

WATER & SANITATION



PDNA GUIDELINES VOLUME B



CONTENTS

■ INTRODUCTION	1
■ ASSESSMENT PROCESS	1
■ PRE-DISASTER BASELINE INFORMATION	5
■ ASSESSMENT OF DISASTER EFFECTS	13
■ ESTIMATING THE VALUE OF THE EFFECTS OF THE DISASTER	17
■ ASSESSMENT OF DISASTER IMPACT	21
■ CROSS-SECTORAL LINKAGES INCLUDING CROSS-CUTTING ISSUES	23
■ THE SECTOR RECOVERY STRATEGY	27
■ THE SECTOR RECOVERY PLAN	29
■ IMPLEMENTATION ARRANGEMENTS	33
■ MONITORING TOOLS	33
■ REFERENCES	36
■ ANNEXES	37

INTRODUCTION

Mortality rates are closely related to infectious diseases, which in turn are strongly related to the quality of water consumed and on access to adequate sanitation services. Under normal circumstances, inadequate waste treatment methods negatively affect the health of the population. In a disaster, removal and treatment of human waste acquire increased relevance in avoiding the transmission of infectious diseases, and it constitutes a public health priority. Water, sanitation and hygiene (WASH) Programme can help reduce poverty and inequality if access and coverage are sufficient.

This chapter is intended primarily for members of the PDNA WASH Assessment Team to help them understand the scope of WASH assessments, the challenges and the requirements of an Assessment Team and the limitations within which such assessments are being made. It will also orient national governments, the appropriate authorities and their representatives to understand the need for assessments in post-disaster situations, and facilitate their participation and contribution to the assessment process. Depending on the institutional context on the ground, it may be necessary for the WASH Assessment Team to share their expertise between the Infrastructure Team and the Social Sector Team, which works closely with the Housing, Health and Education subsectors. This is because the National Accounts, which forms the basis for the deployment into the sectors, does not always have a WASH component and often disaggregates WASH into the Infrastructure and the Social components of the National Accounts. However, to maintain coherence between the technical, hardware and social aspects of WASH, the WASH Assessment Team should meet and/or exchange regularly information gathered during the assessment process.

Rapid recovery of access to WASH services is one of a set of actions essential to stabilizing the health of populations and ultimately assisting communities return to a normal existence. Recovery of infrastructure and services in the affected community helps reconnect communities, and their participation helps generate a spirit of recovery and control of their future in the minds of the affected population. The renewal of delivery of services requires the recovery of other WASH sector elements such as operation and maintenance, re-establishment of regulation for management purposes and ongoing monitoring to ensure that recovery is effectively reaching beneficiaries and addressing needs.

Disasters can create opportunities for change, and the recovery phase of service provision can also be an opportunity to seek more sustainable solutions to old or chronic problems and address gaps in the provision of, and access to, WASH services in urban and rural populations. This can lead to a recovery strategy to guide the restoration and improvement of economic and human development. A solid baseline study, with a good participatory and informed data collection and a well-prepared recovery plan, can address both reconstruction and recurring problems from the WASH sector, identify their underlying causes – be they technical, cultural, social or governance-related – and minimize future risks and vulnerability, and build resilience to absorb future events.

ASSESSMENT PROCESS

WASH issues are part of a multi-sectoral process and may be identified within all three of the overarching sectors as defined by the Methodology – the Social, Productive and Infrastructure sectors. Due to the significance of the Water and sanitation infrastructure, for the purposes of the PDNA, the information regarding WASH infrastructure is usually collected and incorporated into the Infrastructure sector of the PDNA. This includes the energy subsector for hydropower facilities. Consequently, water resources can be managed jointly with energy or even transport. Due to the health and hygiene components of the WASH Programme, this information is usually captured and treated as part of the Social sectors of



Education and Health.¹ Information regarding private waste disposal systems is captured by the Housing subsector of the Social sector. This is reflected in the following WASH assessment and response areas of the WASH:

- Hygiene Promotion;
- Water Supply;
- Sanitation – Excreta Disposal;
- Sanitation – Solid Waste Management (non-hazardous, but can include medical waste);
- Vector Control;
- Drainage.

In addition, the water and sanitation components of WASH are composed of a set of sub-activities, which consist of the following:

- water supply and sanitation services (often viewed together in the same sub-sector but should be considered separately);
- water resources policy and administrative management;
- water resources protection;
- education and training in water supply, sanitation and health/hygiene issues;
- hydropower and agricultural water.

While WASH's immediate focus is often on health and well-being, it also impacts on other quality-of-life components such as livelihoods, security and education. Almost all essential public services and their delivery are dependent, to some degree, on the good functioning of the WASH sector, making WASH one of the divisions with the most linkages to other sectors and subsectors to be evaluated.

For each PDNA, a national focal point (FP) for the overall process shall be identified by the government within one of the relevant ministries or national authorities to oversee the assessment and the recovery framework. In the case of WASH, United Nations Children's Fund (UNICEF) will support and collaborate with the leading ministry, which should ideally be identified by the government. A mechanism for coordinating the PDNA WASH activities should then be established with the national FP, national experts, relevant national organizations and other international partners. In addition to the central government representation, it may be necessary that there be engagement of relevant departments within ministries and local authorities (e.g. municipal, small town and rural) who will be directly implicated with the affected and vulnerable areas in order to ensure that the plans to be implemented correspond to on-site reality.

¹ For an example of how WASH impacts across other sectors, see Annex I: Checklists for Roles and Responsibilities between Sectors – Health, Nutrition and WASH Clusters. This matrix defines the responsibilities and accountabilities of the Health, Nutrition and WASH Clusters during emergency response and areas of potential overlap.

The WASH PDNA uses an approach to analysing disaster effects that combines quantitative data with qualitative information and analysis which, when combined with assessments from other sectors, contributes to providing a comprehensive picture of post-disaster conditions. The quantitative data are combined with qualitative information and analysis, and include the collection of pre-disaster baseline data to compare with post-disaster conditions and evaluate disaster impact to determine the overall recovery needs.

It is not easy to perform a detailed and accurate assessment of the effects of the disaster on WASH and the corresponding needs assessment. The degree to which existing data collection systems for secondary data are affected will dictate the quantity of data needed to be collected first-hand as primary data. Much of this pre-crisis data can sometimes (and ideally) be part of a wider collection for emergency preparedness programmes, so it is worthwhile verifying whether these programmes were in place, even if limited in scope. These pre-crisis data provide a measure of the baseline conditions that the response may be trying to restore or to improve upon.

The collection of baseline data through satellite maps, imagery, topographical data and analysis for a PDNA of the various aspects of WASH is needed in order to identify as a reference point the extent of pre-disaster event WASH services, including their quality and challenges to service provision within the sector. Comparison with fresh post-disaster remote sensing data can also help derive damage and losses. While this can potentially serve as a means to measure rehabilitation and reconstruction progress of post-disaster assistance and recovery, it should be kept in mind that recovery can include new responses to needs in addition – or as an alternative – to a simple rehabilitation of previous services. Identifying already existing needs and challenges can identify opportunities to new solutions for old problems in the recovery. In order for baseline data to be used for a comprehensive monitoring and evaluation system, they should be disaggregated by sex, age, ethnicity (where relevant), rural and urban, disability, or other necessary designations that will affect the way in which people will ultimately respond to a recovery process.

CHALLENGES TO DATA COLLECTION²

LANGUAGE, GENDER, CULTURE

Since field surveys and interviews often require being conducted in the local language, interpreters are often employed. One should spot check the interpreting, where possible, with back-up interpreters. In some contexts, it is more effective for women to interview women, since women may culturally not be allowed to collaborate or participate in a field survey or interview, or even be allowed to attend a meeting.

INSTITUTIONAL IMPACT OF A DISASTER (E.G. HAITI – DESTRUCTION IN CAPITAL CITY AND SEAT OF GOVERNMENT)³

A baseline desk study may be very difficult to carry out if a natural disaster has seriously compromised government or institutional structures (including destruction of buildings or offices of authorities), or resulted in the loss of life of staff. It may be necessary to rely more on remote sensing, as well as on satellite mapping, photos, surveys and interviews.

² See also Logistics in section 2.6 of this report.

³ To what extent has the host government's sector capacity to respond to disaster (or at least coordinate the response) been compromised? Is this a disaster that has wiped out all government capability in the sector or a localized disaster in which the government will play a central part? Related to this – and no doubt covered elsewhere in non-sector sections of the PDNA – is what are the 'politics' of the disaster response, who would win and who would lose?

DATA INTEGRITY

The quality of the data must always be checked for the desk study of the survey by reviewing the origin of the data, methodology and analysis, if any. Checks should be carried out on the quality of data from recent field surveys and assessments or from those being implemented for the PDNA – a number will have been done during emergency interventions.

EXPECTED OUTPUTS OF SECTOR CHAPTER FOR EXAMPLE: SECTORAL REPORTS, TYPICAL TABLES

The PDNA will produce a detailed report on the effects of the disaster on WASH activities and also a recovery plan. The report shall include the monetary values of the effects wherever possible to estimate such damage and loss values, and also the needs and costs of rebuilding the WASH sector. Information obtained through primary and secondary data collection and the subsequent analyses will include both quantitative and qualitative data, coherently synthesized after analyses, to send on to the central report writing team. Where a standardized outline for the PDNA sectoral reports is provided, it should be rigorously respected in order to facilitate the compilation of numerous sector reports and the speed with which a coherent document can be produced.

The combined PDNA document produced at the end of damage and loss for the PDNA exercise will normally factor in the key recommendations and cost estimations made by the WASH Team. All data and information collected in the form of maps, satellite information, data sheets on water resources, services, costs, and consumption, and population figures both in its original and edited formats, should be archived with the relevant authorities for reference and future access.

The PDNA WASH Team manages the day-to-day planning and implementation of the assessment as well as the development of the recovery strategy. This team is supported by report writer(s), who are responsible for writing the PDNA report and recovery strategy and works with the PDNA Report Secretariat. The team is tasked with providing coherence across varied institutional and sectoral approaches while ensuring that adequate focus is paid to key cross-cutting themes, including inter alia, gender (women and equity issues), children, youth, the environment and disaster risk reduction (DRR). The team works under government leadership, and with a FP in the government that has already been identified during the emergency phase and is available to continue with the PDNA process. The Team may also include membership or at least the capacity to liaise with representatives of key ministries (from cross-cutting sectors), the United Nations, the World Bank, the European Community (EU), and other partners, as appropriate for the context. Other partners often include non-governmental organizations (NGOs) and civil society organizations (CSOs), and should include, wherever possible, the local authorities and local government. The Team is established at the initiation of the PDNA and remains fully operational throughout the PDNA process. It is important for this team to ensure that coordination processes are transparent, participatory, impartial and useful: the team must ensure that decision-making will not, or will be perceived as being a closed, elite or secretive process.

LOGISTICS

Where institutional structures have been damaged, or their procedures for data collection and/or archiving and information management are weak, accessing electronic and non-electronic sources and copies of data will be difficult. Depending on the government's information access or dissemination policy, there may be security issues to confront when trying to access information for even a simple baseline desk study. In contexts where infrastructure has been damaged, this may impact on transport and access to the field for surveys and field observation studies.

PRE-DISASTER BASELINE INFORMATION

The section provides guidance on how to develop the overview and pre-disaster baseline in the sector report, which sources and key documents to use to determine pre-disaster conditions. It should include information described in sub-section 3.1.

HOW TO PERFORM A CONTEXT ANALYSIS OF THE SECTOR FOCUSING ON THE STATE OF ITS HUMAN, NATURAL, CULTURAL, FINANCIAL, SOCIAL AND PHYSICAL CAPITAL⁴

Disasters can also have a lasting socio-economic and human development impact that should be assessed during the PDNA where appropriate. The combination of safe drinking water and hygienic sanitation facilities is a precondition for health and for success in the fight against poverty, hunger, child deaths and gender inequality. Natural disasters that significantly affect water and sanitation have serious consequences for health and nutrition, particularly for small and marginal households. Populations affected by disasters may experience significant loss in the provision of and access to critical services and other negative effects that may increase the number of the population living below the poverty line (in the affected areas and in the country as a whole).

The WASH PDNA uses a **people-centered approach** to post-disaster assessment and recovery focuses on the following elements:

- The impact of disasters on quality of life and potential for human development;
- stakeholder engagement in identifying the needs and priorities as well as the recovery process of affected populations;
- inclusions of social-cultural cross-cutting aspects of disaster recovery in complement to economic imperatives;
- guidance and support to recovery efforts of the affected population and institutions;
- inclusion of governance with the above elements as essential to building resilient communities and societies.

The WASH assessment should consider the medium- to long-term impact of the disaster on the country's capability in achieving of its development goals and the Millennium Development Goals (MDGs), particularly its target to increase the proportion of people with sustainable access to safe drinking water and basic sanitation. The Team should also consider the following, in coordination with other sector teams:

- Impact on overall levels of health;
- Impact on nutrition and food security;
- Impact on poverty (rural and urban);
- Impact on the MDGs, such as MDG 1 (eradicating poverty and hunger), MDG 4 (improving child health) and MDG 5 (improving maternal health).

The Assessment Team should estimate the effect on national and regional poverty levels over time and by rural and urban sectors, as well as the criteria for determining poverty levels. Higher disaster-induced poverty will affect the timeline to achieve the MDGs at the provincial and national levels. To estimate the human development impact of the disaster, it is useful to:

⁴ Refer to the work developed by Department for International Development (DFID) on the sustainable livelihood context analysis: www.efls.ca/webresources/DFID_Sustainable_livelihoods_guidance_sheet.pdf



- analyse the performance on human development components before the disaster utilizing a pre-crisis baseline (pre-disaster human development trends, including key challenges, and the salient features of the policies implemented pre-crisis that influenced the condition of human development for affected populations).
- project/ forecast human development performance into the future (both for the year in which the disaster occurred and for the following year/s) based on past performance had the disaster not occurred utilizing clearly stated assumptions.

DESCRIPTION OF THE INFRASTRUCTURE AND PHYSICAL ASSETS

It is important to obtain a clear picture of the pre-disaster infrastructure and physical assets required for the provision of water supply and sanitation services. First, it is necessary to specify whether the population and services are rural or urban. While the technology level can be the same for both (e.g. latrines and shared water points), the management is usually different institutionally. Typically, assets are fixed point infrastructures such as tanks and piped distributions, but assets can also include transportation, treatment materials and spare parts.

