Philippines

UNICEF was already dealing with the effects of multiple emergencies in the Philippines prior to Typhoon Haiyan in November 2013. Typhoon Bopha in 2012, resurging conflict in Mindanao and the strong Bohol earthquake in October 2013 all meant resources were stretched thinly. In Tacloban City, Haiyan disrupted water supply infrastructure, although, this was primarily a result of broken power lines. After repairs, fuel became a critical problem for the city's treatment plants, a situation compounded by petrol station closures due to concerns about looting. Utilising the UNICEF brand led to successful negotiations with the military over short term fuel fixes, whilst key messages of hygiene promotion, basic vector control and simple water treatment were disseminated over community radio.

A key lesson from the recovery from Typhoon Sendong in 2011 was the lack of willingness to participate in cash-for-work programmes in the earliest stages of emergencies, as collapsed markets meant there was little to buy. UNICEF offered hygiene kits for those willing to help, but there was little food to distribute. Such programmes were eventually successful after Haiyan, distributing safe water to over 250,000 people a month after the typhoon struck and replacing the trucking of water during the emergency phase.

In this urban context of recurring disasters, UNICEF was the first agency to work with national government to increase local capacities: pre-positioning stockpiles of water treatment kits, pipes and generators, as well as assessing areas of coverage and points of vulnerability to reduce future disaster risk. Such activities should begin as soon as possible after a disaster to prepare for the next. Advocacy for resilience initiatives is most powerful in the recovery phase after disasters.

Preparing contacts is also important for stakeholders: a long-term agreement with a portaloo company bought valuable time whilst construction of more permanent sanitation works was done. Community involvement is vital to ease tension and overcome particular cultural challenges. Partnering with other agencies, was assisted through standardised cluster agreements that allowed access to some UNICEF funds immediately after the disaster in order to conduct rapid assessments.

Further reading

Tropical Storm Sendong Lessons Learned, WASH Cluster Philippines, 2012

Case study examples

Disease risks from migration: In Lebanon, refugees and migrants coming into urban areas struggled to find housing, and often resorted to living in areas where people have not lived before, such as industrial areas that could have harboured more vectors for disease.

Multiple challenges and opportunities: In Port-au-Prince, Haiti, the challenges post–earthquake in 2010 were many. Debris, the bodies of victims, power and communications, sanitation, the pollution of water supplies, security and looting, and land tenure issues in a crowded space were all challenges for an effective humanitarian response. These were balanced however by opportunities to start afresh in a better planned urban system, as well as promoting existing local capacities, including water vendors. However, the earthquake also limited government institutions that would otherwise have been a useful resource in an urban setting. Longer term, disaster risk reduction should be prioritised. The input of urban planners from very early in the emergency was seen in evaluations as lacking.

1.3: Stakeholders in urban WASH in emergencies

Key lessons

- In urban areas, more stakeholders can mean a greater need to balance their priorities and interests.
- Stakeholders in surrounding areas, in addition to affected areas, are important in ensuring projects 'do no harm' and are sustainable.
- Power relationships can change particularly rapidly in urban areas; with various stakeholders altering their levels of interest and influence depending on unfolding events. It is important to understand these dynamics and the likelihood of events that could change them.
- Furthermore, your own interventions could change these dynamics, often in an unintended manner. For example, repairs to water or sanitation networks may only be of direct benefit to richer stakeholders rather than slum dwellers, who are instead supplied by private water vendors.

Case study examples

Donor preference: In Baghdad, donors wanted to see wells being dug as these brought good photo opportunities. However, Baghdad's existing water system was sophisticated and there was no need for wells. The system instead required repair, which digging unnecessary wells would not have assisted. In Haiti, one private foundation was intent on providing water treatment stations despite the fact that agencies did not need them. The donor was insistent, and sent the equipment anyway, which then went unused. The lesson from both examples is the need to both find out what is really needed and to stand your ground with donors.

> ### Key example: Engaging with the private sector for WASH
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> A major urban water supply and sanitation system reconstruction project over a three-year period implemented by the American Red Cross in Indonesia can provide lessons for using the private sector; of which there are far bigger opportunities for engagement in urban areas than rural. The capital of the district of Aceh Jaya, on the west coast of Aceh, Calang was devastated by the 2004 tsunami, which destroyed most of the town's infrastructure and killed around 70% of the town's 15,000 inhabitants. Emphasising choice for local people, the American Red Cross used a variety of contracting and direct administration implementation approaches for the design and reconstruction of Calang's water supply and sanitation system.
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> However, the conditions of contract, and limited experience with large infrastructure projects among movement partners, led to implementation delays of up to 15 months. In the final outcome, the design and construction contracts for infrastructure should be as flexible as possible in order to minimize potential overruns in planned schedules, and it is recommended to employ standard industry contract templates that are accepted world wide. The use of the FIDIC set of contracts, for example, is a potentially valuable tool in reducing delays and improving service delivery as they are acceptable to donors, consultants and contractors.
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> The use of the private sector needs to be carefully assessed and developed with donors, as the latter are initially unlikely to see the benefits of any savings whilst still taking on the risks. Nevertheless, the successful conclusion of the project in Calang demonstrates how the private sector and a conservative donor can work together to achieve objectives.

