



DIVISION OF OPERATIONAL SERVICES

A GUIDANCE FOR UNHCR FIELD OPERATIONS ON WATER AND SANITATION SERVICES



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1. Background

1.1 Introduction: Water and Sanitation & UNHCR's Goals

The United Nations High Commissioner for Refugees (UNHCR) has the mandate on behalf of the international community to pursue protection, assistance and solutions for refugees. This entails a fundamental responsibility of providing legal security (asylum, non-refoulement and full enjoyment of human rights), physical safety (against natural or man-made threats) and material assistance (basic necessities of life). Provision of water cuts across all of these areas as it is a basic human right for the survival, health and well-being of the refugees.

Water and sanitation are essential to life, health, livelihood and dignity and is a basic human right -Universal Declaration of Human Rights, 1948, Article 25: *“Everyone has the right to a standard of living adequate for the health and well-being of himself and his family”*. Indeed, water is a food in its own right without which humans can survive normally not more than 3 to 5 days. Timely and adequate provision of clean water to refugees is of special importance given that they have traditionally faced difficulties in fully exercising their rights and are very prone to exploitation (Shrestha and Cronin, 2006). Of equal importance is the provision of adequate sanitation and this includes excreta disposal, management of solid waste, proper medical waste disposal, control of waste water and drainage and also control of vectors of communicable diseases including mosquitoes, rats, mice and flies.

In addition, any water and sanitation program in isolation of proper hygiene promotion and implementation will not be effective in preventing diseases and deaths, and resulting suffering among the affected population. UNHCR staff need to be fully aware of such issues and the consequences of insufficient water and sanitation service provision, which becomes even crucial in emergency situations.

Why a water and sanitation guidance booklet?

UNHCR has responded to many emergencies in its long history. Water and sanitation are among the greatest priorities to be addressed from the outset and UNHCR has traditionally addressed these gaps working with and through its partners. However, such partnerships may take time to activate and, in such circumstances, UNHCR may have to reply initially on its own staff including those with a non-technical background. This booklet is aimed to help and guide when UNHCR are faced with such issues. In addition, the Inter-Agency Standing Committee (IASC) cluster approach stipulates that the lead agency, e.g. UNICEF for water and sanitation, may sometimes request that agencies with presence on the ground take the lead. Hence, as in Pakistan, UNHCR was not cluster lead for WatSan but found it had to undertake many water and sanitation activities and monitoring work in camps which they then coordinated with other agencies.

For these reasons it is appropriate to release these guidelines to help colleagues who may find themselves in the position of having to make rapid decisions in the area of water and sanitation that they may have no guidance documents to refer to other than the UNHCR Handbook for Emergencies which may not contain detailed enough information to meet their needs. It can also provide information for protracted refugee situations in their care and maintenance phases as water and sanitation provision in these situations may often be governed by decisions made during the emergency phase.

These guidelines are also meant as a resource companion to the technical CD-ROM toolkit (available as stand-alone CD or on the UNHCR intranet under Operations – Technical Support – Toolkit. This toolkit contains many detailed water and sanitation documents but does not describe how water and sanitation activities link into UNHCR Programs and activities – this guide aims to create this link.

1.2 Guiding principles of water and sanitation provision

The provision and integration of adequate services in the basic life-sustaining sectors of water, food, health and nutrition, shelter and sanitation is core to the protection, well-being and dignity of people of concern to UNHCR. The inter-linkages between these sectors are well documented (Oxfam, 2003; UNHCR/WFP 2004; UNICEF, 2005a, WHO, 2005) as captured in Figure 1. Indeed in complex emergencies, adequate shelter, water, food, and sanitation linked to effective case management, immunisation, health education, and disease surveillance are crucial (CDC, 1992; Connolly et al., 2004).

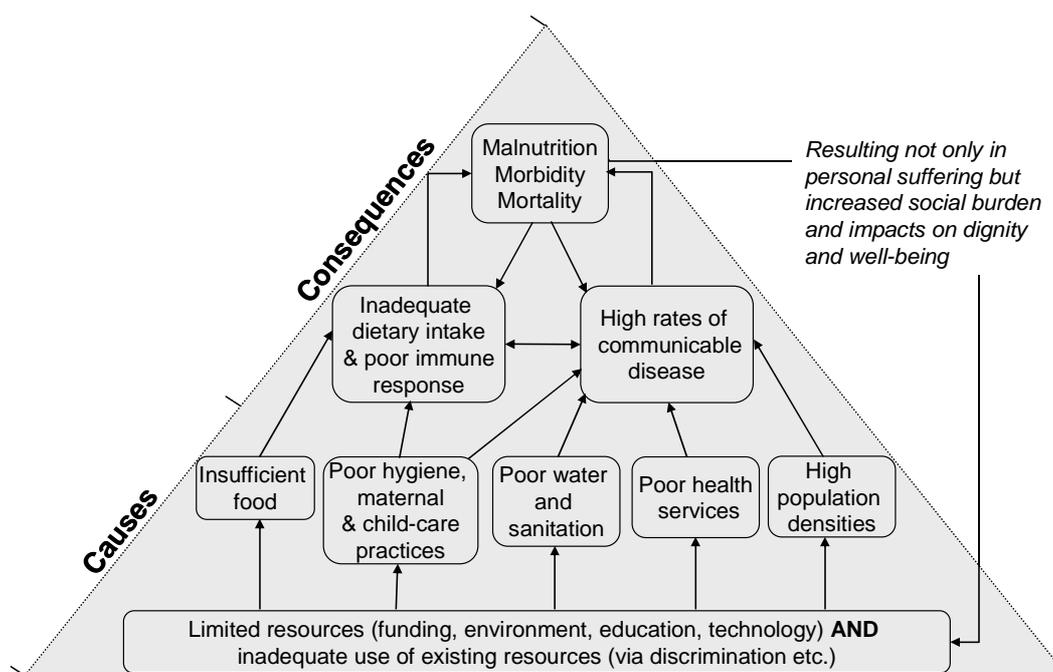


Figure 1 – Conceptual outline of the relationships between the water & sanitation, nutrition and health sectors and how insufficient service provision in these sectors can lead to a vicious cycle of increased rates of malnutrition, morbidity and mortality that can only be broken with appropriate operational interventions.

In addition, refugees and other stakeholders, especially women and groups with special needs, need to be encouraged to participate in all stages of design and maintenance of the water and sanitation facilities; this may not always be fully possible due to the speed with which facilities have to be provided, but community consultation should be the norm rather than the exception (IASC, 2007). There should be sustainable exploitation of the available water sources and minimisation of associated environmental impacts to help develop a good rapport with the host community and uphold the institution of asylum. To ensure these issues are addressed in operations, UNHCR employs a number of targets (referred to as standards and indicators) to assess if its programs are adequately addressing the needs of the beneficiaries in the camps which form the basis of the planning and resource allocation decisions; these complement, though some vary slightly, from the Sphere standards (Table 1).

Table 1: Minimum Standards for water and excreta disposal provision based on UNHCR (2000; 2006a) and Sphere (2004).

<i>Rationale</i>	Description of Standard	UNHCR	Sphere Project
<i>Basic needs for well being and health</i>	1. Average quantity of water available per person/day	> 20 liters*	> 15 litres
	2. Water containers per household (average of five members)	1x20 litres, 2x10 litres, 2x5 litres	2x10-20 litres & enough storage containers at household level
	3. Communal latrine coverage	20 people/latrine	20 people/latrine
<i>Ensure social and security needs in an equitable manner</i>	4. Distance from farthest dwelling to water point	< 200 m	< 500 m
	5. Number of persons at each water point**	80 to 100 per tap 200 to 300 per hand pump/well	250 per tap 500 per hand pump 400 per well
	6. Optimum distance of latrine from household	6 to 50m	< 50 metres
<i>Minimisation of health risks</i>	7. Number of faecal coliform organisms at distribution point	0 per 100 ml treated water	0 per 100 ml treated water
	8. Free chlorine residual concentration in disinfected water	0.2 - 0.5 mg per litre	0.5 mg per litre

* as also advocated for in UNDP (2006)

** must also take into account flow rates, as Sphere outlines, but also duration of water supply, water wastage and overall maintenance costs.

1.3 Going from ‘what’ to ‘how’

Basic principles for provision of drinking water and sanitation services remain more or less same irrespective of whether it is a refugee or non-refugee situation. But it takes on particular significance in a refugee operation. In a refugee situation, it should go beyond ‘**what**’ (e.g. more than 20 liters per person per day of clean water, or at least one latrine per 20 persons) should be provided, but should also include ‘**how**’ the services are provide and utilized. The knowledge on ‘**how**’ has been gained through UNHCR’s and its partners’ many years of experience of dealing with refugees and gave rise to common observations with strong protection concerns, especially taking into account the needs of women and children, which in refugee operations constitute often more than 70 percent of the total population. UNHCR water and sanitation programmes therefore strive to ensure:

1. ***Adequacy and equity of the service provided*** - sufficient water supply and sanitation facilities for basic needs to each and every person throughout the camp including schools and health posts.
2. ***Acceptability and safety of the service provided*** - water supplied is safe and palatable to drink and regular monitoring of quality in place at least for the risk of faecal contamination, and the sanitation facilities, in particular latrines, are appropriate to the users and are culturally acceptable; promotion of harmonious living in a community setting, while respecting individual requirements of different ethnic groups residing in the same camp.
3. ***Minimum social burden) on the users*** - water distribution points and sanitation facilities are located centrally and not too far from the dwellings (e.g. water points within 200m with minimum waiting time and latrines not farther than 50 m,

preferably one for each family); education is not hindered by children (especially girls) having to fetch water during school hours.