WATER SOURCES, WATER DISTRIBUTION AND WATER TREATMENT SYSTEMS

- Identify the main water sources, which can include:
 - surface water sources such as rivers, lakes, ponds or dams;
 - groundwater sources such as boreholes and hand-dug wells;
 - rainwater harvesting: household and surface.
- Water treatment systems such as:
 - large-scale treatment (including chlorine gas systems) plants;
 - large- and small-scale filtration systems (sand, charcoal, other);
 - treatment chemicals and materials for filtration.
- Water distribution systems, which can include:
 - reservoirs, water towers or household rainwater tanks;
 - pumping stations – motor, wind, solar;
 - piped distribution systems;
 - trucks for transporting water.

SANITATION FACILITIES, INFRASTRUCTURE AND SYSTEMS⁵

- Large-scale sanitation facilities such as:
 - urban and small town sewage systems;
 - storm and runoff collections systems;
 - wastewater and sewage treatment facilities such as waste treatment and settling ponds;
 - pumping systems
- Small-scale sanitation systems, often household or rural but can also be collective, such as:
 - Latrines;
 - Septic tanks;
 - French drains.

COLLECTION AND MANAGEMENT OF SOLID WASTE

In terms of infrastructure, this is usually only relevant in the urban and peri-urban context. Solid waste collection management in rural communities and villages are often of low technology and may be as simple as household waste pits but include communal waste management. Given the impact of solid waste on community and public health, the following points may be suggested:

- Urban setting
 - shared collection points such as large waste and rubbish containers;
 - collection transport such as trucks, small motor transport, donkey or hand carts;
 - waste management site for dumping, sorting, compacting or burning, with accompanying infrastructure such as road access, drainage and fencing.
- Rural setting
 - household pits or burning barrels, with fencing or protection;
 - communal collection pits with fencing protection;
 - collection with hand cart, donkey cart or small motor transport.

HAZARDOUS WASTE

Hazardous waste management includes waste from industrial, agricultural and health care facilities. This is usually not part of WASH except for, in some contexts, the safe management of waste from Health Care facilities such as clinics and hospitals, which can be managed on a small to medium scale with separation, safe storage or incineration protocols. In general, most hazardous waste requires specialist infrastructure for transport, storage and/or destruction, and can include waste from nuclear dumping, to banned toxic chemicals for agriculture and pharmaceuticals. Available information on hazardous waste and hazardous waste treatment facilities should be forwarded to the appropriate authorities and assessment sectors such as Health, Infrastructure and Agriculture.

⁵ Information regarding the small-scale sanitation facilities associated with private dwellings, schools or health institutions are collected by the Social Sector Team from the subsectors of Housing, Health or Education. The same holds true for the management of solid waste in the following sector.

DESCRIPTION OF THE PRODUCTION AND DELIVERY OF GOODS AND SERVICES, AND ACCESS TO GOODS AND SERVICES

In addition to estimating the damage and losses relating to water and sanitation infrastructure, the assessment considers the availability of WASH services and the level of access to them by the population affected, including small-scale community and village-level infrastructures for water and sanitation. From an infrastructure perspective, support for the restoration of community-based water supply and sanitation facilities will include: restoring destroyed access (e.g. roads or bridges); cleaning community ponds and water supply sources; re-installing water treatment plants, installing shallow or deep tube wells and boreholes, repairing village water supply facilities; installing/repairing rainwater harvesting; setting up adequate low-cost sanitary latrines for communities and restoring safe solid waste disposal systems, etc. These are priority interventions aimed at restoring drainage and water services to mitigate the health hazards in the affected community. It is also crucial to assess local resources and how the local population can cope with disasters as well as what conditions would be required bringing in external experts, equipment and supplies.

The following are examples of key elements to consider in the assessment of availability and access to WASH goods and services.

WATER SOURCES, WATER DISTRIBUTION AND WATER TREATMENT SYSTEMS

- Identify the main water sources, water treatment systems and water distribution systems that have been affected by the disaster and the causes, for example, contaminated wells, breaks in the pipelines or broken reservoirs.
- Identify alternate post-disaster water supply sources used by the affected population (rivers, springs, rainwater collection, water purchase, etc.) and determine if the supply is safe, reliable and sufficient over the medium to long term.
- Identify obstacles to the affected population's access to water (distance, access to roads, security, financial, others) and possible solutions.
- Identify particularly vulnerable population groups with limited or no adequate access to drinking water (single mothers, widows, pregnant women, the elderly, the disabled), the causes and possible solutions.
- Assess if washing facilities are available and adequate to meet demands.
- Identify current water-related beliefs and practices, including gender-specific practices, that may be limiting people's access to WASH services and that should be considered in the recovery strategy.
- Assess the level of disruption to the collection, transport and storage of water, and what is needed to rehabilitate the system.
- Identify family members who currently collect and transport water from the source to the household or shelter, the difficulties they face in the process, and the effect on their normal employment or role within the household/community.

SANITATION FACILITIES, INFRASTRUCTURE AND SYSTEMS

- Identify the sanitation facilities, infrastructure and systems that have been affected, such as latrines, sewage systems and networks, pumping stations, sewage treatment plants, and wastewater treatment facilities, etc.
- Identify alternate post-disaster defecation practices used by the affected population and determine if these are healthy, safe and reliable over the medium to long term. Consider differences in practices between women and men.
- Determine if there are sufficient sanitation facilities for the population (must not be more than 20 persons per latrine or toilet)



- Identify obstacles to the affected population’s access to sanitation facilities (distance, access to roads, security, financial, others) and possible solutions.
- Identify particularly vulnerable population groups without limited or no access to sanitation (single mothers, widows, pregnant women, elderly, disabled), the causes and possible solutions.
- Determine the cultural beliefs and practices, including gender-specific practices, concerning excreta practices and disposal that need to be taken into account in the recovery strategy.

WATER, SANITATION AND HYGIENE

Assess the need for hygiene promotion related to water and sanitation, especially priority actions linked to hygiene risks and behaviors, and those that need to form part of the recovery response in the sanitation sector. Consider the following practices that may need to be addressed:

- excreta disposal practices and anal cleansing practices;
- use and maintenance of facilities (toilets, latrines, etc.);
- hand-washing practices after defecation and before food preparation and eating;
- hygienic water collection, transport, and safe storage (protection) of water;
- hand-washing practices after defecation and before food preparation and eating;
- bathing /washing facilities and practices;

Consider also the population’s knowledge, accepted beliefs, cultural sensitivities and taboo subjects as well as their understanding of the relationship between water, vectors and disease.

DESCRIPTION OF GOVERNANCE AND DECISION-MAKING PROCESSES

These processes include people’s ability to exercise their citizenship and priority development policy objectives, etc.

GOVERNANCE AND SOCIAL PROCESSES

It is necessary to describe the policy climate in relation to WASH including Integrated Water Resources Management (IWRM)⁶ and the degree of governance, the existing sector capacity for recovery, the key actors and stakeholders in the sector, types of WASH services provision, and basic indicators of the status of WASH. An understanding of the past and knowledge of the current and possible future WASH policy frameworks is important in the formulation of a needs assess-

⁶ IWRM is defined as a process aimed at ensuring that water is used more efficiently (economic dimension), promoting equitable access to water (social dimension) and guaranteeing sustainability (environmental dimension). The term ‘integrated’ stresses that there is a need to adopt a global, holistic approach that brings together different sectors such as health, agriculture and industry – horizontal integration – and different levels (regional, national, municipal, household, etc.) – vertical integration.,

ment that will address recovery in the long term. In concert with the larger policy framework, it is important to describe the key partnerships at work prior to and following a crisis. Good key partnerships are marked by the following characteristics.

CAPACITY FOR SECTOR RECOVERY

Water and sanitation systems are commonly owned and managed by a public authority or utility, which may have local chapters. Identify and consult with the government authorities that have direct but also indirect responsibilities for this Sector, such as the Ministry of Water, the Ministry of Public Works and the Ministry of Health, among other bodies, according to the country. To the extent possible, these government authorities should be empowered to carry-out their function and supported to strengthen their capacity to meet the added demands for recovery in the WASH sector. Consider the following during the assessment:

- the impact of disaster on their institutional infrastructure, office equipment, records, staff, projects, and other relevant capacities;
- the level of their existing capacities (labour, technical expertise, equipment, etc.);
- their current and planned recovery responses;
- specific capacity-building support that can be provided, such as manpower at district and sub-district levels, training, office infrastructure, etc.

Identify the equipment, materials, expertise, labour, skills and other resources needed to repair damaged WASH infrastructure, services and systems (e.g. bulldozers, excavating machinery, trucks, tools, construction materials, sanitation engineers, pipes that need replacement, and repair equipment required such as pumps).

SOCIAL PROCESSES

Many communities have a high level of collective responsibility for water and sanitation services and may have water committees, communal or cooperative management structures, and women's organizations. Also, other CSOs are also actively involved, such as non-governmental organizations (NGOs), church groups and charities. In some cases, these CSOs can operate in regions where official governments have little presence. Consider the following during the assessment:

- the impact of a disaster on these organizations, their projects and capacities;
- the particular capacities of communities and CSOs (technical knowledge, coping mechanisms, volunteer networks, community organization structures, etc.);
- local availability of labour, skills, materials, equipment, technologies related to water and sanitation;
- the organization's institutional needs and those of communities (affected populations),
- main problems and challenges, priorities and suggestions for recovery of the affected communities;
- Specific capacity-building support needed to restore/strengthen their role and functions.

PRIVATE SECTOR CAPACITY

Water management and operations may also be delegated to private agents who play an important role in the provision of services. In such cases, these private sector agents, especially small-scale operators, should be consulted because they could become part of the solution. Assess the activities of the local private agents, how they can improve the delivery of recovery services, and how their potential contributions can be best used. Consider the following:

- the degree that a sector-wide approach (SWAP) is being implemented;
- the role of civil society, public and private service providers;

- the presence of government, municipal or other coordination mechanisms (such as a WASH cluster);
- a nationally convened WASH Working Group or other partnerships that may be working directly on the recovery process post-disaster.

Dialogue and partnerships are critical for improving water governance reform and implementation.

SECTOR POLICY, STRATEGY AND BUDGET

The government sector management for water and sanitation is based on four key elements: sector policy and strategy; the sector budget and its medium-term expenditure perspective; the sector coordination framework; and institutional capacity. The assessment of the water and sanitation sectors should analyse the elements shown in the following box.

Box. Elements for assessing the Water and Sanitation sectors

<p>The sector policy and strategy, including a historical review of legal/regulatory frameworks</p> <ul style="list-style-type: none"> • Quality of the policy and its consistency with government’s own national strategic objectives and consistency with the donor’s objectives for recovery and development cooperation • Role, if any, of the water sector policies in national long-term development plans and visions
<p>The sector budget and its medium-term perspective</p> <ul style="list-style-type: none"> • Available analytical studies that should include existing budget structure (recurrent budget, development budget, cost recovery, etc.) • Public expenditure reviews and similar studies
<p>A sector coordination framework</p> <p>Actors and coordination of the Recovery Strategy need to be linked in order that ongoing responses and the recovery strategy which are developed by the various subsectors or Sector Teams such as Social and Infrastructure (and Productive where necessary) are presenting coherent strategies, which can be seamlessly integrated into the various sectors with capacity building and adjustments.</p> <ul style="list-style-type: none"> • The overall sector coordination – policy mechanisms, regulatory structures and the degree of application • The extent of stakeholder participation – platforms, shared decision-making, participation in service regulation • The extent to which roles are agreed and codified – memoranda of understanding (MOUs) between authorities and service providers, presence and status of regulatory agencies, consumer rights and obligations, issues of ownership
<p>Institutional setting and existing capacities</p> <ul style="list-style-type: none"> • The present outputs from the sector – service provision (public /private); • The institutional setting and context, i.e. role of government, water boards, non-state actors in planning and coordination at the national, regional and local level as well as needs and socio-economic realities • The capacity of the key sector organizations to fulfil their defined or mandated role.

BROADER GOVERNANCE ISSUES IN THE SECTOR

The questions in the checklists are important in identifying issues that are essential or support sustainable recovery. These questions can be answered and may be measured where identified gaps are addressed through technical support, training or other capacity-building actions, all of which can be quantified and costed.

Demand-driven Support

- What is the priority given within national development policy to water resources, access to improved sanitation and their link to hygiene, including issues in which water resources are identified as critical, such as health, natural resources conservation or food production?
- Is there adequate political support to make policy implementation feasible?
- Is there adequate conformity between government policy at the national level, and the local-level problems and needs being tackled by local and community-based organizations?
- What type of requests in the past has the government made to development partners for support in issues related to water resources or where water may play a significant role?
- Are there indications that water, sanitation and hygiene issues are of concern to the people (through NGOs, media reports, pressure groups, etc.). What are they, and how is the national government responding to people's concern?
- Are associated issues, such as land use or pollution, predominant, and is the government committed to resolving constraints faced by water users in other sectors such as energy, agriculture and transport, as well as issues such as health?

Country-level short and long-term view

- Is the country, or some of its regions, now facing water scarcity or stress, or likely to do so in the near future? Does or will this affect the supply of sanitation services, especially in the urban areas?
- Does the country need support (financial, capacity and/or skills) in order to manage its water resources adequately?
- If there is no water policy, or if it is inadequate – e.g. poor Integrated Water Resources Management (IWRM) or poor regulation – should assistance be provided to develop or improve one?
- If no sanitation policy exists either within the overall water policy or as stand-alone, or it is inadequate (e.g. does not address hygiene and health), should assistance be provided to develop one?
- Do current government policies reflect an awareness that water resources issues may cause conflicts between users and do they address the needs of different sectors? Do they include future planning and estimates of need over the longer term for various sectors in order to mitigate sector conflict and competition? (at least a ten-year period)
- To what extent are people's needs to access water, sanitation and hygiene known and understood in the policy process as being critical to the social, economic and well-being of the entire country or of specific regions within it? Are demographic projections included in future planning and long-term policy?