Power relationships: At the time of the earthquake in Haiti, the city was in the middle of changing water companies. There was a conflict between the old water supply company and the new one. International NGOs trying to get the water system going got stuck in the middle of the politics. This was a lesson in needing to understand the existing power relationships in an urban area.

Multitude of actors: In the Philippines, rural water systems are government-run however in urban areas, there is a mixture of public and private providers. . Nairobi and Addis Ababa have similarly complex water systems with many actors. In Haiti, the complexity of actors involved in the water system required agencies to set up mini clusters in each district to coordinate with the various agencies involved.

Impact of security context: In Somalia, agencies wanted to establish WASH programming in South Central, however they were unable to work there due to the potential for funds getting into the hands

of terrorist organisations. This at least partly resulted in people being drawn to urban areas such as Mogadishu, where although provision was easier, the risk of disease and pressures on infrastructure were increased. This created questions for humanitarians about upholding principles, as there were terrorist organisations operating in the urban areas as well. As one training participant said:

> 'How do you choose who to help when you want to choose the most affected without getting into trouble with wider stakeholders who could put you in jail? In an urban area, the stakes are much higher. In Mogadishu, many eyes were watching.'

Key example: Urban water supply challenges in conflict

Sarajevo and Srebrenica, as cities under siege, had no electricity, and limited or no water. Prior to the conflict, the population had enjoyed a western style of living that used a regular, piped water supply. These two cities had limited options due to sabotaged pipelines, bombed treatment centres, hostile sniper fire and already polluted river sources.

All water sources had positives and negative aspects. Surface water was easily sabotaged or polluted, but accessible, and so often used. Rainwater harvesting could have been a critical source, depending on the weather, and may have already been a viable source in the city. Desalination plants are, today, a far more practical solution than in 1992, but remain energy intensive and complicated for a humanitarian agency to operate. In this context, melting snow was also considered, but a lack of electricity and firewood meant this was not an efficient source. In such a relatively high development context, city councils and private companies were considered, as well as smaller potential sources such as mosques, hotels and public fountains; although all of these sources were dangerous in a conflict scenario.

Springs and shallow wells less than 20 feet deep carried the risk of freezing, but in Sarajevo these were the best sources. A water treatment plant was also airlifted in and constructed in an underpass to protect it, although its operation and use was severly delayed due to lack of acceptance of the system by some local stakeholders. In Srebrenica there was a lack of aquifers and no groundwater, and so options were limited; cleaning river water was the primary source. Agencies also found a disused treatment plant which was then powered by a generator.

Further Reading

Humanitarian Interventions in Situations of Urban Violence, ALNAP Lessons Paper, 2014

- _A Comparative Evaluation of Public-Private and Public-Public Partnerships for Urban Water Services in ACP Countries,_ European Parliament, 2010

1.4: Affected populations

Key lessons

- Vulnerable individuals in urban settings can have diverse requirements, can be distributed over a large area, and can be difficult to assess. They could include street children, high rise residents, new arrivals legal or otherwise, and those with disabilities.
- These groups are also potentially difficult to reach because of a lack of a social fabric in many urban areas – although as was pointed out, a lack of community can be a feature of rural settings as well.

Case study examples

Urban conflict: Mogadishu lacked a mains water supply or electricity so local people and refugees depended on water from privately-owned wells, community bore holes that were only available at restricted times, or water bought from local vendors using donkey carts. Therefore, WASH agencies concentrated on providing storage facilities, using local resources. Larger tankers to store water and refill overnight were used, a system more common to refugee camps. The social fabric of the city did still exist, with people going about their lives as best they could, though refugees struggled and were completely dependent on aid agencies for food, water and health provision. In this urban environment, people in need were present throughout the city, and not conveniently clustered together as in a camp. As a result, agencies dealt with 50-100 community representatives who spoke for their own specific community, still intact within the city.

Using local institutions: In order to find street children in Rwanda, a project used church land and helped to build a camp that became a focal point for this vulnerable group that otherwise would have nowhere to gather for help. Even with such a pervasive conflict this was a valuable and trusted institution that remained.