4. **Physical safety of the users** - facilities located in a secured environment and along safe access paths; water distribution time and duration are planned according to users' convenience and cultural habits, normally limited to daylight hours, and latrines located close to individual dwellings with appropriate structure/construction.
5. **Reliability of services** – continuous maintenance of facilities with adequate spare parts and materials in stock, and in particular for water, availability of adequate storage facilities at household and community level in case of interruptions.
6. **Minimum environmental damage** - sustainable exploitation of the available water sources, controlled waste management, especially human excreta, prevention of pollution of local water sources and minimization of other environmental impacts due to water and sanitation-related activities to help develop a good rapport with the host community and to uphold the institution of asylum; and controlled discharge and drainage of wastewater and storm-water to avoid water-induced hazards in the camp and the vicinity.
7. **Efficient use of facilities** – facilities designed and run in such a way so as to minimize wastage (e.g. during fetching water) and maximum use of resources/facilities.
8. **Participation of stakeholders and co-ordination** - refugees and other stakeholders are empowered and encouraged to participate in all stages of a project with equal representation of women; a good rapport maintained with the host community; and coordination of activities among all actors working in the water, sanitation, health and nutrition, education and environment to optimize the quality and effective service provision. A care-taker group can help with the operation and management of the water infrastructure and empower the people of concern to UNHCR.

2. Emergency Phase

In an emergency setting, especially in refugee/IDP situations, provision of water and sanitation is among the top priorities and needs to be planned and initiated from the very beginning of the crisis; indeed availability of water is one of the key criteria for site selection. People will need to be provided water immediately once they are displaced and if they don't have access to sanitation facilities right away, open defecation will occur. To provide water & sanitation for thousands of people overnight is not an easy task and so this booklet aims to guide field officers and managers on organising the initial response and establishing the program on the correct basis. The key questions and answers are outlined below with some generic advice on WatSan provision in difficult settings given in Annex 1.

2.1 Where to get background information:

The UNHCR Emergency Handbook is the first port of call for UNHCR staff in emergencies. The CD-ROM toolkit has also key references for quick consultation. Useful references for initial consultation on water and sanitation supply in emergencies are:

- Emergency Sanitation Manual (WEDC, 2002)
- Sphere Handbook (Sphere, 2004)
- Excreta Disposal in Emergencies: A Field Manual (IFRC, OXFAM, UNHCR, UNICEF, WEDC, 2007)
- Emergency Water Sources (WEDC, 1997)

2.2 Who to approach for help:

The best alternative for sudden crises where local capacity has been overwhelmed is to enlist the help of competent international NGOs who are normally on the ground and who have many years of experience in water and sanitation provision in emergency. The breakdown of funds transferred to NGOs from UNHCR from 1994 to 2007 is shown in Figure 2.

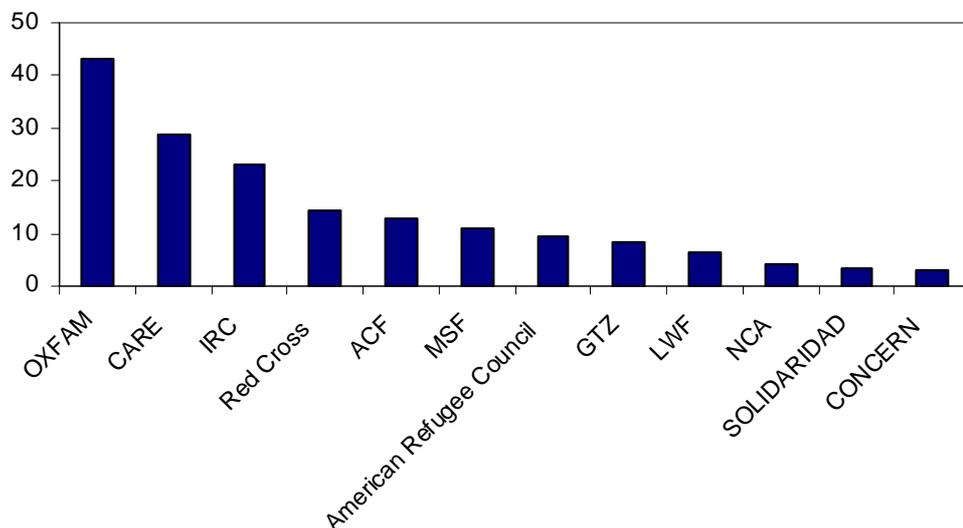


Figure 2 - Total distribution of funds from UNHCR to partners working in the Water and Sanitation sectors (\$ million) from 1994 to 2007 inclusive.

In addition, UNHCR has access to a number of stand-by agreements for deployment of emergency technical experts, principally the Swiss Development Cooperation (SDC), Red-R Australia (Engineers for Disaster Relief) and Irish Aid. These agreements have provided water engineers, hydrogeologists etc. in the past to strengthen UNHCR's programmes. These deployments can take from days to weeks in total from the point of request from the operation to HQ to the point of the engineer arriving on the ground. In the interim period, when

engineers are urgently needed, engineers can be deployed from another operation or from HQ though UNHCR has limited numbers of engineers in its operations and those that are employed are usually managing crucial operations. Alternatively UNHCR can employ short-term consultants, either local or international. The Water and Sanitation Officers at HQ can also provide help in this respect by identifying suitable experienced consultant engineers if there are not enough suitably qualified engineers in-country. United Nations Volunteers (UNVs) can provide experienced engineers, where available. Usually UNVs are requested for longer mission (6 to 12 months) for protracted stable conditions. Hence, the options for technical assistance in order of preferred choice are:

- International NGOs present on the ground
- Short mission by Water and Sanitation HQ engineers to bridge time gaps until identification of:
 - o Stand-by deployee
 - o UNV
 - o Consultant

2.3 How to do a reconnaissance of the affected area:

If a refugee crisis is imminent and thousands of refugees are expected to cross the border, camp sites to host them will need to be quickly evaluated. Access to water is a **KEY** requirement for a site to be selected. It may take some time to develop this water source and in the interim water trucking can be used but water trucking should only be used for a period of days to weeks. The two options for water sources in emergencies are either surface water (rivers, lakes, ponds, streams) or groundwater (from springs, shallow wells, deep boreholes or infiltration galleries). The former can be more easily accessible but will require treatment while groundwater may be more difficult and costly to access but may be microbiologically purer.

As much information (maps, aerial photos, previous drilling campaigns and their success) should be gathered and studied as possible. To assess the options, the local population's habits should be studied and they should be consulted on potential water sources and sanitation options as they will be most familiar with the area as well as the physical features, vegetation etc. More guidance on these issues can be found on the CD-ROM toolkit. Another good reference for groundwater evaluation includes the document on the CD-ROM toolkit 'Simple Methods for Assessing Groundwater Resources in Low Permeability Areas of Africa' (British Geological Survey & DFID, 2002).

2.4 How to assess population size and their needs:

If registration is yet to occur but people have gathered on-site then estimates of the population are crucial to determine what levels of water and sanitation are required. If the population is small the number of huts or temporary dwellings can be counted and multiplied by the estimated number of people per hut. If the number of people is too great to do this, the area of the camp can be calculated by using GPS or aerial photography. Then the population density can be measured by counting of the number of people living within a defined subsection (e.g. 100m x 100m). Hence, the number of people living in the camp can be extrapolated to estimate the total camp population. More detailed information on registration and mapping can be found on the UNHCR intranet under *Operations Support-Statistics and Registration* or *Operation Support-Operational Data Management*.

2.5 How to assess the quantity of water available & what to do if this isn't enough:

UNHCR advocates that all refugees should access 20L of clean water per person per day from a water point at a distance of less than 200m from the furthest dwelling (with a sufficient number of water points for ease of access by the entire population) and that refugees should ideally have access to one latrine per family or at least one latrine per 20 people (Table 1).

Section 3.4 gives a global overview on how well UNHCR is meeting these challenges and the consequences of poor provision.

There are two aspects to assessing the quantity of water; first to see if there are adequate water resources available for supply and the second is to see how the water being supplied is distributed across the camp to assess if every household is accessing enough water. Groundwater has the advantage as usually being a clean source but requires an experienced expert usually to exploit it. To assess if there is enough groundwater available, pumping tests can help to assess groundwater potential and replenishment (for more details see CD-ROM toolkit: Simple Methods for Assessing Groundwater Resources in Low Permeability Areas of Africa, British Geological Survey & DFID, 2002 and free spreadsheets from USGS to assist with analysis of pump tests). Surface water (from a river or lake) may be more easily accessed in the initial stages of an emergency but then must be properly treated prior to distribution.

