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Water Supply, Sanitation and Hygiene (WASH) Disaster Recovery Framework Guide

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UNITED NATIONS DEVELOPMENT PROGRAMME

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The Water Supply, Sanitation and Hygiene (WASH) Disaster Recovery Framework Guide was commissioned by the United Nations Development Programme (UNDP) in partnership with the United Nations Children's Fund (UNICEF) and aims to assist senior national and local governments' advisors/senior-level planners, relevant private sector leaders, intergovernmental organizations and implementing partners, in executing WASH-focused effective and efficient recovery programmes.

The guide emphasizes that recovery programming focusing on Water Supply, Sanitation and Hygiene can play a critical role in poverty reduction and sustainable development goals, ensuring that affected people maintain their health, food security and livelihoods during and after disasters and build resilience over time. Mitigating risk exposure and strengthening the resilience of WASH systems is the best way to protect the most vulnerable, beat back poverty, and promote shared and sustained growth. The guide also illustrates the possibility to adapt a WASH recovery framework to other types of disasters, by using the example of the COVID-19 pandemic and how the WASH sector could recover from it.

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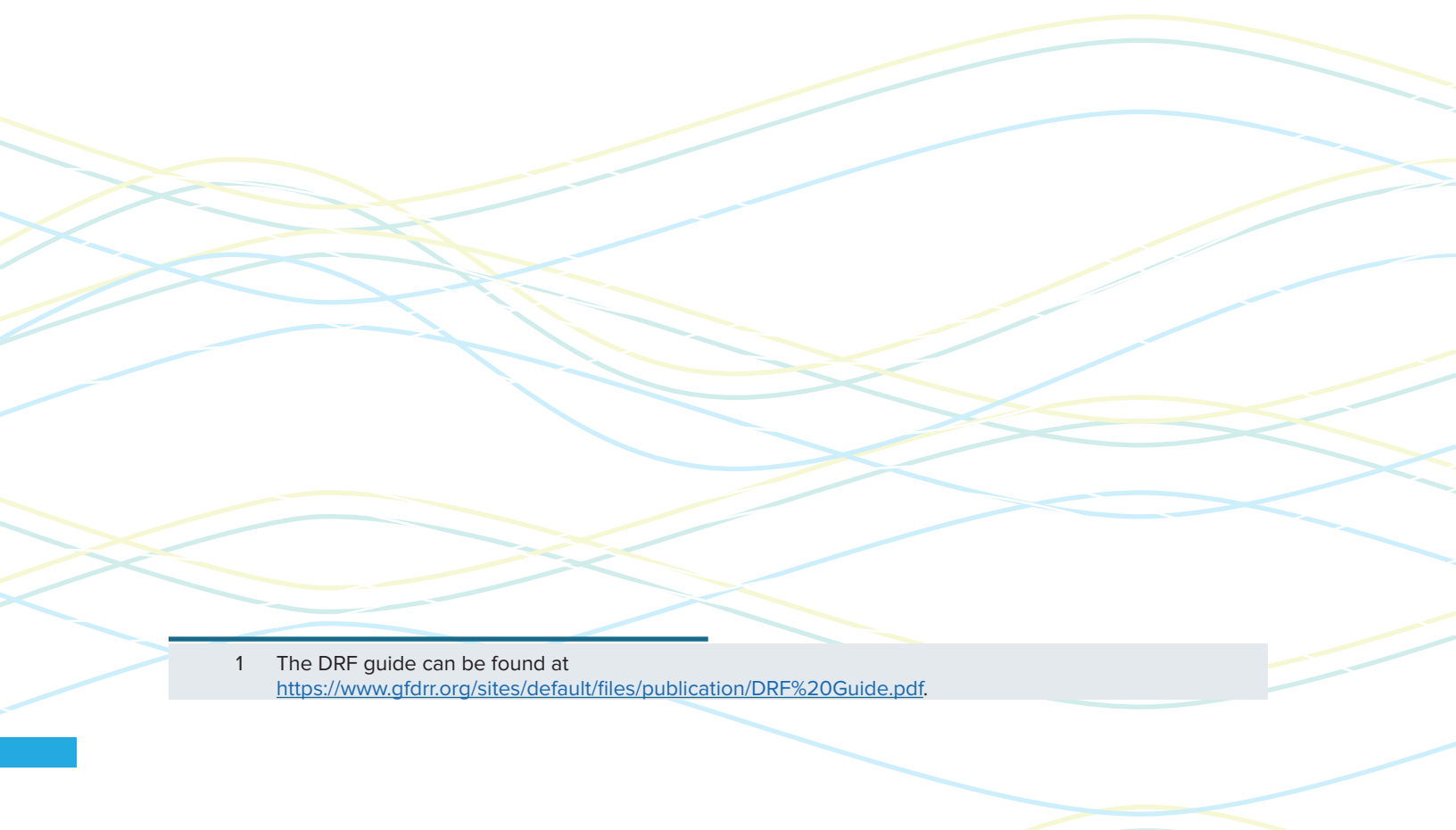


Background

This Guide was commissioned by the United Nations Development Programme (UNDP) and supervised by UNDP and UNICEF, in collaboration with the World Bank's Global Facility for Disaster Reduction and Recovery (GFDRR) and the European Union (EU).

After a Post-Disaster Needs Assessment (PDNA) has been conducted by government, often with the technical support of the tripartite institutions (World Bank, European Union and United Nations), the next step is for the government to develop a detailed Disaster Recovery Framework (DRF) for each of the sectors included in the PDNA. The Disaster Recovery Framework is a government-led and owned exercise that is conducted in association with the stakeholders relevant for the recovery of the country and affected sectors, including civil society, the private sector and international partners. The general DRF Guide provides an understanding of the main steps that each sector should take to develop a recovery framework that will be included in the overall DRF for the country.¹

This WASH DRF Guide provides the reader with an understanding of the specific steps involved in developing a government-led disaster recovery framework for the WASH sector. This is intended to assist government and non-government stakeholders engaged in the development of a DRF to implement post-disaster recovery programmes for the WASH sector.



¹ The DRF guide can be found at <https://www.gfdr.org/sites/default/files/publication/DRF%20Guide.pdf>.

1. Introduction

The recovery phase in the response to a humanitarian emergency signals a shift from the immediate provision of emergency WASH services, through the humanitarian response, to restoration of the delivery of affordable access to safe WASH services, through development operations. The recovery phase, therefore, needs to strike a balance between delivering urgently needed WASH facilities (via the humanitarian response) and building the institutions responsible for sustainably managing WASH services (via development operations).

The recovery programme in the DRF provides an opportunity to incorporate build-back-better (BBB) and disaster-risk-reduction (DRR) principles to strengthen resilience to future disasters.^{2,3} This guidance note for the implementation of a Disaster Recovery Framework for the WASH sector aligns with the structure of the generic DRF Guide to cover WASH policies, institutional coordination, financing mechanisms and implementation arrangements.

1.1. WASH and disaster risks

According to the [World Risk Report](#), the risk of a natural event turning into a disaster depends on the force of the event and the conditions of the society and its response structures. The susceptibility of a society to natural events increases with weak infrastructure networks, greater poverty and inequality, and lower access to public health services.⁴ While extreme natural events cannot be directly prevented, countries can reduce their societal vulnerability to risk by:

- improving public infrastructure and wealth, reducing poverty and under nutrition;
- strengthening governance and the quality of preventative and curative health services; and
- investing in the future capacity of people and the environment;

where water is both a major cause of natural risks and a determining factor in the society's ability to manage those risks.

1.2. WASH and disaster impacts

An estimated 90% of natural disasters are water related. Over the twenty-year period from 1995–2015:

- floods accounted for 43% of all documented natural disasters, affecting 2.3 billion people, killing 157,000 and causing US\$662 billion in damage;
- droughts accounted for 5% of natural disasters, affecting 1.1 billion people, killing 22,000 and causing US\$100 billion in damage.⁵

2 Build back better (BBB) refers to the use of the recovery phases after a disaster to increase collective resilience

3 Disaster risk reduction (DRR) is a systematic approach to identifying, assessing and reducing risks.

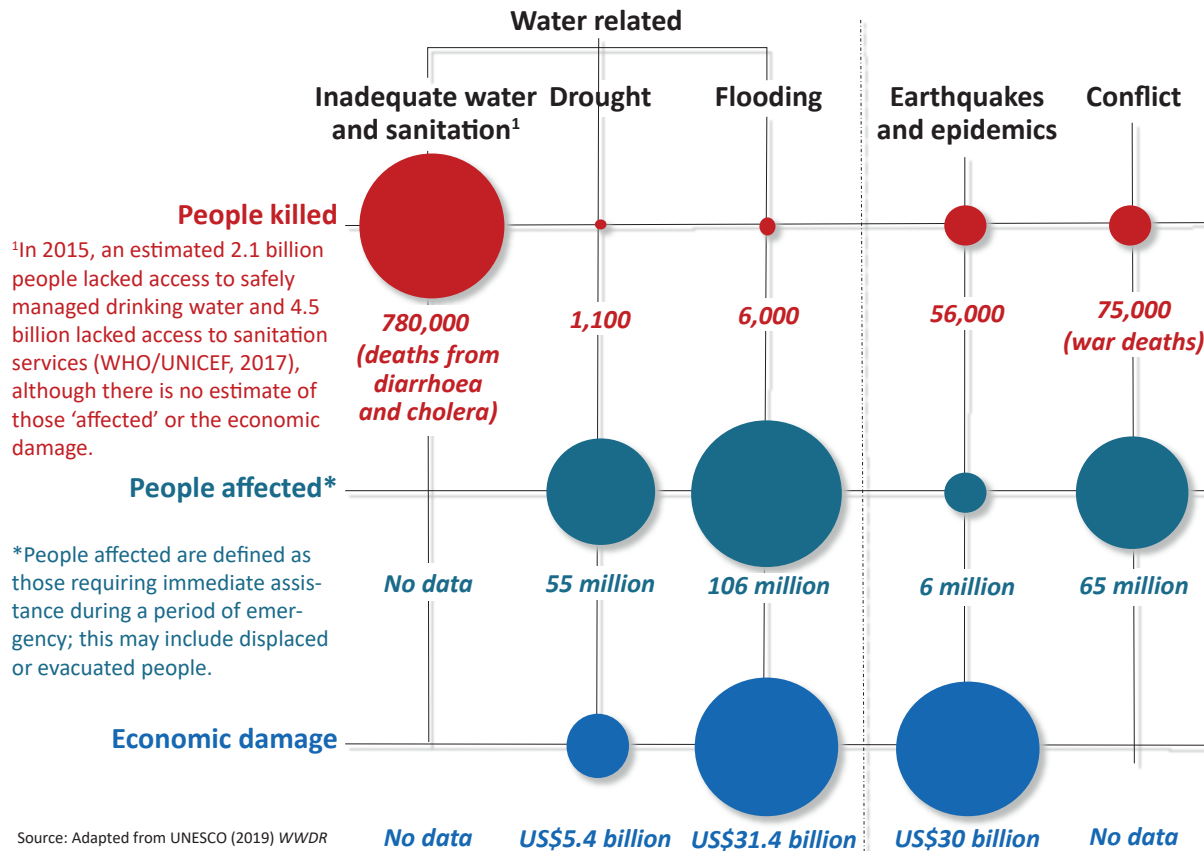
4 Bündnis Entwicklung Hilft, WorldRiskReport, 2018.

5 UNESCO. *World Water Development Report – Leaving No One Behind*. UN Water, 2019.

However, the population affected by floods (i.e. excesses of water) and droughts (i.e. shortages of water) over this period was massively outweighed by those affected by unsafe drinking water and sanitation services.

Figure 1: Average annual impact of water and non-water related emergencies

Average annual impact of inadequate water and sanitation services, water-related disasters, epidemics, earthquakes and conflict



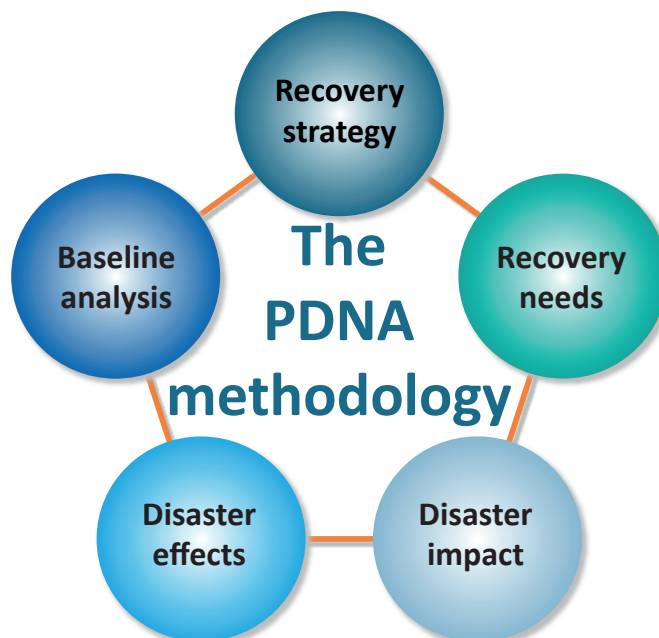
While the PDNA includes an assessment of the physical costs and economic losses to water, sanitation and hygiene services in the wake of a disaster, the DRF is the logical next step in defining the policies, institutional arrangements, financing mechanisms and implementation frameworks needed for recovery of the WASH sector to at least pre-disaster levels.