Further reading

- _Guidance for Profiling Urban Displacement Situations: Challenges and Solutions,_ Joint IDP Profiling Service, 2014

2.1: Urban water treatment options

Key lessons

- More complex contexts and systems demand a greater level of skill and hence a need for specialists, perhaps on a rota system to improve response time globally. As staff from local water companies are likely to still be there in a short term emergency, increasing the capacity of local engineers to assess urban water treatment is also essential.

- The 'Build Back Better' doctrine has left an ambiguous legacy, with the efforts toward higher quality blurring the line between humanitarian response and longer-term development. Whilst higher standards should be followed, it remains to be seen whether humanitarian agencies ultimately possess the management skills to deliver such goals – although need often means agencies commonly operate beyond their realms of expertise.

- Agencies can deliver 'quick wins' such as ordering treatment chemicals and small repairs, but more complex systems are a real challenge, and these are more common in urban areas.

- The private sector has an important role to play in re-establishing existing water supply systems and the interface between the private sector and agencies needs to be clarified and strengthened.

Key example: : Aiming too high? Raising the urban WASH complexity bar

Salqin, northern Syria had a population of around 24,000 before an influx of an estimated 15,000 to 50,000 internally displaced people (IDPs). With municipal water works not functioning, water was distributed from 11 unprotected agricultural wells by private vendors. With insufficient quantity however, informal rationing was put in place, a problem exacerbated by over 200 cases of typhoid; a disease difficult to isolate, due to unclear symptoms, even in non-conflict contexts. With access to chlorine and water treatment tablets limited, around 500 hygiene kits were distributed through clinics to suspected cases. The recommendation that three of the water sources should be closed because of probable faecal contamination was ignored due to acute scarcity.

This example highlights the inadequacy of current interventions in such a problematic setting. One problem was the highly mobile population, and IDPs from rural areas who may have been unfamiliar with the sanitation options available. In addition, it illustrated the need to look outside of the WASH 'silo' and co-ordinate with health providers to strengthen preparedness. Since this intervention was carried out in March 2013, outbreak scares across northern Syria have included further typhoid, measles, hepatitis A, polio and leishmaniasis.

Complex supply systems: In Harare in 2011, solving critical water treatment problems was hampered by economic sanctions and rushed assessments that led to technical mistakes such as inappropriate pumps being installed. Almost non-existent wastewater treatment led to pollution in local Lake Chivero. Although technical tasks were challenging – in particular the removal of large quantities of grit from the water – the biggest problem was a lack of skilled local staff, as Zimbabwe's economic crisis had led to emigration of most water specialists. Political interference also led to difficulties; a characteristic more common in urban settings where these complex, if non-functioning, existing systems may be more difficult to repair and operate sustainably than where there is no provision at all.

2.2: Urban excreta options

Key lessons

- Sanitation is context specific, but urban areas are not a single context. This makes choosing from the wide variety of excreta options an important process, with the needs and preferences of users requiring consideration alongside space, budget, climate, safety, living conditions, water availability, soil type and baseline infrastructure factors.

- There are a great variety of technologies on offer: simple trench latrines, various superstructures, composting, and bag options. However, there is often a lack of guidelines for when, where and how to use these options in a hygienic manner.

- Safe excreta disposal is particularly difficult in an urban context. Issues of access for sludge removal and land availability for disposal can be especially challenging and need to be given immediate priority.

Case study example

Advantages of low baselines: In Haiti, Oxfam used new composting toilets to great effect, taking advantage of low provision before the earthquake to leapfrog less sustainable options common in more developed contexts. This did not mean that there were low local capacities, however, as effective wooden raised latrines had been constructed in some communities by local people prior to aid agencies arriving.

Key example: Cholera response in an urban context, Harare, Zimbabwe

Cholera has an incubation period that varies from a few hours to five days. Since around 80% of cholera affected people show only mild signs, rehydration is the main treatment. Primarily spread through faecal contamination of water and food and sometimes person to person, the risks of transmitting cholera therefore centre around shared areas: water points, latrines, places where food is handled or eaten, and where existing patients are cared for. This characteristic partly explains why cholera particularly affects people of a lower socio-economic status.

In the context of Harare, and possibly many other urban ones, cholera has a higher contamination rate of around 2 – 5% of the population, compared with around 0.1 – 2% in rural areas which have been seen in outbreaks in rural Zambia and Haiti. As a result education about how cholera is transmitted is very important. So too is dealing with stakeholders: an unexpected obstacle in Zimbabwe was a religious group that refused to use communal cholera treatment facilities and promoted their own, ineffective, mitigation strategies. Additionally, cluster meetings in Zimbabwe rarely included water companies who were vital actors, as can be seen in the example of Port-au-Prince, where the health sector failed to report a cholera outbreak to the water sector until agencies found out 4 – 5 days later.