On the second point, all sources of the daily water available to be supplied in the camp need to be evaluated individually and then the sum all of these sources together gives the total water collection. The sources will include tankered water, pumped and distributed water and water withdrawn from protected wells or springs. Any water taken from unprotected rivers, shallow wells or swamps should not be counted as this should be seen as a reaction to inadequate water supply from conventional sources, i.e. a coping mechanism to inadequate water. If the amount of water used in communal infrastructure is not measured precisely, it can be estimated as up to 20% of the total water delivered. For piped water: water meters should be systematically installed to look at communal water use and leakage in different areas. Quantities of daily water collected from non-metered sources can also be estimated as follows:

- Springs: Quantity of water collected in the container in 1 minute x 720 = daily water available based on a collection period of 12 hours
- Wells: Based on the number of containers filled, estimate over 1 hour the quantity of water taken by users, excluding wastage. Then repeat the measurement later 3 or 4 times the same day and calculate the average water collected per hour. The number of hours a day the water source is in use must be derived. The calculate water availability per day = average hourly yield times x daily hours of operation; normal operation hours would be 8 to 12 hours daily. If only a sample of wells is measured, include wells from all over the camp and especially from the highest and lowest points. For hand pumps, repeat as for wells
- Rainwater: Rain can be harvested for drinking water purposes but this can be often unrealistic in many refugee camps as there is a lack of storage facilities to store enough water for a long period of time after the rains finish. If rain water collection is practiced, the volume produced can be estimated by either evaluating the surface covered with roofs and multiply by 75% of the average annual rainfall or by evaluating the quantity of rainwater harvested through a household survey. In some circumstances (topography permitting) surface run-off can be stored and treated and used as a source of drinking water.
- Tap stands: Flow meters should exist on pumps. To complement this estimate the volume of water collected, excluding wastage, in each distribution cycle of the day. This can be done by visiting various tap stands through the camp for the total duration of the distribution cycle. Extrapolate using all the taps in the camp to estimate the total water supplied. Include taps from all over the camp and especially from the nearest and furthest points from the storage tank. This can then be compared with the pumping volumes measured.

It is very important that, regardless of the type of water source, that any inequalities in water distribution as regards different zones or different communities or individuals within zones are identified, i.e. if 50% of the camp are getting 30L per day and 50% are getting 10L per day, the overall camp average is 20L per person per day though the actual details of the distribution are unacceptable. Household surveys are a very good method of identifying such

inequalities in distribution with further details supplied in the WatSan provision methodology mentioned above.

If the UNHCR operations assess that the levels of water quantity are not sufficient, then efforts should be made to augment the supply to mitigate potential health and social impacts on the people of concern. This may require detailed technical studies to assess potential options, including groundwater or surface water, in the area. If it is shown that there are no viable water sources available nearby then relocation of the camp to an area with adequate water resources should be considered. Practical guidance on developing boreholes and pumping water can be found on the CD-ROM toolkit.

2.6 How to assess the quality of water available and evaluating the risks to it

UNHCR is ultimately responsible for the quality of water supplied in refugee camps. Water quality monitoring must have rapid feedback mechanisms to water managers and UNHCR program staff and field officers. If this not the case, rapid deterioration in water quality will not be corrected and hence resulting in a serious outbreak of waterborne disease. There are two aspects to water quality monitoring:

1. An identification of the risks in the surrounding area of the water point should be noted on a regular basis. This is a systematic assessment of visible risks (as well as how the siting of the water point has been done in relation to other facilities such as latrines) to water quality at that point to help understand the reasons for water quality problems and deterioration in quality over time. This approach is also useful for identifying remediation interventions. Standard forms, known as sanitary surveys, for carrying out this risk evaluations are available on the CD-ROM toolkit; please see Water Quality Surveillance - a practical guide (WEDC, 2002).
2. Measuring the level of water contamination involved the filtering of a known volume of water through a filter paper which captures faecal bacteria on the filter paper; the bacteria are then given a food source and a warm environment (44°C) for ~18 hours. After this the bacteria colonies are counted and this gives an indication of the degree of risk involved with ingesting that water. A manual for the correct use of water quality monitoring equipment is available on the CD-ROM toolkit.

The results from the sanitary survey and the water quality analysis can be used as a guide to the level of risk the people drinking are exposed to when using a particular water source. The following table outlines typical levels of water quality and corresponding risk levels.

Table 2 – Relationship between risks level to water quality and intervention priority.

Faecal coliform level	No. of risks identified by Sanitary survey	Risk level	Priority of intervention
0	0	Extremely low	None needed
1 to 10	1 to 3	Some pollution but low risk	Low
11-100	4 to 6	Polluted: Intermediate to high risk	Higher priority
101 to 1000	> 7	Very polluted – very high risk	Urgent
>1000	>7	Grossly polluted – very high risk	Urgent

In cases where the water is disinfected by chlorination, it is easier and more appropriate to test for the presence of free available chlorine at household level than for faecal bacteria. The presence of a water turbidity of <5 NTU and a free chlorine in the range between 0.2 mg/l and

0.5 mg/l at the distribution point indicates an adequate disinfection potential and, hence, an acceptable quality water. As a general rule of thumb, one sample should be taken per 5000 people per month. The water must, of course, be safe at the time of consumption or use in the household, not just at the distribution point. Domestic hygiene and environmental health measures to protect the water through collection, storage and use are important. The water in storage tanks and any tanker trucks should also be tested regularly. More background reading on water quality and monitoring can be found on the CD-ROM toolkit: see Guidelines for Drinking-water Quality, 3rd ed., Vol. 1 Recommendations (WHO, 2004); Sanitary Surveying (WEDC, 1999) and Water supply surveillance - A reference manual (WEDC, 2002).

2.7 Types of water treatment available for different settings and scenarios:

The key issue in an emergency is to distribute enough water of adequate quality rather than smaller amounts of very pure water (UNHCR Emergency Handbook, 2007). There are many types of water treatment/purification systems available which can be either carried out at a camp level if a distribution system exists or on the house level if filters or disinfectants are distributed at the household level. Treatment at the camp level generally relies on physical or chemical purification of the water, if required, and then disinfection with chlorine so that there is a residual of 0.2 to 0.5 mg/L at household level. Usually the chlorine is supplied as calcium hypochlorite granules with the chlorine in the form of High Test Hypochlorite (HTH), supplied in drums or as sodium hypochlorite (liquid) or bleaching powder (also known as chlorinated lime). A constant dosing of 1% chlorine into the water entering the storage reservoir is the optimal way of adding the chlorine.

Table 3 – Water contaminants and treatment options.

<i>Source Water</i>	<i>Potential contaminants</i>	<i>Treatment options</i>	<i>Comments</i>
<i>Rain Water</i>	Physical	filtration	Contamination may occur due to poor collection or storage practices
	Chemical	for acid rain, pH may need to be increased	Only an issue in areas influenced by heavy industrialisation
	Microbiological	chlorination at distribution; treatment at household level storage	This may occur due to poor collection or storage practices
<i>Ground water</i>	Physical	storage; filtration	This may be necessary if the water is highly turbid
	Chemical	iron, manganese or hydrogen sulphide can be treated by aeration;	Nitrate, arsenic, fluoride, heavy metals, organic pollution are too difficult/costly to treat in emergency settings and so alternative sources should be sought
	Microbiological	storage; chlorination at distribution; treatment at household level	Chlorination will disinfect and help to protect water to the final point of consumption

<i>Surface water</i>	Physical and Chemical	<ul style="list-style-type: none"> - raw water storage, - pre-chlorination, - algal control, preliminary settling; - coagulation, - mixing & flocculation, - sedimentation, - filtration 	<p>Helps settling and improve quality, if possible for 12 to 24 hours</p> <p>for low turbidity, poor quality water; use 2 to 5 mg/L by straining or chlorine dosing</p> <p>use settling basins or horizontal roughing filters</p> <p>Alum for pH 6 to 8; Ferric chloride for pH 4.5 to 9 with a flocculation chamber,</p> <p>In sedimentation basin</p> <p>Rapid gravity filter or slow sand filter</p>
	Microbiological	chlorination at distribution; treatment at household level	Chlorination will disinfect and help to protect water to the final point of consumption

Chlorine in tablet form can be distributed for household use but this is generally for responding to emergency outbreaks of water-borne disease. Other products for household treatment include liquid chlorine solutions for addition to the water after filtration; new low-cost equipment now exists to make liquid chlorine. This can be used as an opportunity for income generation activities in certain operations; more details on this technology are given on the toolkit. In addition, 'mini-treatment plant sachets' which consist of many process of a water treatment plant but contained in a single packet for addition to 10L of water are now being marketed but the need for adequate training and the hygiene promotion aspects of such new products should not be underestimated.

2.8 Sanitation provision and hygiene promotion in the Community:

As outlined in Section 1, sanitation must be established immediately following the onset of an emergency and must take into account the issues of excreta disposal, solid waste disposal, vector control, wastewater management, disposal of dead bodies and, crucially, hygiene promotion across all of the activities. Communal sanitation facilities are the easiest and quickest option to implement when large numbers of people arrive on a new site. Since it is almost impossible to estimate how long refugees will stay in a given site, more long-term facilities should also be planned simultaneously. For example, once a defecation field has been established, latrine construction should begin at once; the greater the time lag between those two actions, the more difficult to shift people from their previous habit (defecation in the open) to subsequent building and use of latrines. Even in hot, dry climates, human excreta disposed of on the ground can favour the transmission of diseases. Defecation fields should be only used as a short-term option. Typical levels of provision would be:

Table 4: Number & Types of Sanitary Facilities Required (UNHCR Emergency Handbook, 2007)

	Preferred Option	Second choice	Minimum level of provision in emergencies
EXCRETA DISPOSAL	1 latrine / family	1 cubicle / 20 persons	1 cubicle / 100 persons or defecation field
	Storage	Transport	Final disposal
REFUSE / GARBAGE DISPOSAL	1 bin, 100 litres per 10 families or 50 persons	1 wheelbarrow per 500 persons and 1 tipper per 5,000 persons	1 landfill (50m ² x 1.2m deep) per 500 persons and 1 incinerator and 1 deep pit for each clinic

In areas of rocky terrain where it is difficult to dig pit latrines then raised latrines can be considered as an option. More details on emergency sanitation are given on the CD-ROM toolkit in Emergency Sanitation Manual, Chapter 9 (WEDC, 2003).

