4.4 Water, sanitation and hygiene

Implementing water, sanitation and hygiene (WASH) programmes in urban areas is complex and difficult. As a basic need, effective WASH is vital to prevent loss of life and the spread of disease, a consideration that in dense urban areas can be especially acute. The reliance of people living in cities on essential services such as water and sanitation makes them especially vulnerable to service disruptions during crises.

This section identifies general WASH issues. It discusses WASH in protracted crises and in displacement settings, and reviews good practice in water and hygiene. This section links

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48 This section benefited in particular from the inputs of Michael Talhami, Urban Adviser – Water and Habitat Unit, ICRC.
closely to a number of others in this GPR, including health, protection, shelter and cash, and of course to all sections relating to project management.

4.4.1 WASH challenges

The range and quality of urban WASH is vast, from sewage and water supply systems in the wealthier parts of cities to the almost complete absence of water and sanitation facilities in informal settlements. Vital components of WASH interventions include social and institutional factors (for example who gets what quality of service, depending on where they live in the city and their level of access), as well as technical solutions (the ways in which water and sanitation is provided and managed).49

Like other sectors, WASH in cities presents particular challenges related to the scale, complexity and interconnectedness of urban service systems. Issues to consider include:

- Deteriorating and aging infrastructure and service systems, including but not limited to water, wastewater, electricity and solid waste management.
- Dilapidated buildings requiring repair and maintenance of water and sanitation systems. These structures may be several storeys high, including residential buildings, hospitals and schools.
- Different types of ownership (private and/or public), operation and maintenance of municipal water and sewerage services.
- Private sector service providers such as pit latrine emptiers that operate on a small scale but play an essential role in cities (particularly in low-income areas).
- The wide range of urban WASH needs and issues, from the use of water-borne sewage systems to cesspits and pit latrines in informal settlements.
- People living in informal settlements may rely on water pumps and/or water vendors (public or private, formal or informal) for their water supply.
- Sanitation conditions in informal settlements can be extremely poor, affecting health, protection concerns and dignity, for instance in relation to menstrual hygiene, and options for excreta disposal may be limited.

A complex web of stakeholders are involved in WASH, each with their own aims, mandates and areas of expertise. All have shifting relationships with each other, and understanding this web of relationships is a crucial part of urban WASH programming. For a discussion of service providers, with examples from Lebanon and Jordan, see L. Diep et al., Water,

4.4.2 WASH interventions

During an acute emergency, humanitarian organisations may substitute for a service provider by installing tanks or bladders and initiating water trucking. In protracted settings, considerations include encouraging municipal authorities to cover the financing for the salaries of their staff, as well as funding for operations and maintenance, and mobilising the central government and possibly development actors (once the situation allows for their return) to actively commit to restoring services and helping the utility move towards financial stability. Support to service providers typically aims to help them meet their responsibility to operate, maintain and repair the system. In these circumstances, humanitarian organisations have a role to play in providing spare parts and consumables, and sub-contracting out repairs and rehabilitation work to construction companies.

The long-term provision of basic water and sanitation services is the mandate of official service providers (public and/or private), not NGOs. Humanitarian responses must therefore clearly understand whether substituting for those service providers or supporting them is more appropriate. If the former is required, then there must be a clear strategy and roadmap for establishing (or re-establishing) a sustainable service, and when and how responsibilities will be transferred back to official service providers. Building the resilience of water and sanitation utilities through coordinating with and supporting local actors in the short term will better prepare them to adapt and serve urban populations during future humanitarian crises.

In contexts of displacement, UNHCR states that ‘WASH interventions in urban areas aim to provide refugees [and IDPs] with safe access to water of sufficient quality and quantity, and good quality sanitation; to improve hygiene practices; and improve WASH in hospitals, health and nutrition centres, schools and other institutions, in order to achieve the same quality of services as host communities and ultimately reach national WASH service standards’. To that end, UNHCR identifies the following key activities:

- Assess gaps and needs in WASH infrastructure.
- Constantly monitor WASH needs and changes in needs.
- Work closely and coordinate with government ministries, water providers, municipalities and other actors (such as UN agencies and donors), noting that ‘The best outcome is to provide urban refugees with full access to national services’.

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• UNHCR also notes that water needs paying for. For those unable to afford this, cash grants are an option. State-supplied water is almost always cheaper than bottled water or water supplied by vendors.


