Model Guidelines

for Mainstreaming Water and Sanitation in Emergencies, Protracted Crises, LRRD and Disaster Preparedness Operations

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A Review of Water and Sanitation issues relating to the funding of Humanitarian Operations under the EC Humanitarian Regulation

Model Guidelines 2005

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[†] www.aguaconsult.co.uk

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Abbreviations

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ACF	Action Contre La Faim
CDC	Centre for Disease Control, USA
DP	Disaster Preparedness
DANIDA	Royal Danish Ministry of Foreign Affairs
DIPECHO	Disaster Preparedness programme of ECHO
DFID	Department for International Development (UK government)
DRC	Democratic Republic of Congo
EC	European Commission
ECHO	European Commission Directorate-General for Humanitarian Aid
EHP	Environmental Health Project (a USAID core-funded project)
GIS	Geographic Information System
GPS	Global Positioning System
ICRC	International Committee of the Red Cross
IDP	Internally displaced people
IFRC	International Federation of the Red Cross and Red Crescent
IRC	International Rescue Committee, (USA)
IRC 2	International Water and Sanitation Centre, The Netherlands
ITDG	Intermediate Technology Development Group
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immune Deficiency Syndrome
LSHTM	London School of Hygiene and Tropical Medicine
LRRD	Linking Relief, Rehabilitation and Development
MDG	Millennium Development Goals
MEP	Minimum Evaluation Procedure
MSF	Médecins Sans Frontières
NGO	Non-Governmental Organisation
O&M	Operation and maintenance
PHAST	Participatory Hygiene and Sanitation Transformation
PRA	Participatory Rural Appraisal
PAHO	Pan American Health Organisation
POU	Point of use (of water)
REDR	Registered Engineers for Disaster Relief
Sphere	Humanitarian Charter and Minimum Standards in Disaster Response Project
SMART	Specific, Measurable, Agreed, Realistic and Timed
SOP	Standard Operating Procedures
SWS	Safe water system (a point of use system developed by CDC)
TA	Technical Assistant
UNICEF	United Nations Children's Fund
UNHCR	United Nations High Commission for Refugees
USAID	United States Agency for International Development
VA	Vulnerability Analysis
VOICE	Voluntary Organisations in Cooperation in Emergencies
Watsan	Water, sanitation, and hygiene promotion (in the broadest sense of its meaning, including institutional capacity at the community level)
WEDC	Water Engineering and Development Centre, UK
WHO	World Health Organisation

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1.1 Background

ECHO acknowledges the critical importance of water and sanitation in emergencies as interventions that can save lives, reduce morbidity rates and provide much needed improvements to human welfare and dignity. Safe drinking water, proper sanitation, and positive hygiene behaviours are all fundamental to public health. In addition, ECHO recognises that in many contexts water is linked to broader issues such as livelihoods and conflict. As such, water and sanitation comprise one of ECHO's four core areas of intervention in emergencies, whether due to natural disasters or man-made crises; the other key areas being shelter, health and nutrition.

In accordance with its mandate and general policies, ECHO has developed a policy document which sets out the main issues and considerations for intervention in water and sanitation in emergencies. Both this policy document, or Concept Paper, and these Model Guidelines were researched and developed by a team of independent consultants, drawing on material from ECHO and broader EC documentation, sector publications and existing evaluation reports. The team also carried out extensive interviews with key personnel from operational NGOs, donor, UN and research agencies, both in headquarters and at field level in five countries.

These Model Guidelines have been developed in conjunction with the Concept Paper, to enable ECHO staff and others to effectively understand and implement its policy positions in practice. The guidelines draw on a wide range of experience in the sector, ranging from ECHO itself, NGOs, donors, and research institutes to UN agencies and the Red Cross Red Crescent movement. The Model Guidelines present lessons and good practice relating to a range of areas of intervention, including technical, institutional, and social aspects of service provision, as well as hygiene promotion and behavioural change. Wherever possible the guidelines draw on existing materials and information sources.

Throughout this document 'water and sanitation' (or 'watsan' for short) is used to encompass a wide range of activities covering domestic water supply, environmental sanitation (including excreta disposal, solid waste management and vector control) and hygiene promotion. This definition does not include water resource management.

1.2 Users of the guidelines

This document has been commissioned by ECHO and the potential ***users*** include the following groups:

- ECHO staff: Technical Assistants at field level, country, or regional office staff; desk officers and evaluation staff in Brussels HQ.

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- Implementing partners of ECHO and their own local partners: project managers, design engineers, technical staff, and social organisers; field monitors and supervisors.
- ECHO contractors: those involved in evaluations of ECHO funded watsan projects.
- External agencies: staff from any external organisation that wishes to know about and understand the application of ECHO policies for watsan in emergencies.

1.3 Purpose and scope

The global ***purpose*** of these guidelines is to strengthen the coherence, consistency, and quality of ECHO funded operations in the water and sanitation sector.

The ***specific objectives*** of the guidelines are:

- To summarise ECHO's main policy positions and provide examples of how these can be planned for, designed, and implemented;
- To highlight cross-cutting issues that ECHO considers relevant to water and sanitation interventions.
- To set out examples of good practice and key considerations under different emergency scenarios; resulting from both natural disasters and man-made conflicts; and
- To provide access to technical resource material and contact information of agencies that are active in areas of water and sanitation in emergencies.

Although these guidelines maintain a sectoral focus, they do address a number of broader issues that also apply to other sectors; these have been included only where they have a significant importance for ECHO- funded watsan operations.

It should be emphasised that these guidelines have been developed to illustrate ***good practice*** based on a review of the current experience and knowledge-base in the sector; as such these guidelines ***do not*** represent a binding policy for ECHO regarding funding of water, sanitation, and hygiene promotion interventions in emergencies.

These guidelines recognise that the victims of disasters are primarily the poor and vulnerable, and specifically target the groups of people most severely affected by disasters. Typically these include poor rural, semi-urban, and displaced populations. By and large, these groups have the least developed coping mechanisms, live in the most disaster-prone areas, and they are most at risk of contracting watsan related diseases when a disaster strikes.

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Scope:
These guidelines have been designed to be used for a variety of purposes and by different target groups covering a range of objectives as follows:

- To design, plan and implement watsan projects for emergencies;
- To assess the suitability of watsan interventions proposed to ECHO;
- To facilitate, monitor and/or evaluate the performance of ECHO partners and/or their local partners in the implementation of ECHO-funded watsan interventions;
- To develop the water and sanitation components of ECHO's intervention strategies in specific regions, countries or sub-national areas; and
- As a reference guide for the development of approaches, guidelines, training curricula and operational procedures.

1.4 Organisation of the guidelines

These guidelines are intended to be used as a reference for ECHO staff and partners. The document is divided into eight sections and a number of annexes as follows:

- ***Section 1*** introduces the guidelines and describes the background to their development, the objectives and coverage, target audiences and the main ways in which they can be used by different groups.
- ***Section 2*** presents a summary of ***ECHO policy*** on watsan interventions and describes strategic issues and their practical implications in ECHO-funded projects, as well as summarising how ECHO categorises emergency scenarios.
- ***Section 3*** provides an overview of the ***cross-cutting issues*** and the concept of LRRD that ECHO considers as being relevant to watsan interventions and gives examples of good practice for their application.
- ***Section 4*** addresses important ***implementation steps*** that ECHO recognises as being central to project execution, including assessments to be undertaken before projects begin, the integration of hygiene promotion and the need to address sustainability of systems.
- ***Section 5*** provides practical details of watsan responses to ***acute emergencies***, including a summary of typical impacts covering a range of natural disasters and conflict-related emergency scenarios. This chapter also addresses the requirements for post-acute emergency interventions.
- ***Section 6*** provides practical details of watsan responses to ***chronic emergencies***, including a summary of typical impacts covering both drought and protracted emergency scenarios resulting from conflict.
- ***Section 7*** gives details of watsan considerations for ***disaster preparedness*** projects, stressing the importance of both preparedness and ***mitigation*** measures, which can help to limit or prevent potential damage to watsan infrastructure.

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- ***Section 8*** provides background to the issue of ***standards and indicators*** to be used in the design of watsan projects and explains ECHO's position in relation to the Sphere guidelines and their practical application.
- ***Annexes*** deal with a variety of subjects, including definitions used in the guidelines, literature sources used and a listing of key information resources and agencies working in water and sanitation in emergencies.

Note on use of the guidelines and hyperlinks:

The document does not have to be read in a sequential manner from start to finish – users are encouraged to select a topic or particular intervention scenario which they may find relevant to their work and to dip in and out of the document, making full use of the hyperlinks to an extensive range of reference materials made available on the DVD-Rom or via links to websites.

For those using the digital version of these guidelines there are numerous references to documentation and technical resources. Some of these documents are included on this DVD either in PDF or Microsoft Word format and can be accessed by clicking on the **hyper-linked reference** (e.g. WHO10). Some of these links will also take the reader to an external website if the user is connected to the internet. Some documents are not available in electronic format, in these cases clicking the reference (e.g. IRCNL2) will take the reader to the relevent section of the Annex where the full title, authors, and year of publication can be found.

The text and tables in these guidelines also contain additional information, examples, or case studies in the form of comments. To view these comments, simply click the mouse on the **highlighted text** or the following symbol ■ and a comments document will open on the page related to the text being read.

Feedback and comments on these guidelines:

A wide range of humanitarian organisations and water and sanitation agencies were consulted during the course of the development of these guidelines, and a number of agencies provided feedback and comments on the initial drafts. DG ECHO welcomes further comments or feedback on the use and application of the guidelines; contact the Evaluation Sector at any time at: **ECHO-EVAL@cec.eu.int**

In addition, further copies of these Model Guidelines and the Concept Paper on DVD-Rom may be requested by contacting DG ECHO at the same e-mail address.

2 ECHO's Strategic Approach to Funding Water, Sanitation and Hygiene in Emergencies

2.1 Introduction

This chapter is based on ECHO's water and sanitation policy document, or concept paper. The first section of the chapter provides a summary of the most important aspects of ECHO's strategic approaches, as well as giving guidance on how these policies can best be translated into practice at the field level. The second part of this chapter explains how ECHO categorises different emergencies, both in terms of the type of event (i.e. a natural disaster or conflict-related emergencies), as well as by the nature of the event itself (i.e. sudden-onset, or protracted scenarios).

2.2 Key ECHO strategies for water and sanitation in emergencies

ECHO has a number of priorities and policies which influence the type and range of water and sanitation projects that it funds. It is important to understand how these policies may impact upon the design and execution of projects and what is required of partners when executing activities within this policy framework. The main policies which impact on water and sanitation provision are listed below, in rough order from those applied at the global level down to those more relevant at a project level; some policies (i.e. the needs-based approach) are applied vertically, that is to say at both global and project levels.

2.2.1 Needs-based approaches

ECHO's policy is to identify and intervene in areas of greatest humanitarian need, both at global and at local levels. For chronic situations, needs are assessed and compared based on global indicators and comprehensive field-level assessments. Resources are measured and directed to the specific sectors (i.e. health, watsan, nutrition, and shelter) and to the affected populations most in need. Water scarcity, and the potential impacts that this can have on a region or country, such as increasing the likelihood of conflict, is a factor that ECHO considers to be important when determining resource allocations.

For unforeseen or quick-onset emergencies, decisions are based on rapid, multi-sectoral assessments prioritising both sector-specific needs and geographic locations. Assessments based on global indicators (**ECHO11**, **ECHO14**, **ECHO15**), as well as on field-level data gathered by staff and partners, are used to direct resources to where they are most needed. For emergencies, this approach is applied predominantly at a sectoral level in the allocation of resources across the health, shelter, food, or watsan sectors. It also informs project strategy, ensuring funding is directed to those most in need and where other donors are less likely to respond, and that is channelled through those partners able to engage rapidly and effectively. Both absolute and relative needs are considered (i.e. needs compared to the "normal" service levels and needs compared to other regions) when making these resource allocation decisions.

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Needs-based approaches in practice:

- Need in an emergency is defined in terms of lack of access to adequate quantities and quality of water for basic purposes, including for drinking, practising personal hygiene, cooking etc.
- Need is also defined in terms of lack of access to safe excreta disposal facilities and poor hygiene practices.
- The definition of what constitutes an adequate level of water will vary according to the country context, "normal" levels of service and climatic conditions. The minimum amount of safe water needed for human survival is stated by WHO as being 3 Lpcd, with a further 2 to 3 Lpcd required for food preparation and clean up; however, even this "survival allocation" level will vary according to factors such as climate, cultural practices etc.
- The analysis of need should take into account both absolute need and relative needs.
- The analysis of need should take into account the current capacity of the government, and other actors on the ground, to meet the gap between what is required as a minimum and what is currently available.
- The analysis of need should take into account the actual or likely intervention of other donors or relief agencies that may go some way to meet the gap between what is required as a minimum and what is currently available.

2.2.2 ECHO's forgotten crisis policy

ECHO pays special attention to "forgotten crises" and forgotten humanitarian needs worldwide (**ECHO11**, **ECHO14**, **ECHO15**). The implication of this policy has important repercussions for ECHO's funding of water and sanitation projects. Firstly, forgotten crises often occur in countries which are also characterised by high rates of structural poverty, low levels of physical, social, and institutional infrastructure and where water and sanitation needs are critical and widespread. Secondly, this policy has historically shifted the emphasis of ECHO funding towards more protracted, chronic situations. Finally, forgotten crises, by their very definition, tend to lack other significant donor involvement, so partners are inevitably much more reliant on ECHO funding. In those cases where ECHO is involved in crises that are not forgotten and thus "better" funded, the challenge is, more than in other situations, to fund projects that are actually really necessary and avoid overlap of funding with that of other donors. In these cases donor coordination and active on site monitoring in the field is particularly important.

Forgotten crisis in practice:

- In funding decisions for support to water and sanitation interventions, ECHO gives priority to forgotten crises, both at country and at sub-national level, where there is limited support from other donors for the victims of disasters or conflict.
- In determining the status of a crisis, ECHO also considers the capacity, and political will, of a government to address the needs of those affected by a particular event or situation.

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2.2.3 Disaster preparedness

It has been recognised that this element of humanitarian aid needs to be strengthened as it can often be a more cost effective way of working, particularly in situations where there are frequent or cyclical natural disaster events such as river basin flooding (i.e. in parts of India, Bangladesh and the Mekong delta), or cyclones (i.e. in Central America and the Caribbean). In order to achieve this, different approaches need to be devised and adopted, and planning mechanisms need to be adapted. ECHO already addresses disaster preparedness at the local, or community level, through its Disaster Preparedness funding, DIPECHO (**ECHO18**); however, there is still much to be done in terms of mainstreaming risk reduction. The concept of disaster preparedness also includes mitigation measures which can, when properly executed, address some of the negative impacts of natural disasters. ECHO considers that disaster mitigation should be incorporated into all aspects and phases of a response to a crisis, following on from the immediate life-saving phase. The overall aim of ECHO's work in disaster preparedness is to see disaster risk reduction approaches incorporated into wider national policy frameworks, covering aspects including planning, zoning, design, and construction standards. See also: **ECHO6**.

Disaster preparedness in practice:

- Disaster preparedness includes social or organisational aspects, such as establishing committees within communities which can be mobilised in the event of a disaster, or forming linkages between communities and local government for early warning dissemination and relief protocols.
- Disaster preparedness also includes technical measures, such as the provision of adequate water storage containers, and water treatment materials (e.g. alum, also known as aluminium sulphate or chlorine) at specific times of the year in areas known to be prone to natural disasters.
- Mitigation measures to provide structural protection to water supply and sanitation facilities are a critical element of disaster preparedness. Mitigation measures can be at household level (i.e. raising or strengthening of latrine pits subject to flooding) or at the community level (i.e. location of system intakes at sites less prone to landslide, or improved design and siting of water storage tanks).

2.2.4 Results-based focus

Historically, aid organisations have measured their progress using *output* indicators focussing on concrete results (e.g. number of latrines, water points constructed, number of hygiene training sessions held, etc) which provide very little evidence as to the real effectiveness of the interventions. ECHO's Framework Partnership Agreements (**ECHO9**) stress the need for partners to focus more on output in terms of results in the assessment of achievement of impact. While adopting a results-based approach can provide a more meaningful measure of the effectiveness of aid, the impacts of water, sanitation, and

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hygiene interventions are often difficult to measure. Harder still is attributing any measurable change (e.g. a reduction in the prevalence of diarrhoeal disease) to a particular intervention or input, such as a water project, given the number of confounding factors which could influence the changes. This is particularly true given the short time frame of most ECHO-funded projects. Furthermore, a focus on results has the potential to detract from the importance of the *processes* such as the level of beneficiary participation and consideration of gender. In spite of these limitations adopting a 'results-based focus' both in the project identification phase, and during subsequent monitoring and evaluation activities, is possible and can be the catalyst for improvements in service delivery. In this context, ECHO emphasises the importance of robust baseline information, developing SMART (Specific, Measurable, Agreed, Realistic, and Timebound) objectives and ensuring sufficient attention is given to measuring achievements against those objectives.

Results-based focus in practice:

- Results-based approaches require a focus not only on concrete inputs and outputs (i.e. the quantity of materials used in construction and the number of systems built), but also on the outcomes of a project (i.e. access to and use of facilities by different groups).
- Ultimately, a results-based focus seeks to address impact (i.e. changes in the prevalence of diarrhoea amongst target groups). Measuring such impacts is difficult, can be costly, and requires reliable baseline data, which may not always be available, especially in the first phases of a response. See also: **ALNAP1**.

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2.2.5 Cost recovery

As a general rule, cost-recovery and income-generation schemes should not be considered during urgent or emergency operations. In chronic situations, however, cost recovery can be a critical part of long-term O&M and financing plans and is also important as it enables relief interventions to be more closely aligned with subsequent developmental efforts. In order to prevent the misuse of ECHO-donated equipment and funds, ECHO has developed detailed guidelines and procedures for project cost recovery. ECHO partners are obliged to ensure that proceeds from the sale of items (e.g. water) produced with ECHO-funded inputs, remain with the intermediate beneficiary (i.e. the owner of the donated resource) "in order to guarantee the sustainability of the project;" further, the subsidy cannot have the objective or the effect of leading to a profit for the recipient[†]. Not addressing these issues can lead to serious problems; for example, funds generated from the sale of water being diverted for personal, inappropriate, or even illegal uses.

For chronic situations, and in post-acute emergency scenarios where systems are being rehabilitated in a transition to the normal pre-event levels of service, ECHO's policy on cost recovery advocates for the principle that users should cover a proportion of both investment and recurrent costs where this is feasible and in-line with national norms. However, ECHO further recognises that in some contexts full cost recovery will not be possible. For further reference see: **ECHO5**.

Cost recovery in practice:

- An element of cost recovery should be built into the financial design of projects, especially in projects implemented in chronic situations.
- It is unrealistic to expect that people affected by an emergency will be in a position to contribute to capital costs during a relief operation, but in the longer-term they should be expected to pay for maintenance costs.
- The design of any cost recovery element (tariff) should take into account national norms and standards.
- It is necessary to consider the particular needs and capacities of vulnerable groups within a community who may not be able to pay the full tariff.
- In some contexts, payment of a "tariff" may be made on the basis of in-kind contributions (i.e. labour to carry out maintenance tasks, or produce/livestock which can be monetised).

[†] **Per the EC Financial Regulation**

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2.3 Categorisation of Water, Sanitation and Hygiene Intervention Scenarios

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2.3 Categorisation of Water, Sanitation and Hygiene Intervention Scenarios

No theoretical framework can capture all possible scenarios in terms of the nature, cause and likely effect of different emergencies, but ECHO considers that the most useful and practical way of classifying water and sanitation interventions is to establish **categories under which similar approaches are used**. Along these lines, there are two broad humanitarian situational categories:

i. **ACUTE EMERGENCIES**; and
ii. **CHRONIC** or **PROTRACTED EMERGENCIES**.

These two categories, which are also the two main categories defined under ECHO's mandate, can be further divided into three **sub-categories** based on the cause, or nature, of the crisis:

i. Natural disasters (rapid onset events, such as flash flooding, Tsunami and earthquakes, as well as slow on-set events such as drought);
ii. Man-made or conflict-induced disasters; and
iii. Disasters resulting in population displacement.

It is important to stress that none of these categories are mutually exclusive, and there is clear overlap between them; as crises evolve or retreat they can move from one category to another.

ECHO considers two additional situations which deserve special consideration; one is the **post-acute emergency phase** which naturally follows on from acute emergencies and when short-term solutions are often not sufficient to address the needs of affected populations (this phase is also sometimes referred to as the *recovery and rehabilitation phase*). The second is in situations which warrant **disaster preparedness** activities, which relate most closely to recurring natural disasters. The main objectives and key issues for each of these categories are presented in the following sections, which include a summary of each scenario.

The categorisation of interventions along these lines also largely coincides with the duration of ECHO funding decisions, illustrated by the following:

- ***Acute emergency:*** 0-3 months after the onset of the crisis, which corresponds to the duration of primary emergency funding decision: 3 months
- ***Post Acute emergency:*** 1 to 9 months after the onset of the crisis, in line with the duration of emergency funding decision from ECHO: 6 months
- ***Chronic Emergency:*** from 6 months onwards, in line with Ad Hoc decision of 12 months and Global Plan up to 18 months duration

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2.3.1 Water and sanitation interventions in acute emergencies

Sudden onset emergencies can result from natural disasters or from the effects of conflict. The **main objective** in acute emergency scenarios is to save and preserve lives, during a crisis and in its immediate aftermath. The approach should focus on a quick response which may involve the construction of temporary facilities. Although cost is a concern, timeliness of interventions is of primary importance, where these are typically required in days and weeks.

In an acute emergency response ***water supply*** interventions should focus on provision of a *reasonably clean and safe* water supply, in *sufficient quantities* in the *fastest possible time*. If water supply is limited then it may be necessary for people to use an untreated water source for laundry and bathing. If may also be necessary to ration water to ensure that basic needs are met. Physical access to water supplies should be such to ensure equity of supply to all groups.

Environmental Sanitation interventions should focus on immediate and safe excreta disposal as the key aim; temporary communal toilets or defecation fields should be constructed, and include dedicated hand washing facilities. Priority should be given to protecting drinking water sources from possible contamination from human excreta as well as from other sources of possible contamination (animals etc.). Measures should be taken to manage solid waste disposal either through burial or burning and vector control measures should seek to limit the transmission of diseases.

Hygiene Promotion messages should focus on those immediate interventions most likely to reduce the risk of disease outbreaks, increasing resilience and mitigating the impacts of the crisis on the health status of the population. Hygiene promotion during an acute emergency should focus on a limited number of the most important interventions (i.e. hand washing and the safe disposal of excreta).

2.3.2 Water and sanitation interventions in chronic emergencies

Most chronic emergencies resulting from natural causes are due to drought, where climatic conditions may lead to years of consecutively low rainfall and long-term movement or displacement of people. However, most chronic emergencies are characterised by man-made causes, often involving long-lasting conflict such as those experienced in DRC, Angola, or Afghanistan. It is also not unusual to see chronic conflict-induced emergencies overlain by natural disasters.

The **main objectives** in chronic situations are to identify and respond to acute needs, prevent the impact of crises from worsening, carryout short-term rehabilitation work, assist those most affected in regaining a certain level of self-sufficiency, and ultimately lay

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the basis for development efforts. Priority interventions in chronic situations for water supply should be properly planned and designed to be more permanent in nature than in acute scenarios. ***Water supply*** should focus on the provision of a *safe* water supply, in *sufficient quantities* to meet the needs of the affected populations. If water supply is limited then it may be necessary for people to use an untreated water source for laundry and bathing. Disinfection or treatment of water may be done on a system or household (point of use) basis depending on the context. Priority should be given to appropriate, affordable technologies, which have lower operation and maintenance requirements. Consideration should be given to competing demands for domestic water supply, especially from local livestock, agricultural or industrial uses.

Environmental Sanitation should include excreta disposal systems that are more durable, normally based on household level facilities, and appropriate to the local social and cultural preferences. Users should provide the bulk of the contribution towards construction. Sanitation solutions should be designed to have an impact beyond the immediate crisis, and prevent further emergencies from occurring (i.e. by helping to reduce the incidence of transmissible diseases); for example, through the provision of hygiene and hand washing facilities. For interventions serving static populations, due care and consideration must be given to the final location and processes for disposal of excreta (e.g. emptying of latrines). Particular attention should be paid to disease prevention measures such as a properly designed and built surface drainage pattern to prevent the outbreak of water-related diseases, e.g. malaria, dengue etc. Other sanitation interventions are also important, such as removal and safe disposal of solid waste management and the control of disease vectors, such as insects and rodents.

Hygiene promotion messages in chronic scenarios should focus on the objective of achieving *long-term behaviour change* in key areas known to reduce the risk of disease transmission (i.e. hand-washing, safe excreta disposal and safe handling and storage of water). Efforts should be made to increase long-term capacity for sustained behaviour change at all levels; i.e. through community mobilisation and social marketing methods and institutional support such as the training of extension staff.

2.3.3 Water and sanitation interventions in post-acute emergency situations

The "critical" phase of an acute emergency which requires fast, often temporary, solutions is very often quite short, usually a matter of weeks or even days. In many scenarios, this initial period quickly evolves into a more stable phase under which efforts are made to rehabilitate and repair systems or construct new infrastructure, and to re-establish institutional, social, and organisational structures to manage these systems. Improving hygiene is an important element of the post-acute emergency phase and can be best achieved through addressing long-term behaviour change. In post-acute

2 ECHO's Strategic Approach to Funding Water, Sanitation and Hygiene in Emergencies

2.3 Categorisation of Water, Sanitation and Hygiene Intervention Scenarios

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scenarios, such as the period following the devastating earthquake in Bam in 2003, or the Asian Tsunami in 2004, many aspects of water and sanitation interventions and approaches require more permanent and durable interventions which involve laying the groundwork for developmental-type interventions and levels of service. Even situations involving displaced populations can easily turn into protracted situations, requiring a level of care and maintenance which goes beyond the provision of temporary facilities.

In a significant number of cases, ECHO funding for an acute response will include a transition from purely relief interventions (i.e. provision of emergency water supplies through tankering or provision of public sanitation facilities), to longer-term interventions (i.e. rehabilitation of piped systems or re-construction of household level latrines). In some cases, the transition between these two phases will be clearly delineated; for example when a national government declares that relief operations are to wind-down and national standards and norms are re-imposed. Longer-term sustainability and cost-recovery are important aspects in this phase, as well as the integration of disaster *mitigation* measures in planning for re-construction. It is essential to use the platform of a disaster response as a "window of opportunity" to address the original causes of vulnerability which has led to damage and destruction of physical infrastructure in the first instance (i.e. poor design, poor construction quality, inappropriate location of system components etc.).

3 Cross-cutting Issues of relevance to ECHO in water and sanitation interventions and LRRD

3.1 Participation

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ECHO considers a number of issues as being "cross-cutting", that is to say, issues which are common across different sectoral or thematic areas of intervention (**ECHO1**, **ECHO2**). Drawing on the experience of numerous emergency programmes worldwide, this section provides an overview of what may be considered as 'good practice' for several cross-cutting issues that ECHO considers essential in the field of emergency water and sanitation. Adoption of these good practices can help to make an emergency operation more successful and avoid unintended or negative impacts. Therefore, these should be incorporated wherever possible in ECHO-funded programmes. ECHO also has a strongly held policy objective of linking relief, rehabilitation, and development (LRRD) in all of its activities, which equally applies to emergency water and sanitation interventions and is addressed in the following text.

3.1 Participation

Main characteristics

Affected populations, including vulnerable groups, should actively participate in the assessment, design, implementation and monitoring of water and sanitation programmes. Their participation is an important factor in determining the overall quality, appropriateness, and sustainability of the water and sanitation services delivered.

Beneficiary involvement from an early stage onwards can avoid negative or counterproductive effects and impacts resulting from an intervention. This is especially the case where aid workers are unfamiliar with the customs and culture of those they are assisting. Responses which focus primarily on technological solutions, without taking into consideration local priorities and preferences often deliver poor results.

It is important to stress that limiting beneficiary involvement to the implementation stage only, and not involving the people in planning, design and decision-making, is not considered effective participation.

The fact that affected populations can provide an invaluable input to the relief effort, such as skills, labour and know-how should not be overlooked. The active involvement of beneficiaries can help restore some measure of hope, confidence, and dignity to the affected population. Meaningful participation can also contribute to sustainability by increasing the sense of ownership on the part of beneficiaries, which is particularly relevant in cases where facilities are intended to be used beyond the life-time of the specific project. Therefore, the participation and input of the affected population, especially women and vulnerable groups who might otherwise be overlooked, should be mandatory for any ECHO-funded water and sanitation project. However, due consideration must also be given to the possibility of adding extra, and unacceptable, burdens on such groups (particularly women), therefore the *form* of participation must be carefully thought-through on a context-by-context basis.

3 Cross-cutting Issues of relevance to ECHO in water and sanitation interventions and LRRD

3.1 Participation

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In **acute emergencies** there may be less opportunity to fully engage affected populations. The urgent nature of emergencies and the breakdown of social networks means that consultation is often more difficult and time-consuming, both for beneficiaries and implementing agencies. This does not diminish the importance of participation, but the first aim is to save lives and this should not be compromised. In many cases, temporary facilities will be provided in an acute emergency. Once the situation becomes more stable, ECHO-funded interventions should seek more durable solutions, which require a greater level of participation in the decision-making process, laying the groundwork for long-term developmental efforts.