Hygiene promotion is the key to a successful sanitation program. The two key aspects are community participation and a goal of behavioural change. These are not achieved in isolation: hygiene kits, soap, water storage containers etc. also need to be provided. In addition, hand-washing promotion means there must be water available near the latrine to do this or else it will not be followed up on. More information is provided on the CD-ROM toolkit.

3. Stable Phase Operations

3.1 Water: Minimum standards, explanation of policy and monitoring requirements

UNHCR has developed standards for potable water which not only targets the water needs of beneficiaries but goes beyond simple supply issues to look at ways to **alleviate the burden on users**. In refugee situations, it is often the role of women and children to fetch water. Therefore, it is fundamental that UNHCR standards on the placement and numbers of water collection points be met in order to ensure equitable access and alleviate protection concerns. Locating water points a maximum of 200m from dwellings and having 80 to 100 beneficiaries per tap enhances access and prevents overcrowding, thus reducing the time required to collect water. Furthermore, equal representation of women needs to be maintained in water supply as well as management, monitoring and reporting committees. This ensures that women are given every opportunity to have their concerns addressed. Within these committees issues such as the location of distribution points, hours of supply, and maintenance schedule may be determined. Water distribution points need to be centrally located with clear and safe access paths to reduce SGBV. Where necessary, lighting should be provided to enhance visibility if water fetching occurs at night. As far as possible, the water distribution system should be developed in such a way that the running hours are kept within daylight hours and outside school hours so children do not miss classes due to water collection. It is also advisable to provide separate water points for different ethnic groups expected to reside within the same camp to avoid unnecessary tension and potential SGBV.

The Water and Sanitation Unit at HQ has produced a methodology (Cronin, 2006) to help field colleagues to comprehensively assess levels of water and sanitation provision in existing refugee camps and the associated implications; this is available on the CD-ROM toolkit.

Provision for adequate storage facilities for potable water that are easily accessible are made in all communal facilities such as schools, community centres, and health points. Regarding specific needs of elderly and others with special needs, the matters must be discussed during the planning stage of stakeholder meetings (such as through a participatory assessment process) so as to integrate their needs when designing and laying out the water distribution system. In schools, the tap stands should be child friendly, and the refugee community is encouraged to stop children from fetching water during school hours. The latter approach will help increase **education opportunities for children, especially girls** via increased attendance in schools.

In the development of water resources for refugees, UNHCR must be respectful of the **needs of the neighbouring local communities**. Efforts should also be made to achieve sustainable use of potable water as depletion or contamination of local water resources may cause serious frictions between the refugees and the host communities.

Cultural norms and practices must be incorporated into the design and layout of the water distribution system. For example, where the beneficiaries use water for sanitary cleansing, the provision of appropriate water points at close proximity to sanitation facilities need to be made. The practice of young people fetching water for elderly in some cultures is a healthy tradition which should be encouraged, provided that such activities do not affect their health and education.

While planning the water supply system, changes in water consumption pattern due to climatic variation should be given due consideration. For example, the demand for water is greater during summer than winter. This pattern gives an opportunity to adjust the level of supply during winter to allow maintenance of the distribution system. In all climatic conditions, particularly tropical and high rainfall areas, it is crucial to design the water

collection areas (taps, handpumps, wells, etc), such that there is no possibility for water stagnation. Plans need to be made to re-direct excess water away from distribution points so that the areas around these points should remain hygienic. For instance, excess water can be redirected to kitchen, gardens, agricultural areas and soakaway pits, depending on the situation. In colder climates, additional measures such as protecting pipes against freezing need to be implemented.

Any water supply system whether large or small must be planned and designed by a **competent technical expert** with previous experience in development of rural and or refugee water supply systems. The technical expert holds the lead role in translating protection concerns of beneficiaries into the water supply system. The points to be considered in the design are:

- i) Prior to initiating any extensive drilling programme, watershed and hydrological (surface and sub-surface) surveys need to be undertaken.
- ii) Water distribution system should use gravity wherever possible.
- iii) If treatment is necessary, it should be kept to the minimum required to ensure safe water.
- iv) An adequate factor of safety needs to be considered in the design of various key components to ensure a robust system which will minimise failure.
- v) Attention should be given in the design of the distribution network to ensure adequate water (pressure) at the tail end of a distribution network.
- vi) Minimum construction standards provided by national legislation are to be respected to facilitate handover to local government upon repatriation.

In order to ensure operational sustainability, user-friendly, less mechanized water supply systems are preferable. Spare-parts and after sale maintenance services need to be available through local vendors. It should be noted that ideally the water distribution systems are maintained by the beneficiaries themselves.

The technology for the potable water storage in humanitarian operations is limited with inherent problems; indeed, it is expensive, short life and often the technology is imported, requiring expensive operation and maintenance. In order to overcome these shortcomings, UNHCR has used appropriate technology such as ferro-cement tank in selected refugee camps in the past and recently UNHCR has also developed large ferro-cement tank ranging from 45 to 90 cubic meters capacity (see details on toolkit). These tanks can be fabricated using local construction material and know-how, adaptable to a wide range of physical climatic conditions. This is a low-cost environmental friendly technology which is easy to repair and maintain with added advantage that even refugee women can be equally and easily trained to fabricate, repair and maintain; further details are given on the CD-ROM toolkit. While this deals with the issue of camp level storage, a crucial related point is that of storage at the household level – UNHCR advocates for at least 10L of storage per person per day. This is important in order to:

- minimise the risks of water collection,
- reduce the burden on women and children,
- enhance the quality of the water in storage,
- prevent households resorting to unprotected sources if water is needed outside supply times and
- avoid excessive queuing time and, hence, conflicts resulting from too many people using a single source or outlet of water.

The best type of water storage containers are narrow neck water bottles or jerrycans and these should have a lid. Water pollution is much more difficult from such containers than saucepans etc. as children's hands etc. can not enter and contaminate the water.

While it is important to maintain the delivery of a minimum 20 litres per person per day, it is also important to **ensure quality of potable water** is monitored and standards are respected and sanitary risk assessments are regularly made, as outlined in Chapter 2.

In order to ensure the sustainability of the water distribution system, and effective capacity building approach and water saving practices is transferred to the entire community, along with additional technical training to water committees in the following areas:

- i) Developing regular maintenance schedules;
- ii) Monitoring and reporting;
- iii) Maintenance of the distribution system and tap fittings;
- iv) Safe water handling from source to point of use.

Guidance on where to find help on issues relating to water quantity and quality surveillance, sustainable maintenance of water distribution system, mitigation of potential contamination of drinking water, and assessing level of service are available in Section 5.

3.2 Sanitation & hygiene promotion: minimum standards; explanation of policy and monitoring requirements

Sanitation provision is vital to break the faecal-oral route of disease transmission. It must, however, be undertaken in a manner that does not adversely impact on the local environmental resources. Hence, to this end, guidelines have been developed to help plan sanitation systems in refugee settings (see documentation on the CD-ROM toolkit). These can also help to prioritise where resources are scarce. The most important to consider include:

- i) A maximum of 20 persons per communal latrine, separated for women and men;
- ii) Adequate and good quality latrine superstructure to encourage increased usage by beneficiaries, especially women;
- iii) The latrine design considerations should consider the bearing capacity of the soil; the infiltration rate; the depth of excavation possible and risk to the ground water pollution;
- iii) Provide adequate capacity building to the beneficiaries on hygienic maintenance of the sanitation facilities as well as monitoring and reporting;
- iv) Establish schedules for **hygienic maintenance** as well as monitoring and reporting mechanisms, for sanitation facilities and their access paths, to be used by the beneficiaries.

As with the water guidelines, **prevention of SGBV** is another central point to consider when designing sanitation systems. To this end:

- i) Newly constructed female communal latrines and showers should be of sufficient distance from male facilities or have barriers erected to restrict access;
- ii) Latrines should have an adequate superstructure, roof and a lockable door, be located in a visible, well lit area and be located close to dwellings.
- iii) Facilitating the change of communal latrines into family-based ones, shared between two to three families at most but ideally one per family.
- iv) Provision of lighting in all communal sanitation facilities;
- v) The protection officers in collaboration with community service officers should research into the compatibility of prevailing customs, traditions and legal system in the country of operations with international standards to deal with SGBV cases in relation to the use of sanitation facilities.

In order to avoid creating a dependency syndrome in sanitation programmes, beneficiaries must be involved in planning, consultation, decision making and responsibility sharing. Such early **community participation** will consequently help to mainstream the sanitation programme during the care and maintenance phase and promote community ownership of the

facility. In order to achieve healthy and sanitary conditions for refugees, the regular monitoring and reporting on different aspects of sanitation programmes is essential.