1.3. Defining WASH within the PDNA

A [Post-Disaster Needs Assessment \(PDNA\)](#) is a multi-sector exercise summarizing the damage and losses, human and economic impacts and recovery needs associated with a natural disaster, to facilitate an effective and timely transition from relief to development.⁶ The PDNA is a government-led process with integrated support from the UN, European Union (EU), World Bank and other national and international actors to identify the recovery needs associated with a humanitarian emergency.

6 GFDRR. *Post Disaster Needs Assessments, Volume A, Guidelines*. UNDP, European Union, World Bank, 2013.

Figure 2: The five components of the PDNA methodology



Within the context of the [PDNA](#), [WASH](#) has been defined to include:⁷

- Water supply – the systems for the collection, transmission, treatment, storage and distribution of water from the source to the point of consumption
- Sanitation – the facilities and services for safe management of human excreta from the toilet to containment, storage, conveyance, treatment and eventual safe end use or disposal.
- Drainage – control of rainwater and ice melt, surface and seawater, grey and groundwater.
- Solid waste – management of the generation, storage, collection, transport, processing and disposal of general household rubbish as well as animal, industrial, building and hospital waste.
- Hygiene – conditions and practices that maintain health and prevent the spread of diseases.

which also form the boundaries when developing a WASH Disaster Recovery Framework.

1.4. Situating WASH recovery needs within the PDNA

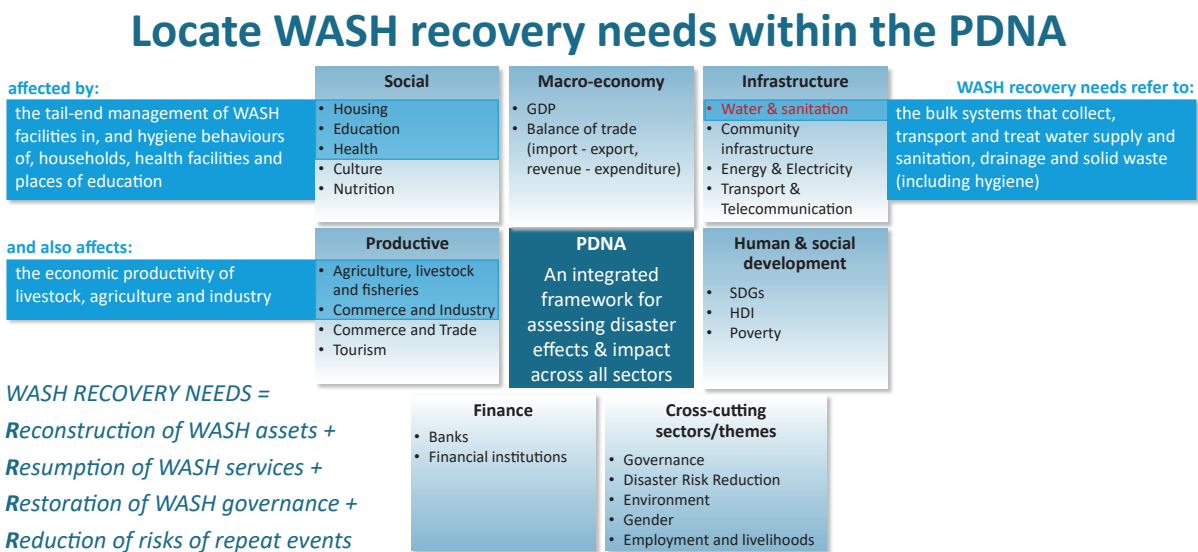
In the PDNA and DRF methodology, WASH is generally placed in the infrastructure sector.⁸

- The infrastructure sector: typically captures information regarding bulk water supply, sanitation, drainage, solid waste management and hygiene systems.

⁷ GFDRR. PDNA Guidelines, Volume B, Water and Sanitation. UNDP, European Union, World Bank, 2017.

⁸ In some cases, WASH recovery needs may also be situated within the social component of the PDNA, the choice of which may be determined by the type of emergency, the structure of government and the setting for national development plans.

Figure 3: Location of the WASH damage and losses recovery needs within the PDNA



However, WASH also has clear linkages with social and productive sectors

- The social sector: typically captures the tail-end management of water, sanitation and hygiene facilities in homes, schools and health facilities in the Housing, Education and Health subsectors.
- The productive sector: typically captures the indirect impact of WASH failures on the economic productivity of agriculture, livestock and fisheries, commerce and industry subsectors.

The linkages between the tail-end management of WASH facilities, the bulk provision of WASH services and the implications for productive subsectors need to be considered by the PDNA and DRF teams to avoid omissions and duplication.

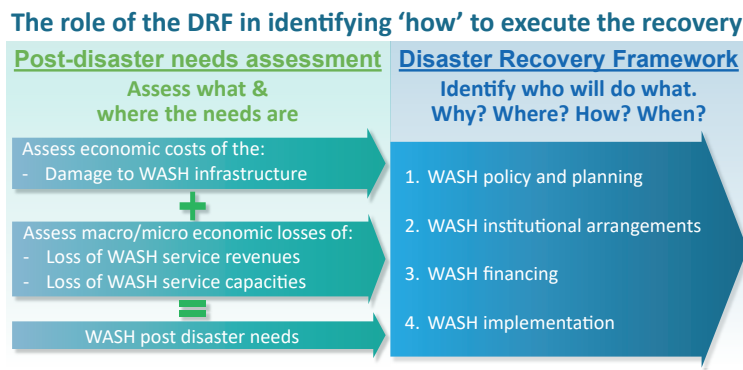
The PDNA seeks to quantify the damage to WASH assets and economic losses associated with WASH service failures. It then derives the WASH recovery needs associated with the estimates of damage and losses, including the costs of:

- Reconstruction of damaged WASH assets (including build back better and disaster resilience)
- Resumption of WASH services (including improved operation and maintenance systems)
- Restoration of governance (including the regulation and training of service providers)
- Reduction of new risks and vulnerabilities as a result of the disaster (including modelling and planning to reduce the risks of repeat events and climate change mitigation).

1.5. Moving from the PDNA to the DRF

The PDNA assesses multisectoral damage and losses to quantify the costs of the type, size and location of post-disaster needs for infrastructure, services and capacities. The PDNA seeks to create a multi-sector planning envelope to inform the trade-offs necessary to manage the recovery process.

Figure 4: Transition from PDNA identification to the DRF implementation

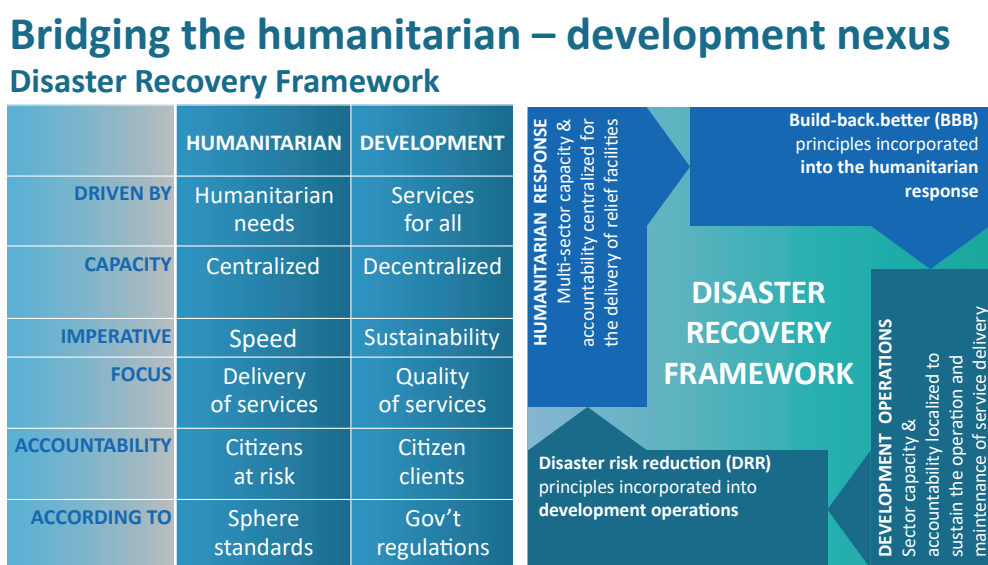


The purpose of the Disaster Recovery Framework (DRF) is to take this a step further to define ‘how’ the recovery process will be managed. The PDNA is a snapshot of all the recovery needs assessed, regardless of whether all these needs can realistically be implemented, while the DRF recognizes available human, financial and organizational capacities. At the core of the DRF lies the prioritization and sequencing of recovery activities with the necessary human and financial resources.

1.6. Bridging the humanitarian – development nexus

The imperative for the immediate provision of WASH services to those at risk from a disaster justifies centralized delivery systems that may bypass routine procedures and local regulations. However, this can undermine the systems designed to provide checks and balances to ensure the sustainability of services. [Bridging the humanitarian-development nexus](#) requires recognition by both humanitarian and development actors of their mutually reinforcing contributions to reducing risks and enhancing development opportunities.⁹

Figure 5: How the DRF can contribute to bridging the humanitarian - development nexus

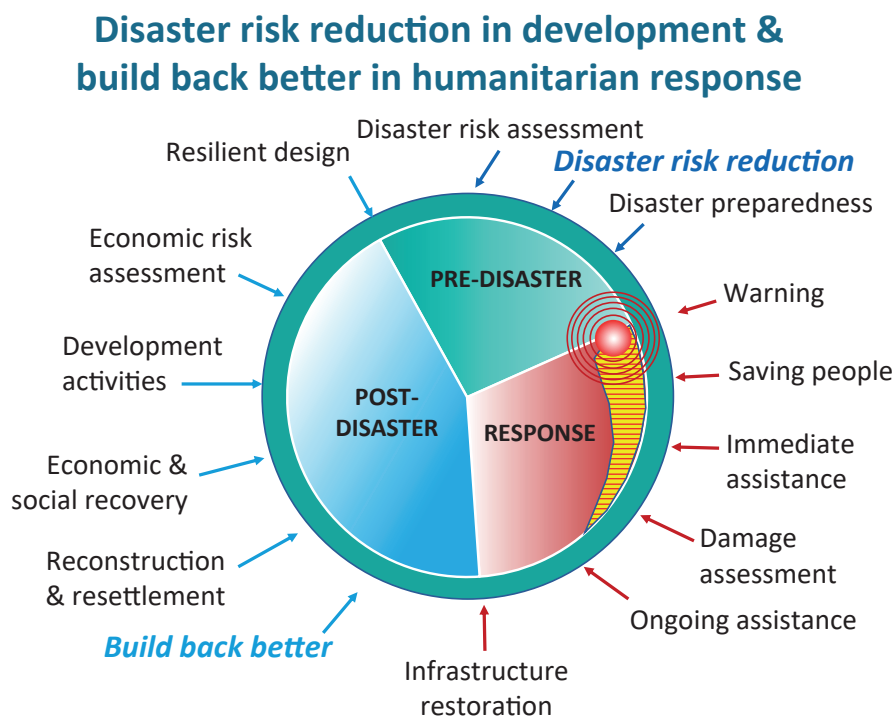


9 OCHA Policy Development and Studies Branch. *New Way of Working*. 2017.

The goal of a disaster recovery framework is to restore WASH infrastructure, services and institutions to pre-disaster levels in disaster affected areas and in so doing contribute to the development of the WASH subsector as a whole. The DRF provides an opportunity for bridging the humanitarian-development nexus by:

- incorporating build-back-better (BBB) principles into the humanitarian response to enable countries to ‘leapfrog’ towards sustainable delivery systems.
- incorporating lessons learned on disaster risk reduction (DRR) into development operations to reduce vulnerability to future humanitarian disasters.

Figure 6: The role of disaster risk reduction (DRR) and build- back-better (BBB) to the DRF



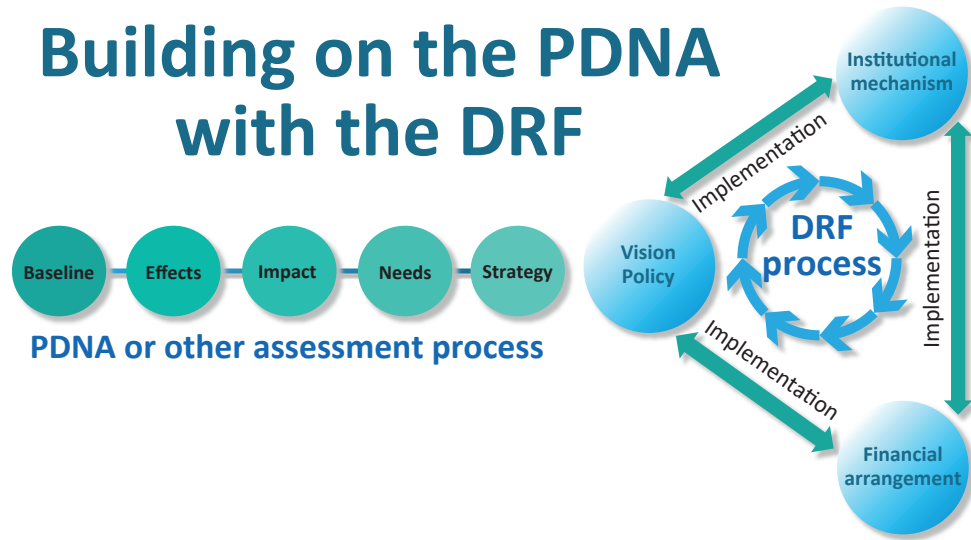
1.7. Structure of the WASH DRF

This document is structured to help the WASH DRF team build on the PDNA to develop the WASH DRF chapter, by assessing the options and the necessary trade-offs associated with the recovery of WASH services.