Good practice for beneficiary participation

Key Issue	▲ ***Affected populations should participate actively in the assessment, design, implementation and monitoring of water and sanitation programmes to ensure effectiveness.***
Good practice for beneficiary participation	▲ The focus on programme results can easily detract from the importance of participation, which can be time-consuming. Every effort should be made to include beneficiary participation in each stage of a project. ▲ It is important to consult both women and men from the affected population in the decision-making process. Designs that have not been chosen and tested with the primary users may have little chance of acceptance. For example, foot pumps may be rejected because they cannot be used by children or pregnant women; latrines may not be used in some places if ventilation slits mean that users' feet are visible; unless latrine slabs can be easily cleaned and water is conveniently available for doing so, they will soon become filthy and fall into disuse. ▲ Keeping up coverage levels in water and sanitation interventions is very important for the overall health status of the community. Combating water and sanitation related diseases means involving all the community in better hygiene behaviour and promoting good use of the water and sanitation facilities by all. If any socio-economic group is left out of the decision-making process, the health impact of the new facilities may be diminished. ▲ As well as involving the affected population in the project design, they should also receive information about the assistance programme once it is formulated, and have the opportunity to comment back to the implementing agency about the programme. ▲ Coordination committees help ensure people's involvement in an assistance programme. Gender, age, ethnicity, and socio-economic status should be taken into consideration in order to ensure that such committees adequately represent the affected population. Acknowledged political leaders, female and male community leaders and religious leaders should also be represented. ▲ Local institutions need to be considered for involvement in all stages of the project and should take priority over establishing new structures wherever appropriate. Preferably these should include local organisations that are already known, respected, and trusted by the target population. They may have established concepts, mechanisms, and networks that they can quickly put to use. Working with local structures also enhances their longer-term capacity to respond to emergencies. ▲ It is important that the partners develop proper methods to involve beneficiaries and local institutions, based on recognised approaches such as PRA (OXF6, CI1) or PHAST (WHO17).

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Good practice for beneficiary participation (cont.)	▲ When involving community labour in implementation it must be clear from the outset, whether or not this is paid labour and, if paid, how often and at what rate people will be paid and whether on a daily or piece rate. If other agencies are working in the area, consistency between agencies in rates and conditions is preferred. Effective coordination on the issue of parity of labour rates is very important to address at the outset of a response, even during the acute phase, as this often causes irreversible problems at later stages of an intervention. ▲ If the community is expected to play a role in operation and maintenance, and in management of the services, this has to be raised as soon as possible with community groups. This is especially important where permanent water supplies are being constructed or rehabilitated. ▲ Participation by the host or resident community is particularly important. Displaced populations often settle in areas with host populations that are themselves poor. Solely focussing on the needs of the displaced population can have negative consequences. ▲ The process of beneficiary participation should always seek to anticipate, and avoid, power struggles among beneficiaries and between beneficiaries and their leaders.

3.2 Gender

Main characteristics

In many emergency settings, women have unequal access to or control over resources, including water. Systematic and structural gender inequality must be assessed and addressed in emergency interventions, including water and sanitation projects. This imbalance of power impacts women before, during, and after emergencies and displacement. Women and children are often disproportionately affected in emergencies and are more likely to suffer or be killed. For example, in some cultures women are not permitted to learn how to swim, thus increasing their risk of drowning during floods; in many emergencies, women and girls have been put at risk of sexual violence because latrines and water points were placed in unsafe areas. Thus, it is essential that the different impact of the emergency on women and children is understood and informs humanitarian interventions. This requires an understanding of the cultural context with respect to the roles and responsibilities of women as well as the power relationships between women and men. Women have specific tasks and responsibilities in water supply and sanitation for their households and communities. Women are usually the collectors of water, the managers of the household and are the "teachers" of their children. Their needs will be different from those of men.

When planning, testing and implementing needs assessment and consultation sessions, it must be recognised that men and women of different socio-economic groups may use different channels of information and have different information needs. They also usually differ in literacy levels - women are, in general, less literate than men. If this is not considered, the less influential categories (women and girls; especially the poor, the young and the elderly women) may find themselves in a marginal position. Even if they

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can and do attend consultation meetings, without good facilitation, they often sit at the back, cannot properly see and cannot speak or otherwise participate in and influence the process.

If gender issues are not taken into consideration, emergency interventions can put women at risk as well as seriously compromise the long-term future for women, and thus their families and communities, by creating further imbalance in their relations with men at a time of stress, as well as increasing domestic responsibilities.

Good practice for gender-specific issues

Key Issues	▲ ***A good understanding of the differences in the roles, responsibilities, and needs of women, men, girls, and boys is required.*** ▲ ***Different channels of information and different methods of consultation may need to be used for women and men.***
Good practice for gender-specific issues	▲ It is often not possible for women to speak in front of male members of the family or other men and they may be discouraged from attending meetings. Splitting up into sub-groups or having separate meetings with male and female groups at their own places and times during needs assessments, decision-making and planning sessions should be considered. ▲ Identify, in discussion with women, their roles, responsibilities, capacities, and needs regarding water collection and sanitation provision and maintaining good hygiene of the family. ▲ Anticipate, in discussion with women, what they will do with any free time, if the intervention results in substantial changes in workload and working hours or if it may result in any negative impacts. ▲ Ensure that timing of operations, such as opening hours for water points, is convenient for women. ▲ Distribute water and sanitation relief items, such as soap and jerry cans, to women. At household level, women are to a large extent responsible for water provision and the overall sanitation and hygiene status of the family. This would make women more suitable representatives of the family. ▲ When presenting results of surveys or other water and sanitation information, disaggregate data, as much as possible by gender (e.g. diarrhoea prevalence among under five year old boys and girls, latrine use by men and women). ▲ Make specific targets for men and women in the objectives, the expected results, and the indicators for success of an intervention. ▲ Aim for an equal representation of women among the implementing agency's staff. ▲ Ensure that in camp and other organisational committees, women are well represented and encouraged to participate fully and express their opinion. ▲ Involve women's organisations or groups wherever they exist among the affected population. ▲ Involve women in water and sanitation related trainings. ▲ Place latrines, water points, and washing facilities in locations preferred by the women in the community, in places believed to be safe, if possible with lighting.

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Good practice for gender-specific issues *(cont.)*	
	▲ Ensure adequate privacy for women in and around water and sanitation facilities. ▲ Consider the use of surplus water or drainage water for the watering of vegetable gardens or small livestock. This can provide women with income (and also improve nutritional status, particularly that of children). ▲ Consider the needs of women who are menstruating. Sanitary napkins, or clean cloths, need to be distributed if women lack these. Furthermore, women need space for changing, washing, and drying clothes that have been soiled during menstruation. ▲ Ensure that proper attention is given to female hygiene. Practicing basic hygiene requires certain facilities such as bathing areas and privacy. These needs become even more acute for adolescent girls who may have not developed any coping mechanisms to tackle concerns of privacy and female hygiene. ▲ Consider the needs of the particular vulnerability of female headed-households, widows etc., their limited ability to participate in project activities and the potential denial of their right to property and land.

3.3 Environment

Main characteristics

The environment can be defined as the physical, chemical, and biological surroundings in which disaster-affected and local communities live and develop their livelihoods (SPHERE4). Water and sanitation projects should be implemented in a way which prevents long-term over-exploitation, pollution, and degradation of environmental conditions, particularly in terms of the depletion of (ground) water resources. Therefore, the long-term effects of a water and sanitation intervention on the environment need to be considered from the outset of the project design. If any environmental impacts are anticipated, these should be investigated and measures put into place to mitigate against potential negative outcomes.

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Good practice for environmental issues

Key Issue	▲ ***Water and sanitation interventions may have negative (long-term) effects on the environment, such as over-exploitation of groundwater aquifers, pollution, and degradation.***
Good practice for environmental issues	▲ Plan measures that take care of sewage, sludge, or other waste products, including medical waste products; solid waste management also needs to be addressed. ▲ Ensure proper drainage around newly developed water points, avoiding stagnant water near settlements. Stagnant water provides breeding grounds for mosquitoes that transmit malaria, filariasis, and dengue. ▲ Be aware of the risks of over-extraction of aquifers, particularly in camp scenarios with high population densities, relying on groundwater sources; appropriate mitigation measures should be planned and executed. The exploitation of aquifers in coastal areas requires special attention to anticipate and avoid possible saline water intrusion. ▲ Prevent deforestation around the settlement, or else reforestation needs to be considered. ▲ Prevent soil erosion in and around (IDP) camps by providing adequate drainage systems for surface run-off. ▲ Avoid pollution of surface or ground water, or else appropriate mitigation measures should be planned. ▲ Consider raising awareness of environmental issues both at local and government levels. ▲ Wherever possible, consider designs that make use of local materials that cause minimal environmental impact. ▲ Consult with women when environmental policies and programmes are prepared and designed. Women play an essential role in managing and preserving biodiversity including water and other natural resources. ▲ Literature sources: **SIDA1**, **UNEP1**.

3.4 Focus on the most vulnerable

Main characteristics

The most vulnerable and most marginalised groups in society will be at additional risk in an emergency situation. The elderly, the disabled, children, and people with HIV/AIDS require special consideration when addressing water and sanitation needs. Sex-disagregation in data is necessary to determine the different prevalence rates among men and women; for example, in sub-Saharan Africa the prevalence rate of HIV/AIDS among women is far higher than among men. To address these vulnerable groups most effectively it is important to customise the water and sanitation interventions to their specific needs and priorities.

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Good practice to ensure the inclusion of the most vulnerable groups

People with HIV/AIDS	Key issues	▲ ***People with HIV/AIDS are particularly vulnerable to unsafe drinking water and poor hygiene, as their natural resistance levels are low.*** ▲ ***The importance of this is enhanced during a crisis situation, when the risk of opportunistic infections (diarrhoea and skin diseases are among the most common) is greater and health care support is often disrupted.*** ▲ ***The mobility of people with HIV/AIDS may be reduced, making access to water and sanitation facilities difficult.***
	Good practice	▲ Ensure easy access to water points. A reasonable amount of water must be available for patients for bathing, washing soiled cloths and for general hygiene of the environment. In times of water shortage, when water ratios are kept low, an additional quantity of water may be considered for HIV/AIDS affected people. ▲ Ensure availability of safe water for drinking and for taking medicine. If the water quality at the source is not safe, point of use water treatment may need to be considered, such as boiling and the use of filters and/or chlorine. ▲ Ensure that sanitation facilities are close by for weak patients who suffer from chronic diarrhoea and reduced mobility. ▲ Literature sources: **ECHO7**, IRCNL2, **WHO10**, **WELL1**, **SPHERE2**
The Elderly	Key issues	▲ ***Elderly people (those over 60 years of age) make up a large proportion of the most vulnerable in disaster affected populations.*** ▲ ***The elderly may have restricted mobility; they may not be able to carry water for long distances and visiting a far-off toilet can be difficult.*** ▲ ***The elderly may be too weak to dig their own latrines or participate in other construction activities.*** ▲ ***Older people are vulnerable to rapid debilitation caused by diarrhoea in the same way as children are.*** ▲ ***Due to life-experience, elderly people have key contributions to make in survival and rehabilitation (SPHERE4).***
	Good practice	▲ Consult older people, in groups or individually, to identify, prioritise and address their problems and explore their capacities. Get a good understanding of the composition and the role of their social network. ▲ Ensure that older people are represented on relevant decision-making and advisory bodies such as disaster preparedness committees and emergency co-ordination committees. ▲ For existing facilities, find out if the expected numbers of older people make use of them. If they are not using them sufficiently, investigate why. Special consideration may need to be given to ensure that the elderly receive an equitable access to water and sanitation services. ▲ Consider 'fast track' queues that allow access for the most frail and vulnerable at communal water supply points and latrines, especially where physical competition for services is high. ▲ Make service delivery points as accessible as possible for the elderly, taking account of terrain and the impact of seasonal weather conditions (such as heavy rains) and population distribution. (**HELP1**)

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3.4 Focus on the most vulnerable
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The Disabled	Key issues	▲ ***Water and sanitation emergency intervention programmes do not always pay sufficient attention to disabled people, and disabled people do not always demand accessible facilities, because of lack of awareness and lack of information about possible options.*** ▲ ***The biggest problems for disabled people are obstacles in the environment, not their own impairment.***
	Good practice	▲ Consider accessibility in infrastructure projects from the outset, by reducing physical and infrastructural barriers in the environment. Considering those who may have difficulty with balance, co-ordination, weak grip, squatting or lifting heavy items. ▲ Include disabled people in consultations, so that access to water and sanitation facilities can be considered in infrastructure projects from the outset of the planning and design stages. Disabled people are often marginalised by society and their needs can be easily ignored without special attention. ▲ Consider individual devices which can assist or contribute to improving access. Not all disabled people need separate, special facilities. Disabled people often need only minor changes to be made to enable them to be included in ordinary water and sanitation services. (**WELL2**). ▲ WEDC will produce a manual on watsan and disabled people at the end of 2005.
Children	Key issues	▲ ***In crisis situations, children often suffer disproportionately.*** ▲ ***Children under five years of age are particularly vulnerable to water and sanitation related diseases.*** ▲ ***Children often play an important role in the water provision for the family.***
	Good practice	▲ Consider special measures to ensure equitable access for children to basic services. Consultation with children is necessary and specific attention may have to be given to ensure that water and sanitation facilities are child-friendly. Latrine squatting holes should be small enough so that children are not afraid of falling in. Pump designs need to consider the needs of children - for example, pump handles should not be set too high and be out of reach of children. (**SPHERE4**). ▲ Educate young children on safe handling of drinking water in the home and during transportation, because they play a vital role in the water provision of the family. ▲ Ensure that schools have adequate access to water and sanitation: 3 l/p/day of water for drinking and hand washing and a maximum of 50 girls per toilet and 100 boys per toilet are recommended guidelines for these scenarios (WHO standards). ▲ Provide feeding centres with sufficient water (20-30 litres/in-patient/day). ▲ See also: **ECHO3**.

3.5 Protection

Main characteristics

The political and security realities within a country or region have a significant impact on any emergency programme. Agencies may have little or no influence over them and some are hesitant to comment on them as they may be concerned to retain an apolitical and neutral status in order to continue working in an intervention and also to maintain the safety of their staff. However, water is vital in all circumstances and because in a conflict

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setting water is a valuable resource, which may be exploited by one particular group, it can become a very powerful bargaining tool. Therefore, the implications of establishing a water supply system are considerable; for example, the choice in location of a water point must be assessed, both under present conditions and in light of the potential to create future conflict or abuse of one particular group or community.

Water is a fundamental requirement for life. Therefore, working on water programmes in conflict zones can provide access to areas which may be banned to projects working on other interventions. This may mean that implementation agencies become exposed to human rights or protection issues that would otherwise be isolated. This may result in agencies and their staff assuming wider obligations than just the provision of water. Thus, it is essential that the protection concerns of beneficiary communities are integrated into the design, implementation, monitoring, and evaluation of water and sanitation projects.

Good practice for protection issues

Key Issues	▲ ***Human rights, as formulated by international law, may be at risk in an emergency situation.*** ▲ ***Some groups may fall at risk to additional harm such as women, adolescents, unaccompanied minors, children, elderly people, and people with disabilities.***
Good practice	▲ Ensure that all staff have an understanding of and commitment to the rights of those affected by disasters, under international law. ▲ Monitor, advocate against, report, and communicate any cases of abuse, violence (including gender-based violence) and exploitation. Inform relevant bodies (national and local authorities, international bodies) when rights are not respected, so that they may contribute to a solution. However, due care must also be taken to account for the increased risk that reporting abuse or rights violations may represent to an individual or community, which may then be subject to reprisal attacks or retaliation. ▲ If humanitarian protection rights are not respected, sensitise, wherever feasible, the affected population regarding the situation and the possible solutions and inform them of sources of assistance. ▲ Do not expose beneficiaries to additional risk as a consequence of the implementation of an emergency water and sanitation programme; e.g. by potentially empowering one group or party with improved access to water. ▲ Prevent the separation of children from their caregivers and the separation of women from their families when providing emergency assistance. ▲ Prevent sexual abuse of women and children by locating water points and latrines in safer locations, i.e. at a location near their settlements. Women and children should therefore always be consulted in cases where there is a perceived risk of abuse or protection issues. ▲ Contribute to coping mechanisms of affected populations by providing access to jobs generated by work on watsan infrastructure projects. ▲ Provide returnees (refugees or IDPs) with watsan "packages" to enhance their coping capacities when they eventually return home.

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Good practice *(cont.)*	▲ Prevent and respond to abuse and exploitation of beneficiaries by humanitarian workers. Ensure that all staff understand and abide by a Code of Conduct that is integrated into human resource policy and that mechanisms are in place for reporting and investigating allegations. Ensure that beneficiary communities understand the standards to which humanitarian workers are held accountable and how to raise a complaint. ▲ Prevent and respond to harassment, including sexual harassment, of staff members by staff members. Ensure that all staff understand and abide by human resource policy against harassment and the mechanisms for reporting complaints and investigating allegations.

3.6 Linking Relief, Rehabilitation and Development

Main characteristics

Linking humanitarian response interventions with rehabilitation and long-term developmental efforts is a strongly held policy position within ECHO. However, in practice the transition from relief interventions to longer-term development cannot always take place within ECHO's, or other donors', funding and policy frameworks. However, even within the one-year programme cycle of humanitarian interventions, ECHO encourages its partners to utilise *adapted* development-type approaches in order to increase the potential for LRRD and to improve the sustainability and therefore the impact of its water and sanitation interventions over the long-term. Humanitarian interventions should lead to higher levels of self-sufficiency which can mitigate the consequences of gaps between humanitarian assistance and longer term development support. For these approaches to be successful, they must be incorporated in the programme from the start.

Good practice for LRRD (Linking Relief, Rehabilitation, and Development)

Key Issue	▲ ***Emergency interventions in water and sanitation should lay the groundwork for long-term developmental efforts.***
Good practice for LRRD	▲ When designing and planning emergency interventions, highlight elements that can support the transition to developmental interventions; these include social organisation, formation of management committees, establishing O&M regimes and realistic tariff systems to pay for maintenance and repair of system components and wherever possible building linkages with national sector agencies and support mechanisms. ▲ These elements, which can support the sustainability of water and sanitation emergency interventions, should be integrated ***as early as possible*** into a (relief) response and as soon as is practicable given the need for immediate life-saving activities. ▲ Coordinate with local and national authorities and programmes during the emergency phase, as this can facilitate a transition to these programmes once the emergency phase is over; for example, to ensure coherence with national norms and standards. ▲ Work closely with national implementing partners in the sector. This can lead to the strengthening of their capacities and will have a positive effect in the developmental phase, once the emergency has ended. ▲ Investigate opportunities for linkages with other donors suitable for taking on developmental projects after the end of the emergency phase, regardless of whether ECHO is likely to consider further emergency funding decisions.

4 Key implementation steps for ECHO water and sanitation operations

4.1 Needs assessment

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This chapter provides an overview of key implementation steps and good practice for water and sanitation intervention processes that ECHO would like to see applied in the interventions it funds. It illustrates how concepts can be put into practice, within the broader framework of project cycle management (**ECHO10**). These approaches have been formulated in conjunction with ECHO's needs-based mandate, which aims to provide ECHO funding where it is most required and covers the priority needs of the most vulnerable people. Where appropriate, the specific phases in the emergency that the good practices refer to are mentioned. In all other case, the practices and approaches described are applicable in all circumstances.

4.1 Needs assessment

Main characteristics

Any intervention should be based on an objective assessment of the water and sanitation needs. Programming and detailed project design decisions should be based on a clear understanding of the current situation. Needs assessments are designed to deliver sufficient quality information and baseline data to justify the proposed project interventions. If the problem is not correctly identified and understood it will be difficult to design and plan the right response and inform monitoring over time.

Gathering information is a crucial element of the needs assessment. Methods used for collecting information should be carefully selected to match the situation and the type of information required. Information should be gathered more frequently when the situation is changing rapidly. Methodologies and procedures should be field-tested and documented and carried out by experienced staff. Only necessary information should be gathered. Time spent collecting unnecessary information is time wasted.

The information required may depend on the *stage of the emergency*. And the requirement to act quickly may influence the comprehensiveness of the assessment. Immediately after an acute emergency, a *rapid collection of public information* takes place, after which it is decided whether or not to continue with a further stage of rapid assessment.

This *rapid assessment* can be carried out as soon as the disaster area can be reached, if possible within 48 to 72 hours, to determine priority needs and the most urgent interventions. Assessments may be executed simultaneously with initial relief interventions if the immediate needs are high. For a *chronic emergency* and a *post-acute emergency* an expanded appraisal is carried out that will require more intensive field data-collection and will also draw on secondary data (see also **UNICEF1**). Both the rapid and the expanded assessment may be supplemented by rapid water and sanitation system damage assessments (more likely in acute emergencies), rapid household surveys, and technical feasibility surveys (both more likely in post-acute and chronic emergencies).

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4.1.1 Assessments in acute emergencies

Rapid collection of public information	
Goals	▲ To obtain a general impression about the disaster, the affected population and coping capacities. ▲ To decide whether or not to do further assessments and/or to intervene.
Focal points of attention	▲ The extent and type of damages resulting from the disaster. ▲ The threat to life represented by the disaster. ▲ The actual areas that are affected. ▲ **The number of people affected, population movements and other demographic characteristics**. ▲ **Existing local response capacities and coping mechanisms**. ▲ National watsan standards and pre-disaster event levels of service in areas where humanitarian assistance is required. ▲ Other agencies already intervening/likely to be active in the same area. ▲ Physical access to communities, towns or other settlements and the general security situation.
Methods	▲ Consultation of local, national, and international media, such as TV, radio, newspapers and internet. ▲ Collection of information provided by other organisations (NGOs, government departments, UN agencies). ▲ Consultation with local partners and individual contacts.
Analysis	▲ The information is presented in a way that allows for transparent and consistent decision-making. ▲ Findings are made available to other sectors, national and local authorities, and NGOs on demand. ▲ Recommendations are made about the likely need for assistance, the most urgent interventions, and the need for further assessments if required.

4 Key implementation steps for ECHO water and sanitation operations

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Rapid area or community assessment	
Goals	▲ To obtain information about the local circumstances and characteristics and priority needs of affected populations. ▲ **To decide whether or not to intervene in the area or specific community**. ▲ To prioritise provision of assistance across an area or between specific communities. ▲ To select the most urgent interventions and obtain information for their planning and design. ▲ To determine additional information requirements. ▲ If applicable: to select suitable locations for settlement of displaced persons based on watsan potentials.
Focal points of attention	**The watsan part of the assessment focuses on:** ▲ **The number of people affected, population movements and other demographic characteristics**. ▲ **Current and potential water and sanitation related diseases and burdens**. ▲ **Current access to water and sanitation services**. ▲ **Priority needs**. ▲ **Watsan related health and hygiene practices**. ▲ **Damage to existing small-scale watsan systems and the institutions that operate them and rehabilitation requirements**. ▲ **Potential requirements for emergency watsan** interventions. ▲ **Current or potential negative effects of watsan interventions or existing watsan facilities**. ▲ Activities and plans for watsan interventions by other organisations. ▲ **Availability of local equipment, materials, spare parts and skilled persons (and their costs)**. ▲ **Existing watsan institutions, coordination and cooperation mechanisms**. ▲ National watsan standards and pre-event service levels in the area and guidelines regarding their application following a disaster, if available. ▲ Physical access to communities, towns or other settlements and the general security situation.
Methods	▲ **Structured and semi-structured observations in affected areas**. ▲ **Semi-structured interviews and discussions with stakeholders**. ▲ **Review of relevant documentation about the local context**.
Analysis	▲ Further information see: **SPHERE2**, **IRC4**, IRCNL1, REDR1, **WEDC2**, **WHO15**, **ODI1**, **OXFAM6**. ▲ The information is presented in a way that allows for transparent and consistent decision-making. ▲ Findings are made available to other sectors, national and local authorities, NGOs and male and female representatives from the affected population. ▲ Recommendations are made about the need for assistance, prioritised interventions and any additional information and assessment requirements.

4 Key implementation steps for ECHO water and sanitation operations

4.1 Needs assessment

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Rapid household surveys	
Goals	▲ **To obtain detailed household level information for household selection purposes**. ▲ To determine which type of watsan assistance will be provided to each of the assessed households. ▲ To select the most urgent interventions and obtain information for their design.
Focal points of attention	▲ The availability of, damage to and remaining capacity of household watsan systems in the assessed households. Sometimes it is also necessary to assess whether interventions should focus on high-risk behaviours, and if so, to identify these practices. ▲ **The general level of vulnerability of the households especially regarding water and sanitation related health risks**. ▲ Access to community watsan systems and/or access to watsan facilities at other households.
Methods	▲ Household interviews and semi-structured discussions (usually with the female heads of the households). ▲ Observations in the households.
Analysis	▲ Selection of households to be provided assistance is based on the information obtained and vulnerability criteria. The level of assistance per household should be determined, including physical interventions and/or any hygiene promotion activities. ■ ▲ Final decisions regarding the level of intervention and households to be included should, wherever feasible, be made in conjunction with community representatives. ▲ Further information: OXFAM8.

Rapid water and sanitation system damage assessment	
Goals	▲ **To obtain information about damage sustained during a disaster both in terms of infrastructure and the institutions that manage them**. ▲ **To determine what parts of the system can be repaired quickly, the required actions, and what other measures can be undertaken to operationalise the system (or part of it) as soon as possible**. ▲ **Prioritisation of systems to be repaired**.
Focal points of attention	▲ Details of damage to systems. ▲ Assessment of rapid measures and repairs to make the system (or part of it) operational. ▲ Capacity of the management structures/institutions of the system and requirements to upgrade emergency operation of the system. ▲ Resources required, local availability, and costs.
Methods	▲ Consultations with relevant institutions, beneficiaries, and key-informants. ▲ Quick physical checks (observations), sanitary inspections, investigations, and measurements.
Analysis	▲ The information is presented in a way that allows for transparent and consistent decision-making. ▲ Findings are made available to other sectors, national and local authorities, NGOs and male and female representatives from the affected population. ▲ Recommendations are made about the most urgent and feasible interventions and the additional information and assessment requirements.

4 Key implementation steps for ECHO water and sanitation operations

4.1 Needs assessment

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4.1.2 Assessments in post-acute or chronic emergencies

	Community appraisals
Goals	▲ To collect information on the priority watsan needs and disaster preparedness of the community. ▲ To establish the first step in a participatory demand-driven process with the community.
Focal points of attention	▲ The health situation and typical high risk behaviours in the community. ▲ **Water and sanitation situation and felt needs**. ▲ **Community vulnerability analysis, including hazard mapping and assessment of the disaster preparedness needs**. ▲ Priorities and preferences in the community.
Methods	▲ **Participatory Rural Appraisal (PRA)** (**CI1**, **OXFAM6**, **IRC4**). ▲ Participative exercises aimed at creating an overview of people's water and sanitation situation and awareness, for instance **PHAST** (**WHO17**). ▲ **Structured and unstructured observations during village walks, visits to the village, etc**. ▲ **Open-ended discussions and interviews with stakeholders**. ▲ **Review of relevant documentation about the local context**. ▲ Other assessments, e.g. technical feasibility surveys, sanitary surveys, household surveys.
Analysis	▲ Further information see: **IRC4**, IRCNL1, REDR1, **WEDC2**, **WHO15**, **ODI1**. ▲ The information is presented in a way that allows for transparent and consistent decision-making. ▲ Findings are made available to other sectors, national and local authorities, NGOs and male and female representatives from the affected population. ▲ Recommendations are made about the need for assistance, prioritised interventions and any additional information and assessment requirements.

4 Key implementation steps for ECHO water and sanitation operations

4.1 Needs assessment

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Household surveys	
Goals	▲ To obtain detailed information about the water and sanitation situation in the households and the health and hygiene awareness of household members. ▲ To select the highest priority and most appropriate interventions and obtain information for their design.
Focal points of attention	▲ **Profile of households**. ▲ **The general level of vulnerability of the households especially regarding water and sanitation related health risks**. ▲ **The water situation in the household**. ▲ **The sanitary situation in the household**. ▲ **The awareness regarding water and sanitation related health and hygiene aspects among household members**.
Methods	▲ Household interviews and semi-structured discussions (usually with the female heads of the households). ▲ Observations in the households. ▲ Given resource constraints, surveys of households are usually carried out on a sample basis; in this case it is important to ensure that different groups of households are represented in the sampling; i.e. poorer households or households from different ethnic or religious groups in cases of mixed communities.
Analysis	▲ **The analysis is preferably done together with representatives of the community (both female and male)**. ▲ The information is presented in a way that allows for transparent and consistent decision-making. ▲ Findings are made available to other sectors, national and local authorities, NGOs and male and female representatives of the community. ▲ Further information see: **CI1**, **OXFAM6**, **OXFAM7**.