Contradictions between sector policies

- Does the national government clearly demonstrate commitment to Integrated Water Resources Management (IWRM) by incorporating other sectors into its policy?
- What is the national current level of commitment, both in policy and practice, to maintain biodiversity and protect the aquatic ecology in the face of the demands of agriculture, transport, energy or other sectors (e.g. mining, forestry)?
- To what extent are the non-consumptive aspects of water resources, such as in-stream use for hydropower, flood control, recreation and transport, taken into account in water policies or proposed development plans?
- Is sanitation and its accompanying wastewater management acknowledged as either a water consumer (in terms of quality) or as a competing sector?
- Have proposed water sector programmes or plans been developed in a clearly demonstrated consultation process with the various sectors and their stakeholders (including non-state)?

Policies established with stakeholders

- Does the government policy and actions on water and sanitation benefit the poor and disadvantaged rural and urban populations, and are these stakeholders included in the policy development process?
- Are stakeholders from other sectors consulted in the water policy process? (Stakeholders can include institutional actors and authorities as well as users.

To what extent are conflicting users (both consumptive and non-consumptive) clearly addressed and/or included in the water policy development process?

- Are transboundary issues significant to water resources management, and is the government party to treaties or agreements with neighbouring countries?
- Are there smaller-scale issues or conflicts over water between neighbouring administrative regions (even down to the municipality level) within the country?

Policies established with stakeholders

Does the government policy and actions on water and sanitation benefit the poor and disadvantaged rural and urban populations, and are these stakeholders included in the policy development process?

RISKS AND VULNERABILITIES INCLUDING EXISTING PREPAREDNESS PLANS

A key element of the assessment is to identify immediate risks to the affected population, particularly new potential threats that may deteriorate living conditions. Risks can be physical /natural such as a recurrence of the natural event or other events, social or institutional. A list of potential indicators is available in section 4.5, Effects of Risks and Vulnerabilities.

In terms of emergency preparedness, the existing plans should be assessed to determine to what extent they address the above points; whether an overall disaster risk reduction strategy was in place for the WASH sector or any relevant cross-cutting sectors; and the risk mitigation measures that were in place to reduce the impacts of possible disasters across the sector.

ASSESSMENT OF DISASTER EFFECTS

The section provides guidance on how to define and describe the effects of the disaster (disaster effects are defined as the changes in the four dimensions of effects: (i) destruction of infrastructure and assets; (ii) disruption of service delivery, production; (iii) disruption of governance; and (iv) emerging risks/vulnerabilities.⁷

NB: effects can be described as tangible as well as intangible.⁸

These effects must be presented according to the country's geographical divisions as presented in the census and by other key sociological characteristics where relevant (sex, age, ethnicity, religion, ability, disability of the given population). The effects can be expressed in quantitative or qualitative terms.

GENERAL DESCRIPTION OF THE DISASTER EVENT, ITS GEOGRAPHICAL SCOPE, THE POPULATION AFFECTED AND EVOLUTION TO DATE

This subsection of the PDNA will begin with a general description of the disaster (the nature and magnitude), the areas and population affected. Much of this is likely to be common with other sectors and could be in fact placed at the beginning of the overall PDNA Report. For the WASH sector, however, the evolution of the event and the assessment needs are related

⁷ This may include information on emergency response taken to address the risks.

⁸ All effects are actually tangible; some are quantifiable immediately in monetary terms and some are not. The latter are highly relevant in providing the full picture of the human development impact to inform the process of estimating needs (quantified as investments or resources required to compensate for those 'intangible' effects).

closely to different types of hazards, their environmental nature and origins, and the primary and secondary impacts of the event. Knowing this information can assist assessors in planning their assessments and disaster response. The following is a list of hazards⁹ to be considered:

- Earthquakes;
- Volcanic eruptions;
- Land instabilities;
- Floods;
- Water hazards (e.g. tsunamis, barrier collapse such as dams and dykes);
- Storms (typhoons, hurricanes, tropical storms and tornadoes);
- Drought.

Environmental damages overlap with and can have an effect on water resources and consequently on the WASH sector. Some examples are shown in the following Table:

Type of Disaster	Primary Environmental Effect	Secondary Environmental Effect
Hurricane/cyclone/typhoon	Saltwater intrusion to underground fresh water reservoirs	Soil contamination from saline water
Tsunami	Water pollution through sewage overflow Saline incursion	Contamination of groundwater reservoirs
Earthquake	Subsurface geological disturbance Possible mass flooding if dam infrastructure weakened or destroyed	Displaced and contaminated groundwater supplies and groundwater infrastructure
Flood	Water pollution through sewage overflow	Contamination of ground water
Volcanic eruption	Destruction of water and sanitation infrastructure	Contamination of surface water Secondary flooding should rivers or valleys be blocked by lava flow
Fire	Destruction of water and sanitation infrastructure	Destruction of watershed retention and infiltration potential

The following table illustrates the effects of manmade disasters on water resources and sanitation infrastructure.

Manmade destruction and disaster events		
Type of Disaster	Type of infrastructure destroyed	Other effects
Chemical and industrial accidents	Destruction of water and sanitation infrastructure	Contamination of surface and ground water
Security breakdown, civil disturbance, war	Destruction of water and sanitation infrastructure	Reduced service provision, operation and maintenance capacity

The PDNA WASH will then carry out a comprehensive data analysis and validation (step 4 of the PDNA process) to determine the specific effects of the disaster on the four aspects already described in section 4, with a view to identify the points illustrated in subsection 4.2.

⁹ See IFRC, Disaster Emergency Needs Assessment Module, Disaster Preparedness Training Programme.

EFFECTS ON INFRASTRUCTURE AND PHYSICAL ASSETS

The value of destroyed physical assets (damage) must be estimated for each of the drinking water supply, wastewater and solid waste subsystems in urban and rural areas. This will usually include a valuation for the main individual components mentioned above such as dams, wells, and water-treatment plants, pumping stations, pipelines, storage tanks, distribution grids, sewerage facilities, latrines and septic tanks in the rural areas, and solid waste collection, treatment and disposal facilities.

The replacement value of destroyed assets must be ascertained using pre-disaster construction or replacement costs, that can be obtained from private contractors presently involved in similar work in the affected country or area, as well as from the planning department of the affected utility enterprises that may have new, similar projects in the planning or construction stages. It must be recalled that the replacement values to be adopted for the estimation of the value of damage are those not yet affected by scarcity or inflation that prevailed at the time just prior to the disaster, since adjustments for these factors are to be dealt with later on when discussing overall reconstruction needs after the disaster.

While replacement values are used for the estimation of damage, the Assessment Team should try to ascertain the year when each damaged component of the individual systems were originally installed. Where the possibility exists, the Water and Sanitation Team can also interview local insurance companies to ascertain the degree to which actors in the sector are insured, and the possible amounts of insurance pay-outs that may be expected and also take advantage of their valuation procedures of infrastructure and other insurable costs.

EFFECTS ON DELIVERY AND ACCESS TO GOODS AND SERVICES

The delivery of goods and services will be affected, and this is reflected in impacts on the production flow within the sector.

Production flow changes are then estimated by comparing the non-disaster to the post-disaster performance of each subsystem, ensuring that the following issues are also valued:

- Decline in operational revenues of the sector enterprises, until services are brought back to normal levels, due to the temporary total suspension of operations, and the partial supply of services while assets are under repair, and due to possible temporary decrease of demand from consumers.¹⁰
- Increase in operational costs (due to use of alternative sources or means of water, wastewater and solid waste supply and disposal, the temporary operation of damaged system components, or the temporary, more-intensive operation of undamaged system components).¹¹

As mentioned in section 3, WASH does not depend on infrastructure alone, but also requires an institutional, regulatory and a qualified human resource capacity to ensure the delivery of goods and services. Some of the damage may include destruction of administrative infrastructures such as buildings and offices, and in some cases, permanent displacement of

¹⁰ The operation of the services may be fully stopped during an initial short period of time immediately after the disaster (a few hours to a few days), to be partially resumed during the period of repairs until full system reconstruction is achieved. In addition, service demand may drop due to extensive destruction in cities caused by the disaster and the subsequent overall lower economic activity. These temporary interruptions or partial operations for each subsystem would result in corresponding revenue decline for the enterprises.

¹¹ Among the possible items to be considered under this heading are: temporary higher costs of chemicals required to ensure quality of drinking water; higher water distribution costs when temporarily using tanker trucks to reach users and/or the temporary free distribution of bottled water; the more intensive operation of water systems to compensate for higher water flow losses in damaged system components (such as distribution or conveyance water mains); cleaning of sewerage systems and treatment plants after flooding; and higher transport costs to collect and dispose of solid waste, etc. In some cases, salt-water desalination plants are installed and operated in coastal areas or in Small Island Developing Countries affected by disasters, which imply a very high cost of operation. Such higher costs of post-disaster operation translate into higher intermediate consumption for the macro-economic impact analysis.

key individuals or even loss of life. The costs of bringing the institutional capacity to provide goods and services up to the level of the populations' needs can include repair or reconstruction of buildings (offices, laboratories, dispatch centres, service and supply centres) and also replacement and training of individuals necessary for the provision of goods and services.

Finally, the role of private sector actors in the supply of goods and services in the WASH sector must be ascertained, as well as costing of damage to their infrastructure, goods and capacity. The role of the private sector varies from country to country, but in some countries where public-private partnerships have been put into place, the private sector cannot be ignored in a post-disaster scenario.

EFFECTS ON GOVERNANCE AND DECISION-MAKING PROCESSES

As mentioned in section 3 above, governance and decision-making processes refer to the systems for developing and implementing policies, enforcing regulations and implementing sector programmes for the provision of services and management of public sector assets and infrastructure. After a disaster, the ability of the public authorities to respond to the emergency and plan for a long-term recovery will be affected. In subsection 4.3 above, the damages as a result of the disaster to buildings, structures and major equipment necessary for the proper functioning of administrative authorities, at central and local levels, will have been already assessed.

In terms of decision-making and other governance capacities, both from authorities and civil society, the focus is more on the capacities of the public authorities and of the civil society to lead and implement the recovery. These capacities should be assessed in terms of management capacity for coordination and strategy, and technical professional knowledge, and finally on community participation and development. Depending on the degree of decentralization of authority and the role of the public in policy and regulatory implementation, the capacity needs will vary along this hierarchical scale.

The effects evident on capacity and governance include the following:

- **depletion of human resources, financial resources and supplies, as well as damage to equipment**, which reduce or impair the ability of the public authorities to carry out their administrative functions;
- **Damage to documentation and baseline data, both in paper and electronic forms**, which are essential to manage services, operations and maintenance, but are also essential to guide the assessment and recovery processes;
- **Disruption of administrative functions** typically exercised by the public authorities, such as quality control assurance and regulation of supply of goods and services, including tariffication, planning of operations and maintenance, and for the post-disaster context, carrying out impact assessments, and planning and implementing interim measures for maintaining services;
- **Disruption of key decision-making, policy and strategy formulation and coordination mechanisms** for the sector, due to communication or transportation difficulties or even the loss of some of key actors;
- **Social disruption of community social structures**, power relations (including gender roles), and rise of latent conflicts (often along ethnic and cultural divides), which can be provoked by populations stressed or displaced by lack of basic WASH services.

EFFECTS ON RISKS AND VULNERABILITIES

A key element of the assessment is to identify immediate risks to the affected population, particularly new potential threats that may deteriorate conditions if the necessary measures are not taken in a timely manner. Priority mitigation and preparedness measures are identified to avoid another disaster or the further deterioration of current livelihood conditions. Below are some effects to examine:

- current water and sanitation practices that can have a negative effect on the population's health, such as solid waste and rubbish disposal (e.g. collection system, burning, burial);
- threats to WASH facilities, such as potential contamination of water sources nearby;
- secondary shocks, such as the potential spread of disease resulting from inappropriate supplies of clean water;
- environmental risks, such as the salinization of underground water;
- WASH practices, which may not be sustainable and that can negatively impact the environment, and ways these can be avoided;
- population groups (economic, social, and geographic) who are especially vulnerable;
- additional hazards such as further landslides, an approaching hurricane season, fire risk;
- climate forecasting, such as on forthcoming seasons that may bring anticipated snow or rains, or temperature extremes;
- social and political risks, such as upcoming elections, religious events or other potential conflict between social groups.

Some cross-cutting issues such as gender, environment, climate, and culture have been included here but will be dealt with in more detail in section 7.

ESTIMATING THE VALUE OF THE EFFECTS OF THE DISASTER

This section gives guidance on how to estimate the value of damage and change in flows of income, extracting from elements that have financial implications, in the following four dimensions: damage to physical infrastructure and assets; the provision of goods and services; governance and risks; and change in flows of income that are linked to service /production, governance and risks. *The methodology is in line with the GFDRR Guidelines Vols 1, 2 and 3.*

DAMAGE

The Water and Sanitation sector includes three separate sub-systems required for the provision and treatment of drinking water, as well as the collection, treatment and disposal of wastewater and solid waste. It is important to ensure that the ownership of damage and losses is separated for these sub-systems and to define them as public and/or private sector.

During the assessment process, it is important to note that changes in the flow of income as a result of changes in production patterns arising in water-consuming sectors (such as agriculture, industry, and trade and tourism) will be estimated and accounted for under each of those sectors. This is done as production losses and/or as higher production costs when alternative, higher-cost sources of water are necessary as interim solutions.

ECONOMIC VALUE OF TOTAL/PARTIAL DESTRUCTION OF INFRASTRUCTURE AND ASSETS

The following is a description of the main infrastructures and associated assets that need to be valued for total or partial destruction. A detailed template for costing of total or partial destruction is found in Annex III: Table for Estimation of Damage and Changes in Flows (Unit Costs), which contains a comprehensive list of unit items for Water and Sanitation Supply Services and Solid Waste Management for both urban and rural contexts. Other unit items can be added where necessary. A sample of the template can be seen in table below.