- WASH DRF Policy chapter: this seeks to define the targets in the context of the restoration of WASH services to pre-disaster levels in alignment with the sustainable development goal targets.
- WASH DRF Institutional chapter: this seeks to define the rules that organize social, political and economic relations in the recovery of WASH services to pre-disaster levels while balancing the imperatives of capacity (often centralized) with accountability (often localized).
- WASH DRF Financing chapter: this seeks to define the resource availability to restore WASH services to pre-disaster levels while recognizing the need to balance the short-term availability of international development assistance with the long-term dominance of local finance (public and private) in the WASH sector.

- WASH DRF Implementation chapter: this seeks to define the procedures by which the recovery of WASH services to pre-disaster levels will occur making the appropriate trade-offs between fast-track versus full-cycle systems.

Figure 7: How the DRF builds on the PDNA



WASH COVID-19 recovery framework annex: this seeks to provide an example of policies, institutions, finances and implementation arrangements that may be associated with the recovery of the WASH subsector from COVID-19.

2. WASH recovery policy and planning

The WASH policy is understood to be a statement of intent to guide decisions to achieve rational outcomes. The DRF WASH policy chapter should set targets and establish principles for the recovery of WASH infrastructure, services and institutions to pre-disaster levels.

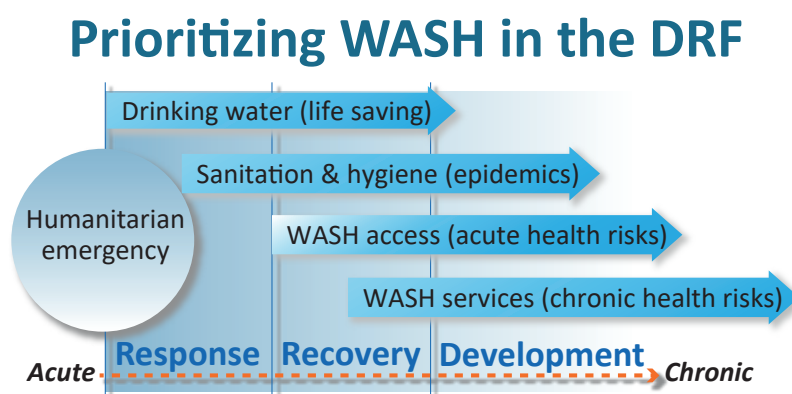
The team in charge of drafting the Policy chapter for the WASH DRF should:

- start with the PDNA, which identifies the priority WASH needs and the associated costs, and then
- refine the PDNA targets and establish the principles that will guide the WASH recovery process in relation to the national goals and targets (within the framework of the SDGs).

2.1. WASH policy within the Disaster Recovery Framework

During the initial response to humanitarian emergencies, water has special priority because it is essential for sustaining life. Sanitation and hygiene are also prioritized to create a barrier to the spread of infectious diseases, the outbreak of health epidemics and increased mortality risks. During the stabilization phase, access to WASH facilities is prioritized to reduce the morbidity costs for households and the public health system. While the acute consequences of WASH service failures on morbidity and mortality remain a priority in the recovery phase, the DRF must also address the chronic consequences of failure to restore WASH services to pre-disaster levels.

Figure 8: The role of the DRF in responding to chronic and acute consequences of poor WASH



For the team responsible for drafting the WASH recovery policy and planning chapter, this means going beyond the restoration of access to WASH facilities, to address the safety and reliability, proximity and inclusiveness of the restoration of access to WASH services from these facilities.

2.1.1. WASH needs in the DRF

While the PDNA defines the priority water supply, sanitation and hygiene recovery needs (and provides an estimate of the anticipated recovery costs), addressing these needs in the recovery phase must go beyond the restoration of WASH infrastructure, to include the quality of services and the relationships of

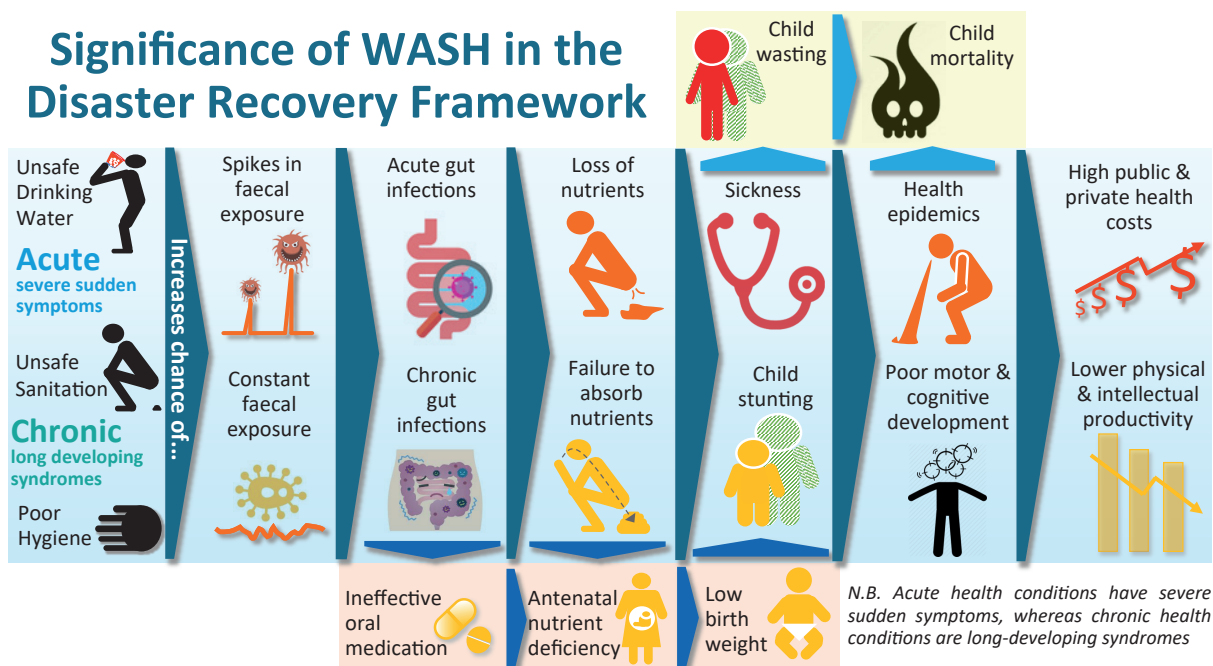
the institutions that will sustain those services. In preparing to address the WASH recovery needs of the affected population, the DRF team should define the targets, policies, principles and plans that will sustain the WASH subsector's recovery.

- **Targets:** while access to WASH facilities is generally used as a proxy for estimating WASH recovery needs, the WASH DRF targets must define the quality of services. Although national targets for the WASH subsector may be defined differently, they can be contextualized from the sustainable development goal (SDG) targets.
- **Policies:** the WASH DRF policy needs to consider how acceptable quality will be defined for the services. This will potentially include the safety, sufficiency, reliability, proximity, accessibility (use), affordability, equity and sustainability of WASH services and the institutions that demand, supply and regulate those services.
- **Principles:** the translation of WASH plans into specified quality infrastructure and services sustained by quality institutions relies on adherence to guiding principles by the implementing agencies. These principles typically require deliberate trade-offs (i.e. demand-responsive versus supply-driven approaches, full cost recovery versus affordability for all, minimum service levels versus incremental improvements) that may apply to some or all of the WASH subsectors that ultimately shape the process for recovery.
- **Plans:** the translation of WASH policies into services requires the development of WASH plans. The framing of WASH DRF plan and budget envelopes should seek to reflect the allocation of responsibilities in the institutions chapter of the DRF (see next chapter).

2.1.2. Significance of WASH in the DRF

The WASH DRF policy team should highlight the significance of the WASH sector, reasserting how WASH supports the objectives of the other sectors in the DRF. They can do this by highlighting how the rehabilitation of WASH infrastructure and the restoration of WASH services is important for social well-being, economic development and poverty reduction.

Figure 9: Significance of the chronic and acute consequences of WASH failures in the DRF



- In the emergency phase, WASH service provision seeks to redress the acute health consequences that are borne as costs by households and the public health system.
- In the recovery phase, WASH service provision must also address the chronic consequences that are borne as limits on the mental and physical development of individuals and the economic development of the affected population.

The team responsible for the WASH recovery policy therefore needs to be cognizant of both

- the acute implications borne as costs by individuals and the public health system, and
- the chronic implications borne as limits on human capital and economic development
- associated with failure in the restoration of WASH services.

2.2. WASH recovery policy and the SDGs

The WASH recovery policy needs to respect national targets and priorities while limiting itself to restoring services to pre-disaster levels. The sustainable development goals (SDGs) form a universal basis for national targets in the WASH subsector, incorporating both humanitarian response and development operations. The SDGs target universal access to safe and affordable water, sanitation and hygiene services (throughout the service delivery chain) and reducing inequalities in all countries (by 2030). This reflects a significant shift from the millennium development goal (MDG) targets, which sought to halve the population in low and middle-income countries without access to improved drinking water and sanitation facilities (by 2015).

Figure 10: Humanitarian and development WASH SDG targets

SDG 6: Ensure the availability and sustainable management of water and sanitation for all



Source: UNICEF's Strategy for WASH (2016-2030)

2.2.1. Water supply

2.2.1.1. Water supply recovery targets

The sustainable development goals for drinking water are primarily defined in:

- SDG target 6.1 “By 2030, achieve universal and equitable access to safe and affordable drinking water for all.”
- SDG target 6.4 “By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.”

where a safely managed service (as measured by the JMP) is defined as “drinking water from an improved source that is located on premises, available when needed and free of faecal and priority chemical contamination”.

Figure 11: SDG water supply service ladder

Water safety and security	
SDG 6.1 & 6.4	Description
Water security	- Change in water use efficiency over time - Level of water stress
Safely managed service	Drinking water from an improved source located on the premises, available when needed and free of faecal and priority contamination
Basic service	Drinking water from an improved source if collection time is not more than 30 minutes for a round trip with queuing
Limited service	Drinking water from improved sources which require over 30 minutes for a round trip including queuing
Unimproved service	Drinking water from unprotected dug wells or springs
No service	Drinking water from a river, dam, lake, pond, stream, canal or irrigation channel

Progressive realization

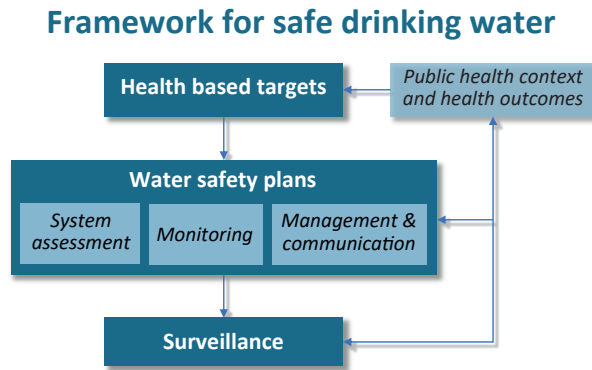
Source: Adapted from WHO/UNICEF JMP (2017)

While the SDG target for water safety and security may not be achievable with the resources and timeframe available for recovery, the DRF team may choose to prioritise the progressive realization of these targets (see Figure 10).

2.2.1.2. Water supply recovery policies

While the reliability and the proximity of access to enough water for all is extremely important, it is essential that the water supply recovery policy prioritizes the safety of drinking water ‘at the point of consumption’ for all those within the affected area.

Figure 12: WHO framework to ensure that water quality standards deliver public health outcomes



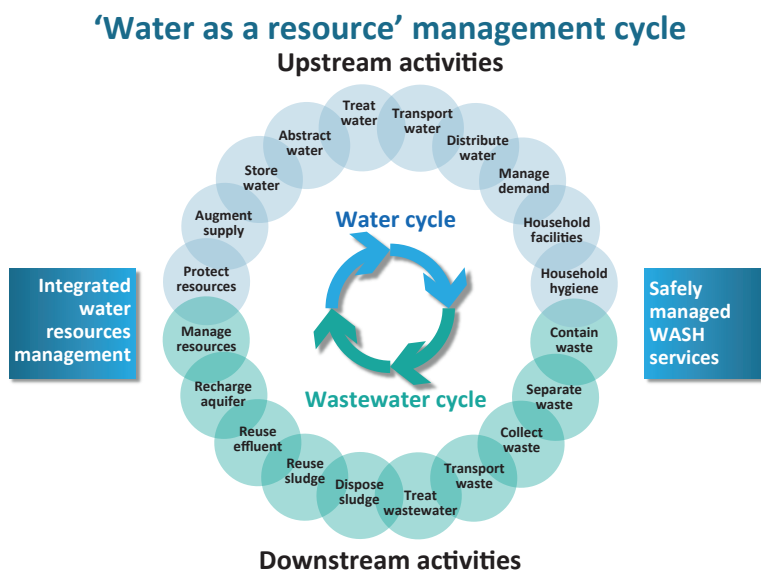
Source: WHO (2011) Guidelines for Drinking-water Quality (Fourth Edition)

Ensuring the safety of drinking water for all, at all times, is set by the [WHO Guidelines for Drinking-Water Quality](#) within a framework of health-based targets and independent surveillance.¹⁰ Control of the microbial and chemical quality of drinking-water is prioritized through the development of water safety plans designed to protect the system and control the process to ensure that the numbers of pathogens and the concentration of chemicals present a negligible risk to public health and that water is palatable to consumers. In practice, the preparation of [water safety plans](#) (and in some contexts drinking [water safety and security plans](#)) seek to identify and mitigate the priority risks necessary to ensure sufficient safe water for all.