Children, the elderly and groups with special need to be part of the sanitation design and implementation process. Special design features should be highlighted to such groups such as latrines slabs with drop-holes of smaller diameter provided for children under the age 10 when communal latrines are built. The plans should be conceived with the participation of all stakeholders – beneficiaries, staff members, of IPs, UNHCR and local government – focusing on the following elements during all stages of interventions.

The choice of materials for personal cleaning after bowel movement must be based on beneficiaries' preferences and cultural habits, provided it would meet the basic acceptable hygiene standards. If water is used then around 3 litres of water per person per day must be provided near to the latrines. If dry materials, such as paper, are used for anal cleansing then this must be accompanied by appropriate hygienic maintenance of disposal containers.

It is advisable to integrate beneficiaries' cultural, religious and traditional practices which are compatible with internationally accepted technical norms into latrine design and waste management. For example Muslim refugees may wish to have the sitting base of the latrine in any direction except in direction of Mecca. Such a simple change in the direction of the sitting base of the latrine can be introduced in the planning stage to avoid under utilization at no additional cost.

Sanitation is much more than excreta disposal. It must also consider the provision of sanitary napkins, solid waste disposal, wastewater control, vector control and hygiene promotion. They are dealt with in the following paragraphs.

The following UNHCR guidelines are to be used in the provision of **sanitary napkins**:

- i) In female latrines containers for the disposal of sanitary napkins should be provided;
- ii) Based on consultations with representative groups of female beneficiaries, sanitary kits should be provided and potentially include either disposable napkins (12 pieces per beneficiary per month) or reusable absorbent cotton material (2 meters per beneficiary per half year) and 6 new underpants per female beneficiary of reproductive age per month;
- iii) 250 gram soap bar per person per month (in addition to the universal soap provision to entire population).

Solid waste dump design needs to take the following considerations into account:

- i) The size of communal dump pits depends on the number of people it serves. About 20 m³ excavated per 500 persons are a reasonable allocation.
- ii) Communal solid waste dump pits should not be located more than 100 meters from households (and at least 30 m from wells, rivers, and lakes to avoid potential contamination of local water resources) to account for efficiency, effective usage and sustainability.
- iii) Sanitary landfill: solid wastes should be covered with 15 cm of soil every week. Once filled, the dump pit should be covered with 50 cm of soil layer and clearly marked.
- iv) Household dump pits should be fenced to prevent children and animals accessing it.
- v) Waste from health centres and hospitals need to be treated with special care due to their public health risk and/or contagious nature – detailed advice can be found on the Toolkit which contains the book 'Emergency Sanitation (WEDC, 2003)'.

Wastewater from taps, kitchen, feeding centres, shower and cloth washing facilities including surface run-off from rain should be drained properly because of the health risk associated with stagnant water in the drainage canals. In designing drainage canals for wastewater, the following factors should be considered:

- Ground soil conditions
- Sub-surface water table and its seasonal variation
- Topography of the site
- Type of waste water
- Liquid wastes from health centres, health posts and hospitals should have conduit drainage canals leading to covered soakaway pits.
- In addition to wastewater from inside the camp, the main drainage facilities also require to be planned and designed to take into account potential rainwater run-off – failure to do this has led to camps becoming flooded during the rainy season in the past.

Vector control is needed to stem high incidence of vector-borne diseases that are transmitted via mosquitoes, houseflies, blowflies, ticks, lice, rodents and cockroaches. It is associated with poor sanitation conditions, unsafe drinking water and unhygienic practices. It is important to create an awareness of the importance of safe hygiene practices in reducing the occurrence of vector-borne diseases, and where possible, control or eradicate the vectors which transmit the diseases. The following measures will reduce the transmission of vector-borne diseases:

- i) Screen on the top of the latrine ventilations pipes;
- ii) Locate latrines away from food preparation and storage areas;
- iii) Chemically treated mosquito (referred to as ITN) nets to refugees and particularly to pregnant women, children;
- iv) Drainage canals having appropriate slope to avoid stagnation;
- v) Latrine holes with cover.
- vi) Application of appropriate vector control chemicals by qualified and skilled people after consultation with the sector specialist (Refer to UNHCR Vector Control in Refugee situations on the CD-ROM toolkit for more details).

Suitable arrangements for the **disposal of the dead** are required from the start of a refugee emergency. The mortality rate may well be higher than under "normal" conditions. The authorities should be contacted from the outset to ensure compliance with national procedures, and for assistance as necessary; more details are given on the CD-ROM toolkit in Emergency Sanitation Manual Chapter, 9 (WEDC, 2003).

Hygiene promotion is essential for the success of sanitation programmes to allow beneficiaries to become aware of the links between poor hygiene behaviour and disease and in providing the motivation required to adopt new behaviour that will reduce the spread of disease. **Refugees can only be expected to practice good hygiene if they have enough clean water, sanitation facilities, accompanied by capacity building in hygienic practices and promotional materials.** The following core point must be kept in mind:

- i) Hygiene education requires inter-sectoral collaboration amongst environmental health services, primary health care workers, schools, community services, programme officers and field officers of IPs and UNHCR. Community and health services should take a lead role with water and sanitation staff supporting on personal and household hygiene issues related to the F-diagram below.
- ii) Tailor programme to include children through the school system and women through advocacy groups, with an emphasis on a family-based approach towards adopting good hygiene practices.
- iii) The shortfalls in hygiene practices are identified through data collection and analysis. Consequently capacity building can focus on overcoming the deficiencies.
- iv) In refugee camps, the focus on hygiene education should revolve around influencing behaviour along the following key principles:
 - Use of safe water sources

- Adoption of behaviour to minimise contamination of water sources, especially from nearby sanitation facilities, animals and chemical storage (i.e. **community hygiene**).
- Solid waste from health centres should be incinerated, liquid waste should be disposed of in soakaway pits.
- All possible mosquito breeding areas drained.
- **Household hygiene**, including safe water collection strategies in place.
- Safe food preparation and storage practices (e.g. vegetables and fruits should be washed with safe water, and food should be properly covered).
- Kitchen utensils washed with clean water after use and stored in a clean place.
- Household (domestic) waste water should be disposed of properly
- Regular hygienic cleaning of water and disposal containers in latrines.
- All faeces, especially those of babies, young children and sick people disposed of using solid waste dump pits designed for the purpose.
- **Personal hygiene**, including hands washing always after using the latrine or handling the faeces of babies, before feeding, eating and preparing food.
- Use of sanitary excreta disposal facilities at all times.

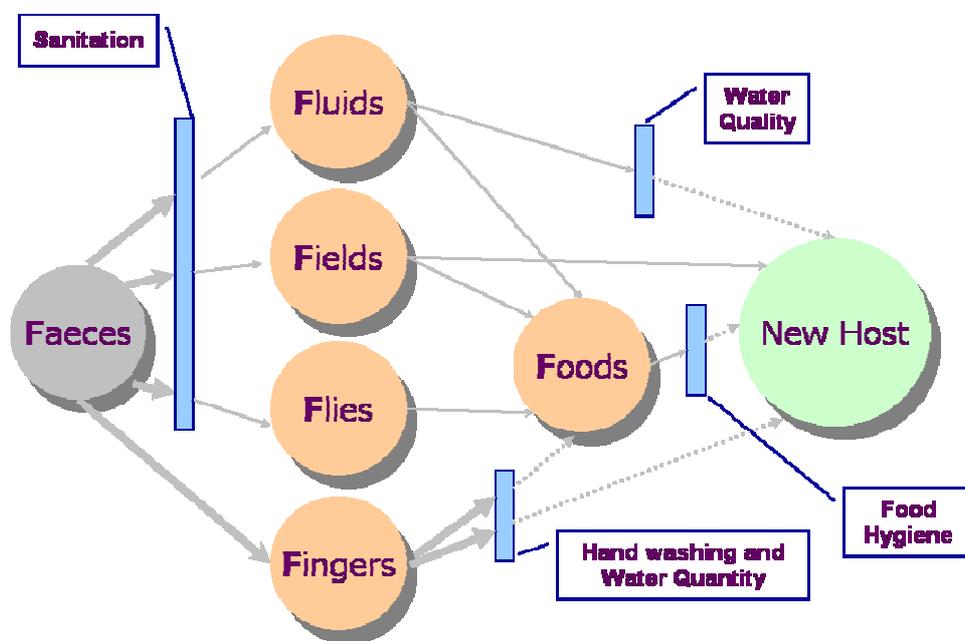


Figure 3 – The F-diagram on barriers to preventing the transmission of water-borne disease

3.3 Performance of UNHCR in WatSan provision in stable situations (2003-2006)

Water and sanitation provision in UNHCR refugee operations (2003 to 2006) was reviewed as part of a gap analysis procedure (Cronin et al., in press). Several sources were used, including data from the Standards and Indicators initiative, are summarised in Tables 5 and 6. These tables demonstrate that while the overall median and average values for water supply and median values for latrine coverage across UNHCR refugee operations are better than the UNHCR standards (Table 1), there are still large numbers of camps where the average water supply is inadequate and there are not enough latrines for the population. In fact, the numbers of camps with less than 20 litres per person per day was over 40% for reporting camps in each of the three years. Over a quarter of the camps have an insufficient number of latrines, i.e. there are greater than 20 people per latrine, but many more camps have problems of poor latrine maintenance and low user rates of latrines.