4.4.3 Water

Water here means ground water, water treatment and testing, surface water, desalinated water, collected rainwater and water supply (water supply is any water that is intended for consumption, hygiene and industrial use). Typical stages from source to consumer include production, treatment, transmission, storage and distribution. Issues concerning urban water delivery include:

• Water delivery ranges from piped water supply in wealthier parts of the city to water points (such as wells and boreholes) and vendors selling water in informal settlements. Humanitarian interventions in an emergency, where water supply is disrupted, should ensure that they do not distort the long-term market for formal water supply.

• Water systems need technical know-how to work. This may be in short supply immediately after a disaster, and restoring water systems may take time. Effort is required to support local engineers (often including employees from the water and wastewater service provider/utility) and other technical specialists.

• Water quality can be an issue at any step from source through to consumption, and hence needs to be factored in from production to treatment, transmission, storage and distribution. Household-level treatment may need to be considered in some cases.

• There may be issues regarding legal constraints around providing permanent water supply to temporary shelters.

• The provision of drinking water using disposable plastic bottles can create a solid waste management concern. Currently there is little recognition of or responsibility for addressing this issue among implementing agencies.

51 ALNAP and RedR UK, Urban WASH in Emergencies.
Chapter 4

Sectoral responses

Wastewater can be a problem. The focus in areas where there is a wastewater collection and treatment system is to ensure that the network remains intact and that lifting stations continue to function properly so that wastewater is safely evacuated from a built-up, populated area.

Sewage systems that utilise wastewater collection and treatment systems can be a significant problem. In urban settings, humanitarian actors often focus on water supply and leave wastewater as a distant priority. In Aleppo during the Syrian conflict, the wastewater treatment plant was damaged and looted to the extent that there was nothing humanitarian organisations supporting the local service provider could do to bring it back online. This can pose a health risk for the population, for the general environment and for groundwater.

In repairing water systems, agencies need to identify where their best efforts lie. This almost certainly involves partnering with the private sector and/or public sector institutions (see the example from Gaza in Box 4.11). It also means advocating for supply to reach less developed parts of the city, so that repairs do not focus only on wealthier areas or areas experiencing rapid influxes of IDPs and refugees. The repair of city water supplies provides an important advocacy opportunity for extending the reach of water supply to poorer settlements, and relief activities can be complemented by work to strengthen the preparedness and capacity of official service providers to respond to crises in the future.


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Box 4.11 Wastewater evacuation in Gaza

‘In 2014, the hostilities in the Gaza Strip at times required urgent action to ensure the safe evacuation of wastewater from built-up areas. In coordination with the Coastal Municipal Water Utility (CMWU), the ICRC supported the repair of wastewater infrastructure that was damaged. These actions included repairs successfully carried out on a sewage pumping station, a wastewater treatment plant, sections of the network, both inlet and outlet pipes to lagoons, as well as an effluent pressure pipeline. These quick repairs carried out by a construction contractor helped to prevent untreated wastewater from flooding into the streets and nearby homes, seeping into the aquifer, or flowing off to the sea. Ultimately, these actions aim to safeguard public health.’


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4.4.4 Water in protracted conflict situations
In protracted conflict settings, one aim is to reduce the rate of service decline, such as water supply, to avert a public health crisis and mitigate displacement (or at least that displacement that is in part caused by a lack of access to essential services). For example, programmes may seek to ensure that municipal service providers have the spare parts and consumables they need, which year after year is logistically heavy in protracted settings (for instance, consumables for water treatment such as aluminium sulphate, sodium hypochlorite and silica sand).

Repair and rehabilitation work can continue during active conflict. For example, in coordination with the local service provider, ICRC arranged for a construction company to carry out repairs to the main water transmission pipeline to the Syrian city of Hama, home to 1.3 million people. While the assessment and repairs took a week, negotiation to ensure safe access took three. In the words of one ICRC water specialist, ‘we often say that emergency response is less about the technical side and the ability of the contractors to perform the work, and more about the politics and negotiations that are necessary to ensure that you have safe access’.


4.4.5 Sanitation
Sanitation here refers to ‘the provision of facilities and services for the safe management of human excreta from the toilet to containment and storage and treatment onsite or conveyance, treatment and eventual safe end use or disposal’. Typical stages from household sources (toilets, and potentially including grey water from sinks and drains at household level if there is no storm water system in place) to treatment and potential reuse include collection, transmission, treatment and discharge. Sanitation in urban areas is varied, ranging from the use of water-borne sewage systems to cesspits, latrines and open defecation. In long-term emergencies, access to quality services may be diminished, while people caught up in rapid-onset disasters may find themselves without access to sanitation (see Section 4.8 on health).