Table

WASH Infrastructure Components	No. of Units	Partially Damaged	Cost of Repair	Fully Damaged	Reconstruction Cost	Change in Flows (or loss)	Total Effects
Urban Water & Sanitation							
Solid Waste Management							
Subtotal							

Major unit items that will be costed in the template are explained as follows:

- **Partial or complete collapse of water supply facilities, urban or rural**, which are part of the source, collection, treatment and distribution of urban water supply. Care must be taken to include household systems, such as rooftop rainwater harvesting tanks, backyard or communal hand dug wells or shallow boreholes, which may exist outside of the main urban supply networks. Smaller systems may often occur in peri-urban and informal urban periphery settlements, which may not be administratively recognized by authorities and therefore unlikely registered or recorded.¹²
- **Partial or complete collapse of sanitation facilities, urban or rural**, which are part of the larger piped sewage systems for the urban context. This can also include fleets of trucks, tanks and pumps for emptying septic tanks and then transporting the waste to central management and treatment. Sewage treatment facilities, including sewage treatment plants and settling ponds, are also part of the sanitation system, which can be damaged or destroyed. Where the value of household and multi-household septic tank and drainage systems have been estimated, this information, as in the previous case of water supply facilities, should be passed to the housing team to ensure no double counting.
- **Partial or complete collapse of solid waste management facilities, urban or rural**, is often particularly essential to a post-disaster response. This can include destruction or damage to central collection facilities such as collection and rubbish containers, central collection sites and the access to the sites, loss, damage or destruction of the collection transport network such as trucks, motorized or donkey and hand-carts. Donkey and hand-carts are sometimes used in rural and village settings where there are community solid waste initiatives. Dumping sites may become damaged: security fences may be destroyed, waste pits may be covered by landslides, or their solid waste content mobilized by flooding.
- **Partial or complete collapse of administrative buildings, laboratories, storage sites and Operations and Maintenance (O&M) materials and supplies**, which are not only essential for the administration and management of delivery of services, but also for ensuring the necessary ongoing operation and maintenance of facilities. The secure storage and content of chemicals for treatment facilities or spare parts for repairs are essential for maintaining the delivery of services. Once again, it is important to ensure that this information is shared with the infrastructure team to avoid double counting.
- **Damage to physical assets pertaining to the administrative functions of the sector** (buildings, infrastructure and major equipment of the government agencies and NGOs, at the central and local levels). This also may be captured by the Infrastructure Team, so close collaboration with this team is required.

In assessing the damage to physical assets and infrastructure, the PDNA Team may consider different levels of gravity according to a given scale (e.g. from slight to severe), from infrastructure and system materials that can be easily rehabilitated,

¹² Data collected by WASH Experts infrastructure team should be transferred to the Housing Team. Infrastructure value is calculated with the Housing Sector (as part of the Social Sector).

to those requiring a more in-depth structural analysis of their conditions, all the way to those beyond repair that must be replaced. These categorizations should be as similar as possible to existing country classification systems if available. If this proves difficult, a common methodology within the PDNA process is the next option, in order to facilitate the collection of comparable baseline data. This is also the point where the WASH PDNA team should consult with other PDNA sectors such as infrastructure, agriculture, health and education. At a later stage, this rapid assessment of the degree of damage will help to better position the sector needs within the recovery framework plan, preparing for prioritization.

Table below shows a possible model for providing a very cursory assessment of the damage that can be sustained by assets and infrastructures in the WASH sector. This would need to be complemented by more detailed information on the actual cost for reconstruction/repair of each individual asset, as well as with information on their respective level of priority in terms of short, medium, and long-term importance for the population.

Table: Rapid Assessment

WASH		Damage to Assets and Infrastructure				
Sheet N.		Name of City / District / Site				
N.	Asset/infrastructure	Public / Private	Water Sanitation Solid Waste	Damage to Assets and Infrastructure		
				Slight	Partial	Complete
1						
2						
3						
...						
N						

Depending on type of infrastructure and the nature of efforts needed for recovery, the Assessment Team, in consultation with local experts, locals populations and/or community members and Civil Society Organisations, should be able to define the thresholds of ‘partial damage’ and ‘complete damage’ for each type of infrastructure. A rule of thumb practiced in some countries is to consider a 0-15 percent damage as ‘slight damage’, which can be repaired by local population efforts or by the community while 15-60 percent damage correspond to ‘partial damage’ (moderate running up to severe) and 60-100 percent correspond to ‘complete damage’ (severe to very severe) requiring recovery support from external sources for their repair and reconstruction or replacement of components if necessary (e.g. pumps, transport). The estimation of damages and losses should be determined by repair or replacement costs expressed in current values.

There is no standard rule nor lists for costing WASH infrastructure, which varies with types of infrastructure, between countries and even between regions within countries. Since some infrastructure building can use labour-intensive methods and locally available materials and resources, the costs of infrastructure will likely be greatly influenced by local wage rates and prices of locally available materials and equipment. The unit prices of common types of infrastructure (buildings, pumps, locally manufactured pipe and conduit) are usually available with the local government authority, particularly in the technical or engineering unit. In many developing countries, the engineering department or cell within the ministry of local government maintains an updated rate schedule of local infrastructures in different regions. Other possible source of information could be the Public Works Department. If the price is not available for any particular infrastructure, the engineer (or technical expert) in the assessment mission, in consultation with community, should be able to determine the cost by analysing the efforts and resources required in each step of the construction method. Where specialty materials or items

are not available locally, such as pumps, treatment units, laboratory units or high resistance construction materials (e.g. ceramic bricks for incinerators), the costs of items (including shipping on-site) must be sourced externally.

The aim of the post-disaster assessment is not to be of utmost quantitative precision, but rather to provide a credible and useful estimation of the extent of the effects of the event and its impact on the economy and society. Such an assessment will allow for the development a recovery strategy for the socio-economic, environmental, public health and well-being, and of the communities and their livelihoods.

VALUE OF EFFECTS ON SERVICE DELIVERY, PRODUCTION OF GOODS AND ACCESS TO SERVICES AND GOODS

The effects of limiting access to water supply and sanitation services (WSSS), as well as management of solid waste, can be very quickly felt among the affected population, as follows:

- knock-on effects of increased costs of WSS services reducing disposable income for individuals and households;
- increased water costs for commercial activities lead to increased costs for products;
- reduced access to or delivery of essential or public services such as education or health care due to lack of water and sanitation services to these public services facilities.

VALUE OF EFFECTS ON THE INTERRUPTION OF GOVERNANCE FUNCTIONS

As stated in subsection 3.3, governance plays an important role within the WASH sector and involves more than just decision-making processes, but also the general health of the sector, its effectiveness, transparency and accountability. The PDNA WASH Team should assess these elements of the WASH sector at national and local levels, and attempt to ascertain to what degree they may have been affected by the disaster event. It is important to quantify to what extent the authorities were capable of implementing policies and enforcing regulations in the pre-disaster context, since this will define to what degree institutional capacity building may be required in the recovery strategy. Part of this can be indicated by the ability of public authorities to respond to an emergency, including the effectiveness of the disaster response plans in place before the disaster, and long-term recovery plan.

The economic costs resulting from damage or loss to buildings, structures and major equipment for the WASH sector, which are essential for the proper functioning of administrative authorities at central and local levels, have already been addressed above. These damages lead to increased economic costs related to WASH services. The effects on governance result in similar economic costs to the general population, since they also affect the administration of the sector. Moreover, the loss of these facilities immediately limit the capacity and ability of administrations to function and of the general population to access support, be it for their WASH services or information. Effects on governance structures and processes that can lead to economic costs can be summarized as follows:

- **disruption of human resources, minor equipment, financial resources and supplies**, which reduce or impair the ability of the public authorities to carry out their administrative functions;
- **damage of documentation and baseline data, both in paper and electronic forms**, which are essential to guide the assessment and recovery processes;
- **disruption of administrative functions** typically exercised by the public authorities, such as provision of services; in the post-disaster context, this would include carrying out impact assessments, planning and implementing urgent safeguarding measures, providing support to sector stakeholders and the public;

- **disruption of key decision-making, policy and strategy formulation and coordination** mechanisms for the sector, due to loss of staff, and difficulty in communication and transportation;
- **disruption of social and community structures**, such as CSOs that normally work in parallel with the authorities to assist vulnerable members of the population (the elderly, women, girls, the disabled, the ill) to access services.

VALUE OF EFFECTS DUE TO THE INCREASED RISKS

The cost associated with increased risks and vulnerability can be measured by the cost of reducing the risk or by the increase in the costs of the expected loss in the future associated with increased risk. The comparison of these two types of costs is useful in determining the financial added value of implementing DRR strategies in the recovery process and beyond. The main risks for the WASH sector have been presented in subsection 4.5. The application of costs to them as changing risks, usually meaning increased or compounded with new risks, is usually based on effects costed for infrastructure, human costs such as health or displacement, and governance costs such as administrative and institutional capacity to respond to disaster or implement risk reduction.

ASSESSMENT OF DISASTER IMPACT

This section provides guidance on how to develop an analysis of the expected trend for the sector after a disaster and describes a worst case scenario should policy and programming measures are not considered. It identifies major challenges for the sector. This impact analysis is based on the assessment of the disaster effects, the sector development plans, lessons from past experiences and the emerging concerns that derive from the events. The analysis of the impact of the disaster provides the medium and long term projection of the effects on the sector. The impact analysis forms the basis of the recovery strategy.

The information produced through this analysis should contribute to the overall Macroeconomic, and Human Development impact assessment.¹³ The WASH Team should work in close collaboration with the team responsible for developing the macro-economic assessment and human development report in the country.

SECTOR TRENDS FOLLOWING A DISASTER

To develop an analysis of how the sector trends may be progressing, it is necessary to review the results of the baseline study inputs, primary and secondary data, as well as the integration of the health of the WASH component sectors, including governance, institutional and administrative capacity. These are collectively analysed within the context of the disaster event, the disaster response from the authorities, and the overall effects and estimation of value of the disaster.

While the immediate impacts on the individual will be linked to health and hygiene, they can ultimately become debilitating enough to evolve into economic impacts on the society in general and can include impacts such as:

¹³ The Macroeconomic and human development aggregated impact analysis develops from a gap analysis between the pre-disaster scenarios in terms of economic and human development indicators (variables to be used in the assessment, such as GDP, balance of payments (BoP), fiscal impact, price fluctuations in the economic side, poverty and employment and human development indicators in terms of health, nutrition, education, access to social services, gender differentials, social development goals) and their evolution in the post-disaster scenarios.

- health impacts of reduced access to services leading to increase in health problems and corresponding increased health costs per capita;
- economic impacts of a reduced labour force (skilled and semi-skilled);
- health impacts of a reduced number of commercial actors;
- displacement of populations and commercial activities due to lack of services;
- economic impacts resulting from the actual cost of repair and replacement of the WASH plant and machinery.

ADDITIONAL IMPACTS TO BE CONSIDERED

- Emerging concerns arise following the disaster and are initially linked to the ability of the authorities to respond to the event. In the emergency and short-term recovery phase, the capacity and the strategy of the authorities will be tested by actions of clean-up and efforts to stabilize the affected populations. However, as the recovery process unfolds, the longer-term elements of a disaster response and recovery strategy will also come under scrutiny. All challenges and difficulties that arise during a short-, medium- and long-term continuum will ultimately be reflected back to the strategy that was developed during the pre-disaster period. This review process will identify elements of the disaster response strategy that require strengthening or even creating. These elements are often closely linked to policy, regulation, institutional and administrative capacity and governance. Consequently, the strategy cannot be improved just by re-writing it; there must almost always be changes within the policy, regulatory, institutional and governance components of the WASH sector.
- Changing risks can be a result of the disaster event wherein the physical and social environment is altered. The physical aspect such as the frequency (and the statistical probability) of disaster events such as volcanic eruptions, earthquakes or flooding events will change as a result of geological and land surface impacts. New volcanoes can reasonably be expected to erupt again, intensity of earthquakes will fluctuate, and new flood zones can be expected to be re-visited. Socially, risks will rise as populations migrate into potentially dangerous zones. Social and cultural rifts, created by a post-disaster environment, may not always be repairable or will require special attention that was previously not necessary.

NO POLICY OR STRATEGY CHANGE

- Based on existing sector management and development plans where disaster response was challenging, the possibility of incurring heavy impacts from future disasters will remain high unless the gaps and needs of institutional and administrative capacity are addressed. This can include policy-related and regulatory solutions, but can also include consolidating the human and financial resources capacity at various administrative levels. In many developing and partner countries, the recent years of decentralization of authority have been led by providing mandates to new authorities but not always supported by the necessary resources. There are often governance challenges that need to be addressed, including transparency and accountability, as well as the role and obligations of WASH services beneficiaries and the general public. A pre-disaster situation where services were not maintained or correctly provided, and tariffs consistently remained unpaid, will not be able to support a post-disaster recovery of services, even if they are built back better. Thus, the sector will not advance or improve, and in a subsequent disaster will experience the same problems since the sector is unable to act and to mobilize populations for an effective disaster response.
- Based on the existing sector DRR strategy, there will almost always be a post-disaster adjustment to strategies to improve the response. This is a best-case scenario. However, if the DRR strategy is firmly anchored institutionally and the gaps in a weak strategy are the result of weak institutions and sector actors, the strategy remains more of a written methodology that lacks the necessary willing and well-prepared actors and pre-positioned resources required to implement it.

MAJOR CHALLENGES

- Medium-term challenges will focus on bringing damaged or interrupted WASH services up to the level necessary to stabilize the affected population socially and economically for a sustainable recovery.
- Long-term challenges will address the DRR strategy, put into place the institutional and administrative mechanisms of policy and regulation, and execute the necessary capacity building within the WASH sector necessary to build a sector that is robust enough to absorb future disaster impacts, reduce risks and thus implement a disaster response strategy that is feasible.

CROSS-SECTORAL LINKAGES INCLUDING CROSS-CUTTING ISSUES

There is a need to be aware of cross-cutting issues, their existence in other sectors and their impact on WASH and vice versa. It is important to know how sectors and their cross-cutting issues have addressed overlaps or shared responsibilities. This is well presented in the WASH Cluster matrices of Checklists of Roles and Responsibilities of WASH and other sectors of Education, Health and Nutrition (see Annex I).

The WASH assessment should provide inputs that integrate disaster impacts on local economic and social activities linked to facilities such as:

- Public markets;
- Schools;
- Health service infrastructures.

When the above facilities are limited due to lack of water and sanitation services, the result is restricted access to local economic activity, capacity building, and the health and well-being of affected populations. Ensuring the effective contribution of WASH services to the recovery and well-being of affected populations requires identifying not only the physical impact of the disaster, but also the underlying elements of gender, governance and disaster risk reduction (DRR). They all combined under a sector framework for risk reduction and social resilience, the venues for identifying key stakeholders, and the avenues and platforms for consultation, participation and decision-making. The following sub-sections identify cross-cutting themes and sectors as well as key actors and focus areas that contribute to or make up the WASH sector. These themes, sectors and focus areas all require assessment to evaluate:

- the extent of damages and losses during a disaster, including loss of skills and capacities to provide services;
- their role and contribution necessary for recovery;
- their technical and human resource needs and requirements in order for them to fulfill their role.