4 Key implementation steps for ECHO water and sanitation operations

4.1 Needs assessment

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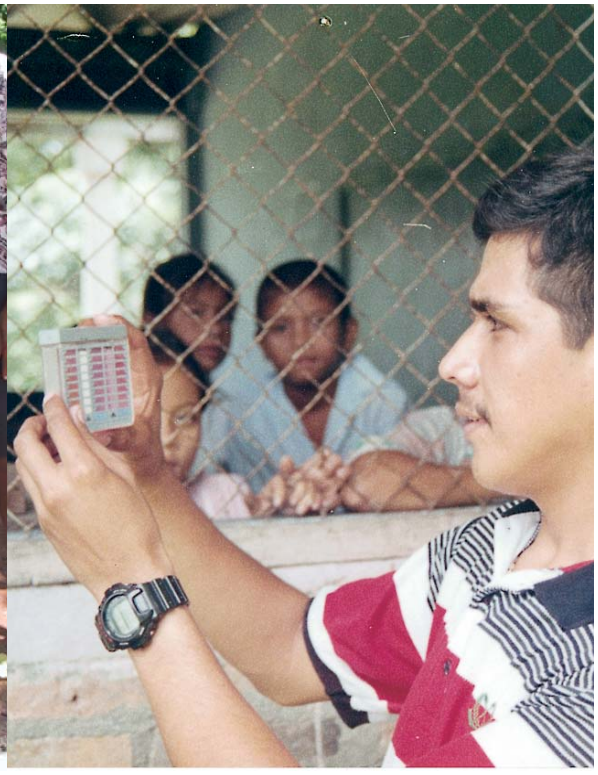
Water and sanitation system vulnerability analysis	
Goal	▲ Determine the existing constraints to meeting **required capacity and coverage**, and the level of disaster preparedness of both the physical system and the institutional aspects of the system (management capacity, contingency planning etc.) with regard to potential future disasters. ■
Focal points of attention	▲ Vulnerability analysis of large (urban) watsan systems ▲ **Operational aspects**. ▲ **Administration and response capacity**. ▲ **Physical aspects and impacts on the system**. ▲ The likely requirement for organisational, institutional, and physical measures and their costs. (**PAHO1**, **PAHO3**). ▲ **Vulnerability assessment of rural watsan systems** (OXFAM1, OXFAM2).
Methods	▲ Consultation with relevant institutions, beneficiaries, and key-informants. ▲ Physical checks (observations), investigations, measurements, and technical surveys. ▲ **Self-assessment and planning by urban watsan institutions** (**PAHO1**, **PAHO3**, CI4, DQI1).
Analysis	▲ The information is presented in a way that allows for transparent and consistent decision-making. ▲ Recommendations are made about the most feasible and cost-effective interventions.



4 Key implementation steps for ECHO water and sanitation operations

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Technical feasibility surveys	
Goals	▲ **Explore the most suitable technical solutions and constraints for implementation of new and/or rehabilitation of existing water and sanitation systems**. ▲ Development of costings for implementing the most appropriate technical solutions.
Focal points of attention	▲ **Hydro-geological conditions** (for groundwater exploration) (ITDG 1, JS 1). ▲ **Soil type and composition** (for pit latrine projects, projects that include the entrenchment of pipes or other infrastructure, projects that include the construction of foundations for buildings, dams, concrete and mortar mixtures, etc.) (REDR1). ▲ **Water quality** (for drinking or other uses, e.g. livestock watering, cleaning, etc.) (ITDG 1, JS 1, REDR1). ▲ **Water yield** (of boreholes, wells, rivers, etc.) (ITDG 1, JS 1, REDR1). ▲ **Topographical measurements** (for camp planning, pipeline design, etc.) (ITDG 3).
Methods	▲ Consultations with relevant institutions and key-informants. ▲ **Collection and analysis of existing technical data and other relevant information**. ▲ Technical surveys, soil tests, and measurements. ▲ Field observations.
Analysis	▲ The results of technical feasibility surveys are almost always complemented by information from other types of assessments to determine the actual feasibility of the interventions under consideration. ▲ The analysis takes existing national standards and technical specifications into account, as well as the local availability of spare parts and the familiarity with the technology. ▲ The information is presented in a way that allows for transparent and consistent decision-making. ▲ Findings are made available to other sectors, national and local authorities, NGOs and male and female representatives from the affected population.

4.2 Integrated approaches

Main characteristics

There is now widespread acceptance among sector professionals of the need to integrate improvements in hygiene, sanitation, and water supply in order to positively impact on public health. Providing water and sanitation facilities does not necessarily ensure that people will use them effectively. Hygiene promotion aims to ensure that the potential benefits of such facilities are maximised and sustained. Field studies (see among others **EHP2**) have demonstrated that water supply, sanitation, and hygiene can each be an effective means to prevent diarrhoea. However, an integrated programme with all three components (e.g. improved access to safe water supplies, sanitation facilities, and positive hygiene behaviours) is known to be much more effective in reducing the transmission of many diseases. The importance of taking an integrated approach, even in the constrained operating environments of an emergency response, is generally accepted among humanitarian practitioners, although the manner in which this can be realised on the ground is still unclear to many.

4 Key implementation steps for ECHO water and sanitation operations

4.2 Integrated approaches

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Good practice for integrated approaches

Goal	▲ ***To promote the integration of water supply, sanitation and hygiene behaviour change components within relief activities addressing the same target population.***
Good practice	▲ It is important that hygiene, sanitation, and water interventions are well co-ordinated. If possible all three should be carried out by the same agency, to ensure that they are fully integrated and that each intervention reinforces the other (for example, a demonstration of improved hygiene practice that requires water (e.g. hand washing) should only be introduced when there are the facilities in place for people to go back and practice the behaviour). ▲ When hygiene, water, and sanitation improvements are carried out by the same team, integration is the responsibility of all team members and must be supported by all levels of management. Technical staff and social promotion staff should communicate regularly, share work plans and be aware of the progress of each others' work to ensure better integration. Wherever possible, technical staff such as engineers should try to reinforce hygiene promotion messages, as in many cultures engineers have more authority than social promoters. ▲ Adequate financial and human resources (staff time) should be included in budgets and proposals to allow for adequate attention to be given to hygiene promotion work; additional funds should be used for the production of hygiene promotion materials, soap for hand-washing, safe household storage containers and potties for children where appropriate to better handle and dispose of infants' and small children's faeces (ITDG 2). ▲ When hygiene, water, and sanitation improvements are a shared responsibility of more than one agency, all agencies should take on responsibility for co-ordination, information sharing, and cost-sharing leading to a good integration. ▲ It is vital that all those involved attempt to understand what hygiene promotion is and how it can contribute to the programme and project outcomes; if necessary staff should be given refresher training or orientation regarding approaches to disease transmission routes, high risk behaviours, and methods of hygiene promotion. ▲ Meetings with community members which involve discussions regarding the design of facilities should initially be attended by both engineers and hygiene promoters. (OXF6). ▲ Ensure that people use the water and sanitation facilities the way they are intended and gain most benefit from them. This is particularly relevant for sanitation facilities, which can be quickly and easily rejected when they become fouled. ▲ In promoting the intended use of the water and sanitation facilities, didactic approaches should be avoided, but non-formal learning techniques and participatory learning approaches should be adopted, e.g. PHAST (WHO17).

Moreover, water and sanitation interventions should be integrated in a wider strategy that meets multi-sectoral needs, not just those related to water and sanitation. To attain this, good coordination among relief agencies is essential. For example, the levels of access to safe water and adequate excreta disposal (latrines) will become a key determinant in the prevalence of diarrhoea and parasitic infestations, all of which can affect people's capacity to effectively absorb nutrients from food. As such, water and sanitation interventions are directly related to the nutritional status of the affected population and their broader health status (see figure 1 on page 33).

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4.3 Sustainability

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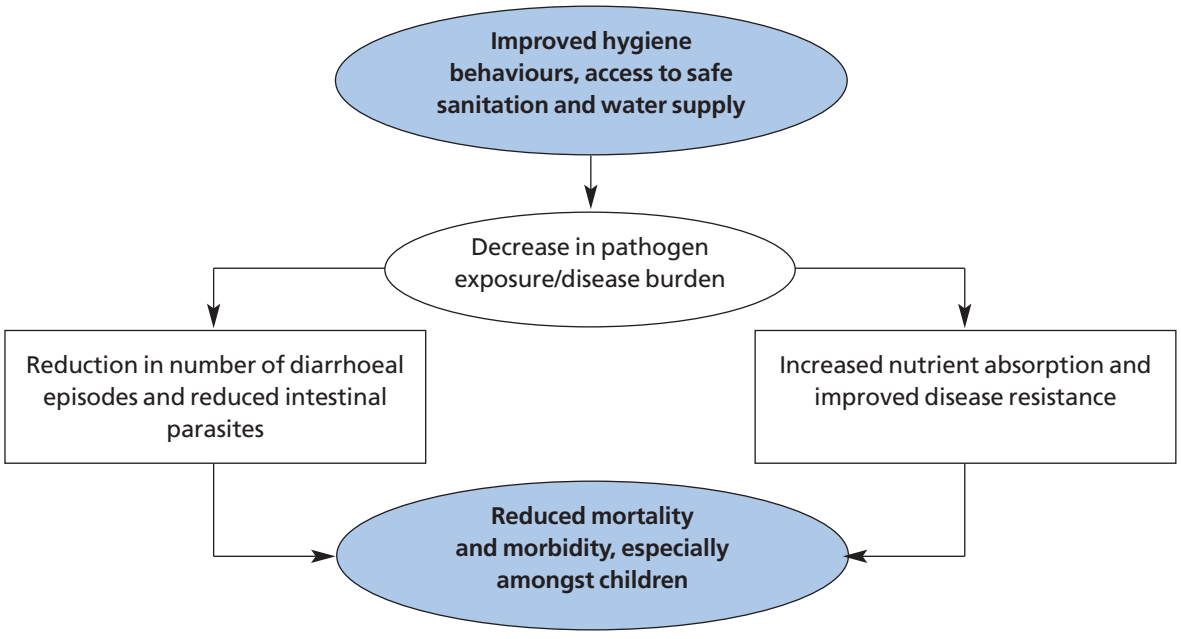
4.3 Sustainability

Main characteristics

Poor sustainability is characterised by new infrastructure becoming inoperative either due to technical problems, lack of proper maintenance or inadequate financing to replace system parts. The problems of poor sustainability are well documented in the development sector; however, aid organisations, including those involved in humanitarian relief, are now under mounting pressure to ensure their activities, wherever possible, also take into account measures that will ensure the long-term sustainability of systems and help to link with developmental programming.

Figure 1: Effects of water and sanitation improvements on health



[Source: Billig, Bendahmane, and Swindon, 1999]

Sustainability of water and sanitation facilities is not a primary objective of ECHO and in most acute emergency situations; this may not always be a realistic option. However, there is growing acceptance that the provision of immediate relief, especially in protracted situations, and addressing the issue of sustainability are not mutually exclusive. In many post-acute emergency and chronic situations ECHO has a duty to find ways of ensuring that infrastructure lasts as long as possible, and does not negatively impact on future developmental efforts. ECHO encourages partners to adapt development-type approaches to fit the one-year project cycle in order to address sustainability and to facilitate links with developmental efforts. If in chronic situations a

4 Key implementation steps for ECHO water and sanitation operations

4.3 Sustainability

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short-term project would only focus on immediate needs, it could easily undermine internal coping capacities, worsen environmental conditions or cause conflict, exacerbating the effects of a short-term crisis. This has to be avoided at all costs.

Good practices for sustainability

Goal	▲ ***To promote the sustainability of water and sanitation services provided by relief agencies in the context of emergency operations.***
Good practices	▲ Water and sanitation systems that depend on local resources can more easily be operated and maintained by communities. For this reason the use of local resources, such as equipment, materials and skills, is always preferred. ▲ Any technical work after the acute-emergency, other than on temporary facilities, should be well designed, of good quality, durable and therefore sustainable. The selection of appropriate technology does not always equate with the lowest cost technology. ▲ Good quality of software aspects (e.g. management capacity, financing, adequate operation and maintenance, external support mechanisms and hygiene behaviour etc.) contributes significantly to the sustainability of an intervention and to increase the demand for the system to keep functioning. ▲ Participation of the users, starting in the initial planning phase of an acute emergency, can ensure an increased scope for cost-sharing, even if only in-kind, such as labour provided by the beneficiary community. Cost-sharing enhances the sense of ownership of the users, which can contribute positively to sustainability. ▲ In chronic situations, when beneficiaries could be capable of contributing financially to the operation costs, proceeds from the sale of items (e.g. water) produced with ECHO-funded inputs remain with the intermediate beneficiary (i.e. the owner of the donated resource) and can enhance the sustainability of the project (i.e. to purchase spare parts, petrol and to build up a fund for replacement of system components). ▲ When rehabilitating damaged water and sanitation facilities, it should be determined who was originally responsible for its management. If there has been a long-established community management structure for the maintenance of these facilities, the relief agency should not take it upon itself to rehabilitate those facilities without involving the existing management structure. Undermining the authority of existing management structures should be avoided, as this reduces the feeling of ownership and responsibility. ▲ When selecting a technology, operation and maintenance and management by local institutions or by the community itself has to be kept in mind. Technically complex systems demand more qualified people, greater skill-levels and usually, although not always, greater levels of financing. Implementing agencies must carefully consider whether these resources and skills will be available (especially once the project is finalised and the agency has withdrawn). ▲ If the intention is to hand over the watsan systems to a government body or a local NGO, this will probably involve discussion about the modalities of the transition and the level of management capacity that is required. Early secondment, or involvement, of government or NGO staff should be considered at the start of the design and execution of projects to ease this transition process. ▲ Sustainability of initial responses can be enhanced if they are compatible with possible future developments; for example, the design of initial systems should be made bearing in mind the possible need for future expansion due to population growth or movement.

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4.4 Monitoring & evaluation

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4.4 Monitoring & evaluation

Main characteristics

In general terms, monitoring and evaluation activities assess the performance of a water supply and sanitation programme and its effectiveness in responding to health problems related to water and sanitation. Baseline data are obtained from the initial needs assessment against which post-intervention results are measured.

A minimal *monitoring* plan or framework needs to be established at the start of the programme, outlining the systematic collection and analysis of information relating to the physical and financial progress of the programme. Key indicators are developed to measure a number of aspects of system performance:

- Activities such as the amount of materials or money used for system implementation;
- Output indicators such as the number of latrines constructed or water committees trained;
- Results (also referred to as outcomes) such as improvements in the proper use of latrines, changes in hygiene behaviours or the level of continuity of a water supply system; and
- Impact such as the reduction in water and sanitation related diseases.

The required methods for measuring and recording these various levels of monitoring (e.g. project financial records, observations, community meetings, direct measurement of water supply production etc.) and information systems (e.g. reporting formats, sanitary inspection pro formas etc.) need to be clearly spelled out in the initial stage of the programme. Ideally, these elements of monitoring should already form part of the standard operating procedures (SOP) of an agency or specific programme.

The measurement of changes in hygiene behaviour is not easy to achieve; however, it is always the case that monitoring should focus on a small number of key behaviours and rely on sound baseline surveys in order to establish the extent of change. Direct measurement of practices is difficult, as in many cases these are considered to be private actions. However, indirect observational assessments can be made (e.g. by examining the condition of household latrines, or the presence of hand washing materials at or near to latrines or defecation sites). Other techniques can be used to measure changes in behaviour, including focus group discussions, self-monitoring and community-based monitoring systems (for further details see **IRCNL3** and **EHP1**).

Both monitoring and evaluation can be carried out at various levels, including the project, or programme itself (i.e. measuring the performance of the project, efficiency, administration, staff performance etc.) and the actual outputs at the implementation

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4.4 Monitoring & evaluation

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level (i.e. the systems themselves). In most cases the information collected for monitoring of watsan projects can be divided into a number of clearly identifiable areas as follows:

- Technical: system performance, continuity of service, water quality;
- Social and health: access to and use of services by different groups, changes in behaviour practices (i.e. safe storage of water in the household, hand washing at critical times);
- Institutional: performance of management structures, clear roles and responsibilities, support from external institutions;
- Environmental: impact on water source, drainage, solid waste management; and
- Financial: tariff system, capacity of users to finance O&M costs.

Monitoring, unlike evaluation, should be carried continuously throughout the execution of an intervention. The ultimate aim of monitoring is measuring to what extent the objectives of the intervention are met and indicating what adjustments can be made to improve performance whilst the intervention is still in progress. Monitoring data will support programme management by increasing effectiveness of the programme in meeting the needs of the affected population. Therefore, the affected community needs to be involved and consulted as to the extent to which delivery of services is acceptable and appropriate. An example of a monitoring checklist and of a matrix for programme monitoring can be found at page 53 and 54 of Oxfam, 2003[vii].

Most commonly an *evaluation* measures the activities, output indicators, results, and impact of a completed programme against objectives and targets set at the start of the programme. On some occasions, an evaluation can be carried out mid-way through a programme, although this is unlikely in the relatively short time frame of most ECHO-funded interventions. Evaluation data may indicate the overall (cost-) effectiveness of an intervention and the methods used. An evaluation can provide valuable lessons for the design and execution of future programmes.

4 Key implementation steps for ECHO water and sanitation operations

4.4 Monitoring & evaluation

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Good practice for monitoring and evaluation

Goal	▲ ***To promote consistent use of monitoring systems during the implementation of water and sanitation relief projects.***
Good practice	▲ Systems are in place to ensure systematic collection of information on the physical status of the water and sanitation facilities. ▲ Systems are in place that monitor the (intended) use of the water and sanitation facilities. Factors that limit the use of facilities should be dealt with through adjustments in the programme. Safe access to water and sanitation facilities, specifically for vulnerable groups, is monitored. ▲ Appropriate facilities and resources are available and used to test the water quality of new water sources when these are put in operation. Regular sampling and testing verifies that sources and delivered water meet specified criteria, but an on-site inspection or 'sanitary survey' is vital to ensure that all the potential contamination risks have been taken into account. ▲ If reliable epidemiological data are available, these are consulted to monitor the trends in the water and sanitation related diseases among the affected population. A programme may need to react to changes in trends highlighted by such data (i.e. step-up water treatment interventions at the point of use). ▲ Access to water and sanitation and the occurrence of water and sanitation related diseases in the host-population and/or the population surrounding the emergency settlement are monitored. ▲ Safety in and around water and sanitation facilities, particularly for women and adolescent girls, is monitored. Incidents are recorded and reported. ▲ Collected information should be used in a consistent and transparent manner and should be made available to other sectors, other agencies, the affected population, the relevant local authorities, donors and others, as needed. ▲ Monitoring and evaluation of hygiene behaviour change should be simple and focus on a limited set of indicators; methodologies for measuring hygiene behaviour change include structured observations (**IRCNL3**), survey techniques and participatory methodologies (for further details on assessing the effectiveness of hygiene promotions see **IRCNL4** and **IRCNL5** and for community and household monitoring see **EHP1**). ▲ The programme is evaluated with reference to stated objectives and agreed minimum standards to measure its overall effectiveness and impact on the affected population. If standards agreed upon in the proposal are not met by the programme, this needs to be justified. ▲ Evaluation identifies lessons for future preparedness, mitigation, and assistance and promotes accountability. Evaluation makes it possible to assess impacts of investments and make more effective decisions about new investments and strategies (**WB1**).

5 Acute Emergencies

5.1 Defining Acute Emergencies and their Causes

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5.1 Defining Acute Emergencies and their Causes

ECHO considers an acute emergency to be a situation in which unacceptable levels of mortality, morbidity and human suffering may occur within a given period of time as a result of a disaster if no external assistance is provided.

Typically acute emergencies are caused by quick onset natural disasters such as floods and earthquakes, by sudden outbreaks of conflict, or by a combination of these causes. Their duration is typically up to 3 months which corresponds to the duration of ECHO's primary emergency funding decision. Acute emergencies may impact on water, sanitation, and hygiene in the following ways:

- By destroying existing watsan infrastructure.
- By contaminating water sources and resources.
- By contaminating the surrounding environment due to disruption of watsan infrastructure, deposits of silt, lava, rocks, etc. and corpses of people and animals.
- By a deterioration in hygiene behaviours (e.g. use of contaminated water sources, sleeping outside where mosquitoes are more likely to affect humans, etc.).
- By having negative impacts on the organisational capacities and resources of watsan institutions.

The **main objectives** of the assistance provided in an acute emergency are as follows:

- To save and preserve lives during the crisis and its immediate aftermath
- To bring the levels of hardship and human suffering back to pre-disaster levels as soon as possible
- To lay an initial basis for future recovery and self-sufficiency, wherever possible

Strategies are geared for a quick response and emphasis is frequently placed on the construction of temporary facilities. Although cost is a concern, timeliness of intervention (often within days) is of primary importance. In many cases, **temporary water and sanitation infrastructure** is required, for use until more permanent solutions are found. This temporary infrastructure is either constructed locally or flown in and erected immediately using pre-fabricated or modular materials. The relief items distributed, the quality of water supplied (taste, colour, etc.), and the design of relief watsan facilities should concur as much as possible with the cultural, social and religious characteristics and the general preferences of the affected population. **Sphere standards and indicators** should be used as a guide, with the levels and coverage adapted to the local context, to the degree of vulnerability among the affected population and to the resources available.

Where resources are insufficient to assist all affected people **carefully targeting of** the most affected areas and to the most vulnerable people within those areas is essential.

5 Acute Emergencies

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In acute emergencies, the level of input and cost-coverage by external agencies is usually substantially higher than in longer-term interventions. Where voluntary input by beneficiaries is feasible this should be enhanced. However, while participation of beneficiaries is always to be encouraged, the affects of an acute emergency (e.g. trauma, disease, and death) and the rapid speed of response demanded in such situations may result in fewer opportunities to fully engage the affected population.

Women and girls are often vulnerable to abuse during and immediately after an acute disaster, especially when affected populations are forced into shelters or camps. Therefore, protection issues, such as **privacy and security** must be carefully considered in any water and sanitation intervention (i.e. in decisions about the location and design of facilities. See also paragraph 3.2. Because of the requirement for rapid intervention and the use of imported systems, the level of service provided during a relief phase may be different from, or higher than, locally recognised norms and standards. Likewise in **displaced populations** the water and sanitation services may initially need to be of a higher standard than that of the local host population in order to offset the increased risk of disease outbreaks that are associated with high density, mobile and weakened populations.

The acute emergency is followed by a **post-acute emergency phase** where more durable, longer-term solutions need to be implemented (this phase is also sometimes referred to as the r*ecovery and rehabilitation* phase in situations where people do not have to relocate or as the *consolidation* phase for displaced populations). The aims are as follows:

- To revert the levels of service established during the emergency operations to the levels people had access to prior to the disaster
- To increase the self-sufficiency of the beneficiaries and the sustainability of their watsan facilities and systems, particularly when people return to their home areas.

In the event of people being dependent for a longer term on temporary facilities the primary aim is to improve service levels and quality of these facilities to levels that existed prior to the disaster. In such instances, self-sufficiency and the sustainability of the facilities are less of an issue; long-term external assistance with the operation of the facilities will usually be required in such cases. See Section 5.5.

5.2 Intervention approaches for Acute Emergencies

5.2.1 Expedition strategies

Interventions are typically implemented through the deployment of pre-packed equipment and materials (for operation of a service or distribution of water and sanitation items) and are managed by pre-trained staff, who are often expatriates. Equipment, materials, and staff are flown, trucked, or shipped into the emergency area at

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5.2 Intervention approaches for Acute Emergencies

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very short notice; continued input by the implementing agency is usually required for the duration of the event (skilled staff, spare parts, etc).

An expedition approach is appropriate when:

- The speed of an operation is crucial or local circumstances do not allow for other approaches.
- The required resources (e.g. materials, equipment, and staff) cannot be obtained locally within the given time frame.
- External resources can be delivered on site within the available time frame (no restrictions regarding permissions, access for the mode of transport used, etc.).

Once implemented, the facilities and services should be adapted to the local circumstances in consultation with beneficiaries and sector institutions. As soon as possible, the local communities should be enabled to manage and maintain systems wherever this is feasible. Alternatively the imported facilities can be replaced by other, more sustainable watsan systems based on local resources, preferences, and capabilities. This is especially important if the implementing agency is present for a limited period of time only and where it is likely that the services will still be required after its departure.

Equipment offered by third parties (e.g. a company offering a high-tech water treatment plant) can fulfil a positive role if:

- The implementing agency has the spare parts, skills, staff and time to implement and manage the equipment; or
- The third party agrees to provide all required resources, including spare parts, operational staff, fuel etc. and guarantees proper operation of the equipment over an agreed period of time.

5.2.2 Community-based strategies

In acute emergencies community-based strategies are generally used in response to emergencies affecting rural populations or those with small-scale systems, and are most appropriate for the following cases:

- To enable consultation of the beneficiaries during all stages of the project cycle;
- To facilitate implementation of activities by the beneficiaries themselves;
- To establish the relief operation in such a way that it facilitates a transition to long-term community-management.

Within this context it is preferable to work with local resources (equipment, materials, skilled local people, etc.) and establish systems that can be operated and maintained by communities or at least that can later be transformed into such systems. However, if the

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involvement of beneficiaries, local watsan institutions, or companies would compromise the saving of lives (because, for instance, it would take too much time), a community-based way of working should not be attempted, or adapted to meet actual needs promptly. However, in the majority of cases, stakeholders' involvement will, if orchestrated properly, result in quicker, more effective relief.

Sometimes demand needs to be **created or increased**. For instance a demand for latrines may need to be established when people are used to practising open defecation; or an acceptance of chlorinated water may need to be created when people are used to, and prefer, the taste of (turbid) surface water. Effective hygiene promotion methods and messages will be required in such cases. In exceptional cases people may even need to be forced to adapt certain behaviours, especially where time is extremely short and the risks related to unsafe behaviours are very high. In such circumstances a good approach is to work intensively with village leaders, opinion leaders, and existing community organisations to create an understanding of the measures taken among the beneficiaries as quickly as possible.

Needs and priorities should be assessed together with beneficiaries, community management structures and wherever possible in coordination with local government authorities. Aid may be provided through local organisations and counterparts. A considerable advantage of this approach is in their understanding of local culture, specific needs and priorities, social relations and the absence of language barriers. Although local organisations may need intensive guidance from a professional external organisation during the emergency period, they are often able to execute interventions using their own approaches, mechanisms, and networks. Indeed partnerships with local organisations can be highly beneficial; for example, when properly managed, assessments conducted via a local network of fieldworkers can be quicker and result in better quality information, than when done by expatriates alone.

5.2.3 System-based strategies

Where people rely on large, complex water supply and sanitation infrastructure, interventions are required that focus on these systems and the institutions that manage them, rather than taking a community-based approach. These systems usually, but not always, serve urban populations and rely on more sophisticated and complex technologies that are normally beyond the scope for active community participation. However, depending on the circumstances, other intervention strategies may be executed in parallel, to ensure that watsan needs are assessed and covered at community and household level, thus avoiding gaps in the provision of assistance. Under this approach the focus is on repairs that can be executed quickly in order that key components of the system can resume functioning. A rapid system assessment is executed together with the

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local watsan institution with the aim of gathering information about the magnitude and location of the damage and the potential for quick repairs. Plans are then made together with the local watsan institutions and implemented as fast as possible.

If staff from a local watsan institution has survived and is motivated to provide relief assistance, it should be encouraged and facilitated to do so; otherwise, an external agency should provide the required assistance in the relief phase. Subsequently the same agency can continue to assist the watsan institution in the execution of structural repairs and to (re)-build management capacity; a key activity in this phase is the provision of **mitigation measures** to protect the system from the impact of future disasters (see Section 7).

5.3 Acute emergencies caused by natural disasters

Most major natural disasters (e.g. floods, earthquakes, hurricanes, volcanic eruptions), with the exception of droughts, have the following characteristics and impacts:

- They are quick onset events which can occur in minutes;
- They have the potential to cause physical damage to watsan infrastructure; and
- They can contaminate water sources.

Damage caused by natural disasters to existing watsan systems are often related to incorrect siting, poor design, and sub-standard construction. While a natural disaster may cause large-scale physical damage to infrastructure, local watsan institutions (knowledge, procedures, staff, finance) are usually not greatly affected (unless many staff are killed). Assistance can therefore often be most successfully provided together with or through such institutions. This is in contrast to acute emergencies caused by conflict in which local institutions are commonly badly affected (by looting, deliberate destruction of offices etc.), as well as damage caused to physical infrastructure.

5.3.1 Floods

Main Characteristics

Floods are quick onset events that occur as a result of excessive rainfall, abnormal increases in ocean level (e.g. tsunamis), massive snowmelts, or a combination of these phenomena. The effects of floods are often reinforced by poorly designed flood control measures, deforestation of watersheds, or dams constructed for electricity production. The negative impacts of floods may be greater when early warning systems fail or have not been installed. Floods can have the following impacts depending on their force:

- Watsan infrastructure can be physically damaged (strong floods);
- Water supplies can be contaminated (either through increases in salinity levels in the case of sea water intrusion, or by organic material and debris carried in a flood);
- People can be temporarily displaced by standing water, usually to nearby areas (see section 5.6 for interventions addressing displaced persons).