54 WHO, ‘Sanitation’ (www.who.int/topics/sanitation/en/).
Box 4.12 Sanitation and a cholera outbreak in Zambia

A prolonged cholera outbreak in Lusaka, Zambia, from December 2017 to March 2018 originated in peri-urban areas of the city, where many residents access water using unregulated boreholes or shallow wells located close to poorly constructed pit latrines that leach their contents into a high water table. The response to the outbreak included public and private sector service providers. For example, the Lusaka Water and Sewerage Company (LWSC) identified the pit latrines that were in danger of flooding in two peri-urban areas, and subsidised existing faecal sludge management (FSM) businesses, within community-based WASH organisations known as Water Trusts, to empty them safely. The outbreak did not lead to private sanitation service providers curtailing their operations to the same extent as during previous outbreaks, and encouraged greater engagement of public stakeholders such as Lusaka City Council and LWSC with FSM and sanitation provision in lower-income areas of the city. Post-payment for pit emptying services continued throughout, albeit at subsidised prices.


One review of practice notes that ‘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’. For example, following the 2010 earthquake in Haiti ‘excreta disposal was a major problem. Pit latrines and elevated latrines (both used as rudimentary cesspits) and portable toilets were used but desludging proved difficult because of the limited number of desludging vehicles, traffic congestion, and the cost’. A DFID evidence review paper found that ‘There is good evidence that for urban on-site sanitation systems to be effective they must allow for pit-emptying, or at least replacement of the pit, and the safe disposal of the pit contents where necessary’.

Another review of good practice in urban sanitation in emergencies found the following:

- WASH interventions should prioritise both the immediate collection of human waste and identification of final locations of disposal.
- During flooding, agencies should also prioritise the prevention of the overflow of raw sewage from pits, septic tanks and water borne sewage networks.

55 ALNAP and RedR UK, Urban WASH in Emergencies.


• For excreta disposal, digging pits may not be feasible, given space, legal and ground constraints.

• Where pits are used, the building of urinals and urine diversion toilets is good practice to reduce pit-filling times. Other options include building raised latrines (used for example by Oxfam in Haiti after the 2010 earthquake on sites where space was limited, digging was impossible or landowners refused permission to dig). Other useful approaches include compost toilets, biodegradable bags and urine diversion toilets (where biodegradable bags are used, it is important to put an organised collection system in place).

• Chemical toilets have a high maintenance cost and limited storage capacity. They may also be in short supply following an emergency.

• Final disposal of faecal matter can be a difficult and contentious issue. Environmentally suitable locations should be identified as part of government contingency planning. Where this has not been done, agencies should prioritise identification of suitable locations.

• For recovery actions, agencies need to work closely with water and sanitation/sewage departments, but with adequate agency coordination (through the WASH cluster or similar).

• Care should be taken concerning permanent system repair, which may be outside the scope and experience of agencies and which may also inadvertently not be focusing on more vulnerable locations such as informal settlements which usually have no such facilities.\textsuperscript{58}

Protection concerns in relation to sanitation are also an issue. WHO’s 2018 guidelines on sanitation and health note that ‘Public and shared sanitation in urban settlements has been linked to stress from lack of cleanliness, anxiety and withholding relief due to long lines, women’s and girls’ fear of harassment from men and boys, and lack of privacy or safety’.\textsuperscript{59}

Protection is discussed further in Section 4.7.

4.4.6 Hygiene

Hygiene here refers primarily to community engagement and participation, hygiene kit distribution and health data monitoring, as well as information, education and communication (IEC) to promote behaviour change. A review of good practice regarding urban hygiene found that:


• In Haiti following the 2010 earthquake, Oxfam disseminated hygiene messages through mothers’ clubs, schools and children’s clubs, as well as household visits and poster campaigns. Social media and mobile phones were also used.

• A simpler but still effective way of encouraging people to use sanitation facilities is to ensure that they are clean and well maintained, either by the community or by paid attendants. These attendants can also communicate hygiene messages.