2.2.1.3. Water supply recovery principles

While water supply, hygiene, sanitation and drainage services are generally managed as separate subsectors, considering WASH as part of a [single water resource management cycle](#) can reduce risks and improve sustainability. Improved management of water resources reduces the load on the wastewater system and vice versa. For instance, judicious decision making regarding the use of water as a resource within the household can reduce the capital and operational costs of both bulk water and wastewater systems.

Figure 13: Water as a resource management cycle to reduce risks and improve sustainability



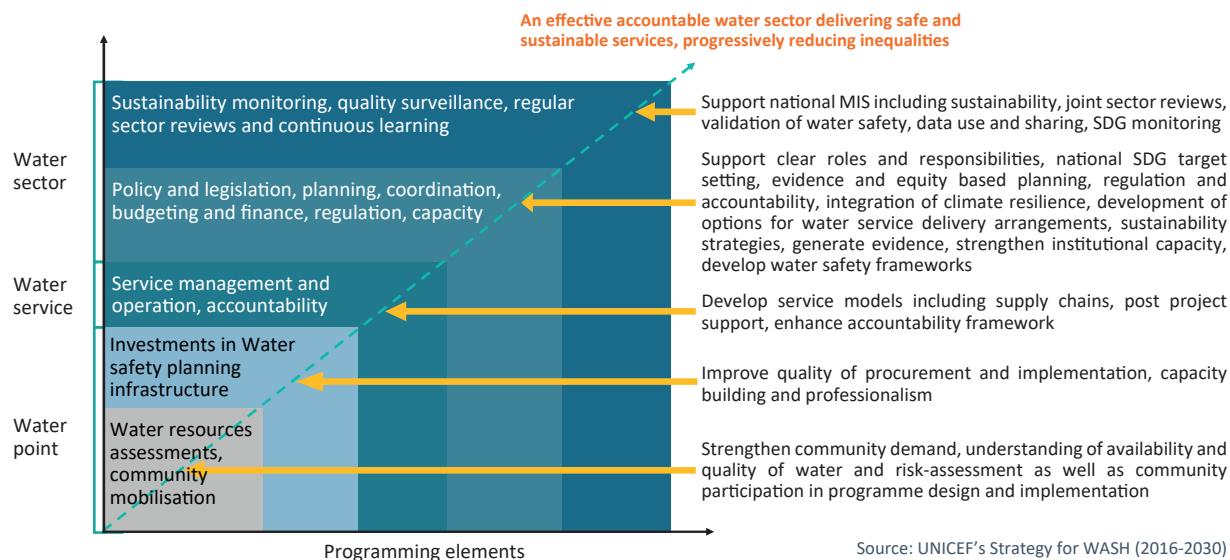
10 WHO. *Guidelines for Drinking Water Quality. 4th edition.* Geneva, 2011.

2.2.1.4. Water supply recovery plans

Contributing to safe, accessible, sustainable and affordable water services for everyone at all times can be achieved by targeting programme inputs at [the water point, water service and water sector level](#).¹¹ The focus in water supply recovery planning needs to be informed by the extent to which the humanitarian emergency has undermined the water points, the water service providers or the governance of the water sector.

Figure 14: Water recovery programming in response to recovery needs

Water programming at the water point, water service & water sector level



2.2.2. Sanitation

2.2.2.1. Sanitation recovery targets

The sustainable development goals for sanitation are defined by:

- SDG target 6.2: “By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations”.
- SDG target 6.3: “By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally”.

A safely managed sanitation service (as measured by JMP) is defined as the “use of improved facilities that are not shared with other households and where excreta are safely disposed of in situ or removed and treated off-site”.

11 UNICEF. *Strategy for Water, Sanitation and Hygiene 2016-2030*. New York, 2016.

Figure 15: SDG sanitation service ladder

Sanitary safety & security

SDG 6.2 & 6.3

	Description
Ambient water quality	- Proportion of wastewater safely treated - Proportion of water bodies with good ambient water quality
Safely managed service	Use of improved facilities that are not shared with other households and where excreta are safely disposed of in situ or transported and treated off
Basic service	Use of improved facilities that are not shared with other households
Limited service	Use of improved facilities shared between two or more households
Unimproved service	Use of pit latrines without a slab or platform, hanging latrines and bucket latrines
No service	Disposal of human faeces in fields, forest, bushes, open bodies of water, beaches or other open spaces or with solid waste

Progressive realization

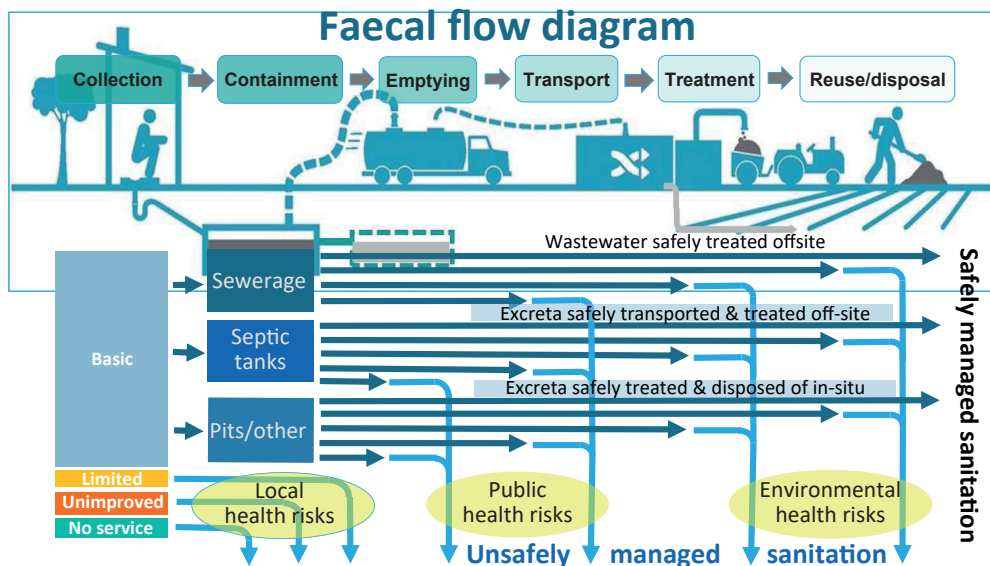
Source: Adapted from WHO/UNICEF JMP (2017)

While the SDG target for safely managed sanitation may not be achievable with the resources and within the timeframe available for recovery, the DRF team may prioritise the progressive realization of these targets (see Figure 14).

2.2.2.2. Sanitation recovery policies

Safely managing sanitation throughout the whole service chain requires faecal sludge and effluent to be safely collected, contained, emptied, transported, treated, and disposed of or re-used. Safe management of the faecal waste chain can be quantified and depicted through a [Faecal Flow Diagram](#). This also enables the identification of the location and type of faecal exposure risks (local health risks, public health risks and environmental health risks) throughout the management chain for faecal waste.

Figure 16: The use of faecal flow diagrams to quantify and target faecal exposure risks



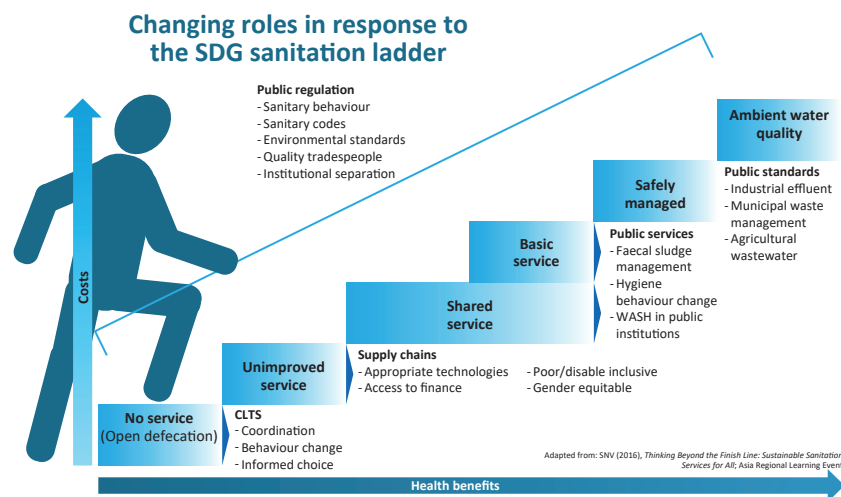
The sanitation recovery policy should prioritize the major faecal exposure risks, irrespective of whether they are associated with failure in the collection, containment, emptying, transport or treatment of networked or non-networked sanitation systems. The team also need to be aware of the risks to surface water bodies from other sources of pollution (i.e. livestock, agriculture, industries and urban waste).

2.2.2.3. Sanitation recovery principles

The effectiveness of sanitation service delivery models tends to vary as households and countries move up the [sanitation ladder](#):

- collective approaches (e.g. community-led total sanitation) are more effective in reducing open defecation;
- sanitation marketing approaches are more effective in assisting households to move-up the sanitation ladder;
- public service approaches are more effective in managing the externalities of networked service delivery;
- enforcing public standards is required to ensure that industrial, agricultural and municipal risks are managed.

Figure 17: Sanitation recovery programme models that respond to different sector challenges



Public regulations are always necessary to ensure that all faecal waste is safely contained, emptied, transported, treated and re-used or disposed of. Sanitation recovery principles for the affected areas should prioritize the approaches that are most effective in enabling the affected population to move back-up the sanitation ladder.

Sanitation recovery plans should also adopt a risk-based approach to redress the highest faecal contamination risks. [Sanitation Safety Planning \(SSP\)](#) is one such risk-based approach for sanitation systems. This enables stakeholders to:

- systematically identify and manage health risks throughout the sanitation chain;
- channel investment based on actual risks, to promote health benefits and minimize adverse health impacts;
- provide assurance to authorities and the public on the safety of sanitation-related products and services.

Perhaps most importantly, Sanitation Safety Planning can be used to coordinate the efforts of the many stakeholders in the sanitation chain – including health departments, utilities, the private sector, and environmental and agricultural authorities – to maximize the health benefits of sanitation for all.

Figure 18: Sanitation Safety Planning



2.2.3. Hygiene

2.2.3.1. Hygiene recovery targets

The sustainable development goal for hygiene is set out in SDG 6.2, “universal access to adequate and equitable sanitation and hygiene by 2030”, which defines a basic hygiene service as “presence of a handwashing facility with soap and water on-premises”.

Figure 19: SDG hygiene service ladder

SDG hygiene definitions

Basic service

Availability of a handwashing facility on premises with soap and water

Limited service

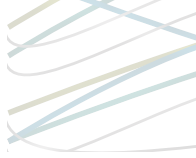
Availability of a handwashing facility on premises without soap and water

No service

No handwashing facility on premises

Note: Handwashing facilities may be fixed or mobile and include a sink with tap water, buckets with taps, tippy-taps, and jugs or basins designated for handwashing. Soap includes bar soap, liquid soap, powder detergent and soapy water but does not include ash, soil, sand or other handwashing agents

Source: WHO/UNICEF JMP (2017)



As access to a handwashing facility is generally much higher than access to a facility with soap or water on the premises (see Figure 18), the DRF team should address the supply chains associated with reliable access to soap and water on the premises, in addition to the targets for access to a handwashing facility.

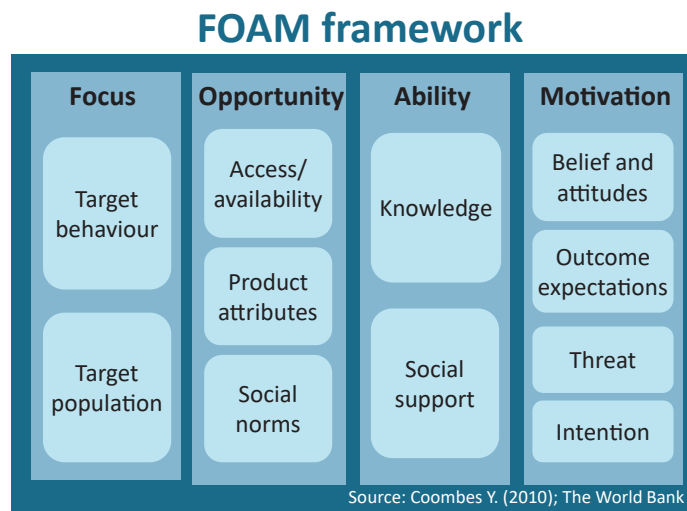
2.2.3.2. Hygiene recovery policies

Handwashing with soap has been shown to reduce [diarrhoea by 23-40%](#), [respiratory illness by 16% to 21%](#), [gastrointestinal absenteeism in school children by 29% to 57%](#). Hand hygiene is also the first line defence against the rise of [antimicrobial resistant infections and healthcare associated infections](#). As one of the most cost-effective investments in public health, the recovery policy should prioritize hand hygiene in the DRF. This should seek to broaden awareness that good hand hygiene practices are not only effective in reducing acute individual health risks (i.e. diarrhoea, ARI, gastroenteritis and wasting in children) but also in reducing chronic public health risks (i.e. transmission of viruses, antimicrobial resistant infections and stunting of growth in children).

2.2.3.3. Hygiene recovery principles

While good hand hygiene practices are effective in reducing diarrheal morbidity, changing hand hygiene behaviour is often extremely difficult. While it is necessary to understand the universal drivers of hygiene behaviour, we also need to understand the local determinants of hygiene behaviour. This has led to evolution of frameworks (i.e. the [FOAM Framework](#)) that seek to understand and influence individual and collective hygiene behaviours.