WASH LINKS TO OTHER SECTORS

HEALTH

The WASH needs assessment must address the needs of health care facilities for provision of water and sanitation services and hygiene promotion activities. This can expand to include the specialty management of health care waste (sharps, softs and organic waste), and can include safe management or disposal of pharmaceuticals; it can also include providing assistance to implementing strategies for vector control. Outside of health care facilities, the health authorities are often implicated in implementing community hygiene initiatives, e.g. responses to cholera incidents.

NUTRITION

In a post-disaster context, nutrition is often viewed from a shorter-term perspective of access and reserves:

- Household access to food assistance;
- Sources and access to food supplies;
- Composition and availability of food basket;
- Food price and household purchasing power;
- Household food reserve.

The impact of WASH on nutrition is felt at various levels. First, there is a need for water consumption for nutritional health, and second, water is often a key component to food preparation without which some foodstuffs cannot be accessed. In terms of health, good water, sanitation and hygiene help maintain barriers to diarrheal diseases, which can result very quickly in malnutrition, especially among young and elderly population. In a post-disaster scenario the number of persons vulnerable to malnutrition due to poor WASH environments increases. In the longer term, the role of water (quality and quantity) in nutritional food security is evident in the cross-cutting sector of agriculture.

EDUCATION

There are two aspects of education and educational facilities to be considered in the WASH assessment. Initially, educational facilities should ensure that safe water and gender-segregated and appropriate sanitation facilities for learning spaces and schools are included. If there is a breakdown in sanitation facilities, or a limitation, it is often females who are marginalized. Also, the educational facility is a key dissemination point for hygiene promotion, for students and in some cases, for the local community. In post-disaster settings, these facilities can also serve as rendezvous points for information, primary health care if normal health services are disrupted.

ENVIRONMENT

Existing and pre-existing environmental problems must be identified in the assessment to evaluate whether they had impact on, or were sensitive to, WASH services, ascertaining what these impacts may have been, and what their influence may be on recovery strategies relevant to WASH. The role of the surrounding environment in water-related diseases, especially for displaced or affected populations, must also be taken into account since it is often the management of the environmental factors that form part of the disease response.

Rebuilding and recovery activities across sectors may have both positive and negative effects on the environment. For WASH, environmental impacts of rebuilding, replacement or construction of new water and sanitation facilities should be considered. For example, building improved sanitation systems may address some problems regarding water pollution, and a wastewater system may help regulate water pollution from local industry facilities. On the other hand, rebuilding new roads may negatively affect the local surface and subsurface hydrology or forests in the locality, and reconstruction of damaged irrigations systems could be a continuation for unsustainable agriculture due to soil salinity, contamination or over-abstraction of water.

CULTURE

Issues of communication and languages, gender and age, and social, religious and family dynamics, as well as other cultural aspects can influence the smooth unfolding of a WASH assessment and post-disaster response. Planning for any post-disaster intervention should include a systematic consideration of the cultural environment in which such interventions are to take place. Religion, gender, ethnicity and socio-economic status are just a few considerations to keep in mind when planning interventions. Poor consideration of socio-cultural contexts results in inefficiencies and low sustainability of

post-disaster investments. While a WASH needs assessment may not include data collection on culture, integrating these elements into the structure and content of the WASH assessment contributes to ensuring the relevance and validity of the information collected and the response provided.

DISASTER RISK REDUCTION

Managing disaster risk cuts across traditional development sectors, such as health, education, infrastructure, water and agriculture. Due to the difference in population densities, the potential risk to populations can be higher in urban areas as compared to rural areas. Achieving efficient development progress requires each of these sectors to invest in risk management and resilience measures. Given the projected increase in the occurrence of disasters, development progress will be contingent more than ever before on measures to avoid disaster impacts (Mitchel, 2012). Suggested actions for WASH are shown below.

POLICIES & LEGISLATION

- Policy on WATSAN Recovery includes provisions on upgrading facilities in terms of hazard-resistance design and accessibility.
- DRR is integrated into watershed management programmes (river basin management) and in land-use planning.

ADVOCACY & AWARENESS

- Sustainable water use and sanitation awareness programmes and support materials are made available to local communities, including appropriate training and installation of secure WASH facilities and different types of emergency responses and protocols.

COORDINATION OF ACTIONS AND CAPACITY DEVELOPMENT

- Contingency plans exist for service delivery system for WASH services in post-disaster contexts (e.g. floods, droughts, earthquake). Plans should reflect both chronic and extreme events, and the corresponding risks considered most likely to occur.
- Sanitation teams and borehole technicians are trained, either locally or in the community, to clean wells regularly, to treat stored water and to provide information for households on treating and storage of domestic water.

BUILDING BACK BETTER

- Risk-proofing and monitoring process is installed, including strategies for access to parts and tools during emergencies.
- Risk assessments are performed for site-location of water pumps, supply systems, drainage and sewage systems, and sanitation facilities.
- Community drainage systems, sanitation facilities, waste management systems are constructed, which are risk-proof. (e.g. site selection, design and choice of materials, shared management and responsibilities).
- The local authorities and communities is engaged in training and information exchange on risk reduction and how it can be implemented.
- Quality control is exercised by the community by participating in the creation of community drainage systems, sanitation facilities, and waste management.

Consulting local communities, water committees, CSOs, government authorities, and national and international organizations specializing in water and sanitation, but also in DRR can help identify potential mechanisms and techniques that can be applied to the recovery of the sector so as to reduce the exposure and vulnerability to future hazards of the new water and sanitation facilities that will be repaired or built. This may include identifying some of the following:

- examples of good DRR practice already used by communities, including WASH systems that may have survived the disaster and can serve as models;
- other local technologies, techniques, designs, and know-how that can be tapped and applied;
- locally available expertise able to provide technical assistance to authorities on DRR in the sector.

A common point of discussion among development partners is the extent to which these measures are specifically DRR actions or how far they simply reflect good practice. At present, this is a grey area, with a wide range of conceptual understanding on how to address risk reduction in the WASH sector. However, given the critical nature of the sector, there is clearly the need to have a more systematic focus to risk reduction (Aquaconsult, 2008).

WASH AND CROSS-CUTTING ISSUES

Gender

The role of women and young girls with regard to the WASH sector is well known in general (water transporters, source protection, management of household health and hygiene, agricultural users), but the degree and extent of their roles in decision making or influencing decisions can vary from context to context. However, gender does not automatically imply a bias towards women; support and opportunities should remain equitable. Each assessment should be conducted with sufficient preparation and focus on gender participants' respective existing and future roles and capability to influence decisions on the basis of informed choices. The specific role of men in decision-making processes should also be assessed. These assessments will indicate which elements will have impact on which transitions can be expected as a result of disasters (e.g. women or youth becoming head of households, freedom of movement).

Climate Change

Without adequate and sufficient data, it is difficult to measure and even more difficult to model climate change in many partner countries that will be implementing a PDNA. Much of the data already available tend to be for a larger geographic scale and not very applicable for more local contexts. What can be measured are the frequency and amplitude of incidents of climatic extremes, often manifested in occurrences of floods, excessive precipitation events or droughts. In the WASH sector, this can affect accessibility of water resources for commercial or domestic use, frequency and need for irrigation or effectiveness of certain sanitation activities such as sewerage and management of wastewater. It is necessary to quantify these events, which can often be performed in the baseline survey, in order to allow for comparison to previous events. Of equal interest is to evaluate how the populations have responded and adapted to these events, which usually requires field surveys and studies. These behaviors are climate change adaptation and are linked closely to the perceptions and resources of the population, defining their capacity and resilience to respond to extreme climatic events. This degree of resiliency also needs to be measured and included in the needs assessment and eventually into the recovery strategy.

Governance and Social Processes

It is necessary to acknowledge the policy climate in relation to WASH including IWRM¹⁴ and degree of governance, the existing sector capacity for recovery, the key actors and stakeholders in the sector, types of WASH services provision, and basic indicators of the status of WASH (as explained in detail in subsection 3.3). An understanding of the past and knowledge of the current and possible future WASH policy frameworks is important in the formulation of a needs assessment

¹⁴ Integrated Water Resources Management (IWRM) is defined as a process aimed at ensuring that water is used more efficiently (economic dimension), promoting equitable access to water (social dimension) and guaranteeing sustainability (environmental dimension). The term 'integrated' stresses that there is a need to adopt a global (holistic) approach which brings together different sectors such as health, agriculture and industry – horizontal integration – and different levels (regional, national, municipal, household etc.) – vertical integration.

that will address recovery up to the long term. In concert with the larger policy framework, it is important to describe the key partnerships at work prior to and following a crisis. Good key partnerships indicated by:

- the degree that a sector-wide approach (SWAP) is being implemented;
- the role of civil society, public and private service providers;
- the presence of government, municipal or other coordination authorities.

THE SECTOR RECOVERY STRATEGY

SECTOR RECOVERY VISION (RATIONALE)

This section provides guidance on how to develop and present the vision (expected outcome for the sector) that guides its progress. This should be based on the country's existing sector development plan, the post disaster conditions and stakeholder consultations. A sector vision and recovery objectives are aligned, where possible, to existing national development plans and strategies.

In moving from an understanding of the effects and impacts of a disaster to the development of a comprehensive recovery strategy, it is essential to start by defining the overall vision for this recovery, that is, the desired situation at the end of the recovery process for WASH and the other sectors. This vision should be based on the analyses of the PDNA and a projection of what may be possible to achieve given the constraints and opportunities as discussed in section 6.

In devising the vision for the WASH sector actors it will be also essential to align the recovery strategies with the country's development plans (and explain how this has been done) and to build on existing local mechanisms, which is also fundamental to strengthen ownership and sustainability. The vision shall also integrate a Building Back Better (BBB) component, i.e. considerations for strengthening the resilience and disaster risk preparedness of the sector through the recovery and reconstruction phases.

The following section describes the steps required to develop a WASH recovery strategy. Experience shows that the planning process will be made of several cyclical iterations, rather than a progressive sequence of individual steps. Considerations made on implementation arrangements, costs, assumptions and constraints (see subsections 9.4 and 9.5 below), might lead to a reconsideration of priorities and indeed of the overall strategy.

STAKEHOLDERS' CONSULTATION

This section provides guidance on how to develop a consultation process within the sector as part of the assessment. The guidelines should facilitate sector experts to identify key partners from government, civil society representatives and others who may participate in a stakeholder consultation. It should provide guidance on stakeholder consultation process which is to share the effect and impact of the event and identify measures for recovery and reconstruction to be implemented in the short, medium and long term. Please see Annex IV on Guidance Note to Stakeholder Consultation.

RECONSTRUCTION AND RECOVERY NEEDS, INCLUDING BUILDING BACK BETTER

This section provides guidance on how to define needs for reconstruction and recovery derived from the recovery strategy, distinguishing the needs to restore and resume to pre-disaster levels, from needs that will improve access to services and goods, catalyze the economy, build livelihoods, strengthen DRM of the government and communities and reduce risks and

vulnerabilities to future disasters. Such measures should, as far as possible, be by location and affected population specific.¹⁵ Reconstruction and recovery needs can be separated into:

- needs that aim to restore, as feasibly as possible, the pre-disaster levels of access to WASH services to the affected population;
- needs that will improve access to these services, Building Back Better, and by their virtue contribute to moving the economy but also be part of the disaster risk management (DRM) strategy that addresses risk and vulnerabilities.

These two types of needs are addressed in detail in Annex V: Types of Recovery and Reconstruction Activity.

GOVERNANCE

Restoring governance capacity, including DRM by the government and decision-making processes may include the following recovery needs:

- Restore the administrative functionality of governmental institutions, at central, regional and local levels. This can include provision of additional human and financial resources to deal with backlogs and interrupted WASH services from public authorities. A possibility can be to share resources from adjacent administrations but this must be seen as only a temporary measure at best. There may also be needs for recovering or even rebuilding lost databases and records such as financial records, service records and identity documents.
- Priority needs for BBB governance and DRM improvement must address the gaps and needs of Institutional and administrative capacity to implement an effective DRM. This can include policy-related and regulatory solutions, but can also include firming up the human and financial resources capacity at various administrative levels. In many developing and partner countries, the recent years of decentralization of authority have been led by providing mandates to new authorities but not always supported by the necessary resources. There are often governance challenges that need to be addressed, including transparency, accountability and also the role and obligations of WASH services beneficiaries and the general public.

Risks

- Addressing pre-existing and new risks related to the disaster are strongly related to the disaster response strategy and DRM already in place. This framework can be strengthened with policy-related and regulatory solutions, but can also include consolidating the human and financial resources capacity at various administrative levels. However, as a stand-alone approach the application of the existing strategic framework is limiting and new risks coming on board are best addressed by new strategies, policies and strengthening of the sector rather than following the existing line
- Essentially, building back better to reduce risks and vulnerabilities to future disasters requires a combination of an adapted DRM strategy that addresses the risks already identified in previous sections and also addressing the gaps and weaknesses in the WASH sector itself, in order build resilience into the sector. While some of this can be addressed with capacity building and infrastructure, it remains largely a task to be addressed by institutional and strategic methods and means.

¹⁵ All BBB interventions contribute to resilience of government, systems and communities. Needs for BBB related should be aligned to/informed by pre-existing national development and/or poverty reduction strategies.

THE SECTOR RECOVERY PLAN

PRIORITIZING AND SEQUENCING RECOVERY NEEDS

This section provides guidance on developing the recovery strategy and prioritization and sequencing the recovery needs. Following the rational of the recovery strategy, identify key outcomes, outputs and interventions, then prioritize and sequence them over time (in the short, medium and long term), and distinguish the interventions that are related to restore/ resume from BBB interventions.

