1. UNHCR WASH Principles

All refugee WASH programmes should be designed around the principles of: saving lives; a timely and adequate response; protection and safety of beneficiaries; participation and consultation; universal and equitable access; capacity building; partnership and institutional strengthening; appropriate technology and cost effectiveness; contingency planning; and integrated programming with a focus on sustainable solutions and clear exit strategies.

Introduction

UNHCR's principles for the provision of WASH services in refugee settings

1. This chapter describes the guiding principles that UNHCR and WASH actors should take into consideration when designing WASH programmes. The guiding principles include:
   - A focus on saving lives
   - Ensuring the safety and protection of beneficiaries
   - Working with service providers and regulatory authorities
   - Participation, consultation and respect of cultural norms
   - Universal access to all groups
   - Equitable access
   - Appropriate technology and cost effectiveness
   - Exit strategies, transitions and handovers
   - Capacity building and partnership
   - Institutional strengthening
   - A comprehensive approach
   - Monitoring and accountability
   - Contingency planning
   - Health and safety of staff
   - Protection of the environment
2. These principles are essential to create conditions where refugees can live with without risk of disease, in dignity, and to ensure that there are cost-effective and sustainable solutions in place in the long-term. This is regardless of the phase of the emergency or whether refugees are living in camps, collective centres, spontaneous unplanned camps, with host families, in rented accommodation, or they are occupying land or buildings.

Saving lives

The importance of immediate WASH interventions

3. In all acute emergencies or settings where lives of refugees are at risk, resources must be mobilised immediately to carry out the following WASH interventions (*in priority order*).
   - Ensure immediate access to survival quantities of safe drinking water during transit and on arrival at a refugee setting (15 litres/person/day).
   - Ensure immediate establishment of gender separated toilets in transit facilities and on arrival at a refugee setting (1 toilet for every 50 persons).
   - Ensure immediate clean-up of excreta and pathogenic or hazardous wastes within the refugee setting.
   - Ensure immediate dissemination of key hygiene messages and distribution of essential WASH non-food items (in particular soap, water containers, and menstrual management materials) during transit and on arrival at a refugee setting (all families have received kits and messages within 72 hours).
   - Ensure immediate identification and control of high-risk disease vector populations within the refugee setting.
   - Ensure that WASH needs are evaluated as part of a multisectoral assessment within 72 hours of an acute refugee emergency.

4. The general aim of WASH agencies should be to initially meet SPHERE emergency standards moving rapidly on to adopt UNHCR standards. More information regarding each of the above interventions (water supply, excreta management, hygiene promotion, disease vector control, and rapid multisectoral assessments) can be found in the relevant chapters of this Manual.

The provision of basic WASH services from the outset of the emergency is better than delayed provision of improved systems.

The problem with scaling up quickly

5. UNHCR has defined WASH coverage targets for both the 'emergency' and the 'post-emergency phases' (definitions of these phases can be found on **pages 6 and 8**). However, it is a common problem during refugee emergency responses that WASH programmes fail to scale-up quickly enough to meet the overwhelming WASH needs.
6. During acute refugee emergencies, WASH agencies should not only track core WASH indicators but also the rate of change of these core WASH indicators (for example the quantity of water distributed per day, the number of hygiene kits distributed per day, the number of toilets constructed per day) to clearly show that the UNHCR target values will be met on-time. If the rates show that the UNHCR target will not be met on-time, additional financial, material, and human resources must be allocated immediately. Changes in WASH implementation strategy may also be required for example: the use of mechanical excavators, imported skilled labour, or mass production of WASH infrastructure (e.g. bathing or toilet superstructures) in a dedicated production-line type facility. Programmes that fail to track implementation rates often fail to realize their WASH programmes are failing before it is too late. UNHCR and WASH agencies must ensure that tracking is given a priority in all emergency settings.

The importance of adequate contingency planning

7. The ability to provide a timely and appropriate response is often directly proportional to the amount of effort that has been set aside to WASH contingency planning. Every UNHCR mission should prepare a country level and site level WASH contingency plan that is based around historical and probable WASH needs. The plan should include: an analysis of the risks; probable scenarios; likely impacts; WASH stockpiling arrangements; personnel and equipment stand-by arrangements; coordination arrangements; links to early warning systems; and mitigative activities related to building preparedness resilience. The WASH contingency plan should be included in every refugee site's WASH plan/strategy document describing the detailed contingency arrangements for water supply, excreta management, solid waste management, hygiene promotion and disease vector control.


CAUTION
CAUTION
CAUTION

8. Contingency planning should also include preparedness activities. During an acute WASH emergency response, there is usually very little time available to compare WASH agency rapid assessment materials and ensure that there is a common tool and approach that is widely supported. The effectiveness of the WASH inter-agency rapid assessment can be dramatically improved by finalizing agreed tools and methodologies during the contingency planning process.
9. Similarly, during a WASH emergency response, there may be little time to coordinate the preparation and approval of agreed inter-agency WASH hygiene promotion key messages and approaches. The effectiveness of the emergency response can be dramatically improved by finalizing these messages and methodologies before an emergency takes place.

Safety and protection of refugees

10. UNHCR is mandated to protect and safeguard refugee populations and every necessary step must be taken to assure that water collection points, toilet facilities, bathing areas, laundering areas and waste collection points minimises the threats to users, especially women and girls, day and night. Lack of security, or dignity, when using facilities can lead to anxiety concerning their use. Inappropriately designed or located WASH facilities can lead to users putting themselves at risk of Gender Based Violence (GBV) for example facilities may not offer enough security or women and girls may put themselves at further risk by defecating outside of the camp environment.

The importance of refugee participation when locating WASH facilities

11. All WASH facilities should be designed and located in discussion with the refugee communities, in particularly women and girls. One practical way to involve men, women and children in the design is to build a sample facility and invite groups to come and critique it. Communal WASH facilities must be located in areas that are secure in discussion with the refugee population, in particular women and girls. Security should be the primary selection criteria when choosing a location.

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Guidelines for WASH facility privacy and security measures

12. Every communal WASH facility should include privacy and security measures designed in collaboration with the refugee population. These include: siting and design in collaboration with the community; a privacy screen around the facility; secure lockable doors; night time illumination to 100 lumens per square metre; and the possible use of night-time community patrols. Full technical specifications for privacy screens,

lockable doors and night time illumination can be found as part of the **UNHCR standard communal latrine** design.

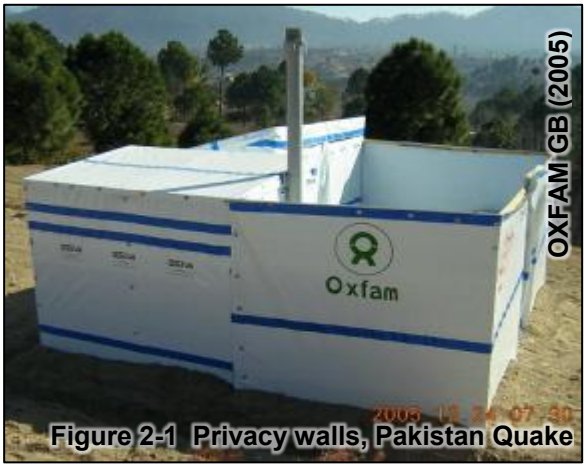

Figure 2-1 Privacy walls, Pakistan Quake

Figure 2-2 External toilet lighting, Zaatari

Use of night-time community patrols

13. In some cases it may be beneficial to engage community guards or patrols to ensure WASH facilities are safe during the night. The modality of this service should ideally be defined and organised by the community themselves.

The importance of rapid transition to household or shared WASH facilities

14. Due to the security risks associated with public toilet and bathing facilities, WASH programmes should start or transition as quickly as possible into the construction of household facilities shared between families. This approach is essential if it is clear that the timeframe of the humanitarian situation will be longer than six months, and especially if it is clearly the cultural preference. Transcripts from focus group discussions and key informant interviews related to the implementation of household toilet and bathing facilities, or willingness to share facilities, should be included in the site WASH strategy/plan. If a WASH programme has decided to build blocks of public or communal toilets and showers, rather than the preferred strategy of moving directly to shared or individual units, the reasons justifying this decision must be fully explained in the site WASH strategy/plan.