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Impacts

General	▲ Destruction of livelihoods, houses, electricity systems, roads, and bridges. ▲ People and/or cattle drowned. ▲ Damage to buildings and equipment used by institutions for the operation of their watsan systems (cars, trucks, computers, offices, etc.).
Water systems	▲ Destruction/breakage/damage of intakes, concrete structures, pipelines and connections and pumping equipment, as a result of wave action and flooding. ▲ Silt and other deposits in water reservoirs, wells, boreholes, filters and pipelines. ▲ Intrusion of salt water into continental aquifers. ▲ Contamination and/or reduction of surface and ground waters. ▲ Non-functioning of water infrastructure due to power outages and short-circuiting.
Environmental sanitation systems	▲ Destruction/breakage/damage of sewage systems, toilets/latrines, drainage canals, waste disposal sites, etc. ▲ Silt deposits in latrines, sewers, and drainage canals. ▲ Non-functioning of sanitation infrastructure due to power outages and short-circuiting.
Hygiene & hygiene behaviours	▲ Deposits of silt, debris and other materials in populated areas. ▲ Standing pools of contaminated water and/or sewage. ▲ Cadavers of animals and people left un-buried. ▲ Increases in vector breeding combined with behaviours that enhancing the danger for disease transmission by vectors. ▲ Contaminated water used for drinking. ▲ Increased open defecation.

Key health issues

- Increased risk of **water-borne diseases**, such as typhoid fever, cholera, leptospirosis, and Hepatitis A. However, the risk is generally low unless there is significant population displacement and/or water sources are compromised. The risk can be minimised through the provision of clean and chlorinated water and the use of safe water sources for drinking. Power cuts related to floods may disrupt water treatment and supply.
- Increased risk of **excreta-related diseases** such as diarrhoea, especially where sewage systems or latrines have been disrupted and people have no possibilities to practice safe excreta disposal.
- Increases in **vector-borne diseases**, such as malaria, dengue and dengue haemorrhagic fever, yellow fever, and West Nile Fever, through the expansion in the number and range of vector habitats. Standing water caused by floods can act as

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breeding sites for mosquitoes. Flooding may initially flush out breeding mosquitoes, but they come back when waters recede. The lag time is usually around 6-8 weeks. The risk of outbreaks is increased by changes in human behaviour (increased exposure to mosquitoes while sleeping outside, interruptions to disease control measures, overcrowding), or changes in habitat, which promote mosquito breeding (landslide, deforestation, river damming, and rerouting).

- There is no evidence that **human corpses** pose a risk to the general public (**PAHO2**). Most agents do not survive long in the human body after death (with the exception of HIV, which can be up to 6 days). Human remains only pose health risks in a few cases requiring specific precautions, such as deaths from cholera or haemorrhagic fevers. However, workers who routinely handle corpses may have a risk of contracting tuberculosis, blood borne viruses (such as Hepatitis B/C and HIV), and gastrointestinal infections. Emergency workers and the public should be duly advised to avoid panic and the inappropriate disposal of bodies, and to take adequate precautions in handling the dead. A related problem may be that **fear** leads people to **reject** water sources that they suspect to contain dead bodies or suspect may have been in contact with them. In such cases the quality of the alternative water sources becomes more important, if improved (safe) sources are rejected. Sometimes, the emptying, cleaning and scrubbing of a well is required to make it acceptable again; however, depending on local cultural practices and beliefs, a source that has been in contact with dead bodies may never be accepted again.

Key results

- Beneficiaries have access to adequate quantities/quality water for drinking and basic household uses.
- Beneficiaries have access to safe excreta disposal facilities.
- Beneficiaries live in an environment free of silt debris, other rubble, and the corpses of animals and people.
- Beneficiaries live in an environment in which vector increases due to the floods are controlled.
- Positive watsan-related hygiene messages have been promoted to the beneficiaries targeting high-risk behaviours and they have been provided with the means required to practice these improved behaviours.

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Interventions & Good Practices

General	▲ Rapid assessments (IRC4, paragraph 4.1.1). ▲ Improvement of watsan relief coordination. ▲ Quick repair or temporary replacement of damaged electricity supply systems (REDR1). ▲ Advocacy.
Water	▲ Water treatment (REDR1, IRC8, CI2, CDC1, OXF5). ▲ Rapid cleaning and chlorination of boreholes and wells (WHO6, WHO7, IRC8, REDR1). ▲ Distribution of household water items (REDR1, IRC8, WHO3, WHO10, CDC1). ▲ Repair of affected water systems (REDR1, IRC8). ▲ Development of new water systems (REDR1, IRC8, ITDG 3, JS 1). ▲ Water tankering (REDR1, IRC8, WHO8, WHO3). ▲ Redirection of water systems to drinking water. ▲ Provision of water system items to communities or water institutions (REDR1, IRC8).
Environmental Sanitation	▲ Construction of emergency toilet facilities (REDR1, IRC9). ▲ Distribution of sanitary kits (REDR1). ▲ Clearing and burial of corpses and cadavers (REDR1, WHO9, PAHO2). ▲ Rapid cleaning and repair of excreta disposal systems (REDR1). ▲ Removal of debris/solid wastes and organic material (REDR1, WHO13). ▲ Vector control (UNHCR 1, REDR1, IRC10, IRC22, OXF4, OXF8, WEDC6). ■
Hygiene Promotion	▲ Promotion through TV or radio, newspapers, posters (ITDG 2, IRC11). ▲ Promotion through personal messaging (ITDG 2, IRC11). ■ ■

5.3.2 Earthquakes

Main Characteristics

Earthquakes often have a devastating effect on watsan infrastructure, because they produce faults in rocks and the subsoil, settlement of the ground surface, cave-ins, landslides, mudslides, and liquefaction (softening of saturated soils). Where an earthquake happens under the sea-bed it may cause a tsunami. When an earthquake affects certain types of infrastructure, this may lead to secondary impacts; for example, an earthquake which damages a dam may cause secondary and sudden flooding. The degree of damage is usually related to the magnitude and extent of the earthquake, the resistance of the watsan systems (construction quality, siting etc.) and the characteristics of the soil at or upon which the watsan systems are located.

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Even if the number of direct victims is low there is often a danger of epidemics due to the sudden breakdown of watsan and sanitary facilities. Earthquakes can have the following impacts depending on their force and other characteristics:

- Watsan infrastructure can be physically damaged;
- Water sources can be altered (in flow direction, outlet, etc.);
- People can be temporarily displaced, usually to nearby areas (see 5.6 for interventions addressing displaced persons).

Impacts

General	▲ Destruction of livelihoods (e.g. irrigation channels, factories, etc), houses, power supply systems, communication systems, roads, and bridges. ▲ People and cattle killed. ▲ Damage to buildings and equipment used by institutions for the operation of their watsan systems (cars, trucks, computers, offices, etc.). ▲ Earthquakes often cause landslides in watersheds, affecting the nature of available water resources.
Water systems	▲ Physical damage to water supply infrastructure (both above and below ground, e.g. intakes, borehole casings, conveyance structures, dams, concrete structures, treatment, storage and distribution lines) causing loss of water and water contamination. ▲ Damage to water facilities in people's houses/compounds. ▲ Change in water quality because of landslides. ▲ Variation (decrease) in the flow of underground or surface collector works, loss of water due to breakages, effects of floods (Tsunami, dam failure), change in the site of water outlets in springs. ▲ Non-functioning of water infrastructure due to power outages and short-circuiting.
Environmental sanitation systems	▲ Physical damage to sanitation infrastructure (sewers, septic tanks, latrines etc.). ▲ Destruction/breakage/damage of drainage canals. ▲ Destruction/breakage/damage of waste disposal sites. ▲ Non-functioning of sanitation infrastructure due to power outages and short-circuiting.
Hygiene & hygiene behaviours	▲ Rubble, stones and other debris deposited in people's surroundings. ▲ Standing pools of contaminated water and/or sewage, if water and/or sewage systems are affected. ▲ Cadavers of animals and people left un-buried. ▲ Contaminated water used for drinking. ▲ Increased open defecation. ▲ Disruption to vector control measures.

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Key health issues

- Increased risk of **water-borne diseases**, such as typhoid fever, cholera, leptospirosis, and Hepatitis A. However, the risk is generally low unless there is significant population displacement and/or water sources are compromised. The risk can be minimised through the provision of clean and chlorinated water and the use of safe water sources for drinking. Power cuts and/or **suspension of public health programmes** related to earthquakes may disrupt water treatment and supply, increasing the danger of water-borne diseases.
- Increased risk of **excreta-related diseases** such as diarrhoea, especially where sewage systems or latrines have been disrupted and people have no possibilities to practice safe excreta disposal.
- There is no evidence that **human corpses** pose a risk to the general public (**PAHO2**). Most agents do not survive long in the human body after death (with the exception of HIV, which can be up to 6 days). Human remains only pose health risks in a few cases requiring specific precautions, such as deaths from cholera or haemorrhagic fevers. However, workers who routinely handle corpses may have a risk of contracting tuberculosis, blood borne viruses (such as Hepatitis B/C and HIV), and gastrointestinal infections. Emergency workers and the public should be duly advised to avoid panic and the inappropriate disposal of bodies, and to take adequate precautions in handling the dead. A related problem may be that **fear** leads people to **reject** water sources that they suspect to contain dead bodies or suspect may have been in contact with them. In such cases the quality of the alternative water sources becomes more important, if improved (safe) sources are rejected. Sometimes, the emptying, cleaning and scrubbing of a well is required to make it acceptable again; however, depending on local cultural practices and beliefs, a source that has been in contact with dead bodies may never be accepted again.

Key results

- Beneficiaries have access to adequate quantities/quality water for drinking and basic household uses.
- Beneficiaries have access to safe excreta disposal facilities.
- Beneficiaries live in an environment free of silt debris, other rubble, and the corpses of animals and people, caused by the earthquake.
- Beneficiaries live in an environment in which vector increases due to the earthquake are controlled.
- Positive watsan-related hygiene messages have been promoted to the beneficiaries targeting high-risk behaviours and they have been provided with the means required to practise these improved behaviours.

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Interventions & Good Practices

General	▲ Rapid assessments (IRC4, paragraph 4.1.1). ▲ Improvement of watsan relief coordination. ▲ Quick repair or temporary replacement of damaged electricity supply systems (REDR1). ▲ Advocacy.
Water	▲ Water treatment (REDR1, IRC8, CI2, CDC1, OXF5). ▲ Distribution of household water items (REDR1, IRC8, WHO3, WHO10, CDC1). ▲ Repair of affected water systems (REDR1, IRC8). ▲ Development of new water systems (REDR1, IRC8, ITDG 3, JS 1). ▲ Provision of items to communities or water institutions (REDR1, IRC8). ▲ Water tankering (REDR1, IRC8, WHO8, WHO3). ▲ Redirection of intact water systems to drinking water.
Environmental Sanitation	▲ Construction of emergency toilet facilities (REDR1, IRC9). ▲ Distribution of sanitary kits (REDR1). ▲ Clearing and burial of corpses and cadavers (REDR1, WHO9, PAHO2). ▲ Rapid cleaning and repair of excreta disposal systems (REDR1). ▲ Removal of debris and solid wastes (REDR1, WHO13). ▲ Vector control (UNHCR 1, REDR1, IRC10, IRC22, OXF4, OXF8, WEDC6).
Hygiene Promotion	▲ Involve women in water and sanitation related trainings. ▲ Promotion through TV or radio, newspapers, posters (ITDG 2, IRC11). ▲ Promotion through personal messaging (ITDG 2, IRC11).

5.3.3 Hurricanes and cyclones

Hurricanes primarily cause damage to above-ground works. The risk of damage increases with the height of structures and the surface exposed to the wind. Hurricanes are usually accompanied by heavy rainfall that may cause landslides and flooding of rivers. Hurricanes and cyclones can have the following impacts depending on their force:

- ▲ Watsan infrastructure can be physically damaged;
- ▲ Water sources can be contaminated or altered (in flow direction, outlet, etc.);
- ▲ People can be temporarily displaced, usually to nearby areas (see 5.6 for interventions addressing displaced persons).

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Impacts

General	▲ People and cattle killed. ▲ Siltation, erosion, and loss of retention capacity in water sheds. ▲ Buildings used by institutions may be damaged. ▲ Damage to electrical transmission and distribution systems resulting in the interruption in operation of equipment, instruments and communication. ▲ The heavy rains that often accompany hurricanes may cause floods and landslides (see the respective paragraphs dealing with these disasters).
Water systems	▲ Physical damage to above ground water supply infrastructure due to heavy winds and windblown debris (destruction of roofs, ruptures in pipelines in exposed crossings over rivers, breakages in exposed pipelines due to falling trees, damage to elevated water tanks, etc.). ▲ Physical damage as a result of water currents or landslides caused by the hurricane, e.g. ruptures in pipelines in exposed crossings over rivers; damage to elevated and ground-level tanks; contamination of water in tanks and pipes; breaks in pipelines and structural failure of pipelines because of earth settling associated with flooding; wave damage to embankments of dams and intake structures etc. (see also the respective paragraphs dealing with landslides and floods). ▲ Damages to water sources, pipelines, river intakes, dams and impoundments, and protected springs due to uprooting of trees and/or falling trees and utility poles. ▲ Blockages and damages in water sources, protected springs (screens), screens of river intakes, water treatment plants, water storage systems, dams and impoundments (filling and overtopping of reservoirs), and pump stations caused by debris. ▲ Flooding and under-scouring of foundations of above ground pumps and electrical equipment, treatment plants, storage tanks and pipelines. ▲ Non-functioning of water infrastructure due to power outages and short-circuiting. ▲ Change in water quality because of landslides caused by the hurricane.
Environmental sanitation systems	▲ Physical damage to above ground sanitation infrastructure due to heavy winds (destruction of latrine superstructures, waste collection systems, etc.). ▲ Damage associated with floods and landslides caused by hurricanes (see the respective paragraphs dealing with landslides and floods). ▲ Non-functioning of sanitation infrastructure due to power outages and short-circuiting.
Hygiene & hygiene behaviours	▲ Standing pools of contaminated water and/or sewage if water and/or sewage systems are affected. ▲ Debris and mud cause generally unhygienic circumstances. ▲ Cadavers of animals and people left un-buried. ▲ Contaminated water used for drinking. ▲ Increased open defecation. ▲ Disruption to vector control measures

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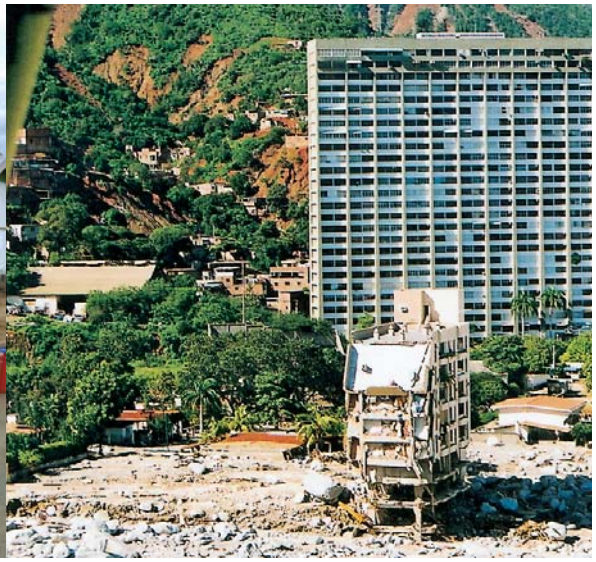
Key health issues

- Increased risk of **water-borne diseases**, such as typhoid fever, cholera, leptospirosis, and Hepatitis A. However, the risk is low unless there is significant population displacement and/or water sources are compromised. The risk can be minimised through the provision of clean and chlorinated water and the use of safe water sources for drinking. Power cuts and/or **suspension of public health programmes** related to hurricanes or cyclones may disrupt water treatment and supply, increasing the danger of water-borne diseases.
- Increased risk of **excreta-related diseases** such as diarrhoea, especially where sewage systems or latrines have been disrupted and people have no possibilities to practice safe excreta disposal.

Key results

- Beneficiaries have access to adequate quantities/quality water for drinking and basic household uses.
- Beneficiaries have access to safe excreta disposal facilities.
- Beneficiaries live in an environment free of silt debris, other rubble, and the corpses of animals and people, caused by the hurricane/cyclone.
- Beneficiaries live in an environment in which vector increases due to the hurricane/cyclone are controlled.
- Positive watsan-related hygiene messages have been promoted to the beneficiaries targeting high-risk behaviours and they have been provided with the means required to practice these improved behaviours.



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Interventions & Good Practices

General	▲ Rapid assessments (IRC4, paragraph 4.1.1). ▲ Improve watsan relief coordination. ▲ Quick repair or temporary replacement of damaged electricity supply systems (REDR1). ▲ Advocacy.
Water	▲ Water treatment (REDR1, IRC8, CI2, CDC1, OXF5). ▲ Distribution of household water items (REDR1, IRC8, WHO3, WHO10, CDC1). ▲ Repair of affected water systems (REDR1, IRC8). ▲ Development of new water systems (REDR1, IRC8, ITDG 3, JS 1). ▲ Provision of items to communities or water institutions (REDR1, IRC8). ▲ Water tankering (REDR1, IRC8, WHO8, WHO3). ▲ Redirection of intact water systems to drinking water.
Environmental Sanitation	▲ Construction of emergency toilet facilities (REDR1, IRC9). ▲ Distribution of sanitary kits (REDR1). ▲ Rapid cleaning and repair of excreta disposal systems (REDR1). ▲ Removal of debris/solid wastes and waste waters (REDR1, WHO13). ▲ Vector control (UNHCR 1, REDR1, IRC10, IRC22, OXF4, OXF8, WEDC6).
Hygiene Promotion	▲ Promotion through TV or radio, newspapers, posters (ITDG 2, IRC11). ▲ Promotion through personal messaging (ITDG 2, IRC11).

5.3.4 Volcanoes

Volcanic eruptions vary in duration and can consist of lava flows and ash rains. Eruption frequency can fluctuate enormously, both in individual volcanoes and between volcanoes, from one or two times per decade to once every few hundred years. A volcanic eruption can cause a chain of disasters, whose consequences can be greater than those of the actual eruption, including:

- Seismic effects
- Flooding
- Increased snow fall
- Earth or mud slides resulting from heating of the earth and localised ground shaking
- The dispersal of ash, dust, gases, rocks and lava over wide areas

These events can physically damage watsan infrastructure, contaminate or alter water sources, and cause displacement of the population.

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Volcanic eruptions are usually characterised by either short-term displacement of populations, which flee the immediate area, but return relatively quickly once the eruption has subsided, or by total and permanent displacement where the eruption destroys entire areas and makes them un-inhabitable. See section 5.6 for interventions addressing displaced persons.

Impacts

General	▲ Watersheds destroyed by fires, mudflows, and ash deposits. ▲ Destruction of access routes, electricity plants, communication lines, and other facilities by fires, floods, landslides, and lava flows caused by the eruptions. ▲ Buildings used by watsan institutions may be damaged.
Water systems	▲ Water resources may be contaminated or altered (e.g. change or loss of spring outlets). ▲ Destruction of water facilities in the direct path of lava flows, usually restricted to the channels that originate in the volcano. ▲ Physical damages caused by falling rocks, fires, floods and landslides caused by volcanic eruptions (see also the respective paragraphs dealing with landslides and floods). ▲ Obstruction of intakes, settling basins, pipelines, flocculators, dams, wells (collapse of cover under ash load), sedimentation tanks and filters due to rock and ashfall. ▲ Change in water quality in surface waters and reservoirs water mainly due to ashfall, lahars, and mudflows and sometimes due to animal cadavers. ▲ Non-functioning of water infrastructure due to power outages and short-circuiting.
Environmental sanitation systems	▲ Destruction of sanitation facilities in the direct path of lava flows, usually restricted to the channels that originate in the volcano. ▲ Physical damages caused by falling rocks, fires, floods and landslides caused by volcanic eruptions (see also the respective paragraphs dealing with landslides and floods). ▲ Obstruction of sanitation systems due to rock and ashfall. ▲ Non-functioning of sanitation infrastructure due to power outages and short-circuiting.
Hygiene & hygiene behaviours	▲ Standing pools of contaminated water and/or sewage if water and/or sewage systems are affected. ▲ Ashes, rocks, debris, and mud cause generally unhygienic circumstances. ▲ Contaminated water used for drinking. ▲ Increased open defecation.

Key health issues

▲ Increased risk of **water-borne diseases**, such as typhoid fever, cholera, leptospirosis, and Hepatitis A. However, the risk is low unless there is significant population displacement and/or water sources are compromised. The risk can be minimised through the provision of clean and chlorinated water and the use of safe water sources for drinking. Power cuts and/or **suspension of public health programmes** related to volcanic eruptions may disrupt water treatment and supply, increasing the danger of water-borne diseases.

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- Increased risk of **excreta-related diseases** such as diarrhoea, especially where sewage systems or latrines have been disrupted and people have no possibilities to practice safe excreta disposal.

Key results

- Beneficiaries have access to adequate quantities/quality water for drinking and basic household uses.
- Beneficiaries have access to safe excreta disposal facilities.
- Beneficiaries live in an environment free of lava, rocks, ash, and other debris caused by the volcanic eruption.
- Beneficiaries live in an environment in which vector increases due to the earthquake are controlled.
- Positive watsan-related hygiene messages have been promoted to the beneficiaries targeting high-risk behaviours and they have been provided with the means required to practise these improved behaviours.

Interventions & Good Practices

General	▲ Rapid assessments (IRC4, paragraph 4.1.1). ▲ Improve watsan relief coordination. ▲ Quick repair or temporary replacement of damaged electricity supply systems (REDR1). ▲ Advocacy.
Water	▲ Water treatment (REDR1, IRC8, CI2, CDC1, OXF5). ▲ Distribution of household water items (REDR1, IRC8, WHO3, WHO10, CDC1). ▲ Repair of affected water systems (REDR1, IRC8). ▲ Development of new water systems (REDR1, IRC8, ITDG 3, JS 1). ▲ Provision of items to communities or water institutions (REDR1, IRC8). ▲ Water tankering (REDR1, IRC8, WHO8, WHO3). ▲ Redirection of intact water systems to drinking water.
Environmental Sanitation	▲ Construction of emergency toilet facilities (REDR1, IRC9). ▲ Distribution of sanitary kits (REDR1). ▲ Rapid cleaning and repair of excreta disposal systems (REDR1). ▲ Removal of ashes and dirt and drainage of waste waters (REDR1, WHO13).
Hygiene Promotion	▲ Promotion through TV or radio, newspapers, posters (ITDG 2, IRC11). ▲ Promotion through personal messaging (ITDG 2, IRC11).

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5.3.5 Landslides

Landslides usually occur in hilly or mountainous areas due to combinations of events and circumstances, including the following:

- Saturated and/or unstable soils or snowfields
- Heavy rainfall
- Erosion of mountains and hill-sides
- Earthquakes and earth tremors

Landslides can also be triggered or caused by human activity, for example, high levels of de-forestation can lead to poor soil stability. Areas where slides have occurred in the past are usually highly susceptible to recurrent events. Landslides can have the following impacts:

- Watsan infrastructure can be physically damaged;
- Water sources can be contaminated or altered (in flow direction, outlet, etc.);
- People can be temporarily displaced, usually to nearby areas (see 5.6 for interventions addressing displaced persons).

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Impacts

General	▲ Buildings used by institutions may be damaged. ▲ Damage to electrical transmission and distribution systems resulting in the interruption of operation of watsan equipment, instruments, and communication. ▲ Damage to water sheds (uprooting of trees, loss of vegetation, loss of retention capacity). ▲ Damage to communication facilities. ▲ Blockage of roads.
Water systems	▲ Physical damage to water facilities – in particular: intakes; distribution structures; protected springs; infiltration galleries; dams; pumping stations; treatment plants, etc. – located in the main path of active slides, especially in unstable mountainous zones with steep, slide susceptible slopes. ▲ Contaminations due to silt and soil entrance in pipes, surface waters, and intake structures. ▲ Changes in the course of rivers due to blockages by landslides. ▲ Loss of impoundment volume of dams and impoundments. ▲ Blockage of water sources, water points and other water infrastructure by landslides (entrance of debris and mud in wells, boreholes, spring protections, infiltration galleries, intake structures, etc.). ▲ Non-functioning of water supply infrastructure due to power outages and short-circuiting.
Environmental sanitation systems	▲ Physical damage to sanitation facilities located on or in the main path of active slides, especially in unstable mountainous zones with steep slide susceptible slopes. ▲ Non-functioning of sanitation infrastructure due to power outages and short-circuiting.
Hygiene & hygiene behaviours	▲ Standing pools of contaminated water and/or sewage if water and/or sewage systems are affected. ▲ Debris and mud cause generally unhygienic conditions. ▲ Contaminated water used for drinking. ▲ Increased open defecation.

Key health issues

- ▲ Increased risk of **water-borne diseases**, such as typhoid fever, cholera, leptospirosis, and Hepatitis A. However, the risk is low unless there is significant population displacement and/or water sources are compromised. The risk can be minimised through the provision of clean and chlorinated water and the use of safe water sources for drinking. Power cuts and/or **suspension of public health programmes** related to landslides may disrupt water treatment and supply, increasing the danger of water-borne diseases.
- ▲ Increased risk of **excreta-related diseases** such as diarrhoea, especially where sewage systems or latrines have been disrupted and people have no possibilities to practice safe excreta disposal.

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- There is no evidence that **human corpses** pose a risk to the general public (**PAHO2**). Most agents do not survive long in the human body after death (with the exception of HIV, which can be up to 6 days). Human remains only pose health risks in a few cases requiring specific precautions, such as deaths from cholera or haemorrhagic fevers. However, workers who routinely handle corpses may have a risk of contracting tuberculosis, blood borne viruses (such as Hepatitis B/C and HIV), and gastrointestinal infections. Emergency workers and the public should be duly advised to avoid panic and the inappropriate disposal of bodies, and to take adequate precautions in handling the dead. A related problem may be that **fear** leads people to **reject** water sources that they suspect to contain dead bodies or suspect may have been in contact with them. In such cases the quality of the alternative water sources becomes more important, if improved (safe) sources are rejected. Sometimes, the emptying, cleaning and scrubbing of a well is required to make it acceptable again; however, depending on local cultural practices and beliefs, a source that has been in contact with dead bodies may never be accepted again.

Key results

- Beneficiaries have access to adequate quantities/quality water for drinking and basic household uses.
- Beneficiaries have access to safe excreta disposal facilities.
- Beneficiaries live in an environment free of silt debris, other rubble, and the corpses of animals and people, caused by landslides.
- Beneficiaries live in an environment in which vector increases due to the hurricane/cyclone are controlled.
- Positive watsan-related hygiene messages have been promoted to the beneficiaries targeting high-risk behaviours and they have been provided with the means required to practice these improved behaviours.

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Interventions & Good Practices

General	▲ Rapid assessments (IRC4, paragraph 4.1.1). ▲ Improve watsan relief coordination. ▲ Quick repair or temporary replacement of damaged electricity supply systems (REDR1). ▲ Advocacy.
Water	▲ Water treatment (REDR1, IRC8, CI2, CDC1, OXF5). ▲ Distribution of household water items (REDR1, IRC8, WHO3, WHO10, CDC1). ▲ Repair of affected water systems (REDR1, IRC8). ▲ Development of new water systems (REDR1, IRC8, ITDG 3, JS 1). ▲ Provision of items to communities or water institutions (REDR1, IRC8). ▲ Water tankering (REDR1, IRC8, WHO8, WHO3). ▲ Redirection of intact water systems to drinking water.
Environmental Sanitation	▲ Construction of emergency toilet facilities (REDR1, IRC9). ▲ Distribution of sanitary kits (REDR1). ▲ Clearing and burial of corpses and cadavers (REDR1, WHO9, PAHO2). ▲ Rapid cleaning and repair of excreta disposal systems (REDR1). ▲ Removal of dirt and drainage of waste waters (REDR1, WHO13). ▲ Vector control (UNHCR 1, REDR1, IRC10, IRC22, OXF4, OXF8, WEDC6).
Hygiene Promotion	▲ Promotion through TV or radio, newspapers, posters (ITDG 2, IRC11). ▲ Promotion through personal messaging (ITDG 2, IRC11).

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5.4 Acute emergencies caused by conflict

War and conflict are often unpredictable events that flare up without any prior notice. Conflict is a factor that can impact directly on water and sanitation, both by disrupting access and by contributing to a breakdown in the systems and human resources required to manage and deliver services. In modern armed conflict it is not uncommon for large numbers of people to become internally displaced and effectively isolated from government services. Complex emergencies, involving armed conflicts, tend to cause sudden movements of large numbers of people and mortality rates are often much higher amongst displaced populations, especially when the exodus of people tends to be rapid. The following information focuses on assistance for people who have not fled from a sudden onset conflict. See section 5.6 for interventions addressing displaced persons.

Main Characteristics

In conflict situations physical damage to existing watsan infrastructure may be high and watsan institutions and authorities may also be heavily affected (staff may have fled or died, money, equipment and other resources stolen or damaged etc.). In conflict situations it is often difficult to obtain permission for works to be executed and there is often lack of clarity or outright conflict over legal possession and access to water sources. Cost recovery and the collection of tariffs based on use of water supply systems are often difficult to arrange and more susceptible to corruption in conflict situations (ACF2).