Figure 20: Constituent elements of the FOAM Framework for hygiene behavior change



2.2.3.4. Hygiene recovery plans

In the DRF, handwashing recovery plans should be preceded by a process to improve understanding of the universal and local determinants of individual handwashing behaviour. This will help with prioritizing the most effective means of changing handwashing behaviour within a particular affected area and context. This must include the desirability of handwashing facilities, access to water and availability of soap in households, places of education, healthcare facilities, retail facilities and public buildings.

2.2.4. Drainage

2.2.4.1. Drainage recovery targets

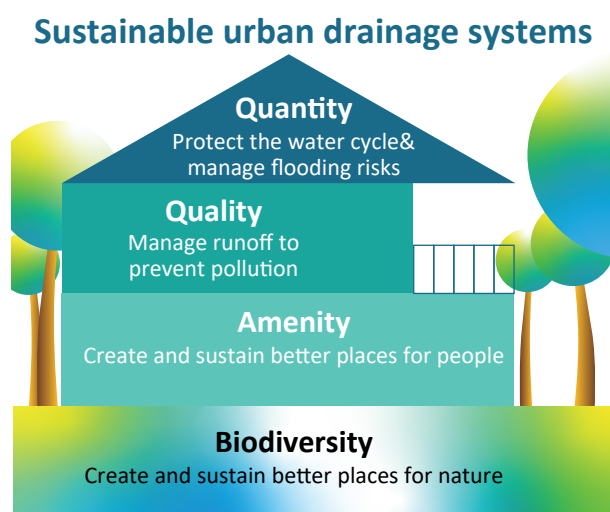
As the natural environment is built on, a significant portion of the natural surface becomes impermeable (i.e. covered by buildings, roads and infrastructure). This sealing of the surface alters the natural water cycle, stopping rain permeating the ground and recharging aquifers, while generating larger volumes of runoff during higher peak flows. Protecting and restoring natural flows is primarily defined by:

- SDG target 6.6: “By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes”.

2.2.4.2. Drainage recovery policies

In conventional drainage systems, surface water is conveyed away from urban centres as quickly as possible to reduce localized flooding and sanitation risks. However, recent [sustainable urban drainage systems \(SuDS\)](#) have sought to reintroduce the natural hydrogeological cycle into urban settings.

Figure 21: Principles defining sustainable urban drainage systems



Drainage recovery policy should seek to maximize the utility of this water by managing the quantity, quality, amenity benefits and biodiversity of urban surface water, instead of treating it as a problem to be disposed of.

2.2.4.3. Drainage recovery principles

Sustainable urban drainage systems (SuDS) deploy a range of technologies such as rainwater harvesting, permeable surfaces, infiltration, separation, transport, storage and treatment to:

- use surface water runoff as a resource
- manage rainwater close to where it falls (at source)
- allow rainwater to soak into the ground (infiltration)
- promote evapotranspiration

- slow and store runoff to mimic natural runoff rates and volumes
- reduce contamination of runoff through pollution prevention and controlling runoff at source

2.2.4.4. Drainage recovery plans

Drainage (rainwater, stormwater and greywater management) is an essential yet underestimated component in the reconstruction of water supply and irrigation infrastructure, as well as roads and buildings. The team responsible for drainage recovery planning should assess the viability of the technologies available to maximize the opportunities and minimize the financial, health and environmental costs associated with the drainage (or use) of water (rainwater, greywater, stormwater).

2.2.5. Solid waste

2.2.5.1. Solid waste recovery targets

There is a positive correlation between a nation’s gross domestic product (GDP) and the solid waste generated by its citizens. As a country’s GDP increases, so does per capita generation of solid waste. The sustainable development goal for solid waste management is captured in SDG 11 (sustainable cities and communities) and SDG 12 (responsible consumption and production), namely:

- SDG Target 12.3: “By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses”.
- SDG Target 12.5: “By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse”.

Figure 22: Constituent materials in municipal solid waste



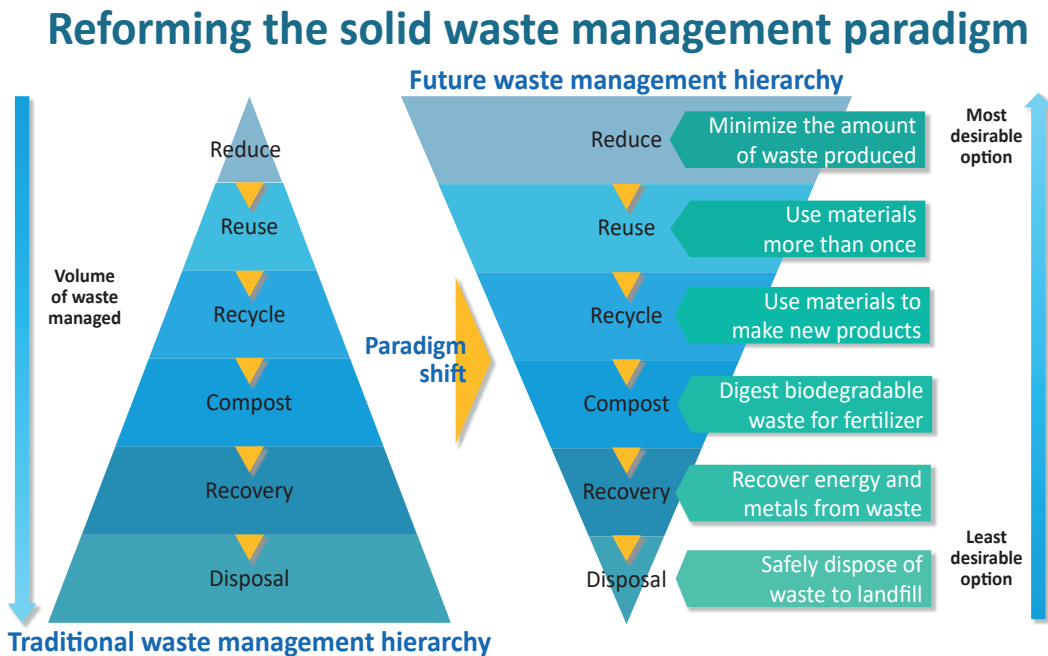
2.2.5.2. Solid waste recovery policies

The solid waste recovery policy should seek to address the resource, energy and food wastage associated with existing municipal solid waste management systems. This will require a paradigm shift in the approach towards solid waste management by municipalities, producers, consumers, collectors and recyclers to rethink, reduce, reuse, recycle, compost, recover, dispose of and research.

2.2.5.3. Solid waste recovery principles

Reforming the current solid waste management paradigm will require considerable effort to:

Figure 23: Shifts necessary to strengthen the sustainability of solid waste management



- Rethink: by redesigning products to make them more durable, recycled, and recyclable or compostable, or use materials that are more environmentally sustainable.
- Reduce: by discouraging consumption, especially of disposable items, non-recyclable packaging and toxic chemicals.
- Reuse: by promoting dismantling of building, thrift stores, food recovery for the hungry and for animals, paint recycling/exchange systems and repair centres for used household items.
- Recycle: by mandating the separation of paper, glass, metal, plastic, biodegradable and electronic waste at source and encouraging material recovery facilities (MRF).
- Compost: by subsidizing household composting bins, shredding tree waste as mulch, collecting biodegradable waste frequently and banning clean organic waste from landfills.
- Recovery: by processing waste materials to recover energy (i.e. methane gas from organic waste, biodiesel from saturated fats and conversion of plastics to energy).
- Disposal: by ensuring proper landfill management by minimizing liquid inflows and leachate outflows, with systematic capping and scrubbing gas prior to firing.
- Research: by routinely sorting waste to see what remains in the waste stream that is productive and can be dealt with 'higher up' the waste stream.

2.2.5.4. Solid waste recovery plans

Solid waste recovery plans should seek to prioritise cost reduction and cost recovery opportunities for local government through the greening of solid waste management systems. This should include provisions for the separation at source of organic material (food and garden waste), recyclables (paper, glass, metals, plastics and fats, oil and grease), reusables (clothes, appliances and furniture), hazardous waste (paint, batteries and chemicals) from the other waste destined for landfill. This requires penalties and incentives for households and commercial and public premises to rethink, reduce, recycle, compost and recover energy through solid waste management processes. This may be implemented in programmes designed to instil civic pride, such as Clean City competitions, or programmes that target household/commercial efficiency, such as the zero-waste movement.

2.3. WASH sector recovery programmes

While WASH Policies and Plans are essential, they are not sufficient to ensure WASH recovery needs will be met. Ultimately, the translation of WASH recovery policies and plans into practice is dependent on adoption of the targets, principles and plans into WASH recovery programmes. While WASH recovery programmes are typically defined by the allocation of responsibilities to different institutions (and the deployment of their capacity), the boundaries of WASH recovery endeavours (i.e. projects and budgets) are typically defined by the sources of funding.

For the DRF Policy team, this means that the success of WASH recovery programmes in translating policies into practice depends on ensuring the deployment of institutional capacity (i.e. legislative and social willpower) and financing capacity (i.e. budgets and projects). The likelihood of success being achieved can be increased by establishing processes for consultation and information collection at the start of development of the WASH recovery policy.

2.3.1. WASH information collection processes

Well targeted assessments are an essential ingredient for the development of WASH Policies and Plans. The targeting of primary data collection processes can be improved through synthesizing of pre-disaster access to WASH services from secondary sources:

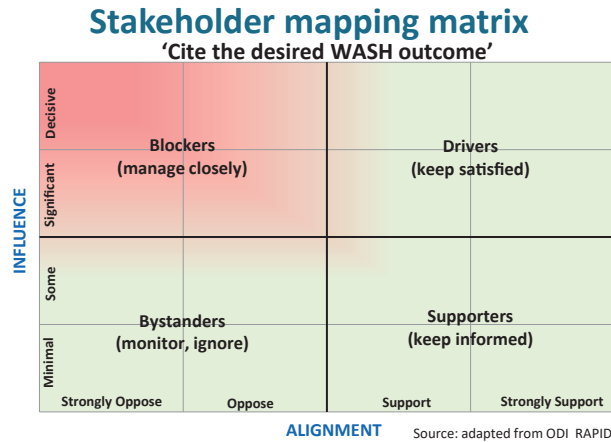
- On the demand side: this includes national individual household data sets (e.g. from censuses), national sample household data sets (e.g. from [MICS](#), [HIES](#) or [DHS](#)) and sample household surveys of specific areas or issues (e.g. from projects or academic research).
- On the supply side: this includes data on the level of WASH infrastructure provided by public ministries (e.g. Public Works, Health, Education) and quality of WASH services (e.g. [IBNet](#))

The gap between the reported levels of supply and consumption of WASH services can offer critical insights into the gaps in the quality of service and patterns of exclusions for primary assessments. These critical gaps can be plugged further through the deployment of sample surveys via focus group discussions, sample surveys, personal interviews and call centre surveys.

2.3.2. WASH consultative processes

The WASH DRF team is advised to engage as early as possible with the stakeholders most relevant to addressing the WASH sector recovery needs. This should include policy makers (i.e. ministries of water, health, infrastructure and the environment), service providers (i.e. municipalities and local governments, utilities and private suppliers) and citizen/clients (i.e. serviced and unserved households and businesses, and their constituent members, and communities and lobby groups). Engaging with these stakeholders in the rationalization and prioritization of needs and the development of targets, policies and plans increases the likelihood that WASH recovery programmes will be translated into services.

Figure 24: Matrix of stakeholder incentives and influence



For instance, the ODI Rapid [tool](#) can be useful for identifying the support or opposition of stakeholders to the implementation of WASH recovery programmes to address the priority WASH needs (see Figure 23). Understanding and seeking to allay the resistance of 'blockers' while strengthening linkages between 'supporters' and 'drivers' can improve the incentives for a particular project or a necessary reform process. This needs to be complemented by understanding the winners and losers in everyday decisions (e.g. the supply of goods and services) and the long-term effects of the success of the project on power relationships.

3. WASH institutional arrangements for recovery

While the previous chapter on recovery policy and planning refines the needs identified in the PDNA to define the recovery targets, this chapter on institutions seeks to define “who should do what” in the recovery process. The institutions responsible for WASH recovery are defined by “the formal and informal rules that organise social, political and economic relations” in the recovery of WASH services to pre-disaster levels. It is recommended that the team in charge of defining the institutional arrangements for the WASH DRF should assess existing legislation, regulations and rules to understand de-jure ‘who should do what’ in the recovery process.

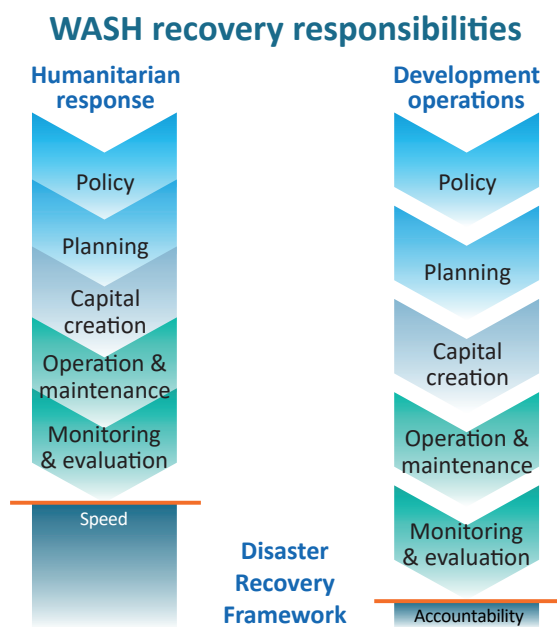
As ‘who should do what’ is defined differently in the humanitarian response to disasters compared to routine development operations, the WASH DRF team will need to identify the most appropriate institutional arrangements to balance the imperatives of speed with those of sustainability in the execution of the recovery process.