• Good hygiene practices in dense urban areas are critical to reduce disease incidences. Oxfam identifies first-response activities in dense areas as the minimising of high-risk practices such as indiscriminate open defecation, “flying toilets” (where excreta are thrown into public spaces in plastic bags) and the reduction of transmission of faecal–oral disease.60

In addition:

• Concerning urban hygiene promotion, community consultation is key, which can be challenging in cities, where people have a wide range of social, economic and cultural backgrounds, making it difficult to tailor specific messages.

• In relation to vector control, people affected by emergencies and conflicts are vulnerable to vector-borne diseases through greater exposure to bites and contact through poor shelter, lack of sanitation, stagnant water and poor nutrition, and by injuries that can become infected. In Syria, a reported increase of leishmaniasis was caused by sand flies in building debris.61

4.4.7 Cash and WASH

As with other sectors, the use of cash in relation to WASH is increasingly resonating in urban emergencies. This reflects in part a wider recognition that WASH actors may need to take on more of an enabling approach than a provider role given the complexity of cities and of urban response.62 A 2016 Global WASH Cluster position paper on cash and markets concluded that cash ‘may be effective in overcoming financial barriers to accessing WASH goods and services when combined with complementary approaches in contexts with an enabling environment’.63

60 Sanderson and Knox Clarke, Responding to Urban Disasters, p. 15.


Box 4.13 Refugee water access in Jordan

‘An integrated needs assessment carried out by Oxfam GB in March 2013 found that, while the majority of refugees in host communities can access water through the municipal supply system, the cheapest source of water, this is intermittent and unreliable, and many are forced to buy water from private vendors in order to meet their needs.

‘To develop [a further] understanding a market assessment was undertaken in Oxfam’s operational areas (the urban areas of Balqa and Zarqa Governorates, and in the informal tented settlements around factories and agricultural land) based on the Emergency Market Mapping and Analysis (EMMA) approach [see Section 3.3].

‘Given the deficiencies of the municipal supply, private wells are a critical part of the water market system. These wells, which are privately owned and operated, sell water to the Water Authority, to supplement supplies in the piped network, and to businesses, water transporters (water trucks) and individual households.

‘Refugees may often not have access to truck operators, and rely on their neighbours and landlords to make contact with them … Refugees with limited contact with their neighbours struggle to set up these types of arrangements. Even if these households manage to access truck operators, they may not have the capacity to store all the water that they have paid for.

‘In summary, the market assessment established that access to water for poor households (in particular refugees) is primarily determined by purchasing power and the availability of adequate water storage capacity within the household. More fragmented social connections also restrict access to the water trucking market.’

The market analysis enabled a range of response options for immediate implementation.

‘As a result of the analysis the following activities were identified:

- ‘Increasing access to drinking water through water vouchers linked to local water vendors: Water vouchers (commodity vouchers) for bottled drinking water are distributed to beneficiaries, to be redeemed from contracted vendors.
- ‘Increase access to drinking water by providing household water filters: The distribution of water filters to individual households is a viable solution. Filters are available on the local market, and beneficiaries have requested them.
- ‘Increase households’ water storage capacity: The extra [piped] water … allows all users to fill a minimum [water storage] tank … and so the aim is to increase the storage capacity of households possessing less than this.'
Box 4.13 (continued)

‘The market assessment confirmed that, for the urban areas of Balqa and Zarqa, the market system is vital for water access. In water-scarce and densely populated areas such as these there are few viable options for WASH programming. Critically, the market assessment was able to analyse the functionality, capacity and scope for expansion of the market system, making possible a range of short- and longer-term responses to help refugees to access water in an equitable manner and at a fair price, without stretching the market beyond its capacity.’

For the full article, see T. Wildman and C. Brady, ‘Can Jordan’s Water Market Support the Syrian Refugee Influx?’, Humanitarian Exchange 59, November 2013 (https://odihpn.org/magazine/can-jordan%C2%92s-water-market-support-the-syrian-refugee-influx/).