Water and sanitation systems established in response to acute conflict may themselves be prone to destruction (purposely or accidentally), misuse, or corruption, and may exacerbate conflict further. A lack of security can obstruct or limit the ability of aid agencies to deliver basic watsan services to people in need. It can also endanger beneficiaries trying to use water and sanitation facilities; women and girls are especially vulnerable in this respect. Furthermore, in conflict situations there may be fear of deliberate pollution of water sources, which has been documented to be the case. Finally, a particular armed group or political faction can misappropriate the supply of water in conflict situations, which are characterised by a lack of law and order, for illegal production of drug crops, the profits of which are then used to finance further illegal actions.

In circumstances where security (including further conflict-related flare-ups), corruption, or the potential for misuse of water as a resource is likely, household level water systems should be considered over public systems. However, this decision is obviously subject to adequate water resources, cost considerations, and available technology. The use of household level rainwater catchment and storage systems is a good, relatively low-cost example of this approach.

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Impacts

General	▲ Destruction of livelihoods (e.g. irrigation channels, factories, etc), houses, power supply systems, communication systems, roads, and bridges. ▲ People killed and injured. ▲ Buildings and equipment used by institutions for the operation of their watsan systems may be damaged or stolen (cars, trucks, computers, offices, etc.). ▲ The death or flight of staff of watsan institutions.
Water systems	▲ Physical damage to water supply infrastructure, especially public systems. ▲ Uneven distribution of water resources between conflicting parties. ▲ Stealing of water, misuse of water as a resource, or corruption with income generated from the sale of water. ▲ Systems cease to function due to lack of materials (chemicals, fuel, spare parts, etc.), funds, staff, and equipment. ▲ Conflict over water sources/points or resources generated from tariffs or other payments made for the use of systems.
Environmental sanitation systems	▲ Physical damage to public sanitation infrastructure (sewers, public/private toilets or latrines, waste disposal systems). ▲ Systems ceasing to function due to lack of materials (chemicals, fuel, spare parts, etc.), funds, staff, and equipment.
Hygiene & hygiene behaviours	▲ Standing pools of contaminated water, sewage, and/or solid wastes if water, sewage, or waste disposal systems are affected. ▲ Contaminated water used for drinking. ▲ Increase in open defecation. ▲ Poor hygiene behaviours due to disrupted water supplies.

Key health issues

- ▲ Increased risk of **water-borne diseases**, such as typhoid fever, cholera, leptospirosis, and Hepatitis A. However, the risk is low unless there is significant population displacement and/or water sources are compromised. The risk can be minimised through the provision of clean and chlorinated water and the use of safe water sources for drinking. Power cuts and/or **suspension of public health programmes** related to conflict may disrupt water treatment and supply, increasing the danger of water-borne diseases.
- ▲ Increased risk of **excreta-related diseases** such as diarrhoea, especially where sewage systems or latrines have been disrupted and people have no possibilities to practice safe excreta disposal.
- ▲ There is no evidence that **human corpses** pose a risk to the general public (**PAHO2**). Most agents do not survive long in the human body after death (with the exception of HIV, which can be up to 6 days). Human remains only pose health risks in a few cases requiring specific precautions, such as deaths from cholera or haemorrhagic

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fevers. However, workers who routinely handle corpses may have a risk of contracting tuberculosis, blood borne viruses (such as Hepatitis B/C and HIV), and gastrointestinal infections. Emergency workers and the public should be duly advised to avoid panic and the inappropriate disposal of bodies, and to take adequate precautions in handling the dead. A related problem may be that **fear** leads people to **reject** water sources that they suspect to contain dead bodies or suspect may have been in contact with them. In such cases the quality of the alternative water sources becomes more important, if improved (safe) sources are rejected. Sometimes, the emptying, cleaning and scrubbing of a well is required to make it acceptable again; however, depending on local cultural practices and beliefs, a source that has been in contact with dead bodies may never be accepted again.

Key results

- Beneficiaries have access to adequate quantities/quality water for drinking and basic household uses.
- Beneficiaries have access to safe excreta disposal facilities.
- Positive watsan-related hygiene messages targeting high-risk behaviours have been promoted to the beneficiaries and they have been provided with the means required to practice these improved behaviours.

Interventions & Good Practices

General	▲ **Rapid assessments** (**IRC4**, paragraph 4.1.1). ▲ **Improve watsan relief coordination**. ▲ **Quick repair or temporary replacement of damaged electricity supply systems** (REDR1). ▲ **Advocacy**.
Water	▲ **Distribution of household water items** (REDR1, **IRC8**, **WHO3**, **WHO10**, **CDC1**, **NWP1**). ▲ **Repair of affected water systems** (REDR1, **IRC8**). ▲ **Development of new water systems** (REDR1, **IRC8**, ITDG 3, JS 1). ▲ **Provision of items to communities or water institutions** (REDR1, **IRC8**). ▲ **Water tankering** (REDR1, **IRC8**, **WHO8**, **WHO3**). ▲ Redirection of **intact water systems to drinking water**.
Environmental Sanitation	▲ **Construction of emergency toilet facilities** (REDR1, **IRC9**). ▲ **Distribution of sanitary kits** (REDR1). ▲ **Clearing and burial of corpses and cadavers** (REDR1, **WHO9**, **PAHO2**). ▲ **Rapid cleaning and repair of excreta disposal systems** (REDR1). ▲ **Removal of dirt and drainage of waste waters** (REDR1, **WHO13**). ■
Hygiene Promotion	▲ **Promotion through TV or radio, newspapers, posters** (ITDG 2, **IRC11**). ▲ **Promotion through personal messaging** (ITDG 2, **IRC11**).

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5.5 The post-acute emergency phase of acute natural disasters and conflicts

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5.5 The post-acute emergency phase of acute natural disasters and conflicts

During the post-acute emergency phase for affected populations that have not been displaced (either those affected by natural disasters or by conflict) the emphasis is on recovery and rehabilitation of water and sanitation services and a return to self-sufficiency. If there is a possibility for future recurrence of disasters, the activities in this phase must include both mitigation measures and disaster preparedness activities (see section 7). The duration of the post-acute emergency is typically 1 to 9 months which corresponds well to the duration of ECHO's emergency funding decision. Linking relief to rehabilitation and development is a critical part of the approaches in these scenarios, and as such the design and planning of projects must take into account a range of issues from the outset, including the following:

- Wherever possible to seek the involvement of central or local government agencies in the planning and identification of priority areas/communities for intervention.
- Generally speaking post-acute interventions are implemented within three months following the disaster event.
- Continuous involvement and support to local government staff in the entire project cycle, so that they are familiar with the interventions and can provide continued supported to community-management models once the ECHO-funded implementing agency has withdrawn.
- Adopting designs and approaches that take account of, or meet, local and national norms and standards.
- The selection of appropriate technologies that are can be used, maintained, and repaired with a minimum of imported parts, or that are freely available in local markets.
- Basing project design and approaches on national sector policy regarding key issues such as cost recovery, tariffs, community-management models (including legal establishment of water committees) and land tenure for ownership of the system.
- Coordination with other government water resource agencies and/or other implementing agencies (including NGOs) to map out and determine the actual or potential affect of a proposed project on ground water or surface water resources.
- A strong involvement of beneficiaries from communities that will be part of the project, including that of women, to promote ownership, to build organisational capacity and to develop skills transfer.

Key results

- Beneficiaries have properly functioning water systems that provide sufficient quantities of water of acceptable quality for drinking and basic household uses, and if applicable, well developed institutions to operate and maintain them.
- Beneficiaries have sufficient and properly functioning excreta disposal and other required sanitary systems and, if applicable, well developed institutions to operate and maintain them.
- Key watsan related health and hygiene promotion targeting high-risk behaviours suitable for the circumstances have been promoted and they have been provided with the means required to practice these improved behaviours.

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5.5 The post-acute emergency phase of acute natural disasters and conflicts

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Interventions & Good Practices

General	▲ Implement and reinforce social infrastructure in the communities (CI1, ITDG 2, WHO14). ▲ Improve the disaster preparedness capacity of support agencies (IRCNL 1). ▲ Improve district level disaster preparedness coordination mechanisms (CORDAID1, REDR1). ▲ Rehabilitate power plants (PAHO1, PAHO3). ▲ Advocacy.
Water	▲ Water resources assessments (IRC8, REDR1, paragraph 4.1.2). ▲ Rehabilitate community water systems (REDR1, IRC8). ▲ Implement new community water systems (REDR1, IRC8, JS 1, PRACT1, PRACT2, SKAT2, NWP1). ▲ Rehabilitate urban water systems and strengthen the institutions that operate them (PAHO1, PAHO3, REDR1, IRC8). ▲ Construction of new urban water systems (REDR1, IRC8, ITDG 3). ▲ Provide consumables and inputs to communities or water authorities (REDR1, IRC8). ▲ Clean and chlorinate boreholes and wells (WHO6, WHO7, IRC8, REDR1).
Environmental Sanitation	▲ Implement and improve facilities at water points (REDR1, IRC9). ▲ Construct toilet/latrine facilities (REDR1, IRC9). ▲ Implement other sanitation facilities prioritised by the community (REDR1, IRC9). ▲ Rehabilitate sewage and other urban sanitation systems and strengthen the institutions that manage the systems (PAHO1, PAHO3, REDR1, IRC9). ▲ Vector control (UNHCR 1, REDR1, IRC10, IRC22, OXF4, OXF8, WEDC6). ▲ Clean and repair excreta disposal systems (REDR1, IRC9). ▲ Implement contingency sanitation facilities (REDR1, IRC9).
Hygiene Promotion	▲ Community level hygiene and health promotion (CI1, ITDG 2, WHO14). ▲ Mass media hygiene promotion (ITDG 2, WHO14).

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5.6 Displacement caused by acute emergencies

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5.6 Displacement caused by acute emergencies

Main Characteristics

Displacement of a population affected by an acute emergency should preferably be avoided through the provision of assistance in and around their home areas, as long as this does not expose the population to further risk. However, because of the nature of some acute emergencies, on-site assistance often cannot be provided in a timely manner or may prove insufficient to prevent displacement. In this case, the best option is the movement and settlement of displaced people among a receiving host community if possible. Under these conditions displaced people can still rely on some form of existing water and sanitation facilities within the host population, thereby avoiding the necessity to construct new systems. Even though systems may need to be expanded to account for an increase in the total population served, this is generally more cost-effective than building completely new systems. In addition the improvement or expansion of facilities is likely to have a more lasting benefit to the host community after the displaced population has been re-located.

Alternatively people can be assisted to settle in properly planned and prepared temporary camps or shelter areas, if sufficient time and resources are available. Rapid movement of displaced persons into unplanned settlements is the worst-case scenario because of the danger that facilities are not in place in time, which can lead to public health concerns for the beneficiaries. The urgent nature of establishing watsan facilities in unplanned settlements also implies more costly interventions.

Following the mass movement of affected people to scattered, unplanned settlements, one option is to provide relief services in these areas on a temporary basis, while at the same time establishing planned temporary camps with the intention of moving people to those locations as soon as they are ready. A crucial decision in this context may be whether it is best to put energy, resources, and time into developing planned temporary settlements or to keep people in the unplanned settlements while starting to prepare for a direct return to their own homes, if possible. It is important that the options are properly communicated to the displaced people and that –within the boundaries of what is possible and permitted – they can select the preferred option.

Where intermediate solutions are implemented, their operational costs should be reduced as much as possible (e.g. by replacing water tankering with other less costly solutions) and they should be designed in such a way as to provide a basis for future, permanent solutions.

It should be noted that the delivery of water and sanitation services in temporary settlements, even on a relief basis, might act as a magnet for attracting and keeping

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displaced people in those settlements which could have negative health or security implications and is often resented by the host community and/or the involved authorities.

Rapid assistance is particularly important in situations where there are displaced persons in unplanned settlements. This is due to the fact that such people usually have very few coping mechanisms left and may therefore be entirely dependent on external assistance for their survival. This is especially the case if people have migrated far out of their home areas (for instance when people have travelled over large distances to get away from a conflict zone). However, it also applies to displaced persons settling near their original home areas (often after natural disasters), who may have lost everything, including their houses, possessions, money, tools and other livelihood resources.

The assistance provided to displaced people in a post-acute emergency situation is comparable with the assistance provided to chronically displaced people (described in chapter 6). The assistance provided to returning displaced people and the communities to which they return is comparable to the post-acute emergency assistance provided to communities struck by conflict or natural disasters (described in 5.5).

Key health issues

- Increased risk of **water-borne diseases**, such as typhoid fever, cholera, leptospirosis, and Hepatitis A. However, the risk is low unless there is significant population displacement and/or water sources are compromised. The risk can be minimised through the provision of clean and chlorinated water and the use of safe water sources for drinking. Power cuts and/or **suspension of public health programmes** related to earthquakes may disrupt water treatment and supply, increasing the danger of water-borne diseases.
- Increased risk of **excreta-related diseases** such as diarrhoea, especially where sewage systems or latrines have been disrupted and people have no possibilities to practice safe excreta disposal.

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- There is no evidence that **human corpses** pose a risk to the general public (**PAHO2**). Most agents do not survive long in the human body after death (with the exception of HIV, which can be up to 6 days). Human remains only pose health risks in a few cases requiring specific precautions, such as deaths from cholera or haemorrhagic fevers. However, workers who routinely handle corpses may have a risk of contracting tuberculosis, blood borne viruses (such as Hepatitis B/C and HIV), and gastrointestinal infections. Emergency workers and the public should be duly advised to avoid panic and the inappropriate disposal of bodies, and to take adequate precautions in handling the dead. A related problem may be that **fear** leads people to **reject** water sources that they suspect to contain dead bodies or suspect may have been in contact with them. In such cases the quality of the alternative water sources becomes more important, if improved (safe) sources are rejected. Sometimes, the emptying, cleaning and scrubbing of a well is required to make it acceptable again; however, depending on local cultural practices and beliefs, a source that has been in contact with dead bodies may never be accepted again.

Interventions & Good Practices

General	▲ Rapid assessments (**IRC4**, paragraph 0). ▲ Improve water and sanitation relief coordination. ▲ Advocacy in support of access to, and provision of services for, displaced populations.
Water	▲ **Distribution of household water items** (REDR1, **IRC8**, **WHO3**, **WHO10**, **CDC1**, **NWP1**). ▲ **Development of new or expansion of existing water systems** (REDR1, **IRC8**, ITDG 3, JS 1). ▲ **Provision of items to host communities or water institutions** (REDR1, **IRC8**). ▲ **Water tankering** (REDR1, **IRC8**, **WHO8**, **WHO3**). ▲ Redirection of **intact water systems to drinking water**.
Environmental Sanitation	▲ **Construction of temporary toilet and other sanitary facilities** (REDR1, **IRC9**). ▲ **Expansion of existing sanitation systems** (REDR1, **IRC9**, ITDG 3, JS 1). ▲ **Distribution of sanitary kits** (REDR1). ▲ **Clearing and burial of the dead** (REDR1, **IRC9**, **WHO9**, **PAHO2**). ■
Hygiene Promotion	▲ **Promotion through TV or radio, newspapers, posters** (ITDG 2, **IRC11**). ▲ **Promotion through personal messaging** (ITDG 2, **IRC11**).

6 Chronic Emergencies

6.1 Defining Chronic Emergencies and their Causes

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6.1 Defining Chronic Emergencies and their Causes

ECHO considers a chronic emergency to be a situation in which unacceptable levels of mortality, morbidity and human suffering may occur over a prolonged period of time as a result of on-going or recurrent natural disasters or conflict situations.

Chronic situations fall within ECHO's mandate when external assistance is required to prevent, mitigate, and/or relieve the impacts of disaster events or conflict. ECHO funded watsan assistance in chronic situations is usually covered by ECHO's funding decisions that have a contract duration of up to 12 months; depending on the type of decision the funding can have a life of up to 18 months. The following list details chronic situations in which ECHO frequently funds watsan interventions:

- Natural disasters which impact on a country or region on a permanent or semi-permanent basis (in practice this applies overwhelmingly to drought conditions);
- Chronic humanitarian emergencies associated with political instability and/or armed conflict; and
- The long-term settlement of displaced persons resulting from either drought, or conflict.

The **main objectives** in chronic situations are as follows:

- To identify and respond to acute water and sanitation needs.
- To prevent the impact of a crisis on water and sanitation from worsening.
- To carry-out short-term rehabilitation work of water and sanitation systems.
- To lay the basis for development efforts in water and sanitation and help those most affected regain a certain level of self-sufficiency.

Under chronic emergency scenarios **community participation** is a key element in the delivery of appropriate and sustainable water and sanitation services. The planning, design, implementation, and monitoring of interventions should, wherever possible, be carried out by and with the individual beneficiaries, community organisations (water committees or water boards) and other primary stakeholders. In many cases beneficiaries can be expected to increasingly take on a greater share of costs. Ideally, facilities and services should become self-sufficient and sustainable over time and levels of cost sharing should increase. However, there are some scenarios where levels of absolute poverty dictate that this will not be possible.

In areas where people have not been displaced, facilities and services may initially be temporary in nature; if, for example, permission for permanent structures is not easily obtained from the authorities or there are other constraints. Recovery interventions in chronic conflict situations need to be **dynamic** and able to move swiftly between relief and recovery assistance. In order to be able to provide such dynamic support,

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implementing agencies must incorporate a high degree of flexibility into their way of working and retain high levels of professionally qualified staff.

Many chronic situations involve the **protracted displacement** of populations into IDP or refugee camps or settlements for years or even decades. In such cases, temporary water and sanitation solutions are no longer appropriate and should be transformed into more sustainable systems, with service levels that comply with or are close to national norms. Where displaced persons have settled among the local population, both the displaced persons and their host communities need assistance in the building up of a permanent watsan infrastructure that has sufficient capacity to meet the needs of both groups.

In determining service levels and minimum standards for people in chronic situations, reference should be made to both the Sphere minimum standards and the national norms for the area or country, if these exist (see section 8).

6.2 Intervention approaches for Chronic Emergencies

6.2.1 Demand driven community-based strategies

Demand driven community-based strategies are designed to incorporate a large degree of decision-making power, input (in planning, organisation, labour, materials, etc.) and initiative on the part of the beneficiaries. The basis for this is as follows:

- Communities themselves take the initiative to establish a relationship with the implementing agency;
- Communities are motivated to invest time and effort in the process;
- Communities are more likely to achieve successful and sustainable facilities and services where they engage in self-help activities, fulfil agreed tasks, and take on responsibilities.

It is common to draw up agreements which are detailed in a contract between the community and the implementing agency, and also often involves local and higher level authorities. The relationship continues on the basis of the fulfilment of the agreed tasks and responsibilities by both parties. **If either party fails to fulfil its part of the agreement, the other party may choose to temporarily stop the relationship/project and the agreement needs to be re-assessed**. Generic examples of roles and responsibilities that are often included in agreements between the project and a community include the following:

- The community agrees to participate as fully as possible in all aspects of the project.
- The beneficiaries will own, operate, and maintain all facilities in a proper way.
- The beneficiaries will elect a committee that will work to organise the project and act as the liaising body between the community and the implementing organisation.

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6.2 Intervention approaches for Chronic Emergencies

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- The implementing organisation provides the materials, tools, and skilled labour that the community cannot afford or does not have access to.
- The community leaders will discuss and document how they will commit themselves to the project and present these commitments to the broader community.
- **Implementation of projects will normally be in phases and the planning and transition to each new phase will be dependent on the success of preceding phases**.
- The implementing organisation will train and coach the community on organisational, management and technical O&M tasks for the water and sanitation facilities.

In practice a demand driven community-based strategy can be implemented very quickly if necessary. A well-prepared implementing organisation with properly skilled staff can do so within weeks, and should be able to train the stakeholders within this timeframe. The facilitation of communities to organise and construct facilities can be achieved within weeks or months.

A **vulnerability assessment** is carried out with the community, focusing on community and household coping capacities in the light of potential disasters, and on what is required to improve them. This assessment should lead to the identification of specific hazards and vulnerabilities, which in turn can help to identify key disaster preparedness and mitigation interventions at household and community level regarding water supply and sanitation services (see section 7).

In the long-term a community should be capable of effectively managing the results of the interventions it has implemented (e.g. finance, skills, access to spare parts, avoidance of corruption, etc.), otherwise such systems will not be sustainable. In communities with a low management capacity and a low potential to improve on this capacity, it is preferable to implement facilities and services that require simple and low cost O&M only. Even if such facilities do not fully cover the community's needs, this is often a better alternative to installing a complex system that may cover the community's needs better, but that demands much higher levels of management capacity and running costs. Discussions with the community and, in some cases, additional assessments will be required to help the community to select the most appropriate solution. If there is no other alternative than to provide a more complex system (i.e. the only water source is from deep groundwater), the implementing agency (and the donor) will need to show a commitment to remaining involved with the community over a longer period of time, in order to provide adequate back-up support and advice.

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6.2 Intervention approaches for Chronic Emergencies

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In scenarios involving displaced populations living in temporary settlements demand-driven approaches can still function, but may have to be adapted to account for a number of variables:

- In most cases the implementing agency will be expected to provide a higher level of inputs;
- Cooperation between the implementing agency and the beneficiaries continues, even if all conditions are not fulfilled; this is because the beneficiaries are generally more dependant on the support than in non-displaced populations suffering from chronic emergencies.
- The conditions put forward on project cooperation are less stringent, for example, labour inputs for the construction of public watsan work are usually compensated for in temporary settlements.

However, it is important to highlight that **the principle of self-help and self-responsibility can often function well, even in temporary settlements**. Social mobilisation and the formation of community structures can work equally well in the context of temporary settlements. Further information can be found at: **IRC22**, **CI1**, ITDG 2, **WHO17**

6.2.2 System-based strategies

Where people rely on large watsan systems, as is often the case in urban settings, interventions are required that focus on these systems and on the institutions that manage them; for these situations system-based strategies are appropriate. A vulnerability analysis is carried out for each affected watsan system. Based on the information obtained, plans are made to either repair and rehabilitate the systems and make them more disaster resistant, and/or to improve the functioning, sustainability and disaster preparedness of the organisations managing the water and sanitation systems.

Beneficiaries (or their elected representatives) should be involved in the assessment, planning, and implementation processes. The works on the watsan systems provide a unique opportunity to facilitate the active involvement of and decision-making by the beneficiaries. The institutions involved should be aware that the beneficiaries are their clients and should therefore be decision-makers in the system. Their involvement can take the following forms:

- New management models may be introduced with, for example, the secondary parts of a system that are under community management or the primary part that is under central management.
- Beneficiaries may elect members of the board of the water institution or utility and/or may establish beneficiary advisory committees.

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- Beneficiaries may provide feedback about problems that already existed in the systems before the disaster struck.
- They may come forward with ideas and preferences regarding management models, technologies, service levels, coverage, financial system, and governance.

Participatory techniques (for example, PRAs, focus group discussions and/or other methods) can and should be used with the beneficiaries and the staff of the utilities in order to complement the technical surveys and vulnerability assessments. The long-term sustainability and (financial) cost-recovery of the system is a central issue to be assessed and discussed together with the beneficiaries (this will also create beneficiary support for procedures and regulations put in place). System-based strategies may also cover small (often rural) watsan systems. For example, in a drought struck area an organisation may focus entirely on drilling or rehabilitation of boreholes and the placement of hand pumps. However, this type of programme will also require sufficient attention to be paid to the formation (or reinforcement) of community level management structures for the administration and O&M of the water facilities. For further information see: **PAHO1**, **PAHO3**, IRCNL 1, IRCNL 1, **WA1**, paragraph 4.1.2.

6.3 Chronic emergencies caused by natural disasters

6.3.1 Droughts

Main Characteristics

A drought constitutes a temporary reduction in water or moisture availability to significantly below the normal or expected amount for a specified period. However, the nature of *´temporary´* is relative and can mean a few months (e.g. in parts of Uganda) or a year or longer (e.g. in Northern Kenya). In parts of Uganda 700 mm is regarded as normal annual rainfall, while in Northern Kenya this figure is closer to 200 mm. A drought causes an emergency if it affects health significantly (through reduced access to water and adequate quantities of food for example) and livelihoods (by forcing people to migrate away from their homes or by forcing them to sell productive assets in order to buy food or other essentials). Droughts tend to occur in stages:

- The **normal stage** when there is enough rainfall.
- The **alert stage** when rains are failing and the most vulnerable households start to feel stress.
- The **emergency stage** when the drought continues and shortages of food and water lead to famine and the deaths of livestock and people.
- The **recovery stage** when the rains return and people and livestock begin to recover.

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Droughts usually set in over a prolonged period of time. This is because groundwater reserves, water storage reservoirs, food reserves, etc. are not immediately depleted. Therefore, there is often time to assess the situation and to plan and implement watsan interventions. The first priorities during the emergency stage are as follows:

- To help communities to remain within their own environment
- To protect productive assets (e.g. livestock, tools and land)
- To provide necessary services such as food and water in an attempt to halt the downward spiral towards famine and displacement.

Impacts

General	▲ High livestock mortality. ▲ Increased burdens and reduced income due to scarcity of water.
Water systems	▲ Increase in turbidity and contamination of surface waters due to: ▲ A decrease in self-cleansing capacities related to reduced flow. ▲ Increased contaminant concentrations due to reduced quantities of water. ▲ A decrease in free oxygen due to fish dying off. ▲ Dead animals in or near water sources. ▲ Insufficient supplies of water from groundwater resources due to lowering of groundwater tables. ▲ Increase in costs of pumping and breakdowns of pumping systems, leading to failure of supplies to communities.
Environmental sanitation Systems	▲ Due to water scarcity there is an increased need for public showers and washing places near water points that provide water, thereby creating increased focal points for contamination.
Hygiene & hygiene behaviours	▲ Cadavers of livestock. ▲ Increase in unsafe/contaminated surface water sources used for drinking. ▲ Poor personal hygiene due to absence of water and reduced incomes (i.e. to purchase soap). ▲ Increase in skin/eye infections related to lack of adequate water supply for washing. ▲ Increase trend for open defecation.

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Key Issues

Droughts are related to scarcity of water which can lead to an increase prevalence of water-borne and water-washed diseases, as well as higher than normal mortality rates among livestock and people due to a lack of drinking water. In chronically dry areas such as in parts of the horn of Africa and Central Asia, people have developed coping mechanisms by which they can survive a number of failed rainy seasons, for example, by migrating together with livestock. In other areas, particularly with sedentary populations which rely on rain-fed farming, the lack of sufficient rainfall can lead to unacceptable levels of water scarcity over much shorter time periods. Therefore, in droughts increasing water availability is a primary objective. There are two typical causes for emergencies during droughts:

i. Water sources deplete beyond the local capacities: surface water sources dry up, rainwater reservoirs deplete, water tables drop beyond the reach of pumps. The relief strategy is as follows:

- Rapid implementation of new, or upgrading of existing, water points (e.g. drilling of new, deeper boreholes or deepen existing boreholes); and
- In exceptional cases water tankering may be necessary.

The longer-term strategy is:

- To find and implement solutions that meet the needs, priorities and capacities of the beneficiaries and which can be supported by available water resources; and
- In exceptional cases the temporary or long-term resettlement of people and their livestock to other areas may be required.

ii. Mismanagement of water points or water sources: in some cases, existing wells and boreholes do not provide water because the pumps placed in them are not functioning; in other instances water sources for existing systems are also used for purposes other than for household consumption (e.g. irrigation or other productive uses), causing problems especially when surface water points dry up. The relief strategy is as follows:

- Rapid repair of water points.
- Address the misuse of water sources and/or redirect them to household uses.
- In exceptional cases water tankering may be necessary.

The longer-term strategy is:

- Investigate and tackle the root causes of mismanagement.
- Help the community to implement less complex and easier to manage systems or technologies.
- If these solutions are not feasible, assist the community in the O&M of water points over a longer period of time, whilst continuing with attempts to introduce more permanent solutions.

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The provision of water for non-domestic productive purposes should be limited to cover 'vital' livelihoods only, i.e. livelihoods that, if disrupted, will cause long-term suffering among the people after the drought is over. In many cases, such livelihood activities will be restricted to livestock and not cover irrigated agriculture or industrial usage of water. Assessments of what constitutes a vital livelihood should be made on a case-by-case basis.

During droughts **disputes or conflict over water** are common. Tensions may rise between different groups of pastoralists, or between pastoralists and crop farmers, or towns that frequently control water resources. New water points have the potential to exacerbate conflict, or cause new conflicts, over water resources and over the access for livestock to water points. Environmental issues include over-exploitation of groundwater resources and overgrazing by animals visiting the water points. **Pastoralists usually have different needs and priorities with regard to water and sanitation to those of sedentary people**. This needs to be taken into account when developing watsan assistance programs. 'Quick fix' solutions (e.g. new boreholes and water tankering) are frequently unsustainable and may have negative social and environmental impacts.