THE SECTOR RECOVERY PLAN

It is essential to verify that an effective consultation process has taken place and that during the stakeholder engagement process there has been actual collaboration and partnership with key institutional players in identifying the components that contribute to the building of the WASH Recovery Plan. These institutional players may come from Line Ministries directly responsible for implementing WASH management (e.g. Ministry housing the Department of Water Affairs) and services, but may also include consultation and contribution from other institutional actors such as rural and urban authorities, health authorities, Ministry of Agriculture, Ministry of Environment or the Ministry for Culture. It is important that the Recovery Plan is in line with any national recovery plan being developed following the disaster and with any national development plan in place. However, for the long term, a WASH sector recovery plan must first demonstrate coherence with the authorities, institutions and policies that are representative of the WASH sector and not follow only a national strategy. The reason for this is that it is with the WASH Sector institutions that will apply the long-term recovery strategy relevant to the WASH sector. Sector Policies and Plans developed within the WASH sector should, by default, be in line with over-arching national plans, but if there is any conflicting content, it is the task of the institutional authorities to clarify. Therefore, as well as promoting ownership, the institutional actors of the WASH sector contribute to and clearly understand the rationale and content of their particular Sector Recovery Plan.

In line with the PDNA guidance on the recovery framework, the WASH sector recovery strategy should be formulated following the results-based model, and therefore include: (i) priority needs; (ii) interventions required; (iii) expected outputs; (iv) recovery costs; and (v) intended outcomes. Table below provides an example of how this may be done.

Indicative Example of a Results-based Recovery Plan in WASH

Priority Recovery Needs	Interventions	Expected Outputs	Recovery Costs	Intended Outcomes
<ul style="list-style-type: none">To assist those affected by the disaster in X province with the rehabilitation of sanitation facilities	<ul style="list-style-type: none">Supply construction materials and sanitation inputsSanitation technical assistanceCapacity building training support	<ul style="list-style-type: none">468 latrines built4 training centres established and 50 government staff trained.10 sewage facilities repaired	<ul style="list-style-type: none">US\$7,650,000	<ul style="list-style-type: none">65,000 affected people have restored access to basic sanitation service delivery

INTENDED OUTCOMES

Outcomes for the sector should be organized according to the functioning areas or focus areas of the sector. The assessment incorporates cross-cutting sectors and includes consultations of various stakeholders, and will feed into the sectors' focus areas. The assessment will identify needs, gaps, and objectives for recovery and improvement in each area. Below is a list of focus areas that are key for promoting recovery and ultimately effective development of the sector over the longer term. They are not too numerous or cumbersome for a PDNA, and facilitate the grouping of almost all relevant programming contexts into a short list of six broad types of activity (EU, 2012):

- Water resources, which include all activities designed to assess the availability of the natural resource, protect its quality, and plan its use; including other primary resource activities such as forestry, mining and fisheries (water quality protection, aquaculture) as well-applied sector activities such as agriculture;
- Basic services, which covers service provision for water and sanitation in rural areas and marginal or poor urban areas,¹⁶ usually consisting of low technology, decentralized management, community-managed and even informal systems;
- Municipal services, which covers major urban and industrial installations, capacities of municipal utility service providers, other services, revenue systems, water operators and suppliers, urban stakeholders and systems, including wastewater treatment, sewage systems, runoff from daily activities and storm events, and solid waste management
- Agricultural, which covers installations and activities related to agricultural use of water, especially for irrigation
- Energy, which covers water use for energy from hydropower. Usually this is the main focus but in some cases the impact of production of biofuels on water resources must also be considered, especially if the latter is introduced into a recovery strategy.
- Sector performance, covering mainly how the national sector framework is conceived and how it functions. This refers to policy and the strategies to implement that policy, institutional structures from national level down to local authorities, service providers from either public or private sector.

SEQUENCING PRIORITY NEEDS

Recovery needs in the sector WASH will need to be prioritized and sequenced (short-term, medium-term and long term, as appropriate). Criteria may be developed by the sector WASH Team (or previously by the PDNA Team) to guide the prioritization process. This should include priority to critical needs expressed by the affected population and government, but also priority to vulnerable population groups, geographic areas most affected conflict-prevention or peace-building objectives where relevant, among other.

TIME FRAME: SHORT-, MEDIUM- AND LONG-TERM RECOVERY

While there should be a smooth transition from emergency to recovery and development, it is important that a PDNA assessment does maintain the longer view of recovering from a disaster and not the shorter view of responding to an emergency. Initial objectives are a simple restoration of services for survival and health, which, at a PDNA stage, are *normally* already being addressed by humanitarian actions, actors and strategies. While this phase is expected to be short-term, in chronic situations or in especially destructive disasters, a PDNA should include identifying short-term needs at least for emergency preparedness. *Long-term objectives* will include improved services to promote health, nutritional security and

¹⁶ In many developing contexts in partner countries the provision of WASH services is for the urban poor or peri-urban entities are rarely integrated into municipal or urban authorities and are usually by default taking advantage of proximal rural services or solutions.



improved livelihoods which will feed into a recovery strategy. Data and information collected needs to be allocated and then used according to either shorter or long-term objectives – or both.

If one views recovery as a linear process, a short-medium-long term time line may not always be the right approach. There are ongoing discussions on closing the emergency-to-recovery gaps and at the same time promoting sustainable strategies and resilience from the beginning. This can render a 3-step timeline not applicable to all contexts, depending on the intensity of a disaster, the chronic nature of the emergency and an institutional capacity to respond.

COSTING

COSTING LOGIC FOR RECONSTRUCTION AND BUILDING BACK BETTER

The costs for reconstruction and BBB should be proportionate to the costs of recovery and reconstruction needs, as well as the type of disaster. Slow onset drought may have very low reconstruction needs, but require a higher investment to build in resilience to the WASH Sector. While it does facilitate the acceptance of an estimate that the costs for Reconstruction and BBB should be comparable to the financial envelope pledged by the government and international development partners, the first initial costing exercise should not have any limits set, but should reflect the real costs corresponding the results of a comprehensive PDNA which contributes directly to an effective strategy for risk management, risk reduction and strengthening the WASH Sector. This allows for a more informed prioritization of actions at a later stage when budget realities may force a reduction in strategy implementation. Having said that, a major challenge in promoting changes in Sector Strategy, Governance and functioning in order to build resilience into the sector is to convince some donors to shift their focus from the disaster impacts at hand to the potential disaster impacts of the future.

Historically most disaster response funds have tended to be allocated to physical reconstruction and compensation of losses, but if Human Recovery and future strategies for Risk Reduction, Risk Management and building sector resilience are to be reflected in the WASH Sector (and other sectors), then some financial emphasis must be shifted towards issues of policy, regulation, capacity building, participation and social adaptation to extreme events and disasters.

Finally, the amount of finance is not always the limiting factor. Some countries, due to their institutional and financial structures, have difficulty in absorbing large amounts of finance and will simply fail to make the expenditure of available funds. This can be linked to administrative and bureaucratic procedures, but is also often enough linked to the capacity of various levels and components of the sector itself to function optimally due to a range of human resource and other issues. However, if a PDNA is properly executed, the capacity of the country to absorb and disburse financial resources, meaning their ability to convert the funds into programming and implementation, should become evident before a cost exercise takes place (even at the baseline evaluation of the sector). Many countries have already been evaluated on their absorption

capacity by funding institutions such as the World Bank and this information is readily available.¹⁷

In order to ensure that costs remain as realistic as possible and that recovery proceeds according to the recovery program, the following cost components should be regularly checked and revisited:

- Ensure costs are based on unit costs for repair and reconstruction at current value (taking into account phased reconstruction and adjusted by inflation);
- Includes the costs of interventions (management and operational costs);
- Includes costs for disaster resilient reconstruction and if necessary relocation;
- Include costs for post construction monitoring and evaluation.

SUGGESTED STRUCTURE FOR PRESENTING COSTS FOR RECOVERY NEEDS FOR THE SHORT, MEDIUM AND LONG TERM

INFRASTRUCTURE, SERVICE DELIVERY AND ACCESS TO SERVICES

Restore

- Short-term: Activities include immediate distribution systems of water trucking, surface piping, portable modular and household-scale water treatment units. Hand pumps and shallow wells shallow boreholes. Portable latrines and small transport (e.g. carts) for solid waste.
- Medium-term: Activities include service materials for water and waste treatment, tanker trucks for latrine waste collection and solid waste removal from temporary disposal sites.
- Long-term: Repair and reconstruct original service infrastructure.

Building Back Better

- Short-term: Activities include installation of temporary services in configuration corresponding to future improved design layout. Arrange population on-site or moving to new site.
- Medium-term: Activities include service materials for water and waste treatment, tanker trucks for latrine waste collection and solid waste removal from temporary disposal sites.
- Long-term: Install new service infrastructure configuration with more efficient design and technology (e.g. treatment systems, metering, valves, pumps) and disaster-proof materials.

GOVERNANCE

Restore

- Short-term: Ensure that all administrative and support facilities are available, including management of distribution, minimum data collection and laboratory support.
- Medium-term: Monitor temporary services for quality, verify regulations and guidelines followed, review existing data and information to ascertain if any has been lost or destroyed.
- Long-term: Put in place administrative and institutional components, reinforcement with capacity building, to resume uptake of original services.

Building Back Better

- Short-term: Install temporary administrative and institutional services, while redesigning administrative and management configuration corresponding to future needs. Evaluation of shortfalls of existing systems and processes.

¹⁷ A good example is the cycle of Country Status Overviews (CSOs) conducted by the World Bank in collaboration with the African Ministers' Council on Water (AMCOW) and the African Union for a large number of countries in Africa.

- Medium-term: Build new strategy for DRR and DRM, begin dialogue with institutions on adapting policy and regulation.
- Long-term: Implement new strategies, policies and regulations for DRR and DRM.

RISKS

Address/mitigate

- Short-term: Follow up on emergency response with actions designed to renew risk responses.
- Medium-term: N/A.
- Long-term: Strengthen risk responses to address events of increasing magnitude.

Building Back Better & Disaster Risk Reduction

- Short-term: Conduct a risk analysis to review existing DRR and DRM strategies.
- Medium-term: Expand scope of risks to be addressed by new strategies; magnitude and type.
- Long-term: Expand scope of strategies to incorporate above BBB actions and engage a wider group of stakeholders.

IMPLEMENTATION ARRANGEMENTS

PARTNERSHIPS, COORDINATION AND MANAGEMENT ARRANGEMENTS TO IMPLEMENT RECOVERY

Partnerships and Coordination should include the key players and partners involved in the PDNA Team with specific focus on the country government Institutions, the relevant sector line ministries and links with beneficiaries via CSOs or exchange platforms. Such platforms may need to be created for the purpose of facilitating a more participative implementation of the recovery plan. A representative list of arrangements can include:

- partnership arrangements within the WASH cluster and intra-sectoral arrangements with other clusters;
- coordination arrangements with the government, civil society and the private sector;
- management arrangements within the government for the culture recovery process;
- inter-agency management arrangements (e.g. coordination unit or similar arrangements, support services to be established, such as offices, human resources, etc.

MONITORING TOOLS

Post-construction monitoring is conducted to measure success of a project, and success can be two-fold:

- to meet criteria and guideline conditions and to measure the attainment of a project's specific objectives;
- to measure the performance of a project over time. It is important to build monitoring components into the final and post-project assessment phases of the project by:
 - establishing pre-construction monitoring components and locations of the project starting with baseline conditions that provide a standard against which to measure improvement;

- paying particular attention to the components of the project that are most sensitive, weak and vulnerable. Monitor the high-risk sections early on - document their conditions before and after construction of the project;
- determining and select a methodology to monitor the objectives;
- defining monitoring parameters, sampling frequency, sampling locations and analytical procedures. Documentation of structures (their size, length, slope, etc.) should also be part of the monitoring strategy.

Good post-construction monitoring relies on data collection methodology and quality. Refer to Annex II: List of Data Collection Methods for developing a data collection plan.

A non-exhaustive list of stakeholders that could be considered in a post-construction monitoring and evaluation plan include:

- project donors for recovery, such as the World Bank, State and Federal Government institutions, local government authorities;
- beneficiary communities and target groups;
- NGOs;
- civil society;
- the media.

GUIDANCE ON POSSIBLE COORDINATION MECHANISMS AND THE LINKS TO DEVELOPMENT AND HUMANITARIAN ASSISTANCE

The coordination of the implementation of the recovery programme should be the responsibility of the host government and the relevant authorities, which, in the case of WASH, would be the partner authority already identified during the strategy recovery plan phase. As mentioned above, this authority (an office or individual) may have been identified as early as the launch of the PDNA process and formation of the PDNA Team. Ideally, it will be with someone or an office located within a Line Ministry that represents the WASH PDNA and recovery programme that is also recognized by the central authority that coordinates the overall recovery plan. Links to humanitarian assistance will have been made at the PDNA Baseline stage and can be continued into the recovery phase if the same actors (i.e. agencies, NGOs, others) are still present. The added value of linking to the humanitarian actors and assistance is to profit from continuity and the institutional memory of the emergency and post-disaster response. Linking to development agencies and assistance will facilitate the implementation of the recovery, since these organizations will bring their expertise to the process, and in some cases, may be actively involved in implementing parts of the recovery on behalf of the authorities.

GUIDANCE ON POSSIBLE SOURCE MOBILIZATION MECHANISMS

If there are no direct sources of finance or regional or international mechanisms that a country can draw on to secure financing, activities that cannot be tied to national development plans and the effects of the event may not receive the necessary attention from development partners. This shorter list may tend to focus more on reconstruction than recovery, with implications and consequences of implementing effective strategies for DRR, which can include building back better. While activities may be limited by resources, the assessment must in any case maintain its objective to develop a wider list of activities for comprehensive recovery and strategy.



CHALLENGES: KEY ASSUMPTIONS AND CONSTRAINTS

CHALLENGES

The following are some challenges that may be encountered during the implementation phase:

- too much funding focus on hardware and infrastructure at the expense of institutional strengthening, capacity building and support to social sectors such as Culture and Education;
- small-scale disasters may not generate enough interest for government authorities to address their disaster response, DRR or DRM.

KEY ASSUMPTIONS AND CONSTRAINTS

Following are some key assumptions made to successfully complete the recovery process, and the major constraints likely to be encountered during the recovery process indicating how they might be overcome.

Assumptions might include:

- Key stakeholders will be part of an open and participatory recovery process;
- All relevant sectors are present and participating in the PDNA from the outset;
- There will be no new disaster affecting the country;
- A Recovery Action Plan will be developed from the Recovery Framework.

Constraints might include:

- limited financial and material resources;
- insufficient human resources and technical expertise to implement timely recovery.

Constraints might be overcome by soliciting financial and technical support from international donors and partners, organizing training for government and community staff and volunteers. The latter is evidently more effective where issues on governance and institutional capacity are included in the PDNA activities across all participating sectors.