Table 4.3 Comparing cash and hygiene kits in Jordan and Haiti

<table>
<thead>
<tr>
<th>Country</th>
<th>Benefits of CBI over hygiene kits</th>
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<tbody>
<tr>
<td>Jordan</td>
<td>• Freedom of choice to refugees in selecting which items they need.</td>
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<tr>
<td></td>
<td>• More convenient than queuing to receive non-food items (NFIs).</td>
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<td></td>
<td>• Satisfaction levels among beneficiaries were much higher.</td>
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<td></td>
<td>• Saved time for the team and therefore more cost effective than providing the kits directly.</td>
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<td></td>
<td>• Increased monthly revenues of traders by 8,000 JOD ($11,000).</td>
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<tr>
<td></td>
<td>• Helped integration of refugees in the host community, as they were contributing to the local economy.</td>
</tr>
<tr>
<td>Haiti</td>
<td>• Freedom of choice to IDPs in selecting which items they need.</td>
</tr>
<tr>
<td></td>
<td>• Reduced security risks associated with mass distributions.</td>
</tr>
</tbody>
</table>

Source: UNHCR, Cash Based Interventions for WASH Programmes in Refugee Settings, undated, p. 9.

A review by UNHCR of cash programmes in refugee situations in 23 countries found that cash ‘can successfully support activities aiming to improve sanitation at the household level’.64 Cash-based interventions (CBIs) ‘have mostly been used to increase access to drinking water through a variety of water vendors, as well as to improve access to kits for water storage and treatment, repair and recover the piped water network and ensure maintenance of water supply.’65


65 Ibid., p. 6.
Table 4.3 shows some of the benefits of CBIs over hygiene kits in urban areas of Jordan and Haiti. The same review identified the following lessons in enacting cash in WASH interventions:

- Understanding WASH market systems is important for programme effectiveness.
- Cash can help market actors overcome supply-side barriers in WASH markets.
- The perceived risks of cash in relation to vouchers are not backed up by evidence (for instance that cash may be used for non-WASH activities).
- Cash can complement rather than replace other forms of support, such as technical assistance.

As in other sectors, cash works only where markets are functioning, which in turn requires market analysis. Figure 4.2, from the UNHCR study cited above, illustrates some of the key considerations when using cash in WASH. In summary, WASH is a vast area, including a wide range of actors, as well as expensive infrastructure. What actions an agency takes depends largely on its mandate, on whether engagement is short-, medium- or long-term, and to what degree efforts are intended to address systemic problems as well as immediate needs.

Large-scale infrastructure reconstruction efforts fall outside of the mandate, budget and capacity of humanitarian actors. However, the repair and rehabilitation of specific assets within a system may not. In protracted crises, a key activity is to ensure that systems do not fail. While there is a sense of urgency to address immediate needs such as the destruction of or damage to infrastructure, addressing underlying needs such as a lack of proper operation and maintenance is more difficult because it requires a preventative maintenance approach.

Useful resources


The sustainable sanitation alliance (SuSanA) hosts a large library on urban sanitation: see https://www.susana.org/en/.

UNICEF’s online library of WASH-related issues can be found at www.unicef.org/wash/3942_documents.html.

Sanivation focuses on WASH issues in East Africa: see www.sanivation.com/.

Figure 4.2 Key considerations when using cash in WASH

- Understand who does not have access to water and why.
- Understand who is not using good sanitation or hygiene practices and why, to decide the appropriate response. Knowledge, Attitudes and Practices (KAP) surveys are useful.
- Interview women and people with specific needs to understand their preferences for sanitation and hygiene items, if these items can be found on the local market, or if they prefer in-kind assistance.
- What markets require special assessment tools? Assess water quality of local sources and providers.

- CBIs to increase access to WASH goods and services (water, sanitation and hygiene kits, household water treatment, materials for WASH infrastructure, etc.).
- Employment schemes or incentives can be used to rehabilitate water storage facilities, or construct latrines.
- Temporary measures such as water vouchers in lieu of water trucking, until a more sustainable source of water can be found.

- Monitor prices and supply of basic WASH items, water, etc.
- Monitor water quality both at point of sale/exchange and at household level.

- For water vouchers, contact vendors who meet quality standards and a capacity assessment.
- Focus group discussions with women to determine appropriate WASH items and establish adequate voucher or cash transfer value.
- Employment schemes for sanitary and waste disposal (e.g. latrines, environmental management for vector control) must be accompanied by technical advice and support.
- Complementary programmes such as IEC on WASH are essential where KAP surveys reveal a need.
- Shortages and price inflation can be mitigated by supply-side interventions (e.g. rehabilitating public water sources, and unconditional grants reducing the demand on single items).
- SMS messaging with WASH messages.

Source: UNHCR, Cash Based Interventions for WASH Programmes in Refugee Settings, p. 20.