15. If a decision has been taken to build communal WASH facilities then WASH blocks must serve no more than 1 community (16 families) and facilities should be arranged with the users for their exclusive use. All communal toilet and bathing facilities should be fully phased out within one year. Within one year all families should have their own private facilities - with public toilet facilities remaining in public areas such as schools, clinics, and market places.

UNHCR modular camp planning

Module	Consisting of	No. persons
1 family	1 family	4-6 people
1 community	16 families	80 people
1 block	16 communities	1,250 people
1 sector	4 blocks	5,000 people
1 camp	4 sectors	20,000 people

Source: UNHCR (2007) *'Handbook for emergencies – third edition'*. UNHCR, Geneva.

Establishment of a functioning feedback mechanism

16. All refugee settings should have a functioning anonymous WASH feedback mechanism not only to report problems of poor WASH service provision but also to communicate safety and protection issues. All refugees should be aware that the complaints mechanism exists and how to access it. The senior WASH programme staff must take personal responsibility for reviewing feedback and ensuring active follow-up and rectification. A description of the feedback mechanism, statistics related to the number and type of feedback that have been received, and the rate at which they have been resolved, should be included in the site WASH plan/strategy.

Ensuring the physical safety of users

17. UNHCR and WASH actors must ensure that all WASH service protect the physical safety of users (in particular children, and infants, the elderly and refugees with disabilities) and are free from trip, crush, pinch, pierce, cut, splinter, burn and drowning risks. Great care must be taken to ensure that the all users (in particularly children and infants) are adequately protected from falling into wells, toilet pits or waste pits. Medical and hazardous waste management areas must be adequately secured to prevent risks to children or scavengers. If hot water is provided for bathing or laundering (in cold climates) there should be no risk of scolding from excessive water temperatures (hot water should not be greater than 50°C). Water boiling apparatus must be secure, safe and out of the reach of children. An up to date checklist assessing potential protection and safety risks (**see annex**) must be completed for each site and a copy should be included in the site WASH plan.

Documenting the protection and safety strategy and activities

18. A clear strategy of how the protection and safety of refugees is being addressed in the short, medium and long term should be included in the site WASH strategy/plan in addition to FGD notes concerning safety and an up to date WASH safety and security checklist (**see template in annex**).

Participation in planning and running WASH services

19. Refugee WASH programmes can involve a whole range of stakeholders including local public and private service providers, local municipal, regulatory, environment and public health authorities, host and refugee populations and community based organisations (e.g. recycling groups or waste scavengers). WASH programmes can quickly go wrong if these stakeholders are not involved in key decisions concerning how the services will function. All WASH programmes must include a strong element of community mobilisation and empowerment. As much as possible, recognized and legitimate refugee and local community leaders should have final decision concerning aspects of the WASH activities within their jurisdiction.

Working with national WASH service providers and regulatory authorities

20. UNHCR and WASH actors should ensure, where possible, that WASH programmes in refugee settings are developed and run in full collaboration with the local water, waste, hygiene, and vector control service providers and regulatory authorities, extending existing services to refugees where possible. As refugee settings can last for decades, with the average length of time around 17 years, it is essential that national WASH organisations are fully engaged. This is particularly important during urban displacement scenarios where the refugee population may present an additional burden on municipal WASH service providers.
21. National WASH service providers and regulatory authorities might be reluctant to support refugee WASH services in distant or isolated settings away from the general population. Technical support, capacity building, material support and funding may be required to ensure that national WASH organisations have the resources to support refugee WASH programming. Direct support and capacity building initiatives should be planned as early as possible.
22. UNHCR and WASH actors should ensure that refugee WASH standards for each response phase are set in agreement with national government authorities and WASH actors, taking into account SPHERE standards, UNHCR standards, and any national guidelines and standards related to water abstraction, water quality, excreta management, solid waste management, wastewater disposal, hygiene promotion, and disease vector control. During emergency responses it may be possible to seek temporary relaxation of national WASH standards. During the post-emergency phases, WASH service provision should adhere to national government approved designs, standards, sanitary codes, regulations and quality standards. If alternative designs or approaches are being promoted, then it is essential that the appropriate national government ministries and bodies have approved the technology and approach.

Consultation, participation and cultural norms.

23. UNHCR and WASH actors should ensure that all WASH programmes and infrastructure are designed, developed and run in full participation with the refugee population taking into account local preferences and cultural norms. One practical way to involve men, women and children in the design of WASH services is to build a sample facility and invite groups to come and critique it.
24. Users, in particularly women and refugees with special needs, should be involved in all aspects from the design and siting of WASH service areas to the frequency and quality of services. If users are not involved there is a risk of public opposition to the siting or type of WASH services that are proposed. In many contexts, WASH related activities, in particular excreta management,

menstrual hygiene management, and solid waste management, have many cultural nuances and it is essential to understand how best to work with the population when it comes to the more complex behavioural aspects. In all cases it is essential to understand how WASH activities were undertaken in the refugee population's place of origin and what they feel are the best solutions for the current context. If the refugee population is not involved in the planning of services there is nothing to stop them simply avoiding, stealing, or misusing WASH services and infrastructure.

25. Refugees should be encouraged to creatively personalize or customize the design of WASH facilities. Being able to add relatively inexpensive details such as paint, mirrors, clothes hooks or shelves in bathing cubicles, somewhere to put a bar of soap (instead of on the floor) can not only create a sense of ownership but can also provide a great deal of dignity to users. Notes from consultative sessions and an up to date plan showing how the needs and preferences of the refugee population are being met should be included in the site WASH plan.

26. Where possible, refugee WASH programmes should have active gender-balanced, representative, and democratically elected water, sanitation and hygiene committees. The size and composition of the committee should be adapted to the context but may include sectoral focal points (water, excreta, solid waste, hygiene promotion, disease vector control) in addition to positions related to gender and protection, universal access, WASH services in marketplaces, or WASH in schools. During the post-emergency phases, the WASH committee may be supported to establish their own WASH related Community Based Organisation (CBO) or to write their own legislation and sanitary codes for the refugee setting (see **section 1.80**). An update of the activities of the WASH committee, in addition to their current action plan, should be included in the site WASH plan.

27. The refugee population should be empowered to plan and manage their own WASH services as early as possible. Programmes should aim to strengthen capacities and resilience over time to the point where the refugee population is fully able to manage their own WASH services with limited external assistance.

Use of group meetings and focus group discussions

28. Group meetings can be effective in discussing aspects of the WASH programme with the refugee population, i.e. what is proposed, how the systems will operate, and why the interventions are important. Such meetings should give the refugee community an opportunity to question what is being proposed and steer decisions that are being made. It is important that every effort is made to include as many of their views as possible. Group meetings can be effective in discussion general information concerning the WASH programme, but it is typical that some sections of the community


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will not participate in these meetings and alternative means of discussing programme design should be sought.

29. Discussion concerning WASH related cultural norms, taboos and concerns related to safety and security, in addition to management of excreta, anal cleansing materials, or women's menstrual hygiene materials, is usually better achieved on a one-to-one basis or within a very small focus group (see **section 9.26** for general guidance for conducting focus groups).

Selecting the location of water points and communal WASH services

30. WASH services for camp based refugee populations should be planned using the community, block, and sector model (see **section 1.15**) where WASH service areas are organised and allocated on a per community basis (defined as 16 families or 80 persons under the UNHCR model). Keeping the number of families small creates an environment where users are known to each other and are more likely to take greater care of facilities.

Creating ownership through the use of restricted communal space

31. The UNHCR Handbook for Emergencies (see below) states that grid based layouts for WASH services must be avoided. Instead, UNHCR and WASH actors should locate water points and WASH service areas in such a way that they create communal ownership. This can be facilitated by working with site planners to establish layouts such as hollow square, staggered square, communal road, and loops and cul-de-sac models.

> ***"Every effort should be made to avoid a rigid grid design which does not account for community layout and interaction and presents difficulties in identifying proper community-based locations for services such as latrines, water points, showers etc. Grid design does not promote ownership of services, which is crucial for proper usage, cleaning and maintenance."***
>
> **UNHCR Handbook for Emergencies – 3rd Edition (2007).**

32. The use of restricted communal space has not only found to beneficial in enabling communal ownership of WASH facilities but has also been found to have strong social and psychological benefits, providing visual relief, opportunity for relaxation, a place for casual contacts, green zones, shading for water points, and a safe, secure and healthy environment for children.