3.1. WASH institutional responsibilities

In development operations, responsibilities for WASH service provision are defined by legislation, regulations and rules that often separate the responsibilities for agencies in:

- Policy
- Planning
- Capital creation
- Operation and maintenance
- Monitoring and evaluation (and regulation)

Figure 25: WASH responsibilities for development operations versus humanitarian response



To ensure that the owners (and providers) of WASH assets undertake to source, transport, store, treat and use water and wastewater in a manner that ensures safe and equitable access for all.

In the event of a disaster, legislation will often assign the responsibilities for policy, planning, capital creation, operation and maintenance, monitoring and evaluation of emergency services (including WASH) to a humanitarian office or responding agencies. The Disaster Recovery Framework needs to understand the assignment of humanitarian and development responsibilities for WASH, to determine the appropriate compromise for the disaster recovery framework.

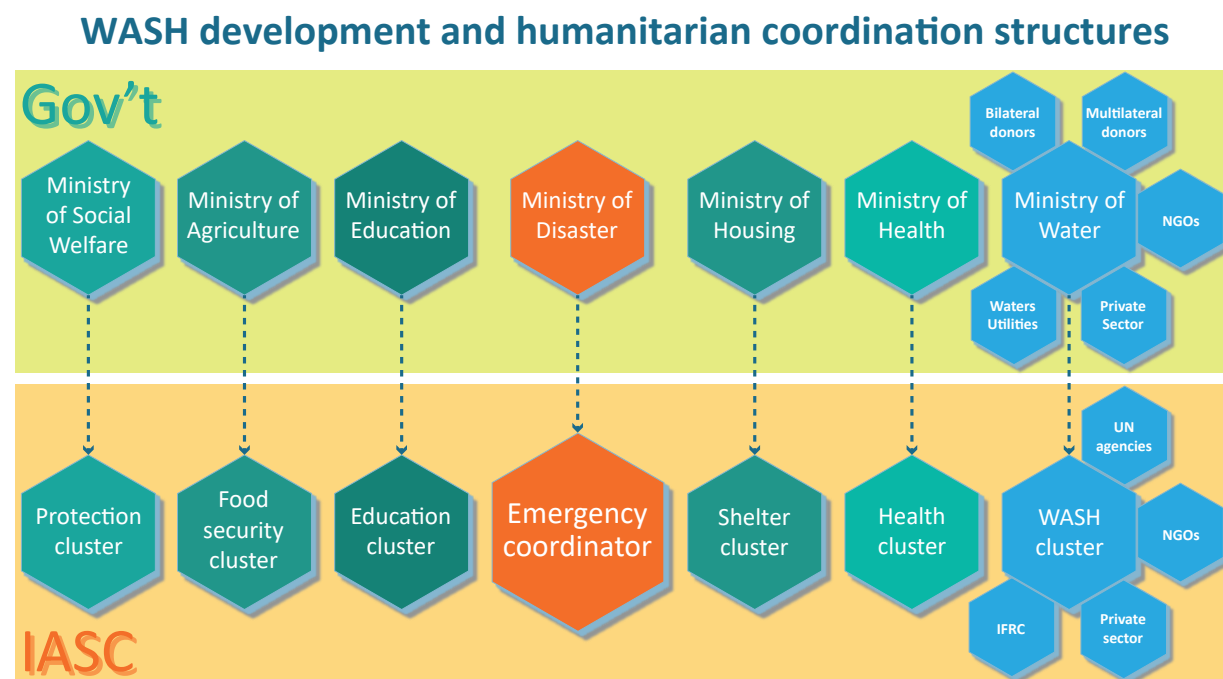
3.1.1. Identification of a lead agency for recovery

The WASH disaster recovery framework should consider how the [Inter-Agency Standing Committee \(IASC\)](#) humanitarian coordination structures (that are in place for the response and that trigger the PDNA) will be located within the broader development coordination structures and the poverty reduction priorities of the government.

For example, reflecting the national policy coordination structures within humanitarian cluster coordination structures enables policy coordination resources to be directed to humanitarian coordination during an emergency and vice versa. While the coordination structures and the actors may not change significantly, the lead agency may change with:

- responsibility for multi-sector coordination shifting from the Planning Ministry (for policy coordination) to the Disaster Response Ministry (for humanitarian response coordination); and
- responsibility for WASH sector coordination shifting from the Water Ministry (for policy coordination) to the WASH cluster (for humanitarian response coordination).

Figure 26: Embedding IASC humanitarian coordination in national policy coordination structures



The choice of the lead agency for WASH recovery will depend on the nature of the disaster, the state of governance and the timeline for recovery. In some contexts, responsibility for WASH sector recovery may be led by a Rural Development Ministry or an Urban Development Ministry, an Infrastructure (& Works) Ministry or a Health Ministry. However, deploying the policy coordination capacities for development operations to coordinate the humanitarian response is most likely to facilitate skilled and sustained provision of coordination services.

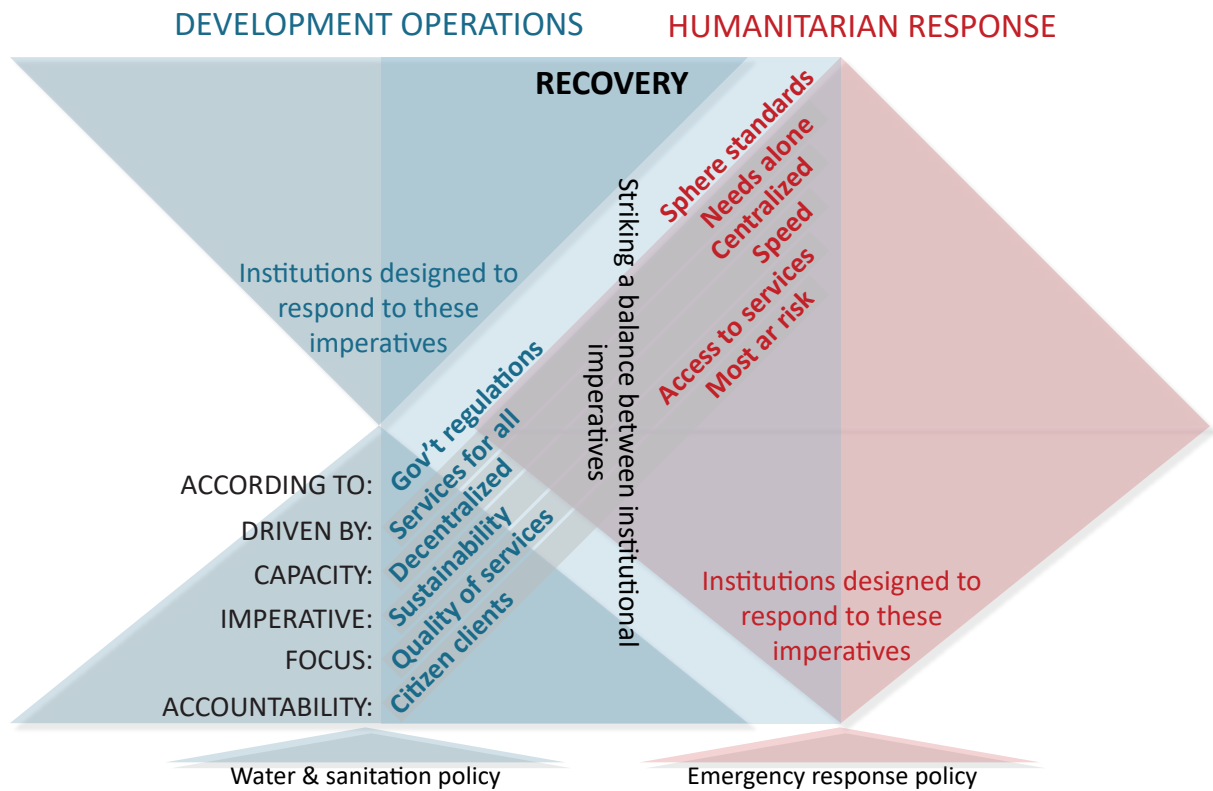
3.2. Defining WASH recovery responsibilities

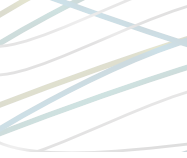
The Disaster Recovery Framework needs to strike a balance between the operational modalities for the provision of WASH emergency services during the humanitarian response and the sustained delivery of WASH services through development operations in terms of the allocation of responsibilities for WASH policy, capital creation (assets, human and social capital), operation and maintenance, monitoring and evaluation. In most cases, this will require trade-offs in the application of:

- international versus national WASH standards
- the quality versus universality of WASH access
- centralized versus localized delivery of WASH services
- speed versus sustainability of WASH services
- accountability to citizens versus most-at-risk

Figure 27: The tension between development operations and humanitarian response in recovery

Reconciling competing imperatives in WASH recovery





The starting point for defining ‘who should do what’ in terms of the institutional responsibilities for the Disaster Recovery Framework is identification of responsibilities for WASH service delivery under prevailing legislation. This is essential to ensure that the assignment of responsibilities for the restoration of WASH assets to pre-disaster levels does not undermine the role of existing institutions responsible for sustaining the quality of WASH service delivery.

3.2.1. Development operations and humanitarian response under the constitution

The WASH DRF team is advised to start with a review of the assignment of decision-making responsibilities under the country’s constitution. The constitution will usually define the processes through which WASH related laws will be made, administered and arbitrated for development operations and humanitarian response.

- The constitution will typically allocate responsibilities for WASH related ‘subjects’ to respective tiers of government. The allocation of water, sanitation, solid waste, environment, housing, local government, roads (and their drainage), health and education issues to a national, regional or local tier of government then defines which legislative, executive and judicial bodies are responsible for making, administering and arbitrating on the relevant laws.
- The constitution will typically also allocate humanitarian responsibilities to tiers of government for disaster management (including responsibility for the military). In general, the law-making and executing responsibilities for disaster management tend to be allocated to more centralized tiers of government than those for provision of WASH services.

This understanding of the legislative responsibilities for WASH services during development operations and humanitarian response enables the WASH DRF team to determine ‘who should decide’ on the allocation of responsibilities for the WASH DRF.

3.2.2. WASH sector and disaster management laws and by-laws

The WASH DRF team is then encouraged to identify all the laws and by-laws associated with the disaster management and WASH sectors. This should enable identification of the legislation relevant to the WASH DRF. For example, legislation relevant to the WASH DRF may be contained in the following:

- Armed forces acts: assign functional responsibilities to the military at times of national emergency that may include the management of WASH services.
- Disaster management acts: assign responsibilities for the management of the response in humanitarian emergencies that may enable WASH development regulations to be bypassed.
- Local government acts: assign functional responsibilities (i.e. policy, planning, capital creation, O&M and M&E) and powers to ensure service compliance throughout the WASH service chain.
- Public health acts: establish the responsibilities of citizens and government agents to protect public health by minimizing the transmission of water borne diseases. This may include WASH standards for households and public buildings, markets and restaurants, offices and factories.

- Water resources acts and land acts: define the rights to water resources (groundwater, surface water, rain) as well as the ‘rights of pipes’ in relation to the land.
- Environmental acts: define the necessary processes to minimize the negative environmental consequences of activities that affect the safe management of water and wastewater.
- Physical planning acts and building acts: establish the processes and systems for determining the permissible uses of land and creation of residential, commercial and industrial buildings.
- Water and sewerage and company acts: establish the boundaries for public and private, limited and unlimited entities that manage the delivery of WASH services to customers.
- Water and sanitation by-laws, building by-laws and planning by-laws: often enacted by local governments establish the procedures and limits within which citizens can create assets to access water and sanitation, and solid waste and drainage services in spatial areas.
- Annual budgets: including all public funded and donor financed WASH activities that are generally tabled as Bills for approval by the relevant legislative body.

3.2.3. WASH and disaster management rules or regulations

The WASH DRF team is encouraged to identify the rules and regulations established by the relevant departments for execution of WASH and disaster management laws. This should enable the identification of the rules and regulations that are relevant to the WASH DRF, and identification of any gaps in the allocation of responsibilities for the recovery of the WASH sector. Examples of rules that may be relevant to the allocation of responsibilities include:

- Standing orders on disasters: from Disaster Management Departments establish the hierarchy of responsibilities of all agencies throughout the disaster management cycle for risk reduction, alerts and warnings, disaster response and rehabilitation.
- Drinking water quality standards: from the Department of Health or a Standards Agency set point-of-delivery standards for all drinking water providers. The WHO Guidelines on Drinking Water Quality (4th Edition) propose limits and processes to manage water quality (www.who.int).
- Effluent water standards: from the Department of the Environment set binding wastewater standards at the point-of-release from properties of industries, municipalities and farmers.
- Recreational water standards: from the Department of the Environment set water quality limits on the use of surface water for recreational and other purposes (e.g. fishing, water sports and irrigation).
- Solid waste management rules: from the Department of the Environment set standards for the generation, collection, transport and treatment of solid waste and roles to ensure compliance.
- Environmental rules: from the Department of the Environment establish the limits and processes (e.g. Environmental Impact Assessments) for activities that impact water and wastewater.
- Water resource allocation rules: from the Department of Water Resources set abstraction limits and water entitlements for domestic, environmental, agricultural and industrial uses.
- Building and plumbing codes: from the Department of Housing set the water and wastewater plumbing standards for buildings and the liability for qualifications.
- Planning (Zoning) Codes: from the Land Use Department set the processes for ensuring that the development and use of property complies with approved spatial development plans.
- Water and wastewater material standards: from the Department of Infrastructure or a Standards Agency set quality standards for pipes, pumps and fittings (see ISO 24510-14, www.iso.org).
- Water and wastewater design standards: from the Department of Water or a Standards Agency set the minimum standards for the design and construction of water supply and sanitation assets.