Table 5: Results from UNHCR Standards and Indicators report: per capita water availability (litres per person per day 2003 to 2005) based on annual averages per camp

	2003	2004	2005	2006
<i>No. of camps with data available</i>	92	73	93	125
<i>Median</i>	20.2	22	20.1	18.3
<i>Average</i>	23.1	35	31.3	35.8
<i>% of these camps meeting UNHCR 20L/day standard</i>	54	59	53	46
<i>Average % of population in camps meeting the UNHCR 200m access distance standard</i>	86	72	77	84

Table 6: Results from UNHCR Standards and Indicators report: excreta disposal availability (persons/latrine 2003 to 2005).

	2003	2004	2005	2006
<i>No. of camps with data available</i>	89	81	90	81
<i>Median</i>	10.9	11	6.4*	10*
<i>Average</i>	27.7	36	26.9	17
<i>% of these camps meeting UNHCR excreta disposal standards</i>	74	67	83	70

*based on family latrine coverage figures assuming 5 people per family if total camp population figures are divided by the total family and communal latrine numbers pooled together.

The average annual crude incidence rates of malaria, watery and bloody diarrhoea cases presenting at health clinics and the relationship between them are shown in Figure 4; the link between watery diarrhoea and malaria and the high burden of morbidity in some operations is evident. Indeed, malnourished individuals have compromised immunity and are not only more likely to contract many communicable diseases, but also suffer from more frequent, severe, and prolonged episodes of these diseases (Connolly et al., 2004; WHO, 2005). Watery diarrhoea and malaria display a large range of values in Figure 4 due to different local and climatic conditions while bloody diarrhoea values are lower and with a smaller range.

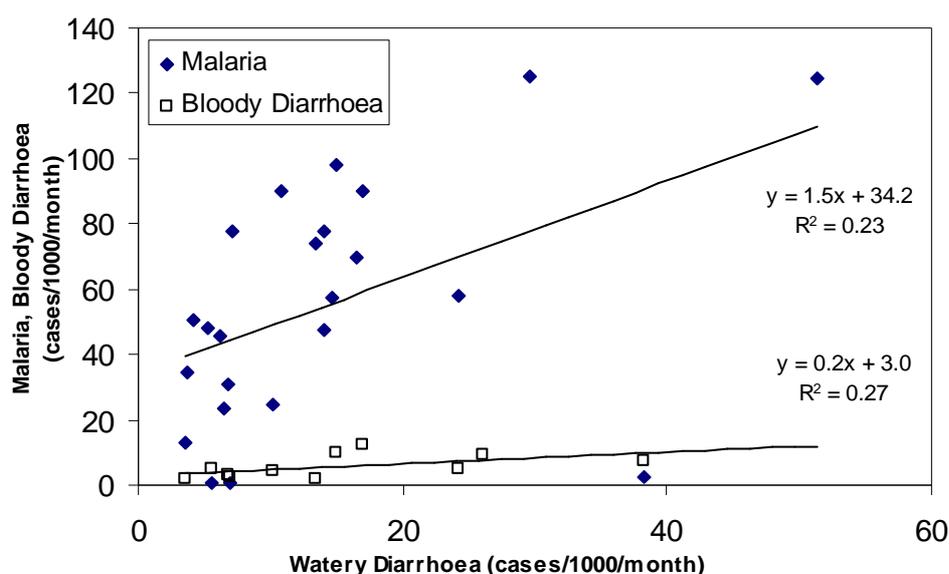


Figure 4 – A comparison of watery diarrhoea crude incidence rate (cases/1000/month) with malaria and bloody diarrhoea crude incidence rates (cases/1000/month) in selected UNHCR operations during 2005.

It is important to note that Figure 4 demonstrates not only that typically higher levels of morbidity of one infectious agent, linked to the water and sanitation sector, are also reflected across other infectious agents but underlines the importance that general environmental conditions (e.g. poor sanitation and community hygiene) have on health in refugee camp settings.

Issues in temporal and spatial differences in access to services across camps can not be dealt with by single annual average indicators and so this is why detailed household surveys were employed so as to gain more information, at least for that point in time. The results from the three household survey results which were carried out to assess the level of water and sanitation provision in typical refugee camps (Table 7) highlight the key parameters associated with water and sanitation services; these have been grouped into results relating to background, access, usage and sanitation & hygiene while survey findings related to diarrhoea are presented in Table 8.

Table 7: Results from three household (HH) surveys carried out in refugee camps

	Parameter	Budumburam (Ghana)	Dadaab (Kenya)	Nakivale (Uganda)	
<i>Back-ground</i>	Date of survey	12/2005	06/2006	02/2007	
	Camp population	10,000	50,000	23,000	
	No. of HH interviewed	840	285	395	
	Median HH size	6	6	5	
<i>Water access issues</i>	% of respondees female	79	64	67	
	Average time spent on water collection (minutes)	35	99	92	
	Average distance to main source of water (m)	153	163	1825	
	% of HH where no women or children are involved in water collection (i.e. adult males only)	11	6	21.5	
	% of HH where school-going children collect water	59	59	72	
	if yes, % arrive in school late	29	39	60	
	% fail to do homework	20	27	55	
	% reporting monthly or more frequent interruptions in water supply	55	79	90	
	<i>Water Usage</i>	Average water usage (litres/person/day) ¹	40	20.5	15.2
		Usage breakdown %:			
Bathing & Laundry		66	31	52	
Cooking & Drinking		26	23	36	
Cleaning, Gardening etc.	8	46	12		
<i>Sanitation and Hygiene</i>	% with separate drinking water container	88	93	67	
	Frequency of cleaning of this container ²	67%	64%	38%	
		daily	daily	daily	
	% with a designated latrine	11	95	69	
	Average distance from shelter to latrine (m)	6	15	15	
	% of HHs disposing of child's excreta in latrine	31	87	90	
% of HH who received hygiene training	23	32	50		
% of HH with access to a mosquito net	8.2	74.6	53		

1 = All of the Dadaab camp supply is chlorinated and distributed via tapstands; much of this figure of Budumburam supply is from unprotected sources and is used for washing and cleaning while one sixth of respondees state they use some form of household treatment. The Uganda supply is from a mixture of treated water and untreated lake water.

2 = The proportion of containers assessed as clean (inside and outside) was approximately 75% in all camps.

The average water quantities and distance to the source mirror the values provided by the Standards and Indicators reports and comply with the UNHCR standards of 20 l/p/d and 200m respectively. There are many similarities across the camps with the similar median household size, the high percentages of respondents in all surveys were women and they, along with their children, are charged with water collection in the vast majority of cases and this has negative impacts on child education in both camps (mainly arriving late and failing to do homework). Monthly or more frequent interruptions in water availability are widely reported (from 54% to 90%) with the main coping strategies in both camps is reported as using less water (bathing is where most economise on), buying or borrowing water or going further in search of water, the latter increasing the risk of attack. Disputes at water points are also commonly reported.

Sanitation access is very poor in the Budumburam camp (11%) and much of the water supply is from unprotected sources. Hygiene is certainly better in Dadaab and Nakivale as higher proportions of respondents there had access to hygiene training and refuse disposal points were closer to houses. Despite this, similar percentages of households are reporting diarrhoea in each operation (15 to 19%), as evident in Table 8 below.

Table 8: Diarrhoea and water quantities relationships from the 2 household (HH) surveys carried out in refugee camps and referred to in Table 7.

Parameter	Budumburam (Ghana)	Dadaab (Kenya)	Nakivale (Uganda)
% of all HH reporting a case of diarrhoea (minimum of 3 watery stools) within the previous 24 hours	15	17	19
Average no. of cases of diarrhoea per HH in those reporting diarrhoea within the previous 24 hours	1.3	1.4	1.3
Average per capita water usage (litres) in HH reporting 0 cases diarrhea \pm 95% confidence interval	41.8 \pm 2.2	21.5 \pm 1.7	16.4 \pm 1.8
N of HH used to calculate this value	716	236	317
Average per capita water usage (litres) in HH reporting cases of diarrhea \pm 95% confidence interval	30.9 \pm 3.4	15.9 \pm 1.3	11.9 \pm 1.4
N of HH used to calculate this value	123	47	76

Interestingly, in all camp household surveys, households reporting a case of diarrhoea within the past 24 hours collect 26% less water on average than those that did not report any diarrhoea cases (Table 8). Many examples of poor water and sanitation provision can be linked with refugees having nomadic backgrounds and the fact that they may not be used to living in camps with their associated higher population densities. These settings demand higher levels of personal, domestic and communal hygiene to offset the increased opportunities for transmission of communicable diseases. The lack of awareness on the need for using more water for hygiene is undoubtedly an important factor but there is also, as Roberts (1988) states, 'a profound need for research to quantify the association between water availability and human suffering'. Likewise, temporal variations in water supply (linked to dry or wet season fluctuations) or sanitation (due to flooding of latrines or structural damage) can not be deciphered using single average annual values.

There is a need for more detailed monitoring to pick this up as unequal distribution of food and non-food items is an unfortunate reality in most refugee camps. Such inequalities for water distribution can be due to the location of the water points, breakage or vandalism of taps, control/influence systems in operation in the camp or lack of storage facilities in the home and is a serious issue due to importance of water quantities to health.