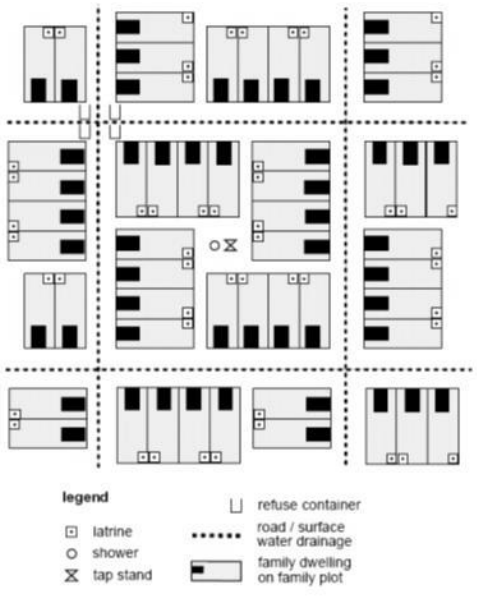

Figure 2-3 Hollow square site model

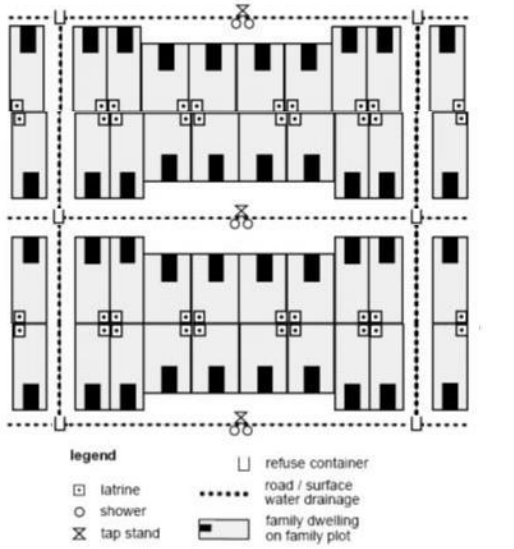

Figure 2-4 Community road site model

Empowering the refugee population from the start

33. The refugee population should clearly understand that they are not just passive recipients of humanitarian aid but they have the rights, capacity and means to manage and dictate the direction of their daily affairs, including managing their own WASH services. The degree to which the refugee population can be empowered to undertake their own WASH services depends upon the phase, the context and the capacity of local actors. In most settings where there are strong municipal waste services, or private sector waste management companies, community leaders should be empowered to work directly with these authorities. In some contexts where local service providers or local authorities are weak or non-existent, UNHCR may consider building capacity of WASH to a community based organisation (CBO) established from representatives of the refugee population to manage the daily running of WASH services.

Universal access

The importance of universal access to WASH facilities

34. UNHCR and WASH actors must ensure that all WASH infrastructure including toilets, water collection points, bathing, laundering and handwashing facilities, solid waste collection points, waste containers and recycling facilities can be accessed and used comfortably by all in particularly children, the elderly, pregnant women, the infirm, and persons with disability and mobility issues. In situations where water is rationed, distribution must be planned to ensure the needs of vulnerable groups. Hygiene promotion materials must ensure accessibility to all (in particular those who are blind, deaf, or have eyesight or hearing difficulties).

Collecting data on vulnerable users

35. The World Health Organisation estimates that between 4% and 10% of any population has some form of disability; however in refugee settings (particularly conflict settings) these figures are likely to be higher. In addition refugee settings generally have a significantly higher proportion of women of reproductive age, small children and elderly persons - who are all likely to benefit greatly from WASH universal access features. In all refugee settings, data should be collected so that facilities can be constructed as near to vulnerable users as possible. A summary of the types and rates of disability present in the setting, in addition to short, medium and long-term strategies and approaches for vulnerable groups

should be included in the site WASH plan/strategy.

Involving vulnerable users in the design of WASH services

36. UNHCR and WASH actors should ensure that vulnerable groups including pregnant women, the elderly and the disabled have an active voice in decisions concerning facilities designed for their use. Vulnerable users generally have a clear idea of their needs and are usually very willing to participate.

Helping users with reduced mobility get to WASH facilities

37. WASH facilities are of no use if users with limited mobility cannot easily access them. Paths may need landscaping to facilitate access by the elderly, pregnant women or users with physical handicaps.

Figure 2-5 Access ramp with curb

38. Once the user arrives at the WASH facility it may be necessary to install steps or a length of ramp for final access. The decision to install access ramps outside WASH facilities should be based on an assessment of the disabled users in the setting. In contexts where there are no wheelchairs it may be easier to install gentle steps with a firm handrail than ramps. If ramps are installed their slopes must meet global regulations with an inclination of no greater than 1:15 and length of no longer than 5 metres. In addition, access ramps must have a curbed edge of at least 3cm to prevent wheelchair wheels falling over the ramp edge. At the end of the ramp there should be a flat and level space of at least 1.5m diameter to allow a wheelchair to stop, turn and safely enter the WASH facilities without rolling back. Access ramps should also have a grab rail to aid users that are unsteady on their feet.

39. All floor surfaces inside and outside should be even and non-slip. The decision to install access ramps outside WASH facilities should be based on an assessment of the disabled users in the setting. In contexts where wheelchairs are completely impractical it is often better to install gentle steps with a firm handrail than waste time and resources on ramps that will never be used.

Helping users with reduced mobility get into WASH facilities

40. Once the user has reached the WASH facilities they need to be able to get safely inside. If inward opening doors are used extra space must be used to allow the door to fully open. If outward opening doors are used there must be sufficient space to avoid the risk hitting users waiting outside the facility. A handrail next to the outside of the door is useful for users who are unsteady on their feet opening the door. A rail or rope attached to the inside can be helpful to pull the door closed once inside.

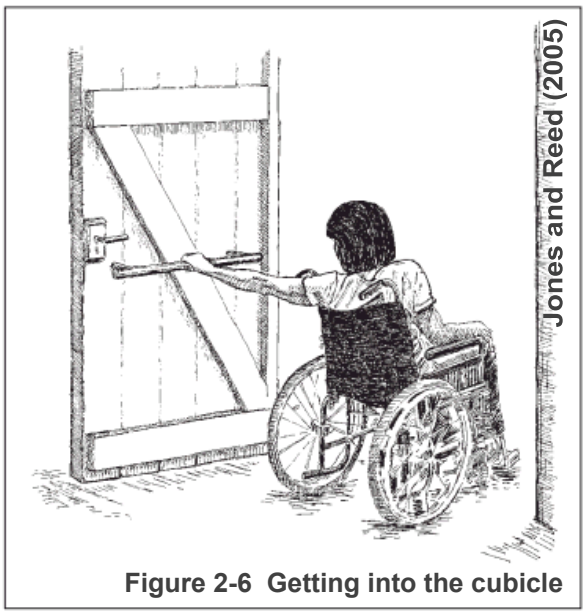

Figure 2-6 Getting into the cubicle

Helping users with reduced mobility move around inside WASH facilities

41. All WASH facility door widths should be at least 90cm wide to allow passage of a wheelchair. All toilet and shower cubicles should have a free space (not including door clearance or fixtures) of at least 1.5 metres by 1.5 metres to allow for full wheelchair rotation. This large space also allows for a mother assisting a child or a caretaker assisting an elderly person or pregnant woman.

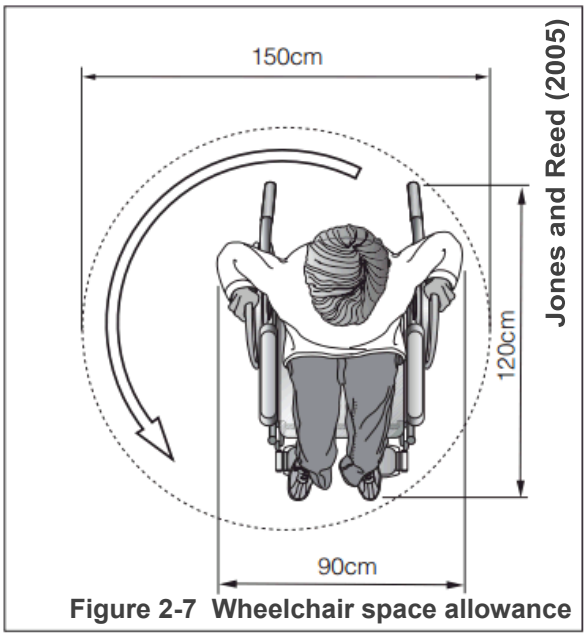

Figure 2-7 Wheelchair space allowance

42. All toilet and shower facilities should include grab rails to assist elderly, infirm, pregnant women and people with disabilities to use the facilities with security. Toilet should generally be placed in the corner of the cubicle to maximise space. Transition onto the toilet is best achieved in a sideways motion. Grab rails should be strong enough to support the full weight of an elderly or disabled user and should be positioned to facilitate transition onto the toilet.