- Qualification standards: from the Department of Infrastructure or Professional Association set qualifications for engineers (civil, mechanical and electrical) and plumbers engaged in the sector.
- Land acquisition and easement rules: from the Land Use Department set the conditions for mandatory purchase and nonpossessory rights to use land for water management assets.
- Planning approval, building license, occupation certificate and plumbers licences: issued by local government bodies ensure compliance with national water and wastewater construction standards.
- Connection agreements and customer service obligations: from service providers set the obligations for consumers and providers to reach an agreement on the delivery of water and wastewater.

3.2.4. WASH and disaster management policies, plans and projects

Finally, the WASH DRF team is encouraged to assess existing WASH policies, plans and projects. While existing policies, plans and projects in the WASH and Emergency sectors are not binding on future endeavours, they do provide an opportunity to deploy existing processes and capacities within the WASH DRF. Existing policies, plans and projects that may be relevant to the deployment of capacities include:

- WASH and disaster management policies: from the relevant departments propose the high-level strategic alignment for the WASH and disaster management sectors. While sector policies are important for establishing future priorities, they are less binding than laws, rules and regulations.
- Medium-term development plans: from planning and finance departments seek to project the five-year funding envelope and expenditure requirements across all sectors. While the MDTP is strategically important for translating the WASH and disaster management policy priorities into a funding framework, it is not binding on government revenue or expenditure allocations.
- WASH and disaster management projects: from the respective line departments are prepared seeking annual budget allocations to implement the government’s WASH and disaster management plans. While such projects propose to deliver WASH or disaster management policy objectives, within a whole-of-government plan and a specific time period at a specific cost, they are often subject to the legacy of previous annual budget allocations.

The development of a WASH Policy and Planning document for the Disaster Recovery Framework is detailed in the previous chapter.

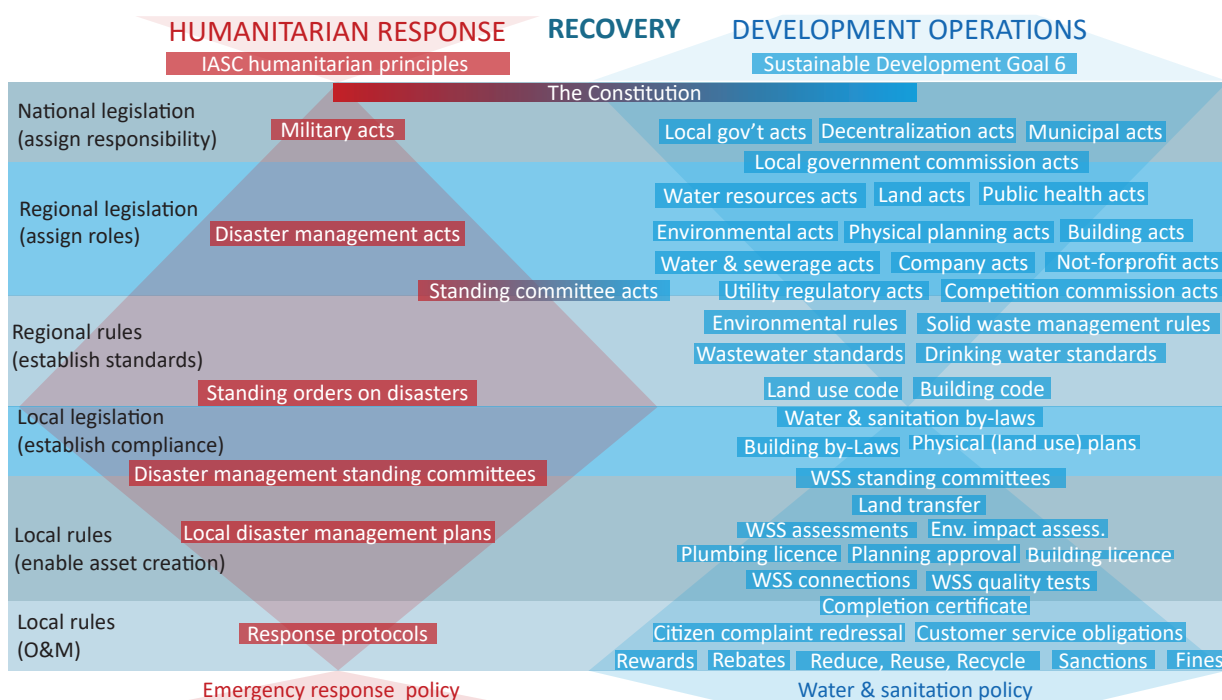
3.3. Assignment of recovery responsibilities for WASH

The legacy of disaster management response means that the departments and projects with the greatest capacity may retain the flexibility to allocate existing development resources towards the provision of emergency WASH services. While the capacity for speed is an important consideration in emergency response, there is a tendency for the assignment of responsibilities for WASH recovery to be led by the agencies with the greatest resources (i.e. budget execution and staffing). The assignment of responsibilities for WASH recovery must balance the “allocation of capacity to responsible agencies” with the “allocation of responsibility to agencies with capacity”.

- In most cases, it is possible for accountability (or financing) to establish executing capacity for sustaining service delivery (i.e. staffing, expertise and equipment) as being subservient to the responsibility for sustaining service delivery (i.e. with the legislated responsibility).
- In decentralized service delivery environments, it is possible to separate the responsibility of local governments to ensure WASH services for all from the capacity of central departments to design, construct and deliver WASH assets.

Given the differences that often exist in the assignment of responsibilities for WASH and disaster management, there is a need for the WASH Disaster Recovery Framework to strike an appropriate balance between the capacity for rapid reconstruction and accountability for sustaining service delivery.

Figure 28: Hierarchy of regulations associated with WASH in development and emergencies



3.3.1. Separation of roles for WASH service delivery

There is a risk that assignment of recovery responsibilities by the DRF team can undermine the accountability of policy makers and service providers for ensuring safely managed WASH services for all. The DRF team must always be cognizant of the fact that the extension of recovery support can drive the accountability of policy makers and WASH service provider upwards in a manner that reduces downward accountability to the citizen //clients.

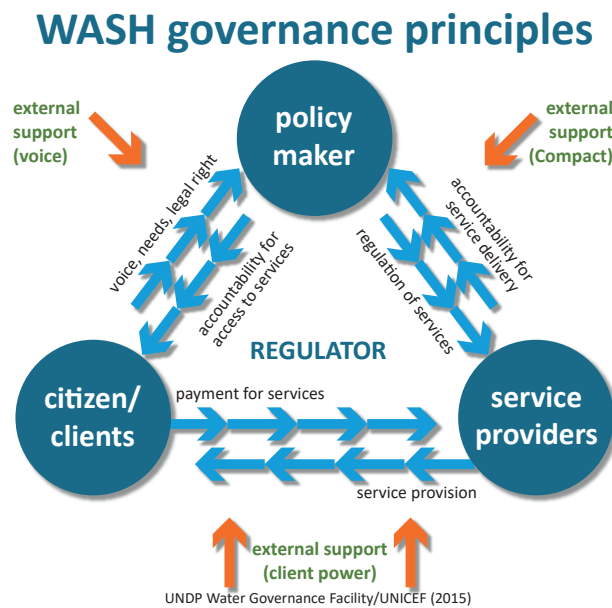
The [water governance accountability framework](#) developed by the UNDP Water Governance Facility and UNICEF based on the [World Bank WDR 2004](#) prioritizes the role of the poor citizen/clients in holding service providers to account:^{12,13}

12 UNDP-SIWI Water Governance Facility & UNICEF. *WASH and Accountability: Explaining the Concept*. 2015.

13 The term “communities/user” favoured by UNICEF/UNDP has been replaced by the term “citizen/clients” favoured by the World Bank in the original WDR 2004.

- as Clients (via the short route of accountability): through payment for water services
- as Citizens (via the long route of accountability): through electing politicians to make laws and license/contract service providers

Figure 29: Strengthening accountability by separating policy, provider and regulator roles



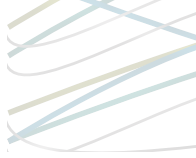
Within this framework, the WASH DRF team can enable the poor citizen/clients (and those affected by disasters) to hold service providers accountable by the clear separation of roles between:

- the policy maker (sets the standards)
- service providers (execute the standards) and
- the regulator (arbitrates on compliance with the standards).

In the delivery of basic public services, in the WASH sector specifically, clear separation of policy making from service provision is often the most challenging aspect. Within the DRF, this requires the strengthening of the role of the ‘compact’ in separating the responsibilities of the policy maker from those of the service provider (e.g. public service contracts with clear targets such that any subsidies do not offset the service provider’s accountability for revenue from clients for delivery of safely managed WASH services). The WASH DRF team can potentially amplify the client power of the poor and the voice of the excluded in holding service providers to account within areas affected by disasters, by harnessing the collective action of the poor and/or strengthening the pro-poor mandate of the regulator (to cross-subsidise those with the lowest levels of access).

In settings where there is a legacy of failure of regulatory systems (often associated with a culture of political patronage and rent seeking), the WASH DRF team may further improve incentives for compliance by separating:

- regulation of failure (by central government), from
- licensing of compliance (by local governments), from
- provision of services (by asset owners and operators), from
- adjudication on the costs of compliance (by economic regulators and regulatory commissions).



This is particularly relevant in settings where: local governments are assigned responsibility for WASH service provision; the central government sets standards and regulates failures; WASH services (i.e. design, construction and operation) are provided by parastatals (i.e. agencies owned by the government) or by non-government organisations; and the tariffs for efficient provision of a monopoly WASH service are determined by independent technical and economic regulators (to ensure the cost efficient provision of services to quality standards when there is no competition). In such contexts, local government licensing of compliance by WASH service providers is additional to the regulation of failure against standards set by central government.

3.3.2. The role of external agencies

In strengthening accountability for service delivery, the WDR 2004 identifies the primary role of external agencies in strengthening the compact, voice and client power to separate the roles of policy makers from service providers, from regulators and citizen/clients.

While external agencies may provide financial support to WASH service providers for recovery activities, it is most important that this does not undermine strict budget constraint. Ultimately, investment in WASH assets should be reflected in higher quality services, increased revenue and positive economic returns. The WASH DRF team should ensure that any support from external agencies for WASH asset creation does not reduce the focus on operation and maintenance, evidenced by a reduction in tariff revenues, leading to reductions in the quality of WASH services and declining viability of service provision. This means that the WASH DRF team should seek to ensure that all financing of WASH Assets by external agencies is fully recovered through tariff revenue, facilitating future investment in the improvement of WASH services.

External agencies may also amplify the client power of the poor and the voice of the excluded in areas affected by disasters, through support for collective action to establish tail-end service providers or lobby groups. For instance, where public services providers will not (and arguably should not) extend networked services to unsecured land (i.e. informal settlements and disputed land), NGOs may support entrepreneurs or cooperatives to register a bulk water/wastewater connection and bear the risks of managing the tail-end distribution of WASH services to the poor.

The financing of external agencies for WASH recovery (via WASH public sector providers or poor client/citizens) must always strengthen the clear separation of policy making from service provision from regulation.



4. WASH financing mechanisms

The team in charge of developing the financing chapter of the WASH DRF needs to start by assessing the sources of financing that are presently available or that will be realistically available that are most appropriate for the specific projects and priority activities to address the WASH recovery needs identified in the PDNA.

The team needs to assess not the availability of financing sources (i.e. national or international, public or private) and their differing suitability for addressing the WASH needs identified in the PDNA. This includes an understanding of the reliability and sustainability of the various financing sources, the inherent biases within the forms of public and private financing (i.e. prioritizing equity versus return on investment), the balance between financing efficiencies and the risks of patronage (i.e. the underlying conditions associated with 'easy money').

Financial means are finite and prioritizing the most important needs is essential. The team will, therefore, need to sequence the recovery financing with the recovery projects to strike a balance between addressing priority needs and ensuring sufficient resources to enable full recovery. While the team needs to understand the global financing trends within the WASH sector, the public expenditure reviews and economic projections produced in the macroeconomic section of the PDNA should enable the team to estimate the economic and financial capacities for full WASH recovery.

4.1. Post-disaster financing options

International and national agreements, agencies and financing instruments have been established to respond to major humanitarian disasters. These systems seek to ensure that a lack of finance does not inhibit the initial humanitarian response to disasters. However, there is growing recognition that international public financing is playing a less and less significant role in both humanitarian and development financing.¹⁴

In low-income countries, most financial support in times of need comes from within households and extended families, or by borrowing from neighbours and local moneylenders. While these sources of finance are easily accessible, they can only provide relatively small amounts or at expensive rates. There are, however, options through which government action can improve access to finance in the response to, and recovery from, disasters. This is particularly pertinent for poor households that have limited savings and access to finance, including those living in informal peri-urban settlements and those without access to formal service provision systems.

The team in charge of drafting the WASH DRF should consider whether these options are currently available to the affected populations, the extent to which they can play a favourable role in the recovery of the WASH sector, and how the government can facilitate or increase access to the options identified as being relevant:

- Savings and loan groups: enable poor people to pool their savings, entitling members to draw on the group for loans, in turns or according to need, when sufficient funds are available. Formalizing savings groups can enable external financial assistance to be made available to saving group members for the most pressing self-recovery activities.

¹⁴ European Report on Development. *Combining finance and policies to implement a transformative post-2015 development agenda*. 2015.