Timely intervention and hygiene promotion was vital and often rested on the quality of local staff. As a result of poor communication and standards, bad practise remained widespread; with some cholera stations even lacking hand washing facilities. There were also instances where diarrhoea education posters were used because of a lack of resources, and stated: 'If you have had it for three days, visit your doctor'. Such examples were obviously counter-productive.

More advanced mitigation strategies are available: risk mapping can enable the planning of location of treatment centres and potentially locate the source of the outbreak. In Zimbabwe areas with open wells had a far higher rate of cholera transmission, as did 'flash points' along road and rail lines.

Far more simple responses were hampered because of a lack of urgency; changing some mixing procedures was an effective and low cost method to increase the amount of water distributed into Harare but this advice came from specialists from private companies who arrived in Harare six months after the outbreak.

2.3: Urban WASH assessments

Key lessons

- Cash transfer programming and market-based toolkits have potentially critical roles to play in urban settings; supporting the local economy gives beneficiaries more choice and transfers can be either in voucher or monetary form. The success of these initiatives depends on functioning markets.

- Emergency Market Mapping Analysis (EMMA) toolkits can assist in gathering information on these local capacities. These gap, market and response analyses can also be applied to the water market in urban areas.

Case study example

EMMA for water markets: In the Balqa and Zarga governates of Jordan, the key question for urban WASH assessment was assessing the capacity of markets to provide the necessary quantity and quality of water for a now-strained market. In this context, an Emergency Market Mapping and Analysis (EMMA) toolkit helps to structure analyses of markets, gaps in provision, and possible responses. Communicating with water suppliers, operators, water truckers, vendors, landlords and users, the EMMA in Jordan included planning for both a normal year of consumption and contingency planning for a particularly scarce year. In this context of scarce supply, it became obvious that increased demand led to a far higher dependence on private vendors. Increased access could be provided through a voucher system, as well as provision of household filters and storage facilities.

Further reading

- _Emergency Market Mapping and Analysis Toolkit,_ Oxfam, 2010

3.1: Disaster waste management

Key lessons

- The abnormally high level of waste that results from a natural disaster or conflict comes from many different sources, and can include: hazardous home and commercial products; waste from relief programmes themselves; unexploded ordnance; vegetation and sediment; and the municipal waste that immediately builds once regular removal is disrupted.

- Often neglected by relief efforts, such debris can hamper logistics, become a public health hazard and damage the environment. Preventing and minimising waste is not always possible in a post-disaster context, although recycling industries are often already developed in some settings.

- Waste management is a cross-sectional issue with challenges and opportunities for other sectors; recycled rubble can provide building materials for shelter, removing waste is of critical benefit for logistics, and potentially infectious, medical or sharp waste can be a problem for health provision.

- Waste markets selling plastics and metals, private firms with international market access and the availability of construction companies and equipment all mean there are many opportunities for employment initiatives in debris clearance and recycling in the urban context.

Case study examples

Post-disaster recycling: In the aftermath of the 2010 earthquake in Port-au-Prince, Haiti, Golder Associates screened, graded and crushed debris to then sell to the local construction sector for use as paving slabs for footpaths and small roads or in gabions for landslide defence. Such recycling initiatives were also pioneered by Haiti Communitere, who used styrofoam and other plastics to make polystyrene building blocks for well insulated and durable new housing.

Innovative IT: A waste hotline GPS project in Port-au-Prince mapped waste to coordinate private and public collection services nearby and change routes accordingly. Freely available software allowed trackers to be installed in the vehicles, rewarding drivers for each collection and discouraging fly tipping.

3.2: Hygiene Promotion

Key lessons

- Hygiene promotion relies centrally upon community consultation in order to promote the messages of better public health practice and gather feedback to suit responses to the specific context. This makes it harder in an urban area, as within the city there can be middle income and slum areas, and host and migrant populations, all with differing needs, cultures and capacities.
- There are opportunities for a more context specific design for urban areas. Children are usually more prevalent in cities and are very effective at distributing information to their families, as are more formal governance structures and access to mass media.

Case study examples

Urban promotion: Lebanon's current refugee population occupied a diverse range of housing across the country, including slums, peri-urban and modern urban centres, with an accompanying range of hygiene promotion needs. Group meetings were often difficult, so door to door visits were used as well as mass media such as radio. The rapid movement of slum dwellers can hamper effective targeting, but some Lebanese government institutions could be partnered with in such areas to ensure

continuity.