Figure 2-8 Toilet adapted for disabled use

Figure 2-9 Toilet adapted for disabled

Provision of bed pans and commodes

43. Incontinence can be a problem affected the elderly, disabled people, postnatal women, people

who are sick, and some men, women and children who just have a problem with their urinary or faecal systems. If reaching the toilet is a problem, a bedpan or commode may be a more convenient option. The bed pan or commode will need to be regularly emptied into a toilet. Appropriate materials for incontinence paddings may be included with hygiene materials in discussion with community members.

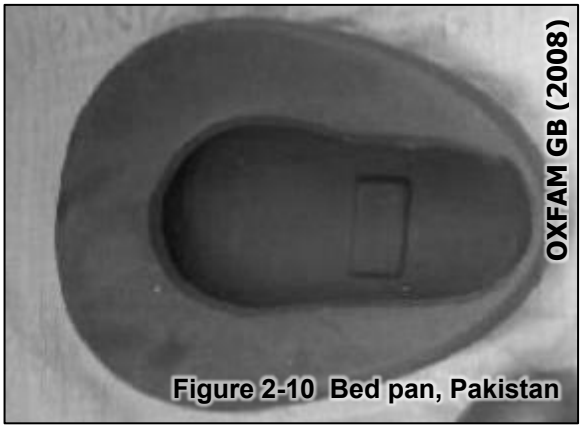

Figure 2-10 Bed pan, Pakistan

Figure 2-11 Commode, Pakistan

Universal access to water collection points and waste containers

44. Water collection points should be no higher than 0.8m from the ground so they are easily accessible to all users. Mechanisms used to abstract water (taps, handpump levers etc.) should not require excessive force and should be free from pinch, puncture, entrapment and drowning risks. Floor surfaces around the water point should be non-slip and free from standing water..

45. Waste containers should be no higher than 0.8m from the ground so they are easily accessible to all users. If lids are used to reduce vector populations, it may be necessary to install mechanisms to facilitate their opening. Floor surfaces around the waste containers should be non-slip, free from standing water and free from waste. Waste collection points should be clean, free from smells, disease vectors and with access in order to facilitate use by users with reduced mobility.

Monitoring of universal access

46. An up to date universal access assessment checklist should be completed for all refugee settings and should be included in the site WASH plan/strategy.

Equitable access

The importance of providing equitable access to WASH services to all groups

47. UNHCR and WASH actors should ensure that all social, ethnic and religious groups within the refugee setting have equitable access to water, sanitation and hygiene services. WASH monitoring mechanisms should track WASH service provision within each of the target socio-economic groups.

48. During the post-emergency phases, UNHCR and WASH actors should aim to provide a level of service in the refugee setting that meets the UNHCR minimum requirements in addition to the level of service available to the local host population and the level of service the refugee population is accustomed to in their place of origin. If the level of service in the host population is lower than the UNHCR minimum standards, then equitable WASH assistance to the host community should be considered through national WASH development agencies.

49. Short, medium and long-term target levels of service for the refugee and host settings must be clearly defined as part of consultation and coordination mechanisms between WASH stakeholders. A description of the current levels of service for each group should be routinely documented within the site WASH strategy/plan.

Child friendly facilities

Participation of children and parents in the design of WASH facilities

50. UNHCR and WASH actors should ensure that all WASH infrastructure including toilets, water collection points, bathing facilities and waste disposal facilities are designed so that they are safe to use and accessible to children. Design features to facilitate the use of children should be discussed in meetings with parents, children and representatives of the refugee community. Focus groups should be carried out with children to understand barriers to the use of WASH facilities for example fears of filth, smells, fear of the dark, or falling into the latrine pit, waste pit, or water source.

Adapting the design of WASH facilities for children

51. All WASH facilities should be adapted so they can be used comfortably and safely by children. Additional hand-washing basins, hand rails and door handles may need to be installed that can be reached by smaller children (see Box). Care should be taken so locks are at a height that children can use and they don't become locked in. The distances between toilet squat slab foot rests should be sufficient so children can use the facility comfortably and are not scared of falling inside. Urinals should be lowered so young boys can use them comfortably. Hand rails may help small children maintain their balance when squatting. Handpumps should have sufficient mechanical advantage so that excessive force is not required to obtain water.

WASH facility dimensional data for young children 3 – 5 years old

Hand-washing basin height	58cm
Toilet seat height	26cm
Maximum reach for handles	80cm

Source: Zomerplaag. J., Mooijman. A. (2004) '*Child Friendly Hygiene and Sanitation Facilities in Schools'.* IRC Netherlands.

Ensuring adequate lighting of WASH facilities for children

52. Natural light and light coloured wall paint inside WASH facilities should provide sufficient lighting

during daytime use so that children are not afraid to use them. Having sufficient natural lighting inside a toilet facility is often contradictory with the need to keep the toilet interior dark to reduce fly populations in certain types of toilets (in particular the ventilated improved pit VIP design). However, if the toilet cubicle door is lightly sprung loaded and the toilet has a well screened vent pipe, then fly infestation can still be reduced. An alternative is to use tightly fitting drop hole lids or to install a water seal system.

Figure 2-12 Colourful toilets, Haiti

Distribution of potties, buckets and trowels to parents of young children

53. Close attention should be given to the disposal of infant faeces. Practice and cultural norms concerning the collection and disposal of infant faeces should be discussed in focus groups. If appropriate, potties and trowels may be included in family hygiene kits. It may be necessary to provide parents with information about safe disposal of infant faeces and safe nappy (diaper) laundering or disposal practices.

Ensuring cleanliness

54. WASH facilities should be clean with light colours, natural light and good ventilation in order to encourage use by children. All surfaces in contact with faeces and urine and all floors should be durable and able to withstand repeated cleaning. Children may not have fully developed toilet skills and so steps should be taken by care takers to help them use facilities and toilet cleaning arrangements should be reinforced where they are used frequently by children.

Appropriate technology selection and value for money

Transitioning into efficient WASH operations as early as possible

55. Emergency phase WASH interventions, in particularly water tankering, toilet desluding, and operating and maintaining large public WASH blocks, can be very costly and inefficient. Clear strategies should be developed from the start that include transfer to more efficient and sustainable technologies. Solutions should be selected to reduce dependence on imported equipment, fuel supplies, imported chemicals, or large numbers of staff.

56. The costs involved in operating and maintaining public and communal WASH blocks in a refugee setting can be staggering (especially maintenance costs, incentives to WASH attendants, cleaning supplies, and maintenance crew costs). As the average lifetime of a refugee camp is 17 years it is essential to consider moving directly to shared toilets/bathing facilities or household facilities as early as possible, or better still from the start of the emergency.

Simple, basic, sanitary, clean, safe and functional WASH systems must be selected over complicated, high-tech solutions that are difficult and costly to operate and maintain. In almost every case, it is it simpler and more cost effective to use on-site solutions than systems that involve transportation of wastes, excreta or water.

Selecting WASH technology based on local technical and financial conditions

57. During the post-emergency phases, UNHCR and WASH actors should ensure that WASH hardware is appropriate for the local technical and financial conditions. Designs should respect the norms and traditional practices of the refugee and local population whilst respecting public health best practice. Technologies should be used that are simple enough to be operated, maintained and repaired by the refugee population with limited external assistance. In all cases, programmes should make use of locally available equipment, materials and spare parts. All consumables should be readily available in-country. Where they exist, national standards for WASH infrastructure should be respected.