Relief funds are often used for **'off-the-shelf'** projects (e.g. pan de-silting and well improvements). However, this can be at the expense of interventions that could genuinely reduce the effects of droughts (e.g. improving community management of water points). **Indigenous people** usually understand the fragile nature of natural resources well in drought-prone areas. Most pastoralists, for instance, would not choose interventions that provide permanent, new water sources in areas that are set aside for reserve grazing of livestock because they are aware that this may cause problems with the aquifer in the longer term. Additionally this practice would lead to overgrazing in the area, which would decrease the suitability of the area for all-important reserve livestock grazing.

Related to the above factors are the risks of aquifer depletion and overgrazing of the land whenever new water points are installed in drought prone areas. Implementing agencies should be well aware of this and take precautions to avoid this danger, by means of a thorough analysis of groundwater resources and other demands on aquifers prior to the drilling of new boreholes.

Interventions & Good Practices

	Normal stage	Alert stage	Emergency stage	Recovery stage
Water	Water resources assessment (IRC8, REDR1, paragraph 4.1.2). Establish and strengthen a water organization (CI1, CORDAID 1). Develop contingency water supplies (CORDAID 1).	Water point and needs assessment (IRCNL 1, IRCNL 1, WA1, paragraph 4.1.1, WEDC2).	Redirection of productive water systems to drinking water. Addressing abuse/misuse of water. Distribution of household water items (REDR1, IRC8, WHO4, WHO10, CDC1, NWP1). Water tankering (REDR1, IRC8, WHO3, WHO8).	Water resources assessment (IRC8, REDR1, paragraph 4.1.2). Establish and strengthen a water organization (CI1, CORDAID 1).
	← Develop contingency water supplies (CORDAID 1) →			
		← Rapid cleaning of existing boreholes and wells (WHO6, WHO7) →		
		← Provision of water system items (REDR1, IRC8) →		
	← Rehabilitation of existing water points (REDR1, IRC8, WHO11, WHO12) Implementation of simple water systems (NWP1, CORDAID 1, PRACT1, PRACT2, SKAT2) Implementation of new or deepening of existing boreholes and wells (IRC8, CI3, ITDG 1, REDR1, WEDC1) →			
Environmental Sanitation	Establish and strengthen a sanitation organization (CI1).		Distribution of soap (REDR1, IRC9).	Establish and strengthen a sanitation organization (CI1).
	← Improvements around water points (REDR1) Development of public showers and washing slabs at functional water points (REDR1) Production of cattle troughs at water points (REDR1, CORDAID 1) →			
Hygiene promotion	Social organisation for hygiene, health, and household interaction in the communities (CI1, ITDG 2, WHO14). Community level hygiene and health promotion (CI1, ITDG 2, WHO14). Mass media hygiene promotion (ITDG 2, WHO14).	Health and hygiene promotion through TV or radio, newspapers, posters (ITDG 2, IRC11). Health and hygiene promotion through personal communication (ITDG 2, IRC11).		Social organisation for hygiene, health, and household interaction in the communities (CI1, ITDG 2, WHO14). Community level hygiene and health promotion (CI1, ITDG 2, WHO14). Mass media hygiene promotion (ITDG 2, WHO14).

6 Chronic Emergencies

6.4 Chronic emergencies caused by conflict

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6.4 Chronic emergencies caused by conflict

War and conflict are often unpredictable events that can flare up without any prior notice. Many conflicts last for years, becoming chronic, with intermittent bouts of increased conflict or flare-ups of violence. Each of these flare-ups can have enormous affects on people, their livelihoods, and the watsan services they have access to, as well as on their psychological well-being. Outbreaks of sudden violence can often result in population displacements (see section 6.5).

Main Characteristics

Conflicts may cause large-scale physical damage to existing water and sanitation infrastructure. Sector institutions, such as urban water utilities, or rural community-managed systems may also be heavily affected (staff can be killed or forced to flee, financial resources can be stolen, equipment damaged or stolen, etc.). The ability of people to pay for water supply or sanitation services may also be affected due to a decline in income resulting from the effect of conflicts on the local economy. The allocation of water resources may also be the cause of conflict or be part of an underlying conflict scenario, as is the case in the Israeli-Palestinian situation. The emergency relief assistance after conflict flare-ups in chronic conflict situations is comparable to the assistance provided in acute emergencies caused by conflict as described in section 5.4.

In a chronic conflict scenario, after a flare-up of violence people try to recover from the inflicted damages, resume their normal lives, and prepare for future outbreaks of violence. In these cases, watsan strategies typically include:

- The rehabilitation of watsan systems;
- Assistance to communities to sustain their systems, and
- Implementation of new systems that are less prone to damage by conflict, **insecurity**, corruption, water **misuse**, and violence, and that do not **enhance conflict**.

As noted in section 5.4, conflict situations may offer increased potential for illicit use of water as a resource for the production of drugs. Whilst project staff should be aware of this risk, the issue of possible misuse of water for drug cultivation should not be overstated as typically drug cultivation takes place on sloping ground, whereas most irrigation will be directed for agricultural uses on more level ground.

In such contexts it is preferable to implement **household-based systems** rather than community facilities, wherever this is possible given the available water resources, overall consumption patterns and cost implications. Simple roof-catchment systems with individual storage reservoirs can be an effective household system, which, depending on rainfall patterns, may provide a considerable proportion of supply for a family.

6 Chronic Emergencies

6.4 Chronic emergencies caused by conflict

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Because of continued uncertainty and lack of secure working environments in many conflict areas, it may not be possible to implement permanent water and sanitation projects. In these cases **intermediate solutions** may be the only practical alternative. **Intermediate solutions** usually comprise service levels that sit between emergency and permanent services and require ongoing, often expensive, inputs by the implementing agency. Where feasible, the decision as to whether to develop interim solutions or to wait longer in order to invest in permanent systems should include inputs on the part of beneficiaries. The challenge when designing intermediate solutions is to reduce operational costs and enable subsequent transformation to more permanent solutions (see the examples described in sections 5.5 and 5.6 and ACF2).

Impacts

General	▲ Destruction of livelihoods (e.g. irrigation channels, factories, etc), houses, power supply systems, communication systems, roads, and bridges. ▲ People killed. ▲ Buildings and equipment used by institutions for the operation of their watsan systems may be damaged or stolen (cars, trucks, computers, offices, etc.). ▲ Staff of watsan institutions may have fled or have been killed.
Water systems	▲ Physical damage to water supply infrastructure, especially public systems. ▲ Uneven distribution of water resources between conflicting parties. ▲ Misuse of water as a resource to control populations, or corruption using income generated from water. ▲ Systems cease to function due to lack of tariff collection or lack of spare parts and other resources. ▲ Conflict over water points or water resources.
Environmental sanitation systems	▲ Physical damage to public sanitation infrastructure (sewers, public toilets, waste disposal systems) and/or to household toilets/latrines. ▲ Systems cease to function due to lack of resources/poor maintenance.
Health & hygiene behaviours	▲ Standing pools of contaminated water and/or sewage if water and/or sewage systems are affected. ▲ Contaminated water used for drinking. ▲ Increase in open defecation. ▲ Poor vector prevention behaviours.

6 Chronic Emergencies

6.4 Chronic emergencies caused by conflict

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Key health issues

- On-going risk of **water-borne diseases**, such as typhoid fever, cholera, leptospirosis, and hepatitis A.
- Continued risk of **excreta-related diseases** such as diarrhoea, especially where sanitation systems have been disrupted and people are forced to practice open defecation, or cannot dispose of excreta in a safe manner.
- Breakdown in health and hygiene support services/epidemiological surveillance systems leading to a deterioration of hygiene practices and increased risk of disease transmission.

Interventions & Good Practices

General	▲ Implement and reinforce social infrastructure in the communities (CI1, ITDG 2, WHO14). ▲ Improve the disaster preparedness capacity of support organisations (IRCNL 1). ▲ Improve district level disaster preparedness coordination mechanisms (CORDAID 1, REDR1). ▲ Rehabilitate power plants (PAHO1, PAHO3). ▲ Advocacy.
Water	▲ Water resources assessments (IRC8, REDR1, paragraph 4.1.2). ▲ Rehabilitate community water systems (REDR1, IRC8). ▲ Implement new water systems (REDR1, IRC8, JS 1, PRACT1, PRACT2, SKAT2, NWP1). ▲ Rehabilitate urban water systems and strengthen the institutions that operate them (PAHO1, PAHO3, REDR1, IRC8). ▲ Implement new urban water systems (REDR1, IRC8, ITDG 3). ▲ Provide water system items to communities or water institutions (REDR1, IRC8). ▲ Clean and chlorinate boreholes and wells (WHO6, WHO7, IRC8, REDR1).
Environmental Sanitation	▲ Implement and improve facilities at water points (REDR1, IRC9). ▲ Construct private toilet facilities (REDR1, IRC9). ▲ Implement other required sanitation facilities prioritised by the community (REDR1, IRC9). ▲ Rehabilitate sewage and other urban sanitation systems and strengthen the institutions that manage the systems (PAHO1, PAHO3, REDR1, IRC9). ▲ Vector control (UNHCR 1, REDR1, IRC10, IRC22, OXF4, OXF8, WEDC6). ▲ Clean and repair excreta disposal systems (REDR1, IRC9). ▲ Implement contingency sanitation facilities (REDR1, IRC9).
Hygiene Promotion	▲ Community level hygiene and health promotion (CI1, ITDG 2, WHO14). ▲ Mass media hygiene promotion (ITDG 2, WHO14).

6 Chronic Emergencies

6.5 Displacement caused by chronic emergencies

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6.5 Displacement caused by chronic emergencies

This section describes aspects of watsan assistance to chronically displaced persons who have settled in temporary camps or semi-permanent shelter or housing areas. The watsan assistance to displaced persons who have settled among the local population is comparable to the assistance described for the post-acute emergency phase of acute natural disasters and conflicts (see section 5.5).

Main Characteristics

Chronic displacement in temporary camps or semi-permanent shelter or housing areas can be caused by a number of types of natural disasters, such as a prolonged period of drought conditions which may last for many years. Chronic displacement can also result from long-term conflicts that affect an area, making it un-inhabitable for long-periods of time, or through the deliberate persecution of a specific group within a society, based on ethnic, religious, or other discrimination which results in their long-term displacement.

In terms of the provision of water and sanitation services, the chronic displacement of people presents many of the same challenges as for populations in a post-acute emergency scenario. However, in general terms the chronic nature of displacement often deprives people of livelihood opportunities, reduces traditional coping mechanisms, and makes them more dependent upon humanitarian assistance than under other scenarios. In these circumstances, it can be expected that a greater level of financial and organisational support will be required on the part of implementing agencies in the delivery of water and sanitation services.

Therefore it is usually necessary to modify the assistance given to chronically displaced people, taking into account the specific nature of the disaster that has struck them, and responding accordingly. This is particularly the case if people have not migrated out of a disaster area in which the hazards and/or the effects of the disaster (or conflict situation) are still apparent.

Key health issues

- On-going risk of **water-borne diseases**, such as typhoid fever, cholera, leptospirosis, and hepatitis A.
- Continued risk of **excreta-related diseases** such as diarrhoea, especially where sanitation systems have been disrupted and people are forced to practice open defecation, or cannot dispose of excreta in a safe manner.
- Breakdown in health and hygiene support services/epidemiological surveillance systems leading to a deterioration of hygiene practices and increased risk of disease transmission.

6 Chronic Emergencies

6.5 Displacement caused by chronic emergencies

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Interventions & Good Practices

General	▲ Implement and reinforce social infrastructure in the settlements (CI1, ITDG 2, WHO14). ▲ Advocacy.
Water	▲ Water resources assessments (IRC8, REDR1, paragraph 4.1.2). ▲ Expansion and/or improvement of the water systems (IRC8, REDR1, IRCNL 1.a.i.IRCNL 1, CI2, NWP1).
Environmental Sanitation	▲ Sanitary assessment (CI2, ITDG 2). ▲ Implement and improve facilities at water points (REDR1, IRC9). ▲ Construct private toilet facilities (REDR1, IRC9). ▲ Implement other required sanitation facilities prioritised by the community (REDR1, IRC9). ▲ Vector control (UNHCR 1, REDR1, IRC10, IRC22, OXF4, OXF8, WEDC6).
Hygiene Promotion	▲ Community level hygiene and health promotion (CI1, ITDG 2, WHO14). ▲ Mass media hygiene promotion (ITDG 2, WHO14).

7 Water and Sanitation Operations for Disaster Preparedness

7.1 Introduction

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7.1 Introduction

While the number of geophysical disasters reported over the last decade has remained fairly steady, there has been a steep increase of hydro-meteorological disaster events (floods, tropical storms, droughts) since the mid-1990s. Therefore, the systematic incorporation of disaster preparedness, mitigation and prevention activities into humanitarian programmes is becoming increasingly important as a measure to reduce the impacts of natural disasters. In 1996, ECHO created the DIPECHO (Disaster Preparedness ECHO) programme, which focuses on geographical zones that are characterised by a high risk of natural disasters and low coping capacities. DIPECHO programmes largely focus on interventions at the local or community level, with a primary emphasis on preparation, rather than on mitigation and prevention (**ECHO1**).

Emergency *preparedness* assumes that a natural disaster may occur and seeks to enhance the local capacity to respond to it. *Mitigation* implies structural (physical) measures undertaken to protect and/or strengthen vulnerable elements to minimise the impact of natural disasters. *Prevention* on the other hand, assumes that the critical event can be prevented or controlled, or that its effects can be avoided so as to limit the impact on people. Given resource constraints and the large-scale inputs required, prevention of disasters may be impossible; for example, removal of silt deposits in river beds requires a fairly continuous process of dredging which simply may not be financially feasible.

Typically, DIPECHO funds preparation activities, such as training, capacity building, awareness raising, early-warning, and planning and forecasting measures. However, ECHO's contribution to disaster preparedness goes well beyond the DIPECHO programme. ECHO strives to integrate disaster preparedness and mitigation measures into its main humanitarian operations in areas already affected by a natural disaster. The mainstreaming of risk reduction activities, and especially *mitigation* actions in the design and construction of facilities in rehabilitation and recovery phases following a major disaster, can have a much wider impact. This is especially important in areas prone to recurrent disasters, whereby mitigation measures can be expected to address some of the impacts of subsequent natural disasters. In this respect, ECHO considers that disaster preparedness is an essential link in the emergency, rehabilitation and development chain.

Water and sanitation systems are particularly vulnerable to natural hazards. In addition to creating emergency response capability (*preparation*), it is necessary to identify what components of the systems are most vulnerable and what measures can be carried out to protect them and thus lessen the impact of a disaster (*mitigation*). Water and sanitation systems are essential to ensuring the health and well-being of the affected population during and after a disaster. Damage to these systems can cause water shortages and contamination of water and the broader environment, which can further compound the

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impacts of a disaster, posing a greater threat to the public health of an affected population. Water and sanitation are basic services that are imperative for a rapid return to normality. Depending on the level of preparedness that households, communities, authorities, and institutions have adopted, water and sanitation systems can remain operational during and after a disaster, or their repair or replacement may take days, weeks, or even months following an event.

7.2 ECHO's Disaster Preparedness Activities

The objective of ECHO's disaster preparedness activities is to support communities living in high-risk areas that have very limited capacity to prepare for and respond to disasters.

Before the disaster strikes, a diagnostic process is carried out by the implementing partner to assess the level of risk, the vulnerability of the population and the local or national capacity to cope with a disaster. This process includes dialogue with local, regional, and national actors and possibly other donors and implementing agencies active in the same sectors.

Disaster preparation includes a number of elements, which are often cross-sectoral and do not focus exclusively on water and sanitation alone. In broad terms preparedness activities can be divided into three categories:

- Social and/or institutional interventions in which communities are organised in order to prepare for, and be better able to survive and recover from the disaster event;
- Material interventions, including the preparation of goods, food stuffs and other essential items required to survive through a disaster event; and
- Technical interventions, such as the establishment of early warning and communication systems.

The successful execution of preparedness activities requires interaction between implementing organisations, beneficiaries, and relevant local, regional, and national authorities. Disaster preparation is based on the assumption that the first people to respond to a disaster are those directly affected by it. It is therefore essential that the vulnerable communities and the relevant authorities work together to reduce risk and to increase the level of preparedness. It is important that the affected people know what to do and who to turn to should a disaster strike.

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7.2 ECHO's Disaster Preparedness Activities

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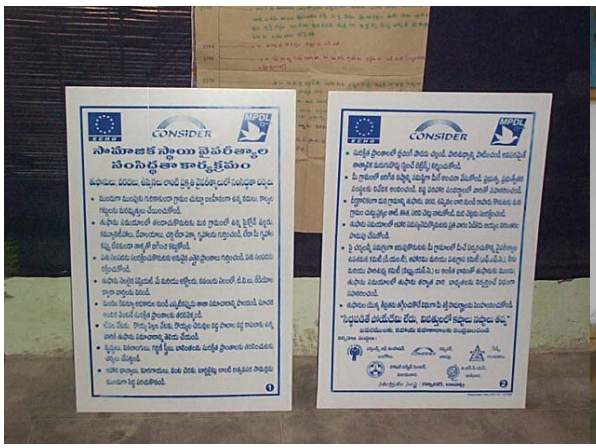
Depending on the outcome of the diagnostic process, good practice for disaster preparedness may include some or all of the activities as listed below:

Disaster preparedness activities	▲ Establishing new committees or (re-)orientation of existing development committees within communities which can be mobilised in the event of a disaster. ▲ **Forming linkages between communities and local government for early warning dissemination and relief protocols**. ▲ **Support to local organisations (NGOs, local/district authorities) in emergency response planning** (OXF3). ▲ **Pre-positioning of preparedness items at a safe location near the area at risk and/or provision of preparedness items to households**. ▲ **Distribution of water related preparedness items prior to floods** and other predictable natural events. ▲ **Distribution of sanitary kits prior to the floods** and other predictable natural events. (REDR1). ▲ **Provision of preparedness items to communities or water institutions. These items are needed to keep water systems functioning during and after a disaster**. (REDR 1, **IRC 8**). ▲ **Provision of emergency equipment**. ▲ Development of water and sanitation facilities in refuge areas, such as hurricane shelters, flood shelters etc. ▲ **Community training**. ▲ **Training for behavioural change of households and communities**. ▲ **Support to relevant organisations in hazard mapping (technical studies and surveys)**. ▲ **Small-scale mitigation works for demonstration purposes and awareness raising**.



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7.3 ECHO's Disaster Mitigation Activities

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7.3 ECHO's Disaster Mitigation Activities

Mitigation measures are intended to protect or to strengthen vulnerable aspects of infrastructure and to minimise the impact of a natural disaster. Mitigation interventions should provide structural protection to water supply and sanitation facilities, and key components of these systems such as transmission pipelines, storage tanks, and water supply points. Mitigation activities can be implemented at two levels:

- At household level, by the raising or strengthening of latrine pits subject to flooding and similar protection works in cases where water points are available for individual families (i.e. in areas of high-water tables it is not uncommon that each family, or group of families, has a separate hand-pump).
- At community level, by the protection, strengthening and improved location of system intakes or water storage tanks at sites less prone to be affected by a disaster, or the application of improved disaster-proof designs and high quality of construction.

Any use of demonstration mitigation interventions for improving the protection of water and sanitation system components should be given appropriate follow-up by the implementing agency in order to ensure replication and to assess long-term impact and desired sustainability. Demonstration activities may need to be accompanied by training and awareness raising activities. All mitigation measures must be designed on the basis of the type of likely disaster (i.e. be hazard specific) and in addition be feasible for local adoption and implementation. Any mitigation measure should also be appropriate to the economic realities of the community.

In the following sections mitigation activities are listed for a variety of natural hazards, except for drought (preparation and mitigation activities for droughts are dealt with under section 6.3.1).

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7.3.1 Disaster mitigation interventions for flooding situations

General	▲ Reinforcement, protection, and raising of buildings used by watsan institutions. ▲ Provision of generators to watsan institutions, in case power plants are expected to break down. ▲ Introduction of radio communication equipment. ▲ Protection of watersheds: prevention of deforestation, promotion of reforestation and contour ploughing.
Water	▲ **Rehabilitation of water systems, making them flood resistant prior to the disaster** (REDR 1, **IRC 8**). ▲ **Development of new flood resistant water systems** (REDR 1, **IRC 8**, ITDG 3, JS 1). ▲ Selection of watersheds for system sources that are least prone to flooding. ▲ Protection of watershed: prevention of deforestation and active promotion of reforestation. ▲ Building of raised platforms for boreholes, wells, pump houses etc., plus protection by dykes, walls, etc. ▲ Development of all-weather access roads to essential water infrastructure. ▲ Construction of improved foundations, water retention structures, riprap to riverbanks, stronger concrete and masonry constructions in spring protections, infiltration galleries, intake structures, etc. ▲ Installation of stronger and better-anchored and entrenched water pipes with flexible joints. ▲ Placement/siting of water pipes, water points/sources, treatment plants, pumping stations, storage reservoirs, etc. in areas least prone to floods and away from trees and utility poles. ▲ Provision of stand-by generators for pumping at source or in treatment plants etc. ▲ Creation of overflow systems to avoid over-topping of dams and water retention structures. ▲ Dredging of rivers and canals to avoid rapid run-off.
Environmental Sanitation	▲ **Construction of flood resistant toilet facilities** (REDR 1, **IRC 9**). ▲ Building of raised platforms for toilet facilities and protection by dykes, walls, etc. ▲ Installation of stronger and better-anchored and entrenched sewage pipes, drainage channels etc. ▲ Development of all-weather access roads to essential sanitation infrastructure. ▲ Placement of sewage pipes and drainage channels in areas least prone to floods and away from trees and utility poles. ▲ Provision of stand-by generators.

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7.3 ECHO's Disaster Mitigation Activities

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7.3.2 Disaster mitigation interventions for hurricane prone areas

General	▲ Reinforcement of buildings, especially roof structures, used by watsan institutions. ▲ Provision of generators to watsan institutions, in case power plants are expected to break down. ▲ Introduction of radio communication equipment.
Water	▲ Protection of watersheds: prevention of deforestation, promotion of reforestation and contour ploughing. ▲ Development of all-weather access roads to essential water infrastructure. ▲ Keeping water source sites clear of loose debris. ▲ Reinforcement of above ground watsan infrastructures (especially where pipelines cross rivers, elevated and ground-level water tanks, etc.). ▲ Covering collection boxes and (channels of) spring protections with protective slabs. ▲ Construction of improved foundations, wider and stronger dams (also with stop-locks, improved screens and parapet walls), riprap to riverbanks, stronger concrete and masonry constructions and improvement of drainage near spring protections, infiltration galleries, intake structures, treatment plants, etc. ▲ Entrenching of mains pipelines, reduction of the number of river crossings, fixing mains at downstream side of bridges, promoting vegetation for slope stabilisation. ▲ Installation of wood sheeting or gabion baskets along the bank of infiltration galleries creating sedimentation areas as a protection during periods of heavy rains. ▲ Construction of strong roof structures at pump houses and other roofed water infrastructure. ▲ For river intakes: installation of stop-locks upstream and installation of intake of sediment tank several feet upstream of weirs. ▲ Removal of trees from areas directly surrounding water infrastructure (also from dams). ▲ Construction of wave protected embankments at dams and river intakes. ▲ Placement/siting of water pipes, water points/sources, treatment plants, pumping stations, storage reservoirs, etc. in areas least prone to effects of hurricanes (and floods and rains caused by them) and away from trees and utility poles. ▲ Design and construction of water treatment plants and pumping stations to withstand high wind speeds. ▲ Reduction of the height of watsan structures wherever possible. If high water tanks cannot be avoided, fill them with water and close valves (install valves if necessary) during periods of high winds. ▲ Provision of stand-by generators at sources, treatment plants etc.
Environmental Sanitation	▲ Development of all-weather access roads to essential sanitation infrastructure. ▲ Placement of sewage pipes and canals in areas least prone to the effects of hurricanes (and floods and rains caused by them) and away from trees and utility poles (cut trees where required). ▲ Raising infrastructure that can be flooded due to heavy rains and place flood walls or dikes or relocate physical infrastructure to other locations where possible. ▲ Reinforcement of roof structures at roofed sanitation infrastructure. ▲ Provision of stand-by generators.

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7.3 ECHO's Disaster Mitigation Activities

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7.3.3 Disaster mitigation interventions for earthquake-prone areas

General	▲ Reinforcement of buildings used by watsan institutions, making them earthquake resistant. ▲ Provision of generators to watsan institutions, in case power plants are expected to break down. ▲ Introduction of radio communication equipment.
Water	▲ Protection of watersheds: prevention of deforestation and reforestation. ▲ Careful siting of water intakes and abstraction points away from areas not prone to landslide or secondary damage following an earthquake. ▲ Making spring protection works and infiltration galleries earthquake proof (use flexible joints). ▲ Making pipelines, treatment plants, pump stations and storage reservoirs earthquake proof (use flexible joints, adequate pipe material and wall crossings, and site carefully; storage reservoirs should be made as low as possible). ▲ Making river intakes and dams earthquake proof (include: sheet piling, extended wing walls, flexible joints; for dams additionally include: sloping banks below and above water line, parapet walls). ▲ Improvement of boreholes: increase strength of casing and make a wider than usual gravel pack with slightly larger diameter gravels. ▲ Provision of stand-by generators at sources, treatment plants etc.
Environmental Sanitation	▲ Making sewers earthquake resistant (flexible joints). ▲ Ensuring the foundations of sanitation structures are well-tied together, and that the walls are securely fixed to the foundations and roof (where appropriate), using adequate braces. Study buildings that have survived previous earthquakes. ▲ Making use of good building materials and good workmanship during the construction of sanitation infrastructure. ▲ Provision of stand-by generators.

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7.3 ECHO's Disaster Mitigation Activities

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7.3.4 Disaster mitigation interventions for volcanic areas

General	▲ Siting of buildings, used by watsan institutions, away from anticipated lava flows and areas where volcanic ash may be deposited (and/or construct the buildings to be able to withstand/carry ash loads). ▲ Provision of generators to watsan institutions, in case power plants are expected to break down. ▲ Training of watsan personnel in safety practices in the occurrence of fire. ▲ Introduction of radio communication equipment.
Water	▲ Careful selection of resource watersheds. ▲ Careful siting of water infrastructure away from potential lava flows and ash deposits. ▲ Use of appropriate pipe materials and flexible joints. Anti-rust measures may be required to prevent water pollution and protect pipes from the effects of volcanic ash. ▲ Design and construction of water tanks and other above ground water infrastructure to withstand/carry ash loads. ▲ Taking fire prevention measures in water structures and in the areas around them. ▲ Provision of adequate water storage and water-piping capacity for fire-fighting. ▲ Provision of stand-by generators.
Environmental Sanitation	▲ Careful siting of water infrastructure away from potential lava flows and ash deposits. ▲ Design and construction of above ground sanitation infrastructure to withstand/carry ash loads. ▲ Taking fire prevention measures in sanitation structures and in the areas around them. ▲ Provision of stand-by generators.

7.3.5 Disaster mitigation interventions for areas prone to landslides

General	▲ Locate buildings used by watsan institutions away from landslide prone areas. ▲ Provision of generators to watsan institutions, in case power plants are expected to break down. ▲ Introduction of radio communication equipment.
Water	▲ Careful siting of water sources and infrastructure away from landslide prone areas. ▲ Protection of watersheds: prevention of deforestation and active promotion of reforestation. ▲ Development of all-weather access roads to essential water infrastructure. ▲ Siting of main pipelines away from landslide prone areas, made of suitable material (e.g. strongly anchored GI at parts subject to land slide or slip) for the soil conditions. Protection and stabilisation of slopes by planting of vegetation. Pipelines should follow topography.
Environmental Sanitation	▲ Development of all-weather access roads to essential sanitation infrastructure. ▲ Careful siting of sanitation infrastructure away from areas most prone to landslides or slippage. ▲ Strong reinforcement, entrenchment and anchoring of structures that cross or are located in landslide prone areas, including slope stabilisation measures, planting of vegetation etc.

8 Standards and Indicators

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A number of humanitarian agencies, including the UN, Red Cross, and major NGOs have established various benchmarks, indicators, and best practice guidelines for water and sanitation activities. These guidelines include both **standards** and **indicators** to describe the desired level of achievement or result of a project intervention. However, in practice there often is confusion over both the difference between standards and indicators, and how these should be applied in practice.

In summary, **standards** are qualitatively formulated objectives that describe a desired result or a condition that should be attained. In the context of an emergency watsan project an example of a standard is: "Affected people have safe access to adequate quantities of water to meet the needs for human consumption and domestic use".

In relation to a standard, an **indicator** is a 'signal' to show or measure whether the standard has been achieved or not. One standard may have a number of indicators that when taken on aggregate are a measure of how well it has been met. Indicators can be qualitative or quantitative. Qualitative indicators are more subjective and descriptive, whereas quantitative indicators can be more precisely measured. Most agencies, including ECHO, work with SMART indicators, which means that quantitative aspects need to be included in each indicator, even in indicators that contain qualitative elements.

Indicators can also be used to illustrate process or the results of process. For example, indicators about the extent of beneficiary participation in sanitation activities measure aspects of a process. In this example the extent of beneficiary participation will most likely be a qualitative description, whereas numbers of latrines constructed under a project or programme will be a quantitative one. Other indicators might describe further the qualitative aspects of the latrines, such as the strength of materials used in its construction, location, ease of use, or even sustainability issues such as environmental impact or ownership by the household.