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ANNEX I: CHECKLISTS FOR ROLES AND RESPONSIBILITIES OF SECTORS

HEALTH, NUTRITION AND WASH CLUSTERS

This matrix defines the responsibilities and accountabilities of the Health, Nutrition and WASH Clusters during emergency response in areas of potential overlap (WASH Cluster Coordination Handbook, 2009). The matrix has been developed through a broad consultative process, but can be revised as necessary at the field level following consideration of the specific contexts and available resources.

Objectives

Clarify responsibilities and accountabilities in areas of potential overlap between the three clusters, especially as they relate to the prevention and control of infectious diseases.

Improve coordination and collaboration among Health, WASH and Nutrition field staff during emergency operations.

Responsibility

Clusters at the field or national level can use this matrix as a starting point to negotiate specific responsibilities. Capacity across Health, WASH and Nutrition sectors may vary according to context, and therefore responsibilities for each activity may vary – what is important is that there is clarity of responsibilities for all activities.

Clusters at the global level have agreed on the indicative framework, but will review and possibly update the matrix, following input from clusters at the field level.

Please note that:

Responsibility means ensuring that the job gets done, not necessarily doing it.

- For example, the Health Cluster is responsible for ensuring Health Care Waste Management, but the support and implementation may be requested outside of the cluster.
- WASH Standards are set at the global level (i.e. Sphere, World Health Organization), but other standards may be incorporated or take priority according to context – e.g. national standards – and should be discussed by the Cluster/sector actors.
- Clusters work with and coordinate with national authorities and incorporate national standards, provided that they can ensure a level of service that protects and promotes public health.

Area of Potential Overlap	Specific Activity	Responsibility		
		Health Cluster	Wash Cluster	Nutrition Cluster
Assessment	Conduct WASH assessments.	In health facilities	Outside health facilities. Support other clusters as requested.	At nutrition rehabilitation centres and wet feeding programmes. Support WASH assessment in communities where malnutrition is of concern.
Monitoring	Monitor and share WASH-related information with other clusters.	Disease status and trends (evidence based) in health facilities	WASH indicators (more perception-based) outside health facilities. Support other clusters as requested.	Trends in hygiene and water-related illness at nutrition rehabilitation centres, in wet feeding programmes and at the community level (from nutritional surveys) where malnutrition is of concern
Information Management (IM)	Develop and monitor the IM system.	Gather, analyse and disseminate evidence based health information. Share with other clusters	Gather, analyse and disseminate WASH information. Share with other clusters	Gather, analyse and disseminate evidence based nutrition information. Share with other clusters
WASH Standards	Disseminate, promote and monitor application.	In health facilities	Outside health facilities	At nutrition rehabilitation centres, in wet feeding programmes and through community-based management of malnutrition
	Agree on indicators.	In health facilities	Responsible to coordinate agreement outside health facilities	At nutrition rehabilitation centres, and wet feeding programmes
Water Quality	Identify country testing capacity and facilities.		Fully responsible	
	Ensure and test treatment.	In health facilities	Outside health facilities. Provide training, material and support to other clusters as requested	At nutrition rehabilitation centres and wet feeding programmes. Support WASH as requested, where malnutrition is of concern
	Perform monitoring.	In health facilities	Outside health facilities	At nutrition rehabilitation centres and wet feeding programmes
Water quantity	Ensure quantity.	In health facilities	Outside health facilities. Provide support to Health and Nutrition Clusters as requested.	At nutrition rehabilitation centres and wet feeding programmes. Advocate for communities as necessary.

Area of Potential Overlap	Specific Activity	Responsibility		
		Health Cluster	Wash Cluster	Nutrition Cluster
Water facilities	Improve access.	In health facilities	External health facilities	At nutrition rehabilitation centres and wet feeding programmes. Advocate for communities as necessary
Hygiene	Promote and improve hygiene.	In health facilities	Fully responsible to coordinate common messages between clusters and to manage external health facilities	At nutrition rehabilitation centres, in supplementary feeding programmes and through community-based workers involved with management of malnutrition.
Hygiene Promotion Outreach Workers (including Community Health Workers)	Develop hygiene promotion strategy and message content.	Provide input	Responsible to coordinate common messages between clusters.	Provide input, if relevant.
	Agree on outreach workers' terms and conditions (e.g. paid, volunteer).	Agree outreach strategy with WASH Cluster	Agree outreach strategy with Health Cluster	Participate if relevant
Excreta disposal	Ensure access.	In health facilities	Outside health facilities	At nutrition rehabilitation centres and wet feeding programmes
Drainage and Waste Water	Disposal	In health facilities	Outside health facilities	At nutrition rehabilitation centres and wet feeding programmes
Ensure Sanitary Environment	Ensure sanitary environment.	In health facilities	Outside health facilities	At nutrition rehabilitation centres and in wet feeding programmes
Disease Outbreak	Conduct assessments.	Fully responsible for overall coordination (with input from other clusters)	Participate in assessment	Input into assessment tool and support as suitable.
	Perform surveillance and monitoring.		Support as requested.	Report incidence in programmatic areas and support as requested.
	Outbreak control		Full involvement in response action plan for WASH-related diseases	Support communication strategies at nutrition rehabilitation centres and in wet feeding programmes.
	Communication			
Vector Control	Identify vector and coordinate control efforts.	Fully responsible	Support as requested	Support as required.
	Implement vector control - provision of materials e.g. bed nets, spraying.	In health facilities	Outside health facilities – responsible for general population	At nutrition rehabilitation centres and in wet feeding programmes.

Area of Potential Overlap	Specific Activity	Responsibility		
		Health Cluster	Wash Cluster	Nutrition Cluster
Waste Management	Maintain, construct and renovate facilities	In health facilities	Outside health facilities. Provide support to Health and Nutrition Clusters as requested.	At nutrition rehabilitation centres and in wet feeding programmes.
WASH Infrastructure	Prioritize facilities for renovation and construction. Implement projects.	In health facilities	Outside health facilities. Provide support to Health and Nutrition Clusters as requested	At nutrition rehabilitation centres and wet feeding programmes
WASH-related Stockpiles	Procure and share information on stockpiles between clusters.	Material used in health facilities, and Oral Rehydration Salts (ORS). Support WASH as requested, particularly for bed net needs and distribution	Population based material (bed nets, water treatment chemicals (e.g. chlorine), water testing equipment, soap)	Nutrition related products such as anthropometric equipment, specially designed food commodities, micronutrient supplements, etc used in the assessment and management of malnutrition

PROPOSED RESPONSIBILITIES AND ACCOUNTABILITIES MATRIX

WASH-ED (EDUCATION) CLUSTERS

This matrix defines the responsibilities and accountabilities of the WASH and Education Clusters during emergency response in order to maximize coordination/impact and prevent any overlap. The matrix has been developed through a broad consultative process, but can be revised as necessary at field level, following consideration of the specific contexts and available resources.

Background

- WASH Sector Response Areas
 - Hygiene Promotion
 - Water Supply
 - Excreta Disposal
 - Vector Control
 - Solid Waste Management
 - Drainage
- Education Cluster Response Areas
 - Permanent educational facilities, e.g. schools
 - Temporary educational facilities, e.g. temporary learning spaces, child-friendly spaces
 - Quality learning
 - Curriculum development

Objectives

- Clarify responsibilities and accountabilities between the two clusters in areas where both clusters are operational, to maximize impact of both.
- Improve coordination and collaboration between Education and WASH field staff during emergency operations.

Responsibility

- Clusters at the field or national level can use this matrix as a starting point to negotiate specific responsibilities, as well as to identify respective areas of operation.
- Clusters at global level have agreed on this indicative framework, but will welcome feedback and review/update the matrix following input from clusters at field level. Cluster contacts at global level are: WASH: Jean McCluskey (jmccluskey@unicef.org), Education: Roger Wright (rwright@unicef.org) and Susan Nicolai (susan@savethechildren.ch)

Please note that:

Responsibility means ensuring that the job gets done, not necessarily doing it.

- For example, the Education Cluster is responsible for identifying the need, organizing and ensuring that an intervention takes place and meets the needs. However the actual work may be completed by a local NGO or a contractor, or the WASH Cluster by proxy. This ensures that the need is not overlooked, and the intervention makes an impact.
- WASH and Education Standards exist at a global level (i.e. Sphere and INEE - Minimum Standards), but other standards may be incorporated or take priority according to context – for example national standards – and should be discussed by the cluster/sector actors. Similarly, specific indicators can be agreed at the field level.
- Wherever feasible, clusters collaborate with national authorities and incorporate national standards, provided that these can ensure a level of service that protects and promotes public health/education. If needed/relevant clusters could promote suitably revisions to such standards. Where possible, Clusters could be led by National Governments.
- The principles of consultation, participation and non-discrimination should be applied to every activity. In particular, the people affected by an emergency should play an active role in the design and implementation of emergency WASH and education activities.
- In both emergency and reconstruction/rehabilitation/recovery phases, ensure that all water/sanitation systems and educational facilities are appropriate to local culture, are appropriate for all users (e.g. children, disabled students and staff), are safe (located in secure areas, well-lit at night, etc.), and provide separate facilities for male and female students, and male and female staff.
- Comments and experiences from the field are welcome and will be included in future revisions of the matrix.

Area of Potential Synergy	Specific Activity	Responsibilities	
		Education Cluster	WASH Cluster
Standards			
WASH –ED Standards	Ensure agreement on WASH–ED standards and indicators.	For education facilities, as per national Ministry of Education (MoE)/ international (especially INEE) standards.	Outside education facilities, as per context-specific national/ international standards.
	Ensure the dissemination and the promotion of standards.	For education facilities	Outside education facilities.
	Ensure that service providers subscribe to the agreed standards and that their performance is monitored.	For education facilities, as per national MoE/ international standards.	Outside education facilities, as per identified context-specific national/ international standards.
Hygiene Promotion			
Hygiene Promotion (HP)	Ensure that teachers are provided with adequate training.	For education facilities	Coordinate relevant training for teachers as requested.
	Ensure teachers are provided with adequate resources.	For education facilities	Coordinate common messages between clusters, and conduct HP outside education facilities, e.g. by providing hygiene promotion material.
	Monitor hygiene promotion practices and support schools where necessary.	For education facilities	Outside education facilities. Inform Education Cluster about prevalent WASH related diseases in the community.
	Support schools with additional capacity and financially for hygiene promotion.	Responsible – identify sources of potential support/resource mobilization.	Support the Education Cluster as requested.
All Facilities			
Needs Assessment	Ensure WASH needs are assessed (as per identified context-specific standards; see 1.2 above).	For education facilities	Support coordinated design and/ or conduct of WASH-ED assessments
Community Consultation / System Design	Ensure that designs meet community needs, are child-friendly, address gender and teacher/student issues, are safe, are appropriate in terms of ongoing costs and operation & maintenance, and will be maintained in the long term.	For education facilities (with technical input from WASH).	Outside education facilities. Provide support to Education Clusters on appropriateness of systems
Construction/ Rehabilitation	Ensure that a quality contractor is engaged and managed, in collaboration with the Ministry of Education.	For education facilities	Support joint consultation and design to ensure appropriateness for all population sub-groups.
	Ensure that quality control system is in place.	For education facilities	Outside education facilities.
Maintenance	Ensure that facilities are maintained.	For education facilities	Outside education facilities.

Area of Potential Synergy	Specific Activity	Responsibilities	
		Education Cluster	WASH Cluster
Use	Ensure that facilities are used.	For education facilities	Support the Education Cluster as requested.
Water			
Water Quality	Identify country testing capacity and facilities.	Involve educational facilities in water quality assessment.	Coordinate
	Ensure testing capacity.	For Education facilities	Outside education facilities.
	Ensure testing conducted.	For Education facilities	Outside education facilities (including source, storage and distribution). Provide training to other Clusters as required.
	Ensure that a monitoring system is in place for water quality tests.	For education facilities	Outside education facilities
Water Quantity	Ensure adequate quantity	For education facilities	Outside education facilities.
Water Facilities	Ensure adequate access	For education facilities	Outside education facilities.
Water Treatment	Provision of chemicals	For education facilities	Provide advice and support to the Education Cluster as requested.
Others			
Excreta disposal	Ensure adequate and sufficient access.	For education facilities	Outside education facilities.
Drainage and wastewater	Ensure adequate disposal.	For education facilities	Outside education facilities.
Waste Management	Ensure maintained, constructed and renovated as required.	For education facilities	Outside education facilities.
Improve sanitary environment	Ensure a sanitary environment (e.g. removing standing water).	For education facilities	Outside education facilities.
Vector Control	Ensure adequate vector control.	For education facilities	Outside education facilities.
Emergency Preparedness	Ensure that schools are supported in the training of teachers and pupils for emergency preparedness.	Responsible	Support the Education Cluster as requested.