58. Where required, water treatment processes should be as simple as possible (for example simple roughing or rapid sand filtration) rather than relying on imported machinery or expensive chemicals. Gravity should be used wherever possible for the movement of water or excreta over distance. If handpumps are used they should be based on models that meet national standards to ensure availability of spare parts and technicians.

59. Latrine designs should be simple, yet functional, appropriate, sanitary and safe. Simple systems must be selected over complicated, high-tech solutions that are difficult and costly to operate and maintain. In almost every case, it is it simpler and more cost effective to use on-site sanitation than systems that involve transportation of excreta. During the post-emergency phases it is better to have a simple latrine design of sufficient quality to last 10-15 years rather than a lower-cost latrine that needs replacing every two years. In many settings, alternating twin-pit urine diverting dry toilets (UDDTs) are an excellent and durable low-cost solution.

60. Careful studies should be undertaken when selecting waste collection vehicles and equipment to ensure that they are appropriate to the waste characteristics (in particular bulk density) and the geographic/roads/climatic conditions. Vector control programmes should concentrate on root causes (e.g. reduction of breeding sites or proper solid waste management) rather than the unsustainable use of imported chemicals.

61. In general, the selection of WASH hardware - for example handpumps, solid waste containers, vehicles, processing equipment, treatment and disposal technology and methods - depends

greatly upon the local context. Approaches that work well in one setting cannot necessarily be applied to another. In all cases, the approaches must build on the traditional practices and the expertise of local specialists. Justification for the selection of water supply, excreta management, solid waste management and disease vector control technology must be fully documented in the strategy part of the site WASH plan/strategy.

Evaluating WASH technologies based on total lifetime costs

62. In all cases, careful studies should be undertaken when evaluating WASH technologies and approaches to ensure total lifetime value for money for both capital and recurring costs. Technology should be selected taking into account total life-cycle costing over a period of 15-20 years (average lifespan of a refugee camp) and encouraging the use of technologies that may have higher up front capital costs, but lower long term operations and maintenance costs. The best facilities are those that are affordable, durable, easy to maintain, easy to clean, generate pride in a community, and encourage proper use. Look for options with the lowest life-cycle costs that have no compromise on quality. Despite a higher initial investment, money will be saved because the facilities will require less maintenance over time without the public health risks that are associated with poor-quality WASH infrastructure.

Selection of WASH technology with a view to eventual handover

63. All post-emergency and protracted phase water supply, excreta management and solid waste facilities should be selected with a view to eventual handover to local authorities, or refugee management. In order to be successfully handed over, technology must be selected as early as possible that can be sustainably managed by these organisations with sufficient capacity building and financial support.

Use of local materials and labour

64. Where possible, WASH infrastructure designs should take advantage of locally available construction materials to reduce costs in addition to avoiding the delays in importing materials. Locally available labour and expertise should be prioritised over imported labour and expertise.

Saving costs through the use of alternative energy

65. According to Oxfam GB (2013) it costs 10 times more to install and run a diesel powered water pumping system as opposed to an equivalent solar powered system over a period of 10 years. In addition, the cost of solar panels has dropped by over 80% during the last 10 years. Therefore, UNHCR and WASH actors should ensure that new pumping installations and rehabilitations in refugee settings prioritize lowest lifetime cost renewable energy options (solar, wind, or ram pumping) provided grid-based electricity is unavailable. This not only has the benefit of affordable


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operation and maintenance costs but additional environmental benefits.

Reducing costs through optimization of labour and vehicles

66. Small changes in how WASH staff, vehicles, and resources are managed can yield enormous cost-savings and WASH programmes must ensure that operations are optimized and efficient. Labour and vehicle costs make up a significant part of the expenditure associated with WASH service provision and small optimizations in efficiency of either the workforce, or the way vehicles are used can make big cost saving. For example, the way that hygiene promoters, street sweepers, waste collectors, WASH block cleaners, or maintenance crews are managed and monitored can significantly improve the productivity of the WASH programme. Waste collection programmes should use transfer stations to optimize vehicle operating radius. Waste collection vehicles should be operated at their rated tonnage. When selecting vehicles, the fuel consumption rating can be a more important factor than the initial purchase price.

67. UNHCR and WASH actors should ensure that the costs of each of the WASH interventions (water, excreta management, solid waste, hygiene promotion, disease vector control) are fully documented in the site WASH plan/strategy, including an analysis of trends over time. This should include at a minimum..

- The cost of water supply (cost per m3 for water abstraction, treatment and distribution up to the end user)
- The cost of excreta management (cost per person per year for excreta management services)
- The cost of solid waste management services (cost per tonne of managing each waste steam)
- The cost of hygiene promotion activities (cost per person per year for hygiene promotion interventions)
- The cost of disease vector control (cost per person per year for each disease vector control intervention)

68. These are important indicators that allow WASH actors to track trends in the cost of WASH service provision and compare the cost in one setting against another setting. In addition, they allow WASH actors to understand ways in which costs can be economised (i.e. by reducing initial capital costs or the annual costs of fuel, electricity, consumables, staffing, logistics, or administration).

Saving costs through waste reduction, recycling and reuse

69. The collection, transportation, processing, handling, reuse, treatment or final disposal of wastes is expensive and costs can add up along the whole length of the waste management chain. Typical capital costs include waste containers, waste collection vehicles, transfer station infrastructure, waste processing stations and landfill infrastructure. Typical recurring costs include vehicle parts and maintenance, transportation fuel, salaries for

collection and sorting personnel, salaries for sweepers responsible for communal areas, landfill fees and environmental monitoring costs. Every kg of waste that is diverted from the waste stream can result in a significant cost saving to the waste management operation. In all settings, make every effort to promote prevention, reduction, reuse and recycling of wastes.

70. In many settings there is commercial value in recycling of glass, metals and paper. Integrated waste management best practices should be followed which looks as waste holistically and uses the funding from waste streams that are profitable such as recycling of metal and glass, to fund waste streams that are not profitable e.g. the safe management of toxic domestic wastes.

Charging for WASH service provision in long term settings

71. In some long term refugee settings, if income generation and livelihoods are possible then UNHCR and WASH actors may consider developing equitable tariff structures for WASH services in line with national and local norms. For example in some long term refugee settings, refugee commercial enterprises that are generating significant quantities of waste above and beyond the typically domestic production rates should be charged a fee that reflects the actual cost to dispose the quantities and types of waste they produce including the difficulties experienced in handling it. These costs should be established in negation with . refugee leaders and businesses to ensure they are fair, transparent and equitably applied to all businesses. Reviews of tariffs may be undertaken on a yearly basis. Fees collected for WASH services should go back into paying the costs of service provision – ideally to the refugee CBO running the services. The main motivation for these payments should be to serve as an incentive to reduce waste and cover actual costs rather than to make a profit.

Documenting appropriate technology selection and cost reduction strategies

72. A detailed description justifying the selection of WASH technology, in addition to short, medium and long term strategies to ensure appropriate technology use and a cost effective approach, should be updated in the site WASH plan/strategy.

Capacity building of WASH stakeholders

The importance of building the capacity of WASH stakeholders

73. UNHCR has found that the average lifetime of a refugee emergency is 17 years. Therefore, as early as possible, UNHCR and WASH actors should take steps to identify suitable solutions for transferring responsibility for WASH service provision to a suitable service provider or organisation. Options to be considered depend greatly on the context but may include..

- Transition of WASH service provision to national water, sanitation and public health

authorities with/without financial support and resources.
- Transition of WASH service provision to private sector WASH service providers with financial support and resources.
- Transition of WASH service provision to a community based organisation (CBO) made up of members of the refugee community with financial support and resources.

Assessing the capacity of WASH stakeholders

74. An organisational capacity assessment tool (**see annex**) has been developed to help UNHCR and WASH actors understand what they can do to help support and build the capacity of WASH organisations that are potential candidates for running WASH operations. The tool has been designed to help obtain a snapshot of the capacity of the organisation and understand the type of interventions that can be carried out to build capacity. The tool should be used to guide a conversation (approximately an hour long) with the most senior representatives of the organisation and understand where the organisation can most benefit from additional support and strengthening.