- Micro-finance institutions (MFIs): can play an important role in reducing vulnerability before disasters and supporting post-disaster recovery. While MFIs may reschedule loans or provide emergency loans to enable households to meet their immediate needs after a disaster, these MFIs can be constrained by a lack of access to capital. In such cases, the extension of soft loans to wholesale MFIs, to make capital available to retail MFIs, can enable households to access non-productive loans to finance the recovery of WASH assets to a specific standard.
- Disaster insurance: is an effective method of sharing risk, giving policy holders confidence to invest (e.g. in WASH home improvements) or expand (e.g. a WASH business enterprise). This can occur as standalone insurance or as a compulsory-savings component directed by MFIs into emergency funds. While insurance is predominantly driven by commercial imperatives, public intervention to provide a backstop for certain events can be vital in enabling rapid access to finance for policy holders after a major disaster.
- Cash transfers: are increasingly deployed in humanitarian assistance programmes, giving people greater choice about what goods and services to buy, according to their own needs and priorities. Conditional cash transfers for WASH recovery activities can stimulate (without distorting) local markets and are most effective if they build on national identity card systems that limit double-dipping and/or conditional cash transfers in social protection programmes.
- Remittances: from family members through a variety of formal and informal channels is an important source of financial support during and after a crisis. Strengthening communication systems (e.g. mobile phone money transfers and access to the internet) is important for facilitating access to remittances by families wishing to undertake self-recovery activities. This should take place after a disaster occurs and continue as an ex-ante preparation measure.

While the instruments enabling affected populations to access finance during the humanitarian response need to be developed prior to a disaster, in the recovery phase there is often time to tailor the instruments for recovery financing around existing systems and capacities.

4.2. WASH financing flows

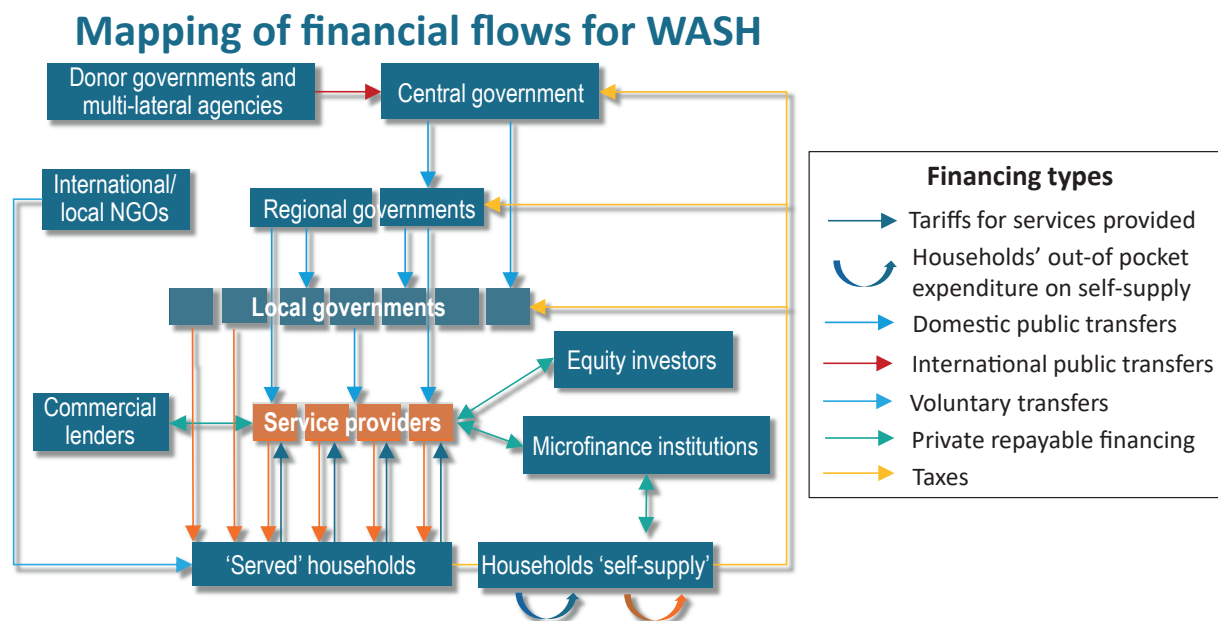
Water and sanitation services are paid for through a combination of **tariffs** from users, **taxes** from citizens and **transfers** from external sources.

- **Tariffs (households):** are fees paid by households.^{15,16} These also repay the **repayable finance raised by public utilities**.
- **Taxes (government):** are funds that originate from domestic taxation channelled to the sector via transfers from all levels of government, including repayable finance borrowed by governments.
- **Transfers (external sources):** are funds from international donors and charitable foundations that often come from other countries in the form of grants and/or concessionary loans.

15 This also accounts for household investments in the tail-end and self-supply of water and sanitation services.

16 Also includes headworks charges imposed on property developers for treatment plants to meet the needs of future tenants.

Figure 30: Typical mix of financing flows for WASH service provision



Source: Adapted from UNWater GLAAS TrackFin Initiative: Geneva: World Health Organization; 2017.

The World Bank estimates that the total global financing of capital and operational costs required to meet the WASH SDGs (6.1 and 6.2) is four times greater than the current financing levels.¹⁷ A review of data on [‘financing for development’](#) over the period from 2002 to 2011 reveals a relative decrease in importance of international public finance and volatility in international private finance, with increasing significance for both public and private domestic finance.¹⁸ This implies that the DRF team should seek to [leverage local finance \(both public and private\)](#) to invest in WASH assets (with improved monitoring of sustainability).¹⁹

According to the GLAAS survey of data from 25 low- and middle-income countries:²⁰

- Most WASH financing originates from households (66%), normally in the form of tariffs from networked water and sewerage services but also in the form of household investment in tail-end systems (e.g. informal settlements where WASH assets cannot be secured) and self-supply systems (e.g. household wells, water tanks and household toilets) and the recovery of repayable finance. Repayable financing constituted just 8% of WASH financing, primarily taken out by government service providers for expansion of access to networked water services.
- The next largest source of WASH financing is taxes from government (24%), which is predominantly directed to public goods (i.e. drainage and hygiene) and expansion of access to improved water sources.
- Transfers from external sources constituted just 2% of WASH sector financing and is primarily targeted at expansion of access to networked water services in urban areas.

17 Hutton, G. et. al. *The Costs of Meeting the SDG Targets on Drinking Water, Sanitation, and Hygiene*. World Bank, 2016.

18 European Report on Development. *Combining finance and policies to implement a transformative post-2015 development agenda*. 2015.

19 Interagency Task Force on Financing for Development. *Financing for Sustainable Development Report*. 2019.

20 UN-Water. *GLAAS: Financing universal and sustainable WASH under the SDGs*. World Health Organization, 2017.

Given the small contribution of external public sources to WASH sector financing, the WASH DRF should seek to utilise overseas development assistance (ODA) to leverage:

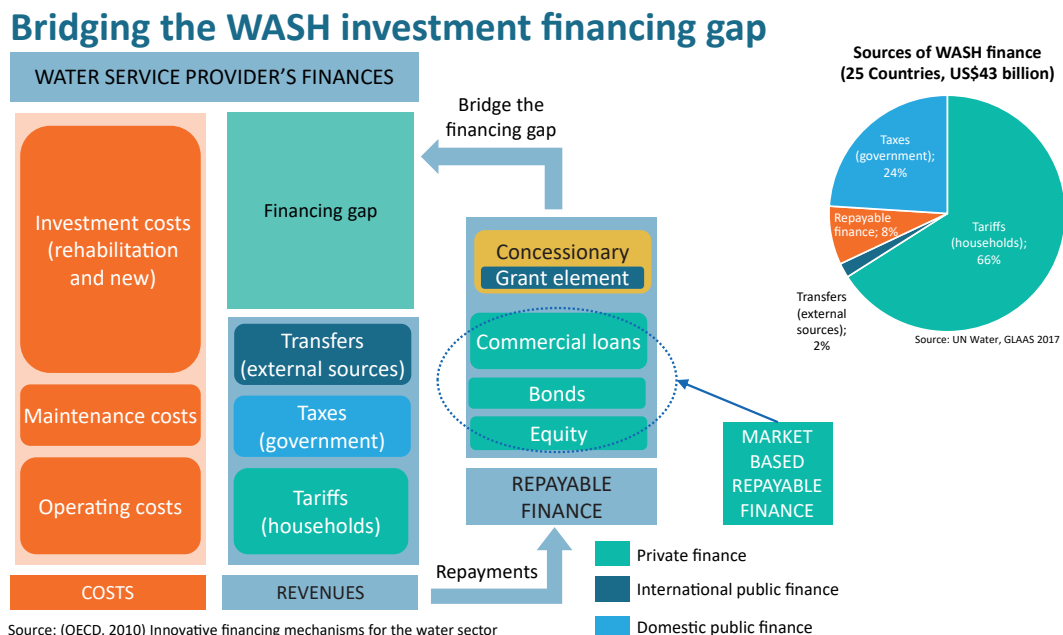
- commercial repayable finance to invest in the recovery of networked water and sewerage facilities where the costs are borne by households over time through tariffs.
 - This includes concessionary loans and grants from international financial institutions (IFIs) to improve the financial viability of investments and/or utilities.
- repayable local private finance to support households in investing in the recovery of the tail-end and the self-supply of water, sanitation and hygiene facilities.
- local public finance (through taxes) to invest in the recovery of municipal drainage and solid waste facilities that can be recovered over time through local council rates and taxes.

4.3. Leveraging commercial financing for WASH

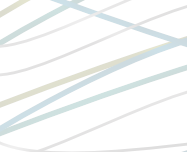
While water sector financing has historically been focused on public finance, private finance has the greatest capacity to meet the long-term WASH recovery needs of countries. However, commercial finance is currently constrained by high risk when the deals are small or risky or the creditworthiness of the water utilities is weak. To address these constraints:

1. access to commercial finance may be enhanced through blended financing, intermediary institutions and access to local capital markets.²¹
2. financial absorption capacity may be addressed by enhancing corporate governance and technical assistance to prepare “bankable” proposals.

Figure 31: Using concessional finance to leverage commercial finance



21 Baietti, Aldo; Raymond, Peter. *Financing Water Supply and Sanitation Investments: Utilizing Risk Mitigation Instruments to Bridge the Financing Gap*. Water Supply and Sanitation Sector Board discussion paper series No. 4, 2005.



Greater access to commercial finance in the WASH sector may then be indicative of improved corporate governance of water service providers.

While concessionary grant financing of water utility assets may be necessary during the recovery period, there is a risk that this will undermine strict budget constraint on the utility. Grant funding of assets can also increase the net worth of water utilities and decrease reliance on tariff revenues, resulting in expensive utilities with low turnover. It is important to remember that the long-term sustainability of water services is dependent on the viability of investment in assets and the utilities that manage them.

Repayable finance can also be used to target improvements in the quality of water, sanitation and hygiene facilities at the household level. This may entail:

- extension of non-productive loans by micro-finance institutions (MFIs) to poor households to improve their water or sanitation facilities, or
- retrospective output-based aid (OBA) to utilities for each new poor household connected to the piped water network.²²

Alternatively, the blending of output-based aid (OBA) with wholesaling of loans to micro-finance institutions (MFIs) can make commercial finance and market expertise available to households willing to construct WASH facilities that are compliant with a minimum specified standard.²³

Increasing access to commercial finance for WASH recovery activities can:

- increase the volume of funds available for recovery
- increase the governance standards required by water utilities, contributing to higher quality WASH services at a lower life-cycle cost.

4.4. Reliability of financial management systems

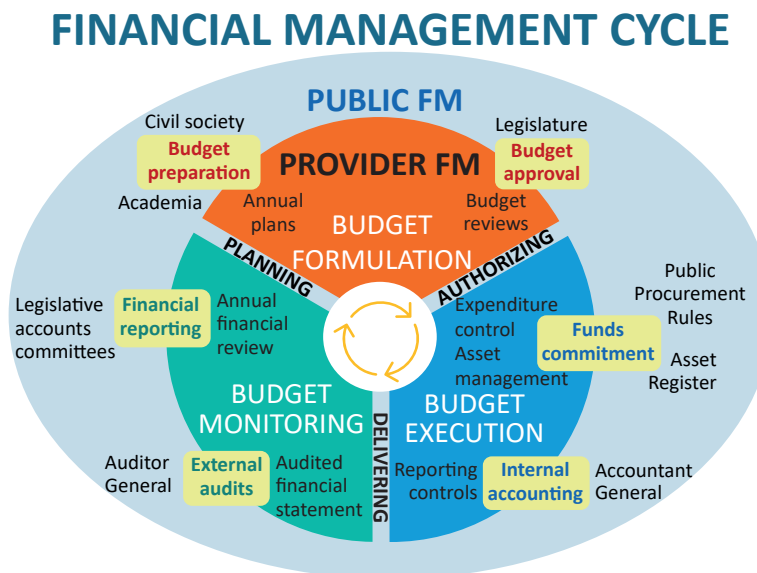
It is essential to ensure that the financial management systems of the implementing agencies provide sufficient integrity to undertake the proposed recovery activities. Irrespective of whether recovery activities are being undertaken by an NGO or the government, a water utility or a municipality, a public or a private water corporation, a micro-finance institution or the local government, it is important to ensure the integrity of the financial management systems (in budget formulation, execution and monitoring) of the proposed implementing agencies.

All WASH service providers and financing intermediaries must have a financial management cycle that includes the formulation, execution and monitoring of budgets for the recovery activities proposed. In the case of public finance, there are additional financial management compliance requirements.