Indicators therefore are used at multiple levels to help monitor or evaluate progress towards project goals. These levels correspond to the 'results hierarchy' found in any humanitarian project framework. Activity indicators describe what resources are provided for a project, the work that is implemented and the processes used. Result indicators describe the immediate results of those activities. Principal objective indicators and specific objective indicators describe the longer-term results that are achieved.

8 Standards and Indicators

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It should also be noted that the use of standards and indicators can have unintended negative consequences, for example:

- Standards and indicators used in providing checklists and guidance can limit the creativity that practitioners bring to the complex problems they face, and stifle innovation.
- Standards and indicators can promote a technocratic approach which is focussed on how a specific project is implemented, without sufficiently taking into consideration the context in which the project is set.

8.1 Minimum standards and indicators

Many organisations and authorities have developed minimum standards and indicators for different types of watsan works, interventions, facilities, and services in their area of operation. The reasoning behind this is the desire to specify the minimum service levels (quality, quantity, continuity etc.) for people in any given situation or context. Standards and indicators may be based on either what is considered as the absolute minimum levels required to survive and/or to be able to be productive, which can be considered as a *needs-based* definition. Or, standards can be developed on the basis of entitlement, as a measure of minimum levels of service, which is commonly referred to as *rights-based* definition. For example, following the establishment of the new South African government, a commitment was made to provide a minimum quantity of water for all citizens (measured as 25 Lpcd of adequate quality water, provided from a source not more than 200 metres from the household) as part of their "*some for all rather than all for some*" policy.

8.2 Overview of types of minimum standards and indicators

Different types of generic minimum standards and indicators are used in interventions responding to disasters. These are often mixes of needs and rights-based approaches. Their applicability depends on the extent to which the actual situation on the ground is comparable to the situation for which the standards and indicators were developed. A general pattern is that **the more urgent the interventions the more minimum standards and indicators are used and the more the situation stabilises the more standards and indicators common to the area are used** (sometimes the use of minimum standards and indicators common for an area is even obligatory, for instance where governments demand that national standards and indicators are used). The following types of generic minimum standards and indicators for watsan interventions may be used in responses to disasters:

National minimum standards and indicators that are applied more in longer-term situations. They often comprise of quantitative technical specifications (focussing on inputs), and are due largely to the ability of national authorities to be more specific for

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8.2 Overview of types of minimum standards and indicators

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their particular context. In addition, in many cases national technical standards will imply citizen entitlement (rights-based). Some examples of national minimum watsan standards and indicators are:

- South Africa: **Water and sanitation regulations** were developed in 2001 and define the basic minimum standards of water supply and sanitation, the need to measure and control services supplied, and the quality standards for potable water. They apply to all municipalities, water service providers, and water boards. (**SA1**).
- Zimbabwe: **Water and Sanitation guidelines and strategies, which focus on HIV and AIDS issues**, have been developed under the under the coordination of the Ministry of Local Government, Public Works and National Housing and in particular the National Action Committee for the Rural Water Supply and Sanitation Programme. (**ZIM1**).
- Nicaragua: Water and Sanitation regulations and standards for the rural sector developed by the National Institute for Water Supply and Sewage, which is the regulatory agency for the sector. (**NIC1**).
- India: national norms, technical options, and programme regulations related to various water and sanitation interventions are developed and disseminated by the Department of Drinking Water Supply through their website **http://ddws.nic.in/default.asp**.

Minimum standards and indicators of United Nations specialised agencies such as UNHCR, WFP, or WHO. These UN agencies have policies and procedures that could be understood as standards and indicators, created after a lengthy process of consultation with national governments, and are most relevant to each specific agency mandate. For example, some degree of minimum standards for water and sanitation can be obtained from UNHCR, WHO and PAHO, but all three have created standards that are particular to their mandate, with UNHCR creating standards and indicators for refugee situations, and WHO/PAHO creating standards and indicators that can be most readily adopted by national Ministries of Health.

The Millennium Development Goals (UN) "Commit the international community to an expanded vision of development, one that vigorously promotes human development as the key to sustaining social and economic progress in all countries, and recognises the importance of creating a global partnership for development. The goals have been commonly accepted as a framework for measuring development progress". There are eight goals and targets for each goal (there are 18 targets in total) and for each a series of indicators (there are just less than 50 indicators).

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Humanitarian sector minimum standards and indicators are designed to improve quality and accountability in the humanitarian sector. One is the Sphere Humanitarian Charter and Minimum Standards in Disaster Response (see **www.sphereproject.org**). Now in its third edition, the Sphere handbook was written by committees of technical experts in the four main life-sustaining sectors (food, water, shelter, and health). Sphere standards and indicators focus on output (services and infrastructures realised) and the process. They are consistent with international legal instruments that apply in times of disaster and have been developed on the basis of needs-based and "best-practice" approaches.

Another initiative is the Quality COMPAS (available at **www.urd.org**) which is a set of questions to guide self-reflection on a humanitarian project. Developed by the NGO Groupe URD, the method is built around a quality assurance reference system called the "Compass Rose" that comprises of twelve criteria that are "centred on the crisis-affected populations and their environment". For project management, these twelve quality criteria have been subdivided into key questions to help aid workers and their agencies reflect upon critical points in the project cycle.

8.3 ECHO and the application of minimum standards and indicators

The Sphere Standards are widely accepted, and to a lesser extent applied, by the majority of humanitarian aid agencies as *the* benchmark standards for water and sanitation in emergencies. ECHO has financed the Sphere project in the past and fully endorses the Sphere Standards in principle, considering them as a universally recognised set of benchmarks. However, ECHO also considers that they must always be applied flexibly in practice, and that partners must take into consideration context, local norms, and standards. It should *not be mandatory* for an ECHO-funded project to meet these standards, as there are clearly situations where this is not feasible. In such cases, ECHO expects project indicators to be adapted based on the local context, competing humanitarian needs, and the cost of achieving a certain level of service.

The following narratives provide guidance on how the Sphere minimum standards and indicators can best be applied in different circumstances or under different contexts. It is of utmost importance that implementing partner agencies base the application of these minimum standards and indicators on the actual situation on the ground. The situation with regard to water and sanitation can differ by country, between regions and areas within a country struck by the same disaster, and sometimes even between individual towns or temporary settlements, depending on the specific local circumstances. Proper on-site assessments should provide the information required to assess the minimum standards and indicators that will actually be used. This can best be done with as many parties active in an area as possible, including authorities, local and international NGOs, UN agencies and Red Cross and Red Crescent National Societies.

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8.3 ECHO and the application of minimum standards and indicators

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i. General guidelines for the application of minimum standards and indicators

- The application of standards and indicators should not be rigid and taken as absolute minimums (or maximums); an extreme case of this would be if an agency with resources only sufficient for half a refugee camp provides 15 litres per person per day to half the population in order to reach the indicator, instead of supplying half that amount for the entire population. When there are insufficient resources, the relevant key indicators should be adjusted accordingly in order to reach all those in need of assistance. When this happens, it is imperative that a transparent explanation be provided for the gap between the original and the adjusted indicator.
- In case there is a need to define maximum standards and indicators these should be based on an analysis of the local context and in all cases national norms and standards should be used as a point of reference (where these exist).
- If local factors make the realisation of standards and indicators unattainable the gap between the originally planned standards and indicators and the ones reached in practice should be described, the reasons for it understood, and suggestions for closing the gap proposed.
- The timeframe in which services and facilities are to be implemented is highly context-specific and often depends on external factors which are beyond the control of implementing agencies, such as funding restrictions, restrictions in access or permission to intervene or security problems. All of these factors may affect the ability of the agency to meet the minimum standards.

ii. Acute crises

In acute crises, the time to attain the minimum standards will depend on the resources available. It may take weeks or months before the Minimum Standards are met, and this itself will depend on how the indicators are adjusted to the context and national standards, if these are considered at all during the first phase of an emergency response.

iii. Chronic crises

In chronic crises, obviously more time is available to meet the Minimum Standards, but the potential for unintended negative consequences of the application of standards is greater, and it may be advisable to adjust indicators accordingly. The timeframe in which the standards are to be reached is also highly context-specific. As rehabilitation and longer-term recovery activities proceed, the need to account for, and respect, national norms and standards becomes more pronounced.

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iv. Displaced populations in temporary settlements

Minimum Standards can be applied in the case of IDP camps or other temporary settlements. However, it is also important to consider the host population and it may be necessary to adjust indicators to avoid major discrepancies between the IDPs in camps and host populations in surrounding areas. When a camp is first created however, people may be sick and weak from being displaced from their homes, and it may be necessary to provide higher levels of assistance in order to restore their health. Regardless of the condition of the camp based population it would be important to avoid negative impacts on the host population. In contexts where displaced people are located with host families, the standards are relevant, although an analysis of the capacities of the host population is required before deciding upon how to adjust the indicators.

v. Urban and rural environments

The standards are relevant to both urban and rural environments, although in urban environments more consideration will have to be given to infrastructure and existing service provision than that which is presented in the Sphere handbook, as systems are generally more sophisticated. However, it is also important to note that in many countries the majority of the urban poor living in marginalised or peri-urban communities on the fringes of large cities do not have access to formal water and sewage systems and therefore rely on simple systems or on water vendors and small scale enterprises for excreta removal from pit latrines.

vi. Exceeding Sphere Minimum standards in middle-income countries

The standards are "minimum" and where relevant or possible should be exceeded. This would be the situation in middle-income countries or in some urban environments where the affected population enjoyed services which exceeded the Minimum Standards before the disaster event or conflict situation. If this is the case, national standards should always be consulted as the key benchmark and the indicators should be adjusted accordingly.

vii. Post-conflict and transitional contexts

As with chronic contexts, the Sphere standards can be applied in post-conflict environments and other transitional situations. Targeting criteria may differ from those identified in the common process standards. Moreover, particular programmatic strategies such as capacity building or institutional strengthening would need to be carefully considered. The Sphere standards will be more relevant to disaster response situations, and some indicators may not be appropriate.

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8.4 The flexible application of Sphere standards and indicators in different scenarios

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8.4 The flexible application of Sphere standards and indicators in different scenarios

The guidance notes in the Sphere Handbook stress the issue of flexible adoption of the indicators as benchmarks and the fact that they are not the target to reach per se. In addition, the following tables present a generic guide to the extent to which the main Sphere indicators for water supply, sanitation, hygiene, and project implementation processes are likely to be adjusted according to three principal scenarios; *acute emergencies*, *chronic emergencies* and *displaced populations*.

Application of Water and Sanitation Minimum Standards in Practice

Hygiene Promotion

Minimum Standards	Key Indicators	Acute Emergency Responses	Chronic or post-acute emergency responses	Displaced populations in camps
All facilities and resources provided reflect the vulnerabilities, needs, and preferences of the affected population. Users are involved in the management and maintenance of hygiene facilities where appropriate.	▲ Key hygiene risks of public health importance are identified. ▲ Programmes include an effective mechanism for representative and participatory input from all users, including in the initial design of facilities. ▲ All groups within the population have equitable access to the resources or facilities needed to continue or achieve the hygiene practices that are promoted. ▲ Hygiene promotion messages and activities address key behaviours and misconceptions and are targeted for all user groups. ▲ Representatives from these groups participate in planning, training, implementation, monitoring, and evaluation. ▲ Users take responsibility for the management and maintenance of facilities as appropriate, and different groups contribute equitably.	▲ Not all key indicators are likely to be met in full during the immediate phase, but highest-risk behaviours should be prioritised. ▲ National standards may not be met in emergency response phase. ▲ Participation of affected population may be limited, especially in the first days of a response ▲ Users may have a limited responsibility in management and maintenance of facilities. ▲ In low income countries with low education/literacy rates, focus of hygiene promotion should be on limited number of most critical high-risk behaviours. ▲ In middle-income countries with higher education/literacy rates it may be possible to focus on a broader set of hygiene issues. ▲ Coverage is dependent on such aspects as resources available, the level of insecurity, access, etc.	▲ Most indicators are likely to be met over time. ▲ Where national standards exist these should be achieved over time, especially in the context of a middle income country, but may be limited by resource constraints. ▲ The affected population should be involved in all stages of the programme, including management and maintenance of facilities. ▲ Hygiene promotion can be embedded in broader social interaction initiatives. ▲ Coverage is dependent on such aspects as resources available, the level of insecurity, access, etc.	▲ Most indicators are likely to be met over time. ▲ Where national standards exist these should be achieved over time, especially in the context of a middle income country but may be limited by resource constraints. ▲ Participation of displaced population may be limited, especially in the initial stages, but should be reached over time. ▲ In low income countries with low education/literacy rates, focus of hygiene promotion in the initial stages should be on limited number of most critical high-risk behaviours. ▲ In middle-income countries with higher education/literacy rates focus should be on refresher messages and may cover a broader set of hygiene issues also in the initial stages. ▲ Hygiene promotion can be embedded in broader social interaction initiatives in longer term contexts. ▲ Coverage is dependent on such aspects as resources available, the level of insecurity, access, etc.

Application of Water and Sanitation Minimum Standards in Practice *(cont.)*

Water supply				
Minimum Standards	**Key Indicators**	**Acute Emergency Responses**	**Chronic or post-acute emergency responses**	**Displaced populations in camps**
Standard 1: People have safe and equitable access to a sufficient quantity of water for drinking, cooking and personal and domestic hygiene.	▲ Average water use for drinking, cooking, and personal hygiene in any household is at least 15 litres per person per day. ▲ The maximum distance from any household to the nearest water point is 500 metres. ▲ Queuing time at a water source is no more than 15 minutes. ▲ It takes no more than three minutes to fill a 20-litre container. ▲ Water sources and systems are maintained such that appropriate quantities of water are available consistently or on a regular basis.	▲ Not all key indicators are likely to be met in full; however in some low income countries national standards may actually be exceeded. ▲ National standards may not be met in emergency response phase, particularly in middle income countries. ▲ Maximum distances to water points may vary considerably depending on the disaster scenario and dispersion of the affected population. ▲ Negative impacts of water supply development on the environment or on other than the target population may be acceptable if within limits and temporary. ▲ Coverage is dependent on such aspects as resources available, the level of insecurity, access, and the level of need specifically for water supply facilities. ▲ Where resources are insufficient to meet minimum standards for total affected population, indicators should be adjusted to provide service to higher numbers of people.	▲ Most indicators are likely to be met over time. ▲ Where national standards exist these may be partly or fully achieved over time. ▲ In the context of middle income countries indicators may be exceeded. ▲ Negative impacts of water supply development should be avoided. ▲ Coverage is dependent on such aspects as resources available, the level of insecurity, access, and the need for water supply. ▲ Where resources are in short supply, only the most vulnerable households may be covered (in case of household water supply facilities) or the communities most in need of water supply.	▲ Ability to meet minimum standards will be determined by absolute numbers of beneficiaries and available water resources. ▲ Where resources are limited, minimum standards should be modified to provide a lesser amount of water to more/total population. ▲ Care must be taken to coordinate exploitation of water resources to ensure that planned supplies can be maintained. ▲ Negative impacts of water supply development on the environment or on other than the target population may be acceptable during the initial stage if within limits and temporary. ▲ Where camps are located in host population areas, similar standards should be provided to this population wherever feasible and within available resources. ▲ Where resources are insufficient to meet minimum standards for total affected population, indicators should be adjusted to provide service to higher numbers of people.

Application of Water and Sanitation Minimum Standards in Practice *(cont.)*

Water supply *(cont.)*				
Minimum Standards	**Key Indicators**	**Acute Emergency Responses**	**Chronic or post-acute emergency responses**	**Displaced populations in camps**
Standard 2: Water is palatable, and of sufficient quality to be drunk and used for personal and domestic hygiene without causing significant risk to health.	▲ A sanitary survey indicates a low risk of faecal contamination. ▲ There are no faecal coliforms per 100ml at the point of delivery. ▲ People drink water from a protected or treated source in preference to other readily available water sources. ▲ Steps are taken to minimise post-delivery contamination. ▲ For piped water supplies, or for all water supplies at times of risk or presence of diarrhoea epidemic, water is treated with a disinfectant so that there is a free chlorine residual at the tap of 0.5mg per litre. Turbidity should be kept below 5 NTU (if necessary filtration or flocculation should be applied). ▲ No negative health effect is detected due to short-term use of water contaminated by chemicals (including carry-over of treatment chemicals) or radiological sources, and assessment shows no significant probability of such an effect.	▲ Water quality provided during an emergency response may be higher than for normal circumstances, especially in low income countries or areas of conflict. ▲ In middle income countries the minimum indicators for water quality should be met or should be in line with national standards. ▲ All centrally produced water supplies, regardless of context, should be chlorinated during an acute emergency phase and meet the minimum indicator for free chlorine residual. ▲ All water supply systems realised or repaired/rehabilitated by the project meet the indicators.	▲ All water supply systems realised or rehabilitated by the project meet the indicators. ▲ Where national standards exist these may be partly or fully achieved over time, especially in the context of a middle income country. ▲ National standards may be met (or exceeded) in low income countries depending on resources available and on circumstances on the ground.	▲ Water quality may be higher than for normal circumstances, especially in low income countries or areas of conflict. ▲ In middle income countries the minimum indicators for water quality should be met or should be in line with national standards. ▲ All centrally produced water supplies, regardless of context, should be chlorinated during an acute emergency phase and meet the minimum indicator for free chlorine residual. ▲ All water supply systems available to the beneficiaries meet the indicators. ▲ Where camps are located in host population areas, similar standards should be provided wherever feasible and within available resources.

Application of Water and Sanitation Minimum Standards in Practice *(cont.)*

Water supply *(cont.)*

Minimum Standards	Key Indicators	Acute Emergency Responses	Chronic or post-acute emergency responses	Displaced populations in camps
Standard 3: People have adequate facilities and supplies to collect, store and use sufficient quantities of water for drinking, cooking, and personal hygiene, and to ensure that drinking water remains safe until it is consumed.	▲ Each household has at least two clean water collecting containers of 10-20 litres, plus enough clean water storage containers to ensure there is always water in the household. ▲ Water collection and storage containers have narrow necks and/or covers, or other safe means of storage, drawing and handling, and are demonstrably used ▲ There is at least 250g of soap available for personal hygiene per person per month. ▲ Where communal bathing facilities are necessary, there are sufficient bathing cubicles available, with separate cubicles for males and females, and they are used appropriately and equitably. ▲ Where communal laundry facilities are necessary, there is at least one washing basin per 100 people, and private laundering areas are available for women to wash and dry undergarments and sanitary cloths. ▲ The participation of all vulnerable groups is actively encouraged in the siting and construction of bathing facilities and/or the production and distribution of soap, and/or the use and promotion of suitable alternatives.	▲ Most indicators to be met as soon as possible even in early phase of response. ▲ Participation of vulnerable groups may be limited, especially in the first days of a response. ▲ In middle income countries indicators for this standard are likely to be exceeded. ▲ Coverage is dependent on such aspects as resources available, the level of insecurity, access, and the need for the facilities and supplies. ▲ Where resources are in short supply, only the most vulnerable households may be covered.	▲ Most indicators are likely to be met over time. ▲ Where national standards exist these may be partly or fully achieved over time, especially in the context of a middle income country. ▲ Coverage is dependent on such aspects as resources available, the level of insecurity, access, and the need for the facilities and supplies. ▲ Where resources are in short supply, only the most vulnerable households may be covered. ▲ The affected population, in particular the vulnerable groups, are participating.	▲ Most indicators to be met as soon as possible. ▲ Participation of vulnerable groups may be limited in the initial stage, but should be encouraged immediately after the initial stage. ▲ Especially in middle income countries more and better quality items are likely to be distributed and better services realised.

Application of Water and Sanitation Minimum Standards in Practice *(cont.)*

Sanitation

Minimum Standards	Key Indicators	Acute Emergency Responses	Chronic or post-acute emergency responses	Displaced populations in camps
Excreta disposal standard 1: People have adequate numbers of toilets, sufficiently close to their dwellings, to allow them rapid, safe and acceptable access at all times of the day and night.	▲ A maximum of 20 people use each toilet. ▲ Use of toilets is arranged by household(s) and/or segregated by sex. ▲ Separate toilets for women and men are available in public places (markets, distribution centres, health centres, etc.). ▲ Shared or public toilets are cleaned and maintained in such a way that they are used by all intended users. ▲ Toilets are no more than 50 metres from dwellings ▲ Toilets are used in the most hygienic way and children's faeces are disposed of immediately and hygienically.	▲ Most indicators to be met as soon as possible, however where resources are in short supply, targeting of communities/groups most in need of public toilet facilities may be covered. ▲ Participation of affected population may be limited, especially in the first days of a response. ▲ The focus is on public emergency toilet facilities in urgent settings. ▲ Coverage is dependent on such aspects as resources available, the level of insecurity, access, and the level of need specifically for toilet facilities.	▲ Most indicators are likely to be met over time. ▲ The focus is on household toilet facilities. ▲ Where national standards exist these may be partly or fully achieved over time. ▲ Coverage is dependent on such aspects as resources available, the level of insecurity, access, etc. ▲ Where resources are in short supply, toilets may be shared by 2 to 3 households and/or only the most vulnerable households may be covered.	▲ Most indicators to be met as soon as possible. ▲ Participation of affected population may be limited, especially in the initial stage. ▲ The focus may initially be on public emergency toilet facilities in urgent settings but shifting as quickly as possible towards household facilities. ▲ Coverage should reach 100% over time.
Excreta disposal standard 2: Toilets are sited, designed, constructed, and maintained in such a way as to be comfortable, hygienic, and safe to use.	▲ Users (especially women) have been consulted and approve of the siting and design of the toilet. ▲ Toilets are designed, built and located to have the following features: ▲ they are designed in such a way that they can be used by all sections of the population, including children, older people, pregnant women and physically and mentally disabled people; ▲ they are sited in such a way as to minimise threats to users, especially women and girls, throughout the day and night;	▲ Most indicators to be met as soon as possible among people reached with toilet facilities. ▲ Consultation with affected population may be limited, especially in the first days of a response; however indicators for consultation on design and location should be met as soon as possible.	▲ Most indicators are likely to be met over time among people reached with toilet facilities. ▲ Where national standards exist these need to be applied where feasible. ▲ Consultation with affected population is carried out at all stages.	▲ Most indicators to be met as soon as possible. ▲ Participation of affected population may be limited in the initial stage, but should be applied as soon as possible. ▲ Where national standards exist these may be partly or fully achieved over time in longer-term settings, especially in the context of a middle income country.

Application of Water and Sanitation Minimum Standards in Practice *(cont.)*

Sanitation *(cont.)*				
Minimum Standards	**Key Indicators**	**Acute Emergency Responses**	**Chronic or post-acute emergency responses**	**Displaced populations in camps**
Excreta disposal standard 2 *(cont.)*	▲ they are sufficiently easy to keep clean to invite use and do not present a health hazard; ▲ they provide a degree of privacy in line with the norms of the users; ▲ they allow for the disposal of women's sanitary protection, or provide women with the necessary privacy for washing and drying sanitary protection cloths; ▲ they minimise fly and mosquito breeding. ▲ All toilets constructed that use water for flushing and/or a hygienic seal have an adequate and regular supply of water. ▲ Pit latrines and soakaways (for most soils) are at least 30 metres from any groundwater source and the bottom of any latrine is at least 1.5 metres above the water table. Drainage or spillage from defecation systems must not run towards any surface water source or shallow groundwater source. ▲ People wash their hands after defecation and before eating and food preparation. ▲ People are provided with tools and materials for constructing, maintaining, and cleaning their own toilets if appropriate.			

Application of Water and Sanitation Minimum Standards in Practice *(cont.)*

Sanitation *(cont.)*

Minimum Standards	Key Indicators	Acute Emergency Responses	Chronic or post-acute emergency responses	Displaced populations in camps
Vector control standard 1: All disaster-affected people have the knowledge and the means to protect themselves from disease and nuisance vectors that are likely to represent a significant risk to health or well-being.	▲ All populations at risk from vector-borne disease understand the modes of transmission and possible methods of prevention. ▲ All populations have access to shelters that do not harbour or encourage the growth of vector populations and are protected by appropriate vector control measures. ▲ People avoid exposure to mosquitoes during peak biting times by using all non-harmful means available to them. Special attention is paid to protection of high-risk groups such as pregnant and feeding mothers, babies, infants, older people and the sick. ▲ People with treated mosquito nets use them effectively. ▲ Control of human body lice is carried out where louse-borne typhus or relapsing fever is a threat. ▲ Bedding and clothing are aired and washed regularly . ▲ Food is protected at all times from contamination by vectors such as flies, insects, and rodents.	▲ Most indicators to be met as soon as possible in communities endangered by vector-borne diseases. ▲ Participation of affected population may be limited, especially in the first days of a response. ▲ In low income countries with low education/literacy rates, focus of hygiene promotion should be on a limited number of most critical high-risk behaviours. ▲ In middle-income countries with higher education/literacy rates focus should be on refresher messages and may cover a broader set of hygiene issues. ▲ Coverage is dependent on such aspects as resources available, the level of insecurity, access, and the level of risk of vector-borne diseases. ▲ Where resources are in short supply, only the most high-risk groups should be targeted first.	▲ Most indicators are likely to be met over time in communities endangered by vector-borne diseases, especially in congested urban settings. ▲ Where national standards exist these may be partly or fully achieved over time, especially in the context of a middle income country. ▲ Hygiene promotion can be embedded in broader social interaction initiatives. ▲ Coverage is dependent on such aspects as resources available, the level of insecurity, access, and the level of risk of vector-borne diseases. ▲ Where resources are in short supply, only the most high-risk groups should be targeted first.	▲ Most indicators to be met as soon as possible if there is a risk of vector-borne diseases, especially in congested camp settings. ▲ Participation of affected population may be limited, especially in the initial stage. ▲ Where national standards exist these may be partly or fully achieved over time in longer-term settings, especially in the context of a middle income country. ▲ In low income countries with low education/literacy rates, focus of hygiene promotion should during the initial stage be on a limited number of most critical high-risk behaviours. ▲ In middle-income countries with higher education/literacy rates focus should be on refresher messages and may cover a broader set of hygiene issues. ▲ In longer term contexts hygiene promotion can be embedded in broader social interaction initiatives.

Application of Water and Sanitation Minimum Standards in Practice *(cont.)*

Sanitation *(cont.)*

Minimum Standards	Key Indicators	Acute Emergency Responses	Chronic or post-acute emergency responses	Displaced populations in camps
Vector control standard 2: The numbers of disease vectors that pose a risk to people's health and nuisance vectors that pose a risk to people's well-being are kept to an acceptable level.	▲ Displaced populations are settled in locations that minimise their exposure to mosquitoes. ▲ Vector breeding and resting sites are modified where practicable. ▲ Intensive fly control is carried out in high-density settlements when there is a risk or the presence of a diarrhoea epidemic. ▲ The population density of mosquitoes is kept low enough to avoid the risk of excessive transmission levels and infection. ▲ People infected with malaria are diagnosed early and receive treatment.	▲ Most indicators to be met as soon as possible in communities endangered by vector-borne diseases. ▲ Negative impact on the environment may be temporarily acceptable to some extent. ▲ Coverage is dependent on such aspects as resources availability, the level of insecurity, access, and the level of risk of vector-borne diseases. ▲ Where resources are in short supply, only the communities most in danger of vector-borne diseases may be covered.	▲ Most indicators are likely to be met over time in communities endangered by vector-borne diseases, especially in congested urban settings. ▲ Where national standards exist these may be partly or fully achieved over time, especially in the context of a middle income country. ▲ Negative impacts on the environment should be avoided, i.e. those affecting the health of people if no proper precautions are taken. ▲ Coverage is dependent on such aspects as resources available, the level of insecurity, access, and the level of risk of vector-borne diseases. ▲ Where resources are in short supply, only the communities most in danger of vector-borne diseases may be covered.	▲ Most indicators to be met as soon as possible if there is a risk of vector-borne diseases, especially in densely populated camps. ▲ Where national standards exist these may be partly or fully achieved over time in longer-term settings, especially in the context of a middle income country. ▲ Negative impact on the environment may be temporarily acceptable in the initial stage to some extent.

Application of Water and Sanitation Minimum Standards in Practice *(cont.)*

Sanitation *(cont.)*

Minimum Standards	Key Indicators	Acute Emergency Responses	Chronic or post-acute emergency responses	Displaced populations in camps
Vector control standard 3: Chemical vector control measures are carried out in a manner that ensures that staff, the people affected by the disaster and the local environment are adequately protected, and avoids creating resistance to the substances used.	▲ Personnel are protected by the provision of training, protective clothing, use of bathing facilities, supervision and a restriction on the number of hours spent handling chemicals. ▲ The choice, quality, transport and storage of chemicals used for vector control, the application of equipment and the disposal of the substances follow international norms, and can be accounted for at all times. ▲ Communities are informed about the potential risks of the substances used in chemical vector control and about the schedule for application. They are protected during and after the application of poisons or pesticides, according to internationally agreed procedures.	▲ All indicators to be met in all vector control projects executed. ▲ Negative impact on the environment may be temporarily acceptable to some extent.	▲ All indicators to be met in all vector control projects executed. ▲ Negative impacts on the environment should be avoided.	▲ All indicators to be met in all vector control projects executed. ▲ Negative impact on the environment may be temporarily acceptable in the initial stage to some extent.