Interventions to build the capacity of WASH stakeholders

75. Interventions to build the capacity of WASH stakeholders depends greatly on context but include..
    - Reinforcing technical skills (e.g. for design, operation, or maintenance activities).
    - Technical advisory support (e.g. for water treatment processes, management of sanitary landfills, hazardous wastes, recycling and reuse operations, maintenance and logistics operations).
    - Secondment (either secondment of experts to the organisation, or short-term secondment of staff from the organisation to centres of expertise).
    - Technical training of staff (e.g. sectoral capacity building in water, excreta management, solid waste, hygiene promotion, or disease vector control).
    - Managerial training of staff (reinforcement of managerial, administrative, logistic, or financial procedures).
    - Logistics or fleet management support.
    - Provision of additional operational resources (e.g. vehicles, tools, or WASH infrastructure such as sanitary landfills, or recycling facilities).
    - Provision of managerial resources (e.g. computers, expanded office facilities, or office equipment)
    - Provision of funds to support budget shortfalls or expansion of WASH services.

Before any WASH services are handed over, UNHCR and WASH actors should ensure that any WASH infrastructure has been upgraded so that it is cost-efficient, affordable, easily operated, maintained and repaired using locally available resources and expertise. In addition, UNHCR and WASH actors should ensure that

the technical, managerial, financial and logistical capacity of the potential organisation is sufficient to take on responsibility for running the WASH services. Any interventions to transfer WASH service provision should be carried out slowly and carefully with constant monitoring and support. Once WASH services are handed over, work with national regulatory authorities to ensure that the quality of services continues to be carried out to defined standards.

Building refugee WASH capacity to facilitate return / integration / resettlement

76. In all settings, UNHCR and WASH actors should prioritize the development of refugee WASH related skills which can serve the population during eventual return, integration, or resettlement. During return or resettlement, UNHCR and WASH actors should coordinate with the UNHCR programme in the country of return so that refugees with WASH skills can be used to lead WASH related return initiatives. In Pakistan for example, UNHCR's partners have trained teams of Afghan refugee well drillers and has supported them with drilling rigs and drilling contracts.

WASH infrastructure quality

References to UNHCR standards for WASH infrastructure quality

77. UNHCR and WASH actors should ensure that all WASH infrastructure has been designed and constructed according to the technical specifications and standards found on the **wash.unhcr.org** website.

A comprehensive approach to WASH service provision

Ensuring WASH interventions are fully integrated with other sectors

78. UNHCR and WASH actors should ensure that WASH activities are fully integrated with Education, Livelihoods, Community Services, Protection, Community Health, Nutrition and HIV/AIDS programmes. In order to avoid confusion, including overlaps and gaps, WASH programmes should ensure there is clear documentation describing the modalities of sectoral support and integration. In refugee schools and health-care facilities for example, it is essential there is clarification with the Education and Health sectors concerning the limits of responsibility for daily cleaning of WASH infrastructure, maintenance of WASH infrastructure, water quality testing, hygiene promotion, waste management, medical waste management and disease vector control. In livelihoods programming, it is essential to come to an agreement concerning water provision for economic activities and livestock, in addition to support to WASH related small businesses.

Ensuring a comprehensive mix of hardware, software and the enabling environment

79. UNHCR and WASH actors should ensure that all post-emergency phase water supply, excreta management, solid waste management, hygiene promotion and disease vector control programmes are planned based on a comprehensive mix of hardware,


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software, and enabling environment interventions. Equal amounts of energy and time, that are invested into hardware should also be invested into community mobilization, policy development, stakeholder capacity development, and resilience building. In all settings, UNHCR and WASH actors should prioritize investments in the capacity of the refugee population to manage their own WASH programming and to facilitate independence which can serve the eventual return process. Enabling environment interventions that are suitable in the post-emergency phases include...

- Demand creation activities (e.g. marketing for improved sanitation)
- Establishing and supporting the local WASH private sector (e.g. supporting handpump spare parts markets, local sanitary artisans, local drillers, local producers/distributors of sanitary wares including toilets, toilet slabs, showers, plumbing accessories etc.)
- Institutional strengthening (e.g. capacity building of local WASH service providers or regulatory authorities).
- Policy and legislation improvements (e.g. writing of sanitary codes at the refugee site level, or higher)

80. In some cases the refugee population may be supported in writing and enforcing their own WASH related legislation for the refugee setting. When elaborating sanitary codes it should be kept in mind that rules and regulations should not be stricter than is necessary and consultation must always precede regulation. It is also worth remembering that regulation and associated disciplinary measures cannot generally be enforced without majority acceptance by the population. Suggestions for sanitary code include...

- People defecating in public places should be fined once toilet facilities have been made available to the refugee population.
- No permanent housing should be constructed by the refugee population without adequate sanitation provision.
- During urban emergencies, the letting of any house, part of a house, or plot of land for residential purposes must include basic toilet and bathing facilities.
- Tenants should be able to construct basic facilities and deduct the expense from the rent payable to the landlord if a landlord fails to provide adequate sanitation within a specified time.

81. The site WASH plan/strategy should clearly describe the short, medium and long-term strategies for ensuring holistic and comprehensive WASH interventions that address hardware, software and the enabling environment, and the arrangements for WASH integration with other sectors.

Approaches to WASH service provision for urban refugees

The importance of reinforcing WASH

services for urban refugees

82. An influx of refugees can quickly overburden urban municipal WASH services leading to water shortages, increases in open defecation, unmanaged solid waste, contamination of water supplies, and conflicts over WASH resources - in particular water resources. In urban settings, UNHCR and WASH actors should ensure the following. *In priority order:*

- Ensure that urban refugees are living in conditions where they have adequate access to sufficient quantities of safe drinking water.
- Ensure that urban refugees are living in conditions where they have adequate access to toilet facilities.
- Ensure that urban refugees are living in conditions free from excreta or other hazardous wastes.
- Ensure that urban refugees have received key hygiene messages and essential WASH non-food items in particular soap, water containers and menstrual management materials.
- Ensure that urban refugees are living in conditions free from high-risk disease vector populations.

During urban emergencies, the host government may prefer to directly absorb the refugee population into the urban setting, rather than create camps, in order to reduce tensions with the host community, reduce concentrations of refugee populations and reduce security risks. Housing options depend greatly on the context but are likely to include renting, staying in short-term collective centres, or with host families (if the refugee family has family ties). Temporary accommodation will usually be provided to vulnerable families identified as part of the registration process.

83. Provision of WASH services for refugees in urban settings can be significantly harder than in camp-based settings as it can be harder to provide structured WASH assistance. In addition, many problems with poor WASH service delivery in the urban setting may be chronic and entirely unrelated to the refugee crisis. In some cases, WASH services and conditions for the resident urban poor may be worse than for the newly arrived refugee population. Overburdening of WASH services by a refugee influx affects both the refugee and host population and the WASH needs of both groups may need to be reinforced.

The importance of evaluating the separate WASH needs of refugee families in rented accommodation, refugee families staying with host families and refugee families congregating in public buildings, land or collective centres.

84. UNHCR and WASH actors should ensure that efforts are made to differentiate the different WASH needs of refugee families in rental accommodation, refugee families that have congregated on public land, or in collective centres, refugee families that are staying with hosts, and blanket WASH interventions for both the refugee and host populations in areas that

are generally heavily inundated. At a minimum UNHCR core WASH indicators including per capita water consumption, water quality, toilet access, household water storage capacity and access to soap must be fully evaluated for all groups. Following the evaluation phase UNHCR and WASH actors should draft clear short, medium and long term WASH strategies for each of these groups. Typical interventions can be found in the table below.

Working with local municipal authorities

85. Where necessary, UNHCR and WASH actors should work with municipal authorities to identify suitable unused urban buildings and public spaces that can be safely and adequately occupied by urban refugee families. This may include unused/abandoned areas of land or buildings, public sports facilities, community centres, factories, warehouses, public parks, religious buildings, military barracks, or private hostels. WASH assessments should be undertaken to determine the required WASH upgrades that are necessary so that the building or land is habitable and meets UNHCR minimum WASH requirements in addition to any local urban building or sanitary codes. Before undertaking any works there must be a clear agreement describing rights, duties, ownership and responsibilities in place with the landowner.