Dealing with the water and sanitation, health and nutrition sectors in isolation will not maximize the potential overall benefits, and may even hinder progress in the other sectors (UNHCR, 2006b). In order to reach a consensus on priority strategies for food, nutrition and health interventions (which includes all of the compounding factors, such as water and sanitation provision, communicable diseases, access to non-food items, child and women's rights, gender and self-sufficiency strategies) joint consultations and integrated plans of action are needed across these sectors.

4 Durable Solutions Phase

All types of Durable Solutions depend upon the availability of essential needs for a population, including adequate water and sanitation services. Indeed, when planning the required level of these services the additional needs for self-reliance and livelihood activities (that are essential elements of a durable solution) must be taken into account; e.g. water for mud brick making, small business uses etc.

Voluntary Repatriation: UNHCR has a strong commitment to the achievement of the Millennium Development Goals (MDG). These goals aim, in the water and sanitation sector, to **halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation**. Such improvements in water and sanitation will speed the achievement of all eight MDGs (WHO, 2005). Returnees have equal rights, alongside host communities, to achieving improved level of water and sanitation services, as aimed for by the Millennium Development Goals. To assess how far such improvements have been achieved, all returnees should have an adequate level of water provision service which should be between the basic and intermediate levels of access, as defined by WHO (2004). This can be defined as:

- At least one water point (tap stand/well) per returnee block or community (i.e. approx. 100 people).
- A minimum of 20L of water available per person per day though 50L is the target level.
- Each family should have their own latrine.
- One hygiene promotion facilitators trained and in operation per 500 refugees for the first two years after return

This level of service can help to ensure that hygiene promotion work is not compromised by insufficient water and that laundry can take place near the plot. It is recommended that it is necessary to randomly verify the number of household latrines in use once a year. This survey can be carried in conjunction with other surveys being undertaken in returnee areas. UNHCR has an obligation to help returning refugees to reintegrate into their place of origin and sustainable water and sanitation systems must also be considered as part of that process. Gender balance on hygiene promotion teams is an important factor to ensure equal opportunities for capacity building and to maximise the receptor audience. Strong partnership with UN sister agencies and NGOs are essential to properly plan the return operations so that help is provided to the returnees and there is a sustainable recovery; if not return may not be successful and refugees may return to the country of asylum or migrate to the slum areas of urban centres within reach.

Local integration: Standards in the water and sanitation sector for refugees integrating into the local community should not be less than those of the local population and, at a minimum, be at the levels of access outlined above for the returnees. Advocacy and open dialogue with local government partners as to how this should be achieved are central to achieving these targets.

Resettlement: Water and sanitation facilities should be of adequate nature in the areas where refugees will be accommodated in the country targetted for resettlement. However, if this is not the case discussions with the host government on how to provide adequate facilities should be undertaken.

UNHCR has produced detailed guidance on durable solutions including ‘The Handbook for Planning and Implementing Development Assistance for Refugees (DAR) Programmes’ and other detailed guidance available on the intranet at Operations / Durable Solutions for Displacement.

5. Advocacy

The word advocacy has its origins in law and is defined by most dictionaries as the process of 'speaking on behalf of someone'. It is used mainly in the development sphere for various groups discussing with stakeholders to achieve a stated objective and this is especially apt for the water and sanitation sectors as there is a wide range of actors involved in these sectors at all levels. Nationally, water tends to cut across the remit of several different government ministries, while donors and multi-lateral agencies also play a key role. Internationally, external finance institutions, UN and other international organisations, and global institutions such as the World Bank and the Global Water Partnership, all contribute to the development and implementation of water policy. Locally, NGOs, private sector companies and local government agencies are all involved in water service provision. Rarely is there effective coordination and collaboration between these different agencies. Indeed, there is often also competition between the different water uses over the freshwater resource – for example between domestic, industrial and agricultural consumption (Water Aid, 2001). All of this may not seem directly of interest to UNHCR but actually UNHCR has often had to consider such activities via negotiations with Governments hosting refugees. Also it is a vital part of returnee operations if UNHCR wants return to be sustainable.

Advocacy works at a number of different levels in a UNHCR context. These may be grouped as follows:

- Advocacy for support from donors (both public and private) – such donors will supply funds and/or expertise to fill a gap in water and sanitation provision to refugees but they must be assured that UNHCR will properly monitor the implementation of their resources and comprehensively report on it.
- Advocacy with Local Government to show, for example, that UNHCR activities will not impinge on the water resources of the locals thus ensuring the institution of asylum. Sound technical studies and risk assessment should be undertaken to show that the needs of the refugees are within the local carrying capacity of the environment – if they are not then a solution with a lower density population than a camp may need to be found. If UNHCR wishes to build capacity in local institutions then advocacy and capacity building go hand-in-hand to achieving a sustainable water management solution for the people of concern to UNHCR.
- Advocacy work should involve the people of concern to UNHCR as much as possible and empower them in the process; this is, in fact, merely an extension of the participatory assessment exercises.
- Finally, and very importantly, internal advocacy is often needed for Water & Sanitation services within UNHCR to show their importance not only as essential services to minimise the affects on refugee health and well-being (the burden of water-borne disease transmission must be targetted and reduced via the provision of improved water, sanitation and hygiene promotion) but also as a key protection concern for UNHCR.
- Resource managers may need to be convinced that it is worth investing in better provision of WatSan to our people of concern. Sharing of information that contains the key essential facts in a digestible format for managers is a key form of internal advocacy as managers will need to be convinced of the need to place adequate resources in the Water and Sanitation program plans.

6. Access to Technical Support

6.1 Advice and reference tools

The first source of advice on water and sanitation issues for UNHCR staff is the Senior Water and Sanitation officer in the Division of Operational Services in HQ who has the responsibility to ensure technical integrity in water and sanitation programs in UNHCR operations.

The principal resource tool for field staff on technical issues is the Health, Food, Nutrition and WatSan **Toolkit** which comprises of a CD-ROM of technical references in these areas. An older version of the toolkit from 2001 has been replaced by an updated version (Nov. 2005) and placed on the intranet under 'Operational Support'. Other useful WatSan and health resources can also be found on this intranet site.

The toolkit contains many useful documents in the WatSan area, including planning and implementing projects as well as monitoring and reviewing issues. The principal references for technical integrity issues include:

Sanitation (all aspects including medical waste):

Emergency Sanitation Manual (WEDC, 2002)

Excreta Disposal in Emergencies (An Inter-Agency project published by WEDC, 2007)

IRC International Water and Sanitation Centre: Hygiene Promotion (ICRC, 2003)

Vector control:

Emergency Vector Control Using Chemicals (WEDC, 1999)

Vector and Pest Control in Refugee Situations (UNHCR, 1997)

Water quality & it's protection:

Sanitary Surveying (WEDC, 1999)

Water supply surveillance - A reference manual (WEDC, 2002) - see chapters 6 & 10

Water Quality Surveillance - a practical guide (WEDC, 2002) - this has sanitary risk forms including household storage

Water source, supply, distribution and treatment:

Emergency Water Sources: Guidelines for Selection and Treatment (WEDC, 1997)

Oxfam Guidelines for Water Treatment in Emergencies (Oxfam, 2001)

Advocacy and Promotion materials:

UNHCR World Water Day materials (2004-2007)

Advocacy for Water, Environmental Sanitation and Hygiene (IRC, 2003).

Guidelines

WHO Drinking Water guidelines (2004) and Training materials (2000)

UNHCR guidelines v. Sphere guidelines (2005)

UNHCR Emergency Handbook (2007)

Two excellent books not on the toolkit but available commercially are:

Engineering in Emergencies (2002), 2nd Edition, by J. Davis and R. Lambert, 718 pages, ITDG Publishing, ISBN 1 85339 521 8.

Water, sanitation and hygiene for populations at risk, (2005) by Action Contre la Faim, 801 pages, Hermann Publishers, ISBN 2 7056 6499 8

6.2 Internet Resources:

The CD-ROM toolkit contains some background information; see:

- How to Find Water and Sanitation Information on the Internet? (IRC International Water and Sanitation Centre, 2003)
- Water & Sanitation website links (UNHCR, 2005)

Other useful; internet sites include:

WELL: <http://www.lboro.ac.uk/well/index.htm>

IRC: <http://www.irc.nl/ircdoc/>

Environmental Health project: <http://www.ehproject.org/>

The World Bank: <http://www.worldbank.org/watsan/>

SKAT: <http://www.skat.ch/htn/publications/downloads.htm>

GTZ: <http://www2.gtz.de/ecosan/english/links-international.htm>

PAHO website on water and sanitation issues in natural disasters:
<http://www.disaster-info.net/watermitigation/i/links.html>

Manuals on drilling, groundwater, sanitation: <http://www.lifewater.ca/manuals.htm>

Environmental Aid at USAID <http://www.ehproject.org/>

6.3 Data sharing and reporting formats

It is important for HQ water and sanitation staff to have a global overview on the quality of water and sanitation provision for a number of reasons:

1. To produce a situational review of UNHCR current operations.
2. To help to flag any problems in a given operations.
3. To prioritise help to those most in need of it.
4. To see the effects of interventions and to spread such effective best practice to other operations.
5. To comply with HQ reporting requirements.
6. To help in recruitment and fund-raising processes.

An example of how such a global overview can be used is given in Section 3.4. The data used to produce these important messages must be produced at camp level by means of three data reporting formats:

- 1) The Standards and Indicators (S&I) Initiative
- 2) The form given below can be filled in quarterly. The completion of this form means the data for the S&I can be easily taken from this information and does not require additional data collection.
- 3) A checklist (given below) has been developed for non-specialists to assess how well water & sanitation provision is being undertaken in the camp or returnee area.