Application of Water and Sanitation Minimum Standards in Practice *(cont.)*

Solid waste management

Minimum Standards	Key Indicators	Acute Emergency Responses	Chronic or post-acute emergency responses	Displaced populations in camps
Standard 1: People have an environment that is acceptably uncontaminated by solid waste, including medical waste, and have the means to dispose of their domestic waste conveniently and effectively.	▲ People from the affected population are involved in the design and implementation of the solid waste programme. ▲ Household waste is put in containers daily for regular collection, burnt, or buried in a specified refuse pit. ▲ All households have access to a refuse container and/or are no more than 100 metres from a communal refuse pit. ▲ At least one 100-litre refuse container is available per 10 families, where domestic refuse is not buried on-site. ▲ Refuse is removed from the settlement before it becomes a nuisance or a health risk ▲ Medical wastes are separated and disposed of separately and there is a correctly designed, constructed, and operated pit, or incinerator with a deep ash pit, within the boundaries of each health facility. ▲ There are no contaminated or dangerous medical wastes (needles, glass, dressings, drugs, etc.) at any time in living areas or public spaces. ▲ There are clearly marked and appropriately fenced refuse pits, bins or specified areas at public places, such as markets and slaughtering areas, with a regular collection system in place. ▲ Final disposal of solid waste is carried out in such a place and in such a way as to avoid creating health and environmental problems for the local and affected populations.	▲ Not all indicators are likely to be met in the first phase of an acute response. ▲ Negative impact on the environment may be temporarily acceptable to some extent. ▲ Negative impact on other than the target population may be acceptable in the initial stages if temporary and limited. However, this needs to be handled with care in order to avoid conflict. ▲ Coverage is dependent on such aspects as resources available, the level of insecurity, access, and the level (of risk) of contamination by solid waste. ▲ Where resources are in short supply, only the communities most in danger of solid waste contamination may be covered.	▲ Most indicators are likely to be met over time in communities where the health risks of solid waste contamination are high. ▲ Where national standards exist these may be partly or fully achieved over time, especially in the context of a middle income country. ▲ Negative impacts on the environment should be avoided. ▲ Coverage is dependent on such aspects as resources available, the level of insecurity, access, and the level (of risk) of contamination by solid waste. ▲ Where resources are in short supply, only the communities most in danger of solid waste contamination may be covered. ▲ Ability to meet standards in solid waste management in urban settings will depend to a large extent on the involvement and collaboration of the local authorities and institutions.	▲ Most indicators to be met as soon as possible. ▲ Where national standards exist these may be partly or fully achieved over time in longer-term settings, especially in the context of a middle income country. ▲ Negative impact on the environment may be temporarily acceptable in the initial stage to some extent. ▲ Negative impact on other than the target population may be acceptable in the initial stages if temporary and limited. However, this needs to be handled with care in order to avoid conflict.

Application of Water and Sanitation Minimum Standards in Practice *(cont.)*

Drainage				
Minimum Standards	**Key Indicators**	**Acute Emergency Responses**	**Chronic or post-acute emergency responses**	**Displaced populations in camps**
Standard 1: People have an environment in which the health and other risks posed by water erosion and standing water, including storm water, floodwater, domestic wastewater, and wastewater from medical facilities, are minimised.	▲ Areas around dwellings and water points are kept free of standing wastewater, and storm water drains are kept clear. ▲ Shelters, paths, and water and sanitation facilities are not flooded or eroded by water. ▲ Water point drainage is well planned, built, and maintained. This includes drainage from washing and bathing areas as well as water collection points . ▲ Drainage waters do not pollute existing surface or groundwater sources or cause erosion. ▲ Sufficient numbers of appropriate tools are provided for small drainage works and maintenance where necessary.	▲ Not all indicators are likely to be met in the first phase of an acute response. ▲ Negative impact on the environment may be temporarily acceptable to some extent. ▲ Negative impact on other than the target population may be acceptable in the initial stages if temporary and limited. However, this needs to be handled with great care in order to avoid conflict. ▲ Coverage is dependent on such aspects as resources available, the level of insecurity, access, and the level health and other risks posed by water erosion and standing waters. ▲ Coverage is also dependent on the quantity of water provided and on physical characteristics of the area: rainfall, slope of ground surface in and around the settlements and absorption capacity of the soil. ▲ Where resources are in short supply, only the communities most in danger of health and other risks posed by water erosion and standing waters may be covered.	▲ Most indicators are likely to be met over time especially where the health and other risks posed by water erosion and standing waters are high. ▲ Where national standards exist these may be partly or fully achieved over time, especially in the context of a middle income country. ▲ Negative impacts on the environment should be avoided. ▲ Coverage is dependent on such aspects as resources available, the level of insecurity, access, and the level of health and other risks posed by water erosion and standing waters. ▲ Coverage is also dependent on the quantity of water provided and on physical characteristics of the area such as rainfall, slope of ground surface in and around the settlements and absorption capacity of the soil. ▲ Where resources are in short supply, only the communities most in danger of health and other risks posed by water erosion and standing waters may be covered. ▲ For urban settings the effectiveness of drainage will depend to a large extent on the involvement and collaboration of the local authorities and institutions.	▲ Most indicators are likely to be met as soon as possible. ▲ Where national standards exist these may be partly or fully achieved over time in longer-term settings, especially in the context of a middle income country. ▲ Negative impact on the environment may be temporarily acceptable in the initial stage, to some extent. ▲ Negative impact on other than the target population may be acceptable in the initial stages if temporary and limited. However, this needs to be handled with care in order to avoid conflict. ▲ Coverage is dependent on such aspects as resources available, the level of insecurity, access, and the level health and other risks posed by water erosion and standing waters. ▲ Coverage is also dependent on the quantity of water provided and on physical characteristics of the area such as rainfall, slope of ground surface in and around the settlements and absorption capacity of the soil.

Common Process Standards for all water & sanitation projects

Minimum Standards	Key Indicators	Acute Emergency Responses	Chronic or post-acute emergency responses	Displaced populations in camps
Common standard 1: participation The disaster-affected population actively participates in the assessment, design, implementation, monitoring, and evaluation of the assistance programme.	▲ Women and men of all ages from the disaster-affected and wider local populations, including vulnerable groups, receive information about the assistance programme, and are given the opportunity to comment to the assistance agency during all stages of the project cycle. ▲ Written assistance programme objectives and plans should reflect the needs, concerns and values of disaster-affected people, particularly those belonging to vulnerable groups, and contribute to their protection. ▲ Programming is designed to maximise the use of local skills and capacities.	▲ Not all indicators are likely to be met, but should be achieved as soon as possible in targeted communities, especially where small-scale interventions are executed. ▲ Participation of affected population may be limited, especially in the first days of a response when people are traumatised, in shock and/or exhausted and in cases where security prevents the mobility of operations. ▲ At a minimum the indicator for participation in assessment and design should be met, even in a rapid response. ▲ Emergency repair of large-scale urban facilities are less likely to involve the disaster-affected population, but will involve existing management structures.	▲ Most indicators are likely to be met over time in targeted communities, especially where small-scale interventions are executed. ▲ Indicators for most vulnerable groups should be addressed as a priority. ▲ Rehabilitation of large-scale urban facilities may or may not involve the disaster-affected population, depending on their involvement in management, operation, and maintenance of the facilities.	▲ Most indicators to be met as soon as possible. ▲ However, participation of affected population may be limited, especially in the initial stage and in cases where security prevents the mobility of operations, but should be applied in all later stages.
Common standard 2: initial assessment Assessments provide an understanding of the disaster situation and a clear analysis of threats to life, dignity, health, and livelihoods to determine, in consultation with the relevant authorities, whether an external response is required and, if so, the nature of the response.	▲ Information is gathered using standardised procedures and made available to allow for transparent decision-making. ▲ The assessment considers all technical sectors (water and sanitation, nutrition, food, shelter, health), and the physical, social, economic, political and security environment. ▲ Through consultation, the assessment takes into account the responses of the local and national authorities and other actors and agencies.	▲ Most indicators to be met as soon, and as far as possible in targeted areas. ▲ Assessments focus on short-term needs. ▲ Consultation with affected population may be limited, especially in the first days of a response, when people are traumatised, in shock and/or exhausted. ▲ Consultation with relevant authorities, institutions, other actors and agencies should be applied where possible.	▲ Most indicators to be met in targeted areas. ▲ Assessments focus on longer-term needs and should meet the required indicator for vulnerable groups. ▲ Consultation with affected population is crucial. ▲ Consultation with relevant authorities, institutions, other actors and agencies is carried out.	▲ Most indicators to be met as soon as possible. ▲ Consultation with affected population may be limited, especially in the initial stage, but will be applied in later stages. ▲ Initially assessments focus on short-term needs, followed by assessments focusing on longer-term needs. ▲ Assessments keep in mind the temporary nature of the settlement and consider the time span the settlement is likely to exist.

Common Process Standards for all water & sanitation projects *(cont.)*

Minimum Standards	Key Indicators	Acute Emergency Responses	Chronic or post-acute emergency responses	Displaced populations in camps
Common standard 2: initial assessment *(cont.)*	▲ Local capacities and strategies to cope with the disaster, both those of the affected population and the surrounding population, are identified. ▲ Whenever feasible, data are disaggregated by sex and by age. ▲ The assessment is underpinned by the rights of those affected by disasters, as defined by international law. ▲ The assessment takes into account the responsibility of relevant authorities to protect and assist the population on the territory over which they have control, and also takes into account national law, standards and guidelines applicable where the affected population is found, as they conform to international law. ▲ The assessment includes an analysis of the operating environment, including factors affecting the personal safety and security of the affected population and of humanitarian staff. ▲ Estimates of population numbers are cross-checked and validated with as many sources as possible, and the basis for the estimate made known. ▲ Assessment findings are made available to other sectors, national and local authorities, and representatives of the affected population. Recommendations are made on the need for external assistance, and on appropriate responses that should be linked with exit or transition strategies.	▲ Whenever possible, the indicator for desegregation of data by gender should be met, even in a rapid assessment.		

Common Process Standards for all water & sanitation projects *(cont.)*

Minimum Standards	Key Indicators	Acute Emergency Responses	Chronic or post-acute emergency responses	Displaced populations in camps
Common standard 3: response A humanitarian response is required in situations where the relevant authorities are unable and/or unwilling to respond to the protection and assistance needs of the population on the territory over which they have control, and when assessment and analysis indicate that these needs are unmet.	▲ Where people's lives are at risk as a result of disaster, programmes prioritise life-saving needs. ▲ Programmes and projects are designed to support and protect the affected population and to promote their livelihoods, so that they meet or exceed the Sphere Minimum Standards, as illustrated by the key indicators. ▲ There is effective coordination and exchange of information among those affected by or involved in the disaster response. Humanitarian agencies undertake activities on the basis of need, where their expertise and capacity can have the greatest impact within the overall assistance programme. ▲ Organisations, programmes, and projects that either cannot address identified needs or are unable to attain the Minimum Standards make any gaps known so that others may assist. ▲ In conflict situations, the assistance programme takes into account the possible impact of the response on the dynamics of the situation.	▲ Most indicators to be met as soon as possible in the areas of operation. ▲ Involvement of the affected population in coordination may be limited in the first days of a response.	▲ Most indicators to be met in the areas of operation.	▲ Most indicators to be met. ▲ Involvement of the affected population in coordination may be limited in the initial stage, but will increase in later stages.

Common Process Standards for all water & sanitation projects *(cont.)*

Minimum Standards	Key Indicators	Acute Emergency Responses	Chronic or post-acute emergency responses	Displaced populations in camps
Common standard 4: targeting Humanitarian assistance or services are provided equitably and impartially, based on the vulnerability and needs of individuals or groups affected by disaster.	▲ Targeting criteria must be based on a thorough analysis of vulnerability. ▲ Targeting mechanisms are agreed among the affected population (including representatives of vulnerable groups) and other appropriate actors. Targeting criteria are clearly defined and widely disseminated. ▲ Targeting mechanisms and criteria should not undermine the dignity and security of individuals, or increase their vulnerability to exploitation. ▲ Distribution systems are monitored to ensure that targeting criteria are respected and that timely corrective action is taken when necessary.	▲ Most indicators to be met as soon as possible in the areas of operation. ▲ Consultation with affected population may be limited, especially in the first days of a response, when overall assistance may be rendered before vulnerability criteria are defined.	▲ Most indicators to be met in the areas of operation.	▲ Most indicators to be met as soon as possible. ▲ Consultation with affected population may be limited, especially in the initial stage, but will be applied in later stages.
Common standard 5: monitoring The effectiveness of the programme in responding to problems is identified and changes in the broader context are continually monitored, with a view to improving the programme, or to phasing it out as required.	▲ The information collected for monitoring is timely and useful, it is recorded and analysed in an accurate, logical, consistent, regular, and transparent manner and it informs the ongoing programme. ▲ Systems are in place to ensure regular collection of information in each of the technical sectors and to identify whether the indicators for each standard are being met. ▲ Women, men, and children from all affected groups are regularly consulted and are involved in monitoring activities. ▲ Systems are in place that enable a flow of information between the programme, other sectors, the affected groups of the population, the relevant local authorities, donors and other actors as needed.	▲ Most indicators to be met as soon as possible in the areas of operation. ▲ Consultation with affected population may be limited, especially in the first days of a response. ▲ In the first days of a response a detailed monitoring system might not yet be in place, but should be developed as soon as possible.	▲ Most indicators to be met in the areas of operation. ▲ Social interaction systems that enable flow of information and feedback between all stakeholders may be used by other programmes as well for the realisation of interventions.	▲ Most indicators to be met as soon as possible. ▲ Consultation with affected population may be limited in the initial stage, but will be applied as soon as possible. ▲ In the somewhat longer term social interaction systems that enable flow of information and feedback between all stakeholders may be used by other programmes as well for the realisation of interventions.

Common Process Standards for all water & sanitation projects *(cont.)*

Minimum Standards	Key Indicators	Acute Emergency Responses	Chronic or post-acute emergency responses	Displaced populations in camps
Common standard 6: evaluation There is a systematic and impartial examination of humanitarian action, intended to draw lessons to improve practice and policy and to enhance accountability.	▲ The programme is evaluated with reference to stated objectives and agreed minimum standards to measure its overall appropriateness, efficiency, coverage, coherence, and impact on the affected population. ▲ Evaluations take account of the views and opinions of the affected population, as well as the host community if different. ▲ The collection of information for evaluation purposes is independent and impartial. ▲ The results of each evaluation exercise are used to improve future practice.	▲ Not all indicators likely to be met in the first phase of an acute emergency operation. ▲ The evaluation system might not be in place when the acute emergency operation starts, but will be developed and applied as soon as possible.	▲ Most indicators to be met in full for the projects executed.	▲ Most indicators to be met in full for the projects executed.
Common standard 7: aid worker competencies and responsibilities Aid workers possess appropriate qualifications, attitudes, and experience to plan and effectively implement appropriate programmes.	▲ Aid workers have relevant technical qualifications and knowledge of local cultures and customs, and/or previous emergency experience. Workers are also familiar with human rights and humanitarian principles. ▲ Staff are knowledgeable about the potential tensions and sources of conflict within the disaster-affected population itself and with host communities. They are aware of the implications of delivering humanitarian assistance, and pay particular attention to vulnerable groups ▲ Staff are able to recognise abusive, discriminatory or illegal activities, and refrain from such activities	▲ All indicators to be met as soon as possible for the projects executed.	▲ All indicators to be met for the projects executed. ▲ Where national standards exist these may be partly or fully achieved over time, especially in the context of a middle income country.	▲ All indicators to be met as soon as possible. ▲ Where national standards exist these may be partly or fully achieved over time in longer-term settings, especially in the context of a middle income country.

Common Process Standards for all water & sanitation projects *(cont.)*

Minimum Standards	Key Indicators	Acute Emergency Responses	Chronic or post-acute emergency responses	Displaced populations in camps
Common standard 8: supervision, management, and support of personnel. Aid workers receive supervision and support to ensure effective implementation of the humanitarian assistance programme.	▲ Managers are accountable for their decisions and for ensuring adequate security and compliance with codes/rules of conduct as well as support for their staff. ▲ Technical and managerial staff are provided with the necessary training, resources, and logistical support to fulfil their responsibilities. ▲ Staff working on programmes understand the purpose and method of the activities they are asked to carry out, and receive subsequent feedback on their performance. ▲ All staff have written job descriptions, with clear reporting lines, and undergo periodic written performance assessment. ▲ All staff are oriented regarding relevant health and safety issues for the region and environment in which they are to work. ▲ Staff receive appropriate security training. ▲ Capacity-building systems for staff are set up and these are subject to routine monitoring. ▲ The capacity of national and local organisations is built up to promote long-term sustainability.	▲ Most indicators to be met as soon as possible. ▲ Some additional training needs may be identified during the emergency operations and should be covered as soon as possible to ensure proper functioning of staff.	▲ Most indicators are likely to be met over time. ▲ Where national standards exist these may be partly or fully achieved over time, especially in the context of a middle income country. ▲ There is a greater likelihood that staff training, orientation, and capacity building standards for aid agencies will be met in the longer-term.	▲ Most indicators to be met as soon as possible. ▲ Where national standards exist these may be partly or fully achieved over time in longer-term settings, especially in the context of a middle income country. ▲ In cases of prolonged displacement of populations there is a greater likelihood that staff training, orientation, and capacity building standards for aid agencies will be met in the longer-term.

Annex 1 Definitions

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- **Behaviour change**: a sustained change in the way people act in general, in this context in relation to personal hygiene practices, use of sanitation facilities and the handling of water for human consumption.
- **Chronic situation**. A situation characterized by an ongoing or recurrent emergency threat. *Chronic situations fall within ECHO's mandate when external assistance is required to prevent and/or mitigate emergencies*.
- **Communicable diseases**. Infectious diseases transmissible (as from person to person) by direct contact with an infected individual or indirectly (via bodily discharges or by an external vector). *Examples of communicable diseases are: diarrhoeal diseases, measles, acute respiratory infections, cholera, haemorrhagic fevers, malaria, and meningitis*.
- **Coping capacity**. The level of resources and knowledge available in a community and the manner in which people use these resources and abilities to face the adverse consequences of a disaster.
- **Diarrhoea**: abnormally frequent evacuation of watery stools. *The prevalence of diarrhoea is commonly used as an indicator to measure project impact, where diarrhoea is defined as more than three loose stools passed in one 24 hour period*.
- **Disaster**. A serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected population or society to cope using its own resources. Events may consist of any combination of natural causes or those resulting from human interventions (e.g. deforestation of steep slopes), industrial or technological accidents, conflict or war and chronic political instability.
- **Disaster mitigation**. Structural and non-structural measures taken before a disaster event which reduce or eliminate impact on people and the environment.
- **Disaster preparedness**. Activities and measures taken in advance by people and organisations to ensure effective mobilisation for a response to potential impact of disasters, including the issuing of timely and effective early warnings, the temporary removal of people and property from a threatened location and support to the indigenous coping capacity of the population at risk.
- **Emergency**. A situation of hardship and human suffering arising from a disaster which has developed because existing capacity (of government or the affected population) cannot sufficiently cope with the impact of an event.
- **Faecal coliform**: bacteria that inhabit the intestines of humans and animals, including E. coli.; *the measure of faecal coliforms (expressed as number of coliforms per 100 ml of water) in water is often used as proxy indicator for the presence of human faeces*.
- **Hygiene or hygiene practices**: the collective practice of personal hygiene and actions that ensure the cleanliness of houses and surrounding areas, especially in order to prevent illness or the spread of disease.

Annex 1 Definitions

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- **Hygiene behaviour**: a wide range of actions associated with the prevention, and restriction of transmission, of water and sanitation-related diseases.
- **Incidence**: number of new cases of a specified disease during a defined period of time, usually expressed in cases/100,000/day.
- **Key informant**: a person from the community who is especially knowledgeable and/or respected by specific groups within the community.
- **Morbidity**: the relative incidence of a disease or rate of sickness, generally expressed as cases per 1,000 per year.
- **Mortality**: the measure of the rate of death from a disease within a given population.
- **Sustainability**: the extent to which the benefits of a project or programme continue after the intervention ends.
- **Vector-borne disease**: disease transmitted to humans directly or indirectly by animals or insects.
- **Vulnerability**. The conditions determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards.

Annex 2 Key information sources

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The following links will take you to the websites of various organisations and institutes that are active in the water and sanitation sector and have a wide experience in emergencies.

ACF Action Contre la Faim, France.
Humanitarian organisation providing assistance both during a crisis and afterwards through rehabilitation and sustainable development programmes. Its ultimate goal is to enable communities to regain their autonomy and self-sufficiency as soon as possible. ACF has a proven track-record in emergency water supply and sanitation interventions **www.actioncontrelafaim.org/**

IFRC International Federation of Red Cross and Red Crescent Societies.
Humanitarian organisation carrying out relief operations to assist victims of disasters, and combines this with development work to strengthen the capacities of its member National Societies. **www.ifrc.org/what/health/water/index.asp**

IRC International Centre for Water and Sanitation, The Netherlands.
Knowledge centre providing news and information, advice, research and training, on low-cost water supply and sanitation in developing countries, with a focus on participation and community management. **www.irc.nl/index.php**

IRC International Rescue Committee, USA.
IRC provides relief, rehabilitation, protection, post-conflict development, resettlement services, and advocacy for those uprooted or affected by violent conflict and oppression. IRC has a proven track-record in emergency water supply and sanitation interventions. **www.theirc.org**

ITDG Intermediate Technology Development Group, UK.
ITDG provides practical action with the aim of demonstrating and advocating for the sustainable use of technology to reduce poverty in developing countries. ITDG also produces a wide range of publications, including water and sanitation documents. **www.itdg.org**

OXFAM GB
Oxfam GB is a development, relief, and advocacy development organisation and has a widely recognised capacity in and vast experience of emergency water and sanitation interventions. **www.oxfam.org.uk**

PAHO Pan American Health Organization
Regional Office for the Americas of WHO, which focuses on disaster preparedness with experience in water and sanitation mitigation interventions, especially in larger urban contexts. **www.paho.org**

Annex 2 Key information sources

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RedR Engineers for Disaster Relief
An international charity working to relieve suffering in disasters by selecting, training and providing competent and effective relief personnel to humanitarian aid agencies world-wide. **www.redr.org**

The Sphere Project
Initiative launched in 1997 by a group of humanitarian NGOs and the Red Cross and Red Crescent movement, who framed a Humanitarian Charter and identified Minimum Standards to be attained in disaster assistance. **www.sphereproject.org**

UNHCR United Nations High Commissioner for Refugees
UNHCR is mandated to lead and co-ordinate international action to protect refugees and resolve refugee problems worldwide. **www.unhcr.ch**

UNICEF United Nations Children's Fund
Is a child-focused UN agency supporting longer-term initiatives to improve access to safe water and sanitation and to promote hygiene awareness. It has a particular focus on emergencies, where its central role is advocacy, assessment, and coordination to ensure the care and protection of vulnerable children. **www.unicef.org/wes**

WDEC Water, Engineering, and Development Centre, UK.
WEDC is a world-renowned teaching and research institution concerned with the provision and management of physical infrastructure, including emergency water and sanitation. **http://wedc.lboro.ac.uk/**

WHO World Health Organization
WHO promotes technical cooperation for health among nations, carries out programmes to control and eradicate disease, and strives to improve the quality of human life; WHO has long experience in water and sanitation issues. **www.who.int/water_sanitation_health/en**

Annex 3 References and Links

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Action Contre la Faim (ACF)

ACF 1. **Water and sanitation programmes.**

ACF 2. (2005, English Ed.; Drouart, E. and Vouillamoz J.) Water, sanitation and hygiene for populations at risk.

Active Learning Network for Accountability and Performance in Humanitarian Action (ALNAP)

ALNAP 1. **2003. Evaluating Humanitarian Action. An ALNAP Guidance Booklet. Draft 1.**

Asian Development Bank (ADB)

ADB 1. **2003. (Fox I.B.). Floods and the Poor. Reducing the Vulnerability of the Poor to the Negative Impacts of Floods.**

Centers for Disease Control and Prevention (CDC)

CDC 1. **http://www.cdc.gov/safewater/**

Connect International and De Veer Consultancy (CI)

CI 1. **2005. (Veer, de T. and de Groot H.). Community Coach Manual. Draft.**

CI 2. **1999. (Veer, de T.). Beyond Sphere. Integral Quality System for the Operation of Water and Sanitation Programs in Camps. 2nd Draft Edition.**

CI 3. **2004. (Veer, de T.). Borehole and hand pump implementation, operation and maintenance. A manual for field staff of NGOs. Draft.**

CI 4. 2005. (Veer, de T.). The Connect International Organization Improvement Process - Facilitating local organizations in developing countries to improve their performance. Draft.

Catholic Organisation for Relief and Development Aid (CORDAID)

CORDAID 1. 2004. Drought cycle management. A toolkit for the drylands of the Greater Horn.

Centre for Agriculture and Biosciences International (CAB)

CAB 1. 1994. (Edited by Buckle, A.P. and Smith, R.H.). Rodent Pests and Their Control.

Cranfield University Silsoe (SILSOE)

SILSOE 1. **(Tyrrel S.). Interim Design, Construction and Operation Guidelines for a Biologically-Enhanced Iron Removal Filter for Attachment to Handpumps.**

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Department for International Development (DFID)

DFID 1. Guidance manual on water supply and sanitation programs – Front page and Contents (go to the folder containing all documents covering the different chapters).

Deutsche Gesellschaft fur Technische Zusammenarbeit (GTZ)

GTZ 1. ZOPP (an introduction to the method).

Dutch Quality Institute (DQI) and Northedge

DQI 1. 2000. Determine your position through the public sector quick-scan. Based on the EFQM-model.

European Commission Directorate-General for Humanitarian Aid (ECHO)

ECHO 1. 2005. Model Guidelines. A Review of Core Cross-Cutting Issues and Key Objectives Affecting Persons in Humanitarian Crises.

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ECHO 5. 2002. Guidance note for staff. Procedures for the inclusion of cost-recovery, INCOME GENERATION AND REMUNERATIVE SCHEMES IN HUMANITARIAN OPERATIONS.

ECHO 6. Disaster Preparedness and Prevention.

ECHO 7. 2004. A REVIEW OF DG ECHO's APPROACH TO HIV/AIDS. MODEL GUIDELINES.

ECHO 8. A REVIEW OF DG ECHO's APPROACH TO HIV/AIDS. CONCEPT PAPER.

ECHO 9. FRAMEWORK PARTNERSHIP AGREEMENT WITH HUMANITARIAN ORGANISATIONS

ECHO 10. 2003. ECHO Manual. Project Cycle Management.

ECHO 11. 2005. ECHO entry and exit strategies

ECHO 12. 2004. GENERIC SECURITY GUIDE. FOR HUMANITARIAN ORGANISATIONS.

ECHO 13. DG ECHO FIELD AUDIT MANUAL (Inspired by USAID FOG).

ECHO 14. 2005. FORGOTTEN CRISES ASSESSMENT 2005

ECHO 15. 2005. Global needs assessment 2005.

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ECHO 16. SIDA 2005. (Borton J., Buchanan-Smith M. and Otto R.). Learning from Evaluations of Support to Internally Displaced Persons. IDP Synthesis Report. Final Report.

ECHO 17. 2004. (Robbins A. and Heffinck J.). UNIT COSTS OF HUMANITARIAN ACTIVITIES IN THE MIDDLE EAST CLUSTER - working paper.

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Environmental Health Project (EHP)

EHP 1. 2004. Strategic Report 8. Assessing Hygiene Improvement. Guidelines for Household and Community Levels.

EHP 2. Environmental Health Project 1999 - 2004, www.ehproject.org

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IFRC 1. 2002. Water and sanitation. Operating Manual and Part List. Emergency Response Unit.

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IHJ 1. 2003. (Cairncross, S.). Water supply and sanitation: some misconceptions, Editorial in Tropical Medicine and International Health Journal. Vol 8. No 3, Mar 2003.

International Water and Sanitation Centre (IRCNL)

IRCNL 1. 2002. Small Community water Supplies. Technology, people and partnership. IRC Technical Paper Series 40.

IRCNL 2. 2003. HIV/AIDS and water, sanitation and hygiene: Thematic Overview Paper.

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IRC 3. **2004. Environmental Health Field Guide. 3. Technical Support Team.**

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IRC 6. 2004. Environmental Health Field Guide. 6. Proposal Development.

IRC 7. 2004. Environmental Health Field Guide. 7. Outbreak Response.

IRC 8. **2004. Environmental Health Field Guide. 8. Water Supply and Distribution.**

IRC 9. **2004. Environmental Health Field Guide. 9. Sanitation.**

IRC 10. 2004. Environmental Health Field Guide. 10. Vector Control.

IRC 11. **2004. Environmental Health Field Guide. 11. Hygiene Promotion and Health Education.**

IRC 12. **2004. Environmental Health Field Guide. 12. Community Participation.**

IRC 13. **2004. Environmental Health Field Guide. 13. Personnel Management.**

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