WASH assistance for refugee families in urban settings congregated in public (or private) buildings, land, or collective centres	**WASH assistance for refugee families in urban settings in rented accommodation**	**WASH assistance for refugee families in urban settings living with host families**	**WASH assistance to both the refugee and host population in urban districts where the refugee influx heavily inundates the local population**
• Establishment of supplementary public water points • Clean up campaigns (open defecation, waste dumps, ditches) • Reinforcing solid waste collection services • Distribution of WASH hygiene kits, water filters and water vouchers • Construction of temporary toilet and bathing facilities • Identification of suitable unused urban buildings and spaces that can be safely and adequately occupied by refugee families, in close collaboration with municipal authorities. WASH assessments should be undertaken to determine the required WASH upgrades that are necessary so that the building or land is habitable and meets UNHCR minimum WASH requirements.	• Distribution of WASH hygiene kits, water filters and water vouchers • Distributions of a sanitation improvement package or cash grant if the refugee family is expected to remain for longer than six months.	• Distribution of WASH hygiene kits, water filters and water vouchers • Distributions of a sanitation improvement package or cash grant if the refugee family is expected to remain for longer than six months.	• Establishment of supplementary public water collection points • Rehabilitation of existing public WASH infrastructure • Clean up campaigns (open defecation, waste dumps, ditches) • Reinforcing solid waste collection services • Distribution of WASH hygiene kits, water filters and water vouchers • WASH related community driven Quick Impact Projects (QIPs) Activities must be carried out as much as possible through existing national WASH service providers!
Note: Provision of WASH assistance for families that are renting or staying with hosting families (i.e. WASH NFIs, water vouchers, and construction materials for sanitation upgrades) must be prioritized according to UNHCR vulnerability criteria.			


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Coordination with the shelter sector

86. In urban settings, the WASH response is closely dependent on the Shelter sector to identify the types of accommodation that are being planned and exactly where and when the refugee persons of concern will be accommodated. In addition, the Shelter programme will typically establish a refugee financial and material support package to match each of the settlement options which should include WASH items including: hygiene kits; water vouchers; and possibly a household upgrade packages that may be used for improving household sanitation, water supply, or water storage. If the refugees are to be located in collective centres, generally, the Shelter sector will take responsibility for ensuring humanitarian shelter standards are met in terms of building conditions (structural stability, safety, earthquake resistance, sealing, water protection, roofing, windows, partition walls, ventilation, winterization, electrical wiring, access, damp, noise) and WASH will ensure that there are adequate water supply, excreta management, bathing, laundering, solid waste, wastewater, hygiene and disease vector control services. UNHCR and WASH actors should ensure that close coordination is also carried out during the assessment and shelter identification stages to ensure that refugee sites are selected based on the feasibility of providing WASH services.

WASH strategy documents and operational plans

Country level WASH strategies/plans

87. At the national level, the UNHCR Country Programme should ensure that all WASH stakeholders working with refugees are able to contribute towards a country level WASH strategy document that briefly describes the refugee context, the baseline WASH situation, WASH coverage, WASH gaps, short, medium and long-term strategies for water supply, excreta management, solid waste management, hygiene promotion and disease vector control, in addition to each of the fourteen (14) core UNHCR WASH philosophies and principles. The WASH country strategy should be used as the basis for developing ad-hoc country operational plans and should be linked to the approaches and principles in the UNHCR Global WASH Strategy. Individual refugee site WASH plans/strategies should be included in annex. The UNHCR template for a country level WASH strategy and operational plan – including an example from Ethiopia can be found on **wash.unhcr.org.**

Site level WASH strategies/plans

88. UNHCR and WASH actors should ensure that every refugee setting has a site WASH strategy document that contains up to date and relevant data and information concerning the WASH situation in the site. The document should describe the short, medium and long-term strategies for water supply, excreta management, solid waste management, hygiene

promotion and disease vector control, in addition to the fourteen (14) core UNHCR WASH philosophies and principles. In addition to the general strategies, an operational plan should be included that clearly describes the ongoing WASH activities in terms of WHO, WHAT, WHERE, WHEN and HOW.

89. The site WASH strategy/plan for each site should be seen as a living document that should be kept up to date with the latest information concerning the conditions within the refugee setting. All of the results from water quality testing, sanitary surveys, waste surveys, baseline surveys, focus group discussions, rapid household surveys and KAP surveys should be included in the site WASH plan annex. The WASH sectoral strategies developed for the site should be based on a solid interpretation of the WASH data that is collected.

90. The initial draft of the site WASH plan/strategy should be prepared within the first three months of the refugee emergency and should be revised every six months based on analysis of the latest data from monitoring mechanisms. Overall responsibility for coordinating production of the site WASH plan/strategy lies with the UNHCR WASH Officer(s) present in country, with responsibility for the content resting with the WASH implementing agencies and the WASH sector lead. Preparation and dissemination of the latest incarnation of the site WASH plan/strategy should be carried out in full collaboration with all the active WASH stakeholders. A follow-up meeting of all WASH stakeholders should be called with each updated related to reflect on the latest findings and refine the individual short, medium and long term strategies and WASH workplan (WHO, WHAT, WHERE, WHEN, HOW). Copies of the updated site WASH plan/strategy should be widely circulated with the following...

- Representatives of the refugee population.
- Representatives from the donor community.
- Representatives of national government departments related to water supply, excreta management, hygiene promotion, solid waste management and disease vector control.
- Representative of WASH agencies.
- The UNHCR WASH Officers present in country (if any).
- The UNHCR Regional WASH Officer.
- The UNHCR Senior WASH Officer, UNHCR Geneva.

91. The UNHCR template for a site level WASH strategy and operational plan can be **found in annex**.

Accountability to donors, beneficiaries and local authorities

92. UNHCR and WASH actors should ensure that core WASH indicators are reported on a monthly basis. Where the UNHCR WASH Monitoring System and TWINE have been rolled out (**http://twine.unhcr.org/**), data should be uploaded monthly to


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TWINE. More detailed information can be found in **chapter 10**.

93. UNHCR and WASH actors should ensure that there is functional system in place to report back to donors, beneficiaries and local authorities the progress of the WASH programme. Different communication strategies (for example camp information boards for beneficiaries) should be used to meet the information needs of different groups. Copies of the updated site WASH plan/strategy should be made available to all stakeholders every six months. More detailed information can be found in **chapter 10**.

Protection of the Environment

94. Poorly managed WASH activities in refugee settings can potentially have an extremely negative impact on the environment. The major environmental risks from WASH programmes are related to pollution and degradation of the environment from poorly managed excreta, greywater, solid waste, and disease vector control related activities. In addition over-exploitation of fragile water resources may lead to rapid depletion with irreversible impacts on water reserves or fragile ecosystems. Finally, unsustainable procurement of wood or burned bricks for latrine construction may present a large environmental risk particularly in locations where sustainable supplies of wood are in limited supply.

95. In all cases short, medium and long-term environmental impacts from WASH interventions must be considered from the outset of a refugee emergency. Failure to do so can have widespread ramifications and prove costly to address. Preventative and mitigation measures are far more cost-effective than remedial actions. Environmental measures must be budgeted from the start.

Respect of local sanitary codes and national environmental legislation

96. In all settings, local sanitary codes and environmental legislation related to water, wastewater, excreta, blackwater, sewage, solid waste, vector control must be respected. During short term emergency responses it may be possible to negotiate with national authorities for relaxation of sanitary codes and environmental standards. In cases where national sanitary codes and environmental legislation do not exist then the minimum guidance provided in this UNHCR document must be met. WASH programmes should be designed and monitored in close collaboration with local regulatory authorities. All environment related rules, regulations and norms should be clearly communicated to the refugee population.

Environmental guidelines for water supply

97. All refugee programmes should ensure that refugee sites are selected where there are sustainable water resources that are able to meet the needs of the refugee population without conflict with other users or long-term depletion. All WASH programmes should clearly understand the nature of water resource recharge mechanisms that are in place and

ensure that recharge rates are greater than abstraction rates. Abstraction of non-renewable or fragile water resources (in particular fossil groundwater sources) should be avoided. Rainwater harvesting should be considered as a low-tech and cost-effective method of supplementing water availability in all viable refugee settings.

98. Levels of unaccounted for water (UFW) should be monitored in all refugee settings regardless of phase or context. All WASH programmes should clearly document the steps they are taking to reduce leakage, wastage, or inappropriate water use. This is not just to avoid over exploitation of water resources but also to ensure efficient and cost-effective water supply operations.