Checklist to assist non-technical staff responsible for routine monitoring of UNHCR activities in the Field

The following checklist is to assist colleagues in the field, especially non-technical staff responsible for routine monitoring of UNHCR activities in the Field. It is expected to:

- help monitor some basic facts and figures on the performance and impacts in technical sectors;
- identify the gaps and narrow down the areas that need strengthening or further review;
- provide broader picture of the level of services, which would be available for consumption to managers at the field as well as technical experts in the Regional Hubs and HQs;

The checklist should be conducted primarily by Field Assistants **every 6 months** in conjunction with other UNHCR field colleagues directly involved in monitoring activities on the ground, relevant staff from implementing partners (IPs) and/operational partners (OPs), and the representatives of the beneficiary community. It does not replace routine reporting or more detailed assessments of service or program quality, such as Standard and Indicators Report, Annual Protection Report, etc. The findings and recommendations from the checklist should be discussed with relevant implementing/operational partners, local authorities as appropriate, and the Head of the Office. It should be shared with UNHCR's Public Health/WatSan Regional Coordinator for your region.

Name of camp/settlement: _____	Province/District: _____
Name of assessor: _____	Position of assessor: _____
Date of current assessment: ___/___/___	Date of last assessment: ___/___/___

Biannual Checklist for UNHCR Field Staff
Monitoring of Water & Sanitation (WatSan) Activities

1. Coordination

a. Are there WatSan Management Committees (WMC) established at camp/settlement level?	Y/N
b. If yes, how many meetings have occurred during the past 6 months? ¹	---
c. Is there refugee / returnee representation, including women and youth, on the WMC? Total Member: ----- Male: ----- Female: -----	Y/N
d. A clear mechanism established to consult with host community on WatSan related issues?	Y/N
e. Has a work plan been developed by the WMC?	Y/N
Any other comments on coordination? _____ _____	

2. Protection²

Please discuss this with Head of Field Office/Sub-Office, Protection Officer and implementing partner staff.

Was there any protection issues/incidents relating to WatSan reported in the last 6 months?

If yes, briefly describe the incidents and the action taken (do not provide any identifying details).

3. Prevention

Initiatives to reduce diseases transmission linked to poor WatSan and hygiene services (e.g. diarrhoea, dysentery, typhoid, hepatitis etc.); for details refer to page 547 in UNHCR Emergency Handbook, 3rd Ed through Information/Education/Communication as well as to avoid/mitigate potential problems in the provision of WatSan services

Item	Available (Y/N or N/A)	Comments
1. Are posters and billboards on WatSan and Hygiene promotion available?		
2. Have WatSan brochures/pamphlets for Community Workers been prepared and distributed?		
3. Have WatSan clubs been organised in the schools?		
4. Have community cleaning campaigns been organised regularly?		
5. Are there formal awareness sessions or training activities on WatSan & Hygiene conducted for the Community Workers?		
6. Is there a clear procedure or surveillance mechanism to prevent contamination of water in the supply system, including water quality testing?		
7. Are routine maintenance procedures for WatSan facilities well-established and followed?		

¹ Target = 1 per month

² For example, incidents of SGBV at water points/latrines; denial of access to WatSan facilities or discrimination within the community in service provision; conflicts in the camp population or with the host community due to sharing of resources and pollution of local water bodies; children missing school due to burden on water collection.

4. Quality of WatSan Service Provision

(i) Please consult with program staff in the Office, and if necessary check with implementing partners, on the WatSan standard and indicator data compiled recently for this operation/camp and provide your comments reflecting the gaps in the provision of services vis-à-vis the actual observations you have made during this monitoring exercise.

(ii) Please comment on the current state of WatSan facilities in the camp; i.e. are the following apparent?

Issue	Y/N or N/A	Issue	Y/N or N/A
1. Broken taps or handpumps?		7. Latrines clean?	
2. Frequent breakdown in water supply?		8. Open defecation?	
3. Poor household water storage practice?		9. Stagnant water/flooding?	
4. Garbage all around the camp?		10. Long queues at taps?	
5. Are there vector control activities? ⁱ		11. Any erosion or land-degradation? ⁱⁱ	
6. Are unprotected sources being used?		12. Are wells excessively near to latrines?	

5. Overall Recommendations (based on findings of checklist):

Please discuss findings with the relevant implementing and operational partners. Be sure to communicate findings to your supervisor and through your country programme to the Regional Public Health/ WatSan Technical Officer.

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Annex 1 Generic Lessons learnt in Water and Sanitation projects

General advice can be given on water and sanitation provision in different types of settings, as outlined in the following table, adapted from Chalinder (1994).

Scenario	Water	Sanitation	Comments
Camps sited in arid region	Short term may use water trucking; long term need to site near a reliable source and/or drill boreholes. Need to ensure that these do not impact on sources used by local community. Boreholes should not lead to all-year round livestock grazing and result in soil erosion	Good scope for latrine digging but materials such as wood, cement, gravel etc. will be in short supply	
Camps in hilly or mountainous area	Water source (surface or groundwater water or preferably a spring which can be used for gravity feed) to be identified before final site selection. Valley may be cultivated and so not permit camp location. Then camp may be on slopes or hill top and then alternatives are between expensive pumping options or camp population collect their own water. If the latter, then hygiene promotion is very important to justify to the people why they should collect enough water for all needs.	May need to level ground to install squatting plate, water drainage to pit should be avoided and so a drainage channel may be necessary. If soils are shallow then may need to raise latrine above ground level. Latrines should not be above water sources.	Site planning and the number and nature of the beneficiaries should dictate whether it is better to leave people dispersed around springs and other sources or to gather them centrally where expensive water distribution may be necessary though health centres can be more easily organised and accessed.
Camps in area of abundant surface water	Surface water often needs treatment which is not sustainable in the long term though it may bridge the gap between tankering and handpump development. Water should be drawn upstream or human areas. It is best to standardise equipment across the operation and preferably use locally available options. Infiltration galleries are a good option to reduce turbidity.	Latrine bases should at least 1.5m above the highest water table. This may affect latrine capacity and so it may be require re-siting or more frequent desludging. Alternate chamber filling is another good option.	
Displacement into existing settlement	Expansion of existing system may be done by increasing pumping or storage. Extra taps could reduce waiting time. Wells may be rehabilitated. Otherwise may need to tanker while sustainable solutions are being examined	If communal buildings are being used for shelter then sanitation facilities need to be expanded and improved. Overloaded systems should not become the norm. More frequent desludging and new latrines may be required also	Local management structures can be reinforced by giving training on maintenance and encouraging community ownership and management

<p style="text-align: center;">Population affected by drought</p>	<p>Stress increases on existing sources or yields and quality may drop significantly. Trucking options may be considered including the use of carts, animals, bicycles etc. Browsers may be a viable option where transport options are limited. Well deepening/rehabilitation are another option. Drilling may be considered but may not have short-term benefits; success rates can be enhanced with geophysics. Sustainability of such wells should be considered - a program of improving physical infrastructure may be preferred.</p>	<p>The reduction in water quality and quantity makes good hygiene practice even more important. Hygiene promotion can have significant impacts on morbidity and mortality</p>	
<p style="text-align: center;">Resident population affected by sudden onset of disaster</p>	<p>Floods drive people to higher ground and to use unprotected water sources. Preparatory work should seal and raise plinths to prevent ingress of contamination. The distribution of chlorine tablets at household level is another option. Wells may need to be purged and disinfected afterwards. Cyclones lead to power disruption and damage to infrastructure. Saline wells need to be purged and disinfected afterwards. Chlorine tablet and filtration may be needed. Earthquakes: temporary water treatment stations may be necessary, Chlorine tablet distribution is a short term option. Spring lines may have been altered. Wells and boreholes and pipelines may also require repair.</p>	<p>People should bury faces to avoid them reaching floodwater.</p> <p>Latrines may have to be constructed where people have congregated. Dead bodies and carcasses should be buried. Defecation areas need to be managed and latrine constructed; hygiene awareness and training is very important. If sewage pipes burst they should cordoned off.</p>	<p>Such events usually see people staying close to their destroyed homes. Camp development is less likely and so more disperse programmes and additional staff and resource allocation may be required.</p>
<p style="text-align: center;">Urban area provision</p>	<p>Often poor maintenance and under-funding of systems in developing or transition countries complicates repair work after conflict. Quick-fix solutions are often not appropriate. Water trucking and increased storage facilities are short term solution and allow more time for detailed assessments. If groundwater is to be used chemical pollution can often be a serious issue in urban areas and a full range of tests should be undertaken.</p>	<p>The same issues of repairing a system in poor condition prior to the onset of the emergency apply to water and sanitation. Cross-connection (either by rupture or poor original work) should be kept in mind.</p>	<p>Scale problems are the biggest issue with respect to the level of intervention. The higher the level of technology means the more likely specific experts are needed for rehabilitation work and so the level of expense also increases.</p>

ⁱ These are typically spraying of chemicals to control vectors causing health risks such as flies, mosquitoes, mites, lice, fleas, ticks, rats etc.

ⁱⁱ Some camps are vulnerable to water-induced hazards like landslides, erosions of banks along the drainage/streams/rivers, development of massive gullies etc.