The need for contextual research: After recurrent water-based diarrhoea diseases in post-tsunami Aceh, it was realised by several agencies that the method of hand-washing – recurrent use of the same bowl of water – rather than not hand-washing at all, was to blame.

Further reading

- *Sanitation and Hygiene Promotion for the Urban Poor: Recommendations from the East Africa Practitioners' Workshop on Pro-Poor Urban Sanitation and Hygiene,* 2011

4.1: Vector Control

Key lessons

- Victims of emergencies and conflicts are more vulnerable to vector-borne diseases, through greater exposure to bites and contact through poor shelter, a lack of sanitation, poor nutrition, injuries that can become infected and perhaps flood waters.

- The urban setting has particular characteristics, and, unlike in rural areas, malaria is generally not a critical problem. Dengue fever, however, spread through uncovered water, is on the rise in urban areas: a six-month project to cover water containers in Yangon, Myanmar led to an 88% fall in reported cases.

Case study example

Urban vectors during conflict: There are now an estimated 200,000 cases of leishmaniasis, an often non-lethal yet disfiguring flesh-eating disease spread through sand flies, across northern Syria. Cracks in buildings and rubble caused by conflict provide areas for sand flies to breed, and mobile, exposed populations are vulnerable. In this context there is a need for multiple approaches, including in waste disposal, to ensure integrated vector control management.

Conclusion: Lessons and next steps

Many **specific lessons for the WASH sector in the urban context** can be drawn from this discussion, including:

- Solid waste management can be of particular importance and there are multiple new technologies that can assist in this sector.

- Vector control is more complex but just as essential in the urban environment, especially when considering dengue fever, which is on the rise across the developing world and particularly a threat to urban populations.

- Hygiene promotion remains a critical part of the WASH response but is potentially far more complicated, owing to the diverse target groups in urban settings. Schools are a particular asset for hygiene promotion.

- Diverse target groups may also mean a more responsive and greater range of WASH options may be needed to ensure effective service provision.

A recurring lesson from this discussion has been the emphasis on the interconnected and dynamic nature of the urban setting, and how this challenges 'silo'-based, sector-structured responses. Recognising this characteristic, **many lessons have wider applicability for humanitarian response more generally**. Vector control, solid waste management and drainage are key examples of where success or failure in one area could greatly determine results in other sectors. These specialist and technical areas also clearly demonstrate the need for humanitarian agencies to '
know their limits and utilise external expertise – including potentially the private sector.

The different context of an urban environment may lead to humanitarian actors fulfilling a different role than in the rural context, where many agencies first began programmes. Becoming enablers, rather than simply providers, may be the way to navigate this complex setting. Cash programmes are the most obvious example of this approach, and a greater understanding of their beneficial and detrimental economic effects would be a useful asset in programme design.

Such capacities usually indicate a wider point: many modern urban contexts, as well as presenting higher numbers of inhabitants on low incomes, also have the potential to introduce humanitarian agencies to beneficiaries from higher incomes. Service provision before disaster or conflicts may have been well developed, and standard humanitarian projects may not be at an acceptable level of service for those used to sophisticated utilities.

Yet familiar problems for the sector also remain present and are often exacerbated in the urban setting. Project funding still follows a model that struggles to build sustainable practises, rather than straightforward response immediately following a crisis.

Next steps

The intention of this paper was to capture the key messages, lessons and experiences of both course facilitators and participants on the coming together of two topics, WASH and the urban context. The former is a well-established sector of humanitarian response, the latter, whilst not a new setting, is one that has become increasingly prominent as a challenging setting for humanitarian responses in recent years. This trend is set to continue, and will only increase in importance as a result of global demographic, political, economic and environmental trends.

Lesson learning is a continuous journey, and tools for facilitating this process would be valuable across many areas of urban response:

- The need for external expertise for potentially more technical projects in urban contexts is high and increasing. In such situations, the private sector could be an effective partner. However, advice over contracts, standards, and most importantly, when and when not to engage, is currently not comprehensive or accessible.

- A greater information gathering and analysis capacity would also help plug many of the gaps of missing evidence that can be critical in such a complicated environment. When combined with a city-wide, rather than only sector-wide, scale of analysis this could help a more risk-management focused approach develop, which would help define priorities.

- More generally, the particular characteristics of the urban environment discussed in this paper demand WASH responses that are more responsive, accountable, smarter and sustainable than current practises. A regular 'best practice review' for urban response, building to an updating set of guides and toolkits that are increasingly the norm for particular sectors, would be a necessity to learn the lessons of, and keep up with, this challenging and dynamic environment.