99. Water treatment by-products or sludges should be stored, treated, transported, and disposed of in a manner that minimises any potentially negative impacts on the environment. Any sludges produced as a result of treatment with chemical coagulants (e.g. aluminium sulphate or ferric chloride) should be dried and the resulting cake disposed of in a properly designed and sealed sanitary landfill. All programmes should transition as soon as possible to sustainable water treatment technologies with reduced reliance on the procurement and use of treatment chemicals (e.g. use of infiltration galleries, rapid filtration, or roughing filtration).

100. Water treatment chemicals should be stored in a cool, ventilated and shaded location in sealed containers out of direct contact with the ground and in a manner that minimises any potentially leakage or contamination of the environment.

101. Where viable, programmes should ensure that WASH services prioritize renewable energy (solar, wind, or ram pumping) where grid-based electricity is not available. The use of renewable energies not only reduces the environmental impact of the WASH programme but often leads to more reliable and sustainable WASH services with lower operational costs. Long-term use of fossil fuels should be avoided not only to reduce the overall carbon footprint of the WASH programme but to reduce the burden of operation and maintenance on handover to local authorities or the refugee population.

102. The use of boiling as a drinking water treatment method must not be promoted in any refugee setting – especially in locations where sustainable supplies of wood are in limited supply.

103. Bottled water has been shown to be an effective acute emergency response mechanism however it should not be used beyond the first week of any refugee emergency. It is far more effective, cost-efficient, and environmentally friendly to move as quickly as possible to establish fixed water distribution points (e.g. through the use of bladders and tapstands).


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Environmental guidelines for excreta management

104. Refugee programmes should ensure that all excreta, blackwater (from septic tanks), sewage, and faecal sludges from all household, public and communal sanitation systems are treated, conveyed, reused, or disposed in a manner that minimises any potentially negative impacts on the environment. In all settings, excreta, blackwater, sewage, and faecal sludges must not be allowed to enter the environment without treatment.

105. On-site treatment, reuse and disposal of excreta may be permissible in low-density settings (>45m^2 per person) provided minimum safe distances are respected between pit infrastructure and the groundwater table and an engineer's report has verified that ground types are suitable for the type of sanitation system that has been selected (i.e. travel times of pathogens through the unsaturated zone should be greater than 25 days - refer to **Guidelines for Assessing the Risk to Groundwater from On-Site Sanitation, BGS 2001**).

106. In medium density settings (<45m^2 per person) off-site treatment, reuse and disposal of excreta may be required due to restrictions on aquifer contamination (particularly due to sustained nitrate loading from urine). Centralized treatment should be budgeted for excreta management in all high density refugee settings (<15m^2 per person) or settings with multi-story accommodation.

107. Ensure that the environmental impact of sourcing large quantities of wood for household latrine slab, superstructures, or privacy screens, in addition to the burning of large quantities of wood in brick production, is mitigated in refugee locations where sustainable supplies of wood are in limited supply. In some cases it may be better to procure wood supplies from sustainable sources outside of the refugee camp environment. Alternative construction techniques for latrine superstructure construction such as the use of sun dried mud brick; rammed earth; stabilized soil bricks; or earth-filled sand bag and barbed wire techniques; may have a significantly lower overall environmental impact.

Environmental guidelines for greywater disposal

108. All greywater from showers, handwashing stations, and laundry points, should be treated, reused or disposed in a manner that minimises any potentially negative impacts on the environment. In all settings, greywater should not be allowed to flow directly into water courses without treatment.

109. In low-density settings (>45m^2 per person), on-site disposal of greywater or wastewater into properly designed soak pits may be permissible provided an engineer's report has verified that soils have sufficient capacity to absorb the daily loading rates (see **soil infiltration test procedure on wash.unhcr.org**). Soakage pits and drain fields should be correctly sized based on daily loading rates. The base of all soakage pits and

drain fields should be at least 2m above the groundwater table. Greywater and wastewater may be diverted into small communal or household garden areas provided the system is designed to eliminate the risk of pathogen transmission or vector breeding (i.e. using sub-surface infiltration). Grease traps should be installed where cooking and eating utensils are washed in order to prolong the life of infiltration systems.

110. In medium density settings (<45m^2 per person) local sanitary codes and environmental legislation concerning greywater and wastewater management are likely to be more restrictive in order to prevent groundwater pollution and degradation. Some urban environmental guidelines may require that greywater and wastewater are combined with blackwater or sewage for off-site centralized treatment. Centralized treatment should be budgeted in all high density refugee settings (<15m^2 per person) or settings with multi-story accommodation.

Environmental guidelines for solid waste management

111. All solid wastes in the refugee setting should be collected, stored, transported, treated, reused or disposed in a manner that minimises any potentially negative impacts on the environment. Any indiscriminate waste piles should be dealt with before they have a chance to fester and clean-up becomes more difficult.

112. In all settings, domestic wastes should be triaged according to the principles enshrined in the universal waste hierarchy i.e. those that are an environmental and public health risk should be dealt with immediately compared to those that require a longer-term approach. In many cases the management of toxic domestic wastes (e.g. used oils, electronic wastes, paints, varnishes, paint thinners, lead-acid batteries, and asbestos) may be of more importance than management of general domestic wastes that are generally inert.

113. All refugee programmes should have a properly designed sanitary landfill that is constructed in a location that minimise any potentially negative impacts on the environment in particularly ground and surfacewater resources. Site selection for landfills should be carried out in full cooperation with the local authorities and refugee and host populations. Sites should be selected that completely seal leachates from the environment by either a natural or artificial impermeable barrier. In order to minimise the impact on the environment, only wastes that cannot be composted, recycled, or reused should be allowed to enter the landfill. All waste management programmes should have activities in place to source separate organic matter, paper, plastics, metals, and glass from the landfill waste stream.

114. Leachate production within sanitary landfills should be kept to a minimum by preventing rainwater, stormwater, or surfacewater entering the site. Active waste cells should be kept sealed through the application of 30cm of daily soil cover.

Completed waste cells should be capped with 50cm of compacted and landscaped soil to reduce water entry. Grasses should be planted on top of closed cells to encourage leachate reduction via transpiration.

115. All refugee settings should prioritise source management of domestic hazardous wastes (e.g. paints, varnishes, paint thinners, lead-acid batteries, used oils, electronic wastes, and asbestos). Waste management operations should ensure these items are collected separately and are not allowed to enter the domestic waste stream. If local host-government hazardous waste treatment facilities do not exist then hazardous wastes should be encapsulated in a dedicated section of the sanitary landfill facility.

116. Refugee programmes should ensure that all non-food items (NFI) items that are distributed to the refugee population are free from any unnecessary packaging.

117. Low-temperature burning of plastic wastes should not take place in any refugee settings. Toxic dioxins formed during the low-temperature burning of certain plastics are carcinogenic. Burning of solid wastes must not take place in refugee settings under any circumstances.

Environmental guidelines for disease vector control activities

118. All vector control chemicals used in refugee settings should be stored, applied, treated, and disposed in accordance with national and international guidelines and in a manner that minimises any potentially negative impacts on the environment in particularly aquatic wildlife. In all settings, the use of vector control chemicals should be used as a final control measure if a comprehensive approach to vector management including breeding site eradication, solid waste management, trapping, and barrier methods are failing to control vectors of public health importance.

Environmental impact assessments

119. All refugee sites should have completed a WASH related environmental impact assessment that includes at a minimum:

- An assessment of environmental related risks at each stage of water supply, excreta management, greywater disposal, solid waste management, and disease vector control. The risks should be ranked according to an assessment of their likely probability and impact.
- A matrix of short, medium and long-term mitigative activities to address the WASH related risks identified as having both “high impact” and “high probability”.
- A matrix of environmental monitoring parameters (along with their means of verification, monitoring frequencies, and target thresholds) to measure WASH related risks identified as having both “high impact” and “high probability”.
- A checklist of emergency corrective actions to be carried out if the environmental monitoring programme identifies


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parameters that exceed their target thresholds.

- An overview of national environmental legislation related to water supply, excreta management, greywater disposal, solid waste management, and disease vector control; along with how they are being addressed.

120. Overall preparation and monitoring of the WASH environmental impact assessment and action plan is the responsibility of the WASH programme however the activities should be undertaken in close collaboration with UNHCR's environmental stability and management specialists and national environmental monitoring authorities.