ANNEX II: LIST OF DATA COLLECTION METHODS

DATA COLLECTION METHODS FOR INITIAL ASSESSMENTS

Name	Description	Purpose	Material /Tools
Desk Study, Literature & Reports review for Secondary Data Collection	<p>Collection, reading and synthesis of relevant information that is already available in:</p> <ul style="list-style-type: none"> documents (e.g. studies, government reports, sector reports, water, hygiene and sanitation). sector management data sheets, maps, photos, remote sensing source info. books / guidelines / manuals published by local / state authorities, professionals, external sources (e.g. sector reviews, donor reports, emergency preparedness plans). 	<ul style="list-style-type: none"> To gain an insight of the situation before the primary data collection and assessment on the field is started (this review can already start in the headquarters or on the way to the study site). To identify gaps in secondary data and, if time and resources are limited which primary data content must be prioritized. 	<ul style="list-style-type: none"> Reports (e.g. minutes of meetings, SitReps) Sector policy, regulations Books guidelines Media reports
Key informant interview	<p>Interviewing informally anyone who can provide detailed information, on the basis of his special expertise or knowledge of a particular issue: e.g. a village leader, a local authority, a head of services provision,</p> <p>NB: Women and children can often be key-informants in water, hygiene and sanitation matters.</p>	<ul style="list-style-type: none"> To gain a good overview of the relevant (water and sanitation) issues. To feed and orient a potential in-depth assessment. To identify issues to cover / validate in (structured) observations which can form content of checklist 	<ul style="list-style-type: none"> List of topics to cover (based on checklists) Basic survey form Notebook and pencil
Mapping and area sampling	<p>Drawing of a map of the study site or collection of map information on ground showing sites or features that are important for the affected population: e.g. water sources, defecation areas, service provision facilities for distribution, treatment, waste management.</p> <p>Area sampling permits a good estimation of the population number, the household size and the average available space per person as well as spatial distribution of affected population in relation to services and facilities.</p>	<ul style="list-style-type: none"> Where there are gaps in map data from the desk study, different maps can be made of areas and used for orientation and planning purposes, depending on scale and detail required. The estimation of the population living in a closed setting helps to determine important data such as water, sanitation and hygiene needs in a representative area. To refine and expand checklists To feed the potential in-depth assessment. 	<ul style="list-style-type: none"> Compass /GPS Long tape, measuring cable Hand clicker Graph Note book, pencils, scale rulers Calculator Digital camera
A transect walk	<p>A walk through the primary data site(s) in a meandering fashion, to gather information through (unstructured) observations and informal talks with the population.</p> <p>NB: Most effective when carried out at dawn or dusk, when most hygiene practices and water collection occur and people move to and from economic activity.</p>	<ul style="list-style-type: none"> To familiarize yourself with the physical context in which people access water and sanitation and hygiene practices occur. To investigate how people behave culturally and socially in their daily routines To refine and expand checklists To orient and feed the potential in-depth assessment. 	<ul style="list-style-type: none"> List of topics to cover (based on checklists) Map (if available) /GPS Basic survey form Graph Note book and pencil Digital Camera

Spot-check observation	<p>Record information (defined on a clear but very short list of topics) during the first moments of observation (e.g. quick observation of the issues on the spot-check list when entering a household, infrastructure, local offices).</p> <p>NB: A rapid method particularly useful when time is a major constraint.</p>	<ul style="list-style-type: none"> • To investigate the presence or absence of some clearly defined hygiene / health behaviour and practices • To identify technical needs or capacity needs of infrastructures, service providers, public services • To orient and feed the potential in-depth assessment. 	<ul style="list-style-type: none"> • Spot-check list (based on previous data collection / checklists) • Basic survey form • Graph notebook and pencil
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DATA COLLECTION METHODS FOR IN-DEPTH ASSESSMENTS

Name	Description	Purpose	Material / Tools
Structured observation	<ul style="list-style-type: none"> • Continuous observation to collect information defined on a clear but short list of topics. • Continuous structured observation (e.g. each time an action listed on the observation sheet is done; it is marked on the sheet). • Ticketing (e.g. each time person collects water, a mark is put on the ticketing sheet). 	<ul style="list-style-type: none"> • Identify location of water and sanitation-related facilities. • To obtain information on water, hygiene and sanitation issues and practices in and around these facilities, at people's homes or working environment, in health structures, schools (e.g. regularity of hand washing, gender or age roles in water collection or waste management). 	<ul style="list-style-type: none"> • Observation checklist (based on previous data collection/ checklists) • Ticketing schedule and or Graph Note Book • Pencil
Structured interview	<p>Interviewing people based on a questionnaire with closed ended questions on predetermined topics (e.g. the answer can only be yes or no, or an option within a multiple choice question).</p>	<ul style="list-style-type: none"> • To collect mainly factual and quantitative data (data is relatively easy to collect and to interpret as it is a preconceived questionnaire, which on the other hand is difficult to prepare). 	<ul style="list-style-type: none"> • Written interview with closed questions on predetermined topics based on previous data collection / checklists) • Pencil, Note Book
Semi-structured interview	<p>Interviewing people based on a questionnaire with open ended questions on predetermined topics (e.g. person being interviewed can answer with his/her own words).</p> <p>NB: It is useful to have an assistant to take notes.</p>	<ul style="list-style-type: none"> • To investigate general as well as specific issues by asking questions, informally but systematically. • To investigate which hygiene / health practices are ideal / acceptable, and why. • Collection of qualitative data. 	<ul style="list-style-type: none"> • Written interview with open-ended questions on predetermined topics (based on previous data collection/ checklists) • Notebook and pencil
Focus group discussion	<p>Discuss a specific topic of interest to the investigator with a small group of people having similar backgrounds or experiences.</p> <p>NB: It is necessary to be at least two for the focus group discussion: 1 moderator and 1 person taking notes.</p>	<p>To investigate:</p> <ul style="list-style-type: none"> • A range of opinions / points of views on the topic of interest. • The wide variety of local terms and expressions linked to the topic of interest. • The meanings of survey findings that cannot be explained (statistically). 	<ul style="list-style-type: none"> • Written open ended questions and/or pictures to introduce the topic of interest • Notebook and pencil (and/or tape recorder)

PARTICIPATORY DATA COLLECTION METHODS FOR IN-DEPTH ASSESSMENTS

Name		Description	Purpose	Material / Tools
Community Mapping		The participants are asked to make a map of their community structure, showing places that are important for them (e.g. market place, health centre, schools) and to include features of interest to the investigator (e.g. water sources, latrines).	<ul style="list-style-type: none"> To find out what facilities related to health and hygiene exist and to which the community has access. To find out about hygiene and sanitation resources in people's homes, health structures, schools or other public services (e.g. latrines). To find out how the community perceives its surrounding / working environment and what it prioritizes within it. 	<ul style="list-style-type: none"> Blackboard and chalk or Poster paper, sheets and markers Local materials, clear ground or table space Digital camera
Three pile Sorting		<p>Participants have to discuss and decide if water, hygiene and sanitation related activities presented on the pictures are good, bad or in-between, and why.</p> <p>Once consensus is reached, the picture is placed in the appropriate good, in-between or bad pile. The discussions between the participants will provide essential information to the investigator.</p>	<ul style="list-style-type: none"> To break down social barriers and establish good communication. To introduce potentially sensitive / personal topics (e.g. latrine use) that need to be investigated (knowledge / perception of the participants). To choose improved hygiene behaviour based on people's perceptions and needs. 	<ul style="list-style-type: none"> Sets of pictures showing water- and sanitation-related activities Good, bad and in-between signs Notebook and pencil
Pocket chart	<p>The participants can indicate individually and secretly which water, hygiene and sanitation resources/ methods, depicted on a matrix, they are using. The discussions between the participants afterwards will provide essential information to the investigator on the actual water, hygiene and sanitation practices.</p> <p>NB: Each picture should be defined and its meaning agreed upon before a vote on a pre-defined aspect of the picture takes place.</p>	<ul style="list-style-type: none"> To investigate which resource /method is actually used, for what purpose, or by which population group (e.g. investigation on defecation methods used by women, or children, or at home environment or marketplace). 	<ul style="list-style-type: none"> Sets of pictures showing water, hygiene and sanitation activities. Voting cards Pocket chart Notebook and pen 	

ANNEX III: TABLE FOR ESTIMATION DAMAGE & LOSS UNIT COSTS

WASH Infrastructure Components	Unit	Partially damaged	Cost of repair	Fully damaged	Reconstruction cost	Indirect effect (or loss)	Total damage and loss
Urban Water & Sanitation							
Source Intake (ground / surface water)							
Reservoirs & Water Towers							
Water Treatment Facilities							
Distribution Networks & Water Points							
O & M Transport & Supplies							
Household Systems (Wells, Rainwater)							
Wastewater Collection Network							
Sewage Network							
Sewage Treatment Facilities							
Septic Tanks/ Fields/ French Drains							
Household Latrines / Septic Tanks							
<i>Subtotal</i>							
Urban Solid Waste							
Collection Point Facilities / Containers							
Waste Transport Facilities							
Waste Management Site Facilities							
<i>Subtotal</i>							
Rural Water & Sanitation							
Source Intake (Ground / Surface Water)							
Reservoirs & Water Tanks							
Water Treatment Facilities							
Distribution Networks & Water Points							
O & M Spares & Supplies							
Household Systems (Wells, Rainwater)							

Hand Dug Wells							
Boreholes							
Pumps – Solar, Motor, Hand							
<i>Subtotal</i>							
Rural Solid Waste							
Community Waste Pit							
Waste Collection System (if any)							
Household Waste Pits							
Household Burning Barrels							
Household Burning Barrels							
<i>Subtotal</i>							
Total							

ANNEX IV: GUIDANCE NOTE FOR STAKEHOLDER CONSULTATION

STAKEHOLDERS FOR WASH SECTOR ASSESSMENT

The identification of possible stakeholders is a precondition for any participatory assessment and planning process. If stakeholders are not identified, they cannot be invited to participate. Stakeholder identification and analysis should not only be performed in the beginning by the Assessment Team, but should be repeated with representatives of the involved stakeholder groups. This ensures a deeper understanding of the exercise by the stakeholders (and Team members) and also prevents the exclusion of stakeholders at the early stage. It may not be possible for all members of the affected population to participate in an assessment process or collaborate in a recovery process, but all individuals and key groups that will be affected (positively and negatively) and therefore hold a stake in these processes should be identified as being stakeholders. Stakeholders can be members of the affected population but can equally include local authorities, agencies or other government entities. There are many ways to classify stakeholders, but they generally can be divided into primary, secondary and external stakeholders.

Primary stakeholders come from within the affected population and will usually be the direct beneficiaries and end users of recovery (e.g. urban/rural populations, farmers, social sectors such as women, children and the elderly).

Secondary stakeholders are usually intermediaries in the process of delivering services and/or support to primary stakeholders, e.g. consultants, experts, local government and agencies, governmental organizations (NGOs), service providers and private sector organizations.

External stakeholders such as decision and policy makers (politicians, senior civil servants, district-level bodies, governmental bodies, etc.). In the recovery process, development agencies may exert enough influence to merit being included as external stakeholders in the process.

Choosing stakeholders from the wide range of primary, secondary and external actors first requires the drawing up of a long list from which choices will be made. For primary stakeholders, the parameters of the affected population as end-us-

ers and final beneficiaries should be relatively evident, but there is often a challenge in engaging this level of stakeholder because they often have the least resources or capacity to fill a stakeholder role. Also, representativeness of this potentially large sector is important, not only in the numerical sense, but also to ensure that marginalized groups among the affected populations are represented.

For secondary and external stakeholders, these represent the actors that normally constitute the WASH sector, as has been presented in subsections 2.2 and 3.3 above. While the direct government counterpart at the national level may already have been identified during the emergency response process, it is important to determine who the key sector actors are in terms of sector policy and regulation-making at the national level, sector policy implementation at the regional and district levels, regulation implementation by authorities or regulatory bodies, and finally administration and oversight of service provision at the local level. In addition to authorities, there may be local or international NGOs, and private sector actors implicated in the provision of goods, supplies and services from the WASH sector. A short list of potential stakeholders is presented below:

- representatives from the line ministry (ies) responsible for Water Resources management, provision of water services, sanitation services, rural water supply and urban water supply;
- representatives from cross-sector line ministries of infrastructure (this may be Transport and Energy), Environment, Agriculture, Health and Education. It is likely that these sectors may be implicated to some degree in a WASH recovery strategy;
- district, municipal, rural and urban authorities, including Water Boards;
- regulatory agencies or bodies (if any);
- the traditional authorities (where relevant);
- private sector actors involved in the Water and Sanitation goods, supplies and services; provision;
- local NGOs and CSOs, especially those representing marginalized groups;
- affected population.

The role of stakeholders must be clear first for the Team and then for the invited stakeholders. While the title of this section implies consultation, there is also a call for stakeholders to be engaged as partners; however, consultation and partnerships are not the same thing, and the difference must be clearly understood by the team to prevent confusion, false expectations and disappointments among stakeholders. In the PDNA process, there will be clearly defined official roles of government authorities already established, and specific definitions of partner collaboration at a higher level. At the lower level of sector PDNAs and primary beneficiaries, consultations should certainly take place, but the degree to which this is one-way or an ongoing exchange process, and the amount of ownership that can be awarded to primary beneficiaries must be constantly referenced and integrated into the agenda of local authorities and the higher multi-sectoral PDNA process and the national government agenda. If it is observed that the role of stakeholders appears to be marginalized by the official process, this should be recorded into baseline analysis under cross-cutting issues such as governance, which may have an impact on the recovery strategy.

ANNEX V: TYPES OF RECOVERY AND RECONSTRUCTION ACTIVITY

INFRASTRUCTURE AND ASSETS

Restore access to water and sanitation services to pre-disaster levels by repairing or replacing damaged infrastructure facilities essential for providing urban water and sanitation, urban solid waste management, rural water and sanitation and rural solid waste management. This also includes replacing supporting assets and materials such as transport, spare parts

and chemicals which may have been lost or irreparably damaged. There may be a need to rebuild or collaborate with other sectors in the re-building of key administration buildings. It should be kept in mind that restoring to pre-disaster levels must be kept relevant to the needs of the affected population, and never automatically put into effect, since the needs of the population – and the population themselves – may have changed.

Infrastructure needs for Building Back Better (BBB) are reflected in the results of the PDNA, which identify which elements of infrastructure and assets can be improved by design and technology. This can include more efficient pumping systems, more easily maintained distribution networks (types of pipes, valves, joints), and lightweight construction materials. Improved technology can be used in water and waste treatment, even down to the level of household latrine design or rainwater harvesting techniques. Equitable costing of services can also be improved with new metering technologies and their distribution closer to the consumer level.

RESTORE SERVICE DELIVERY AND ACCESS TO SERVICES

Restoring service delivery and ensuring access to services are initially addressed by the emergency response, but are not necessarily oriented to social and economic stability. Unless the habitat environment of the affected population has been completely destroyed, there will be expectations for services to resume on-site. Much of this is addressed by the infrastructure and assets reconstruction or replacement. However, to ensure the ongoing delivery and access to water and sanitation services, the process of Operation and Maintenance must be re-launched as quickly as possible. It will also be required to rapidly resume administrative management and other support services, which may have been affected by destruction of offices, laboratories or damage to access roads. This can require an initial financial outlay to kick-start the process that is above normal operating costs and may also require discussions with other sectors such as transport and infrastructure.

Access to services is a priority need for BBB service delivery and includes benefitting from improved technology and materials. It can also include a wider implication of stakeholders in the overall service delivery and management process. Private sector actors can be encouraged to participate as sub-contractors of services, to specialist support services for Operation and Maintenance. Consumers and beneficiaries can also be integrated into the regulation of services by participating in quality control, thus according an ownership role with responsibility and allowing for more timely responses to problems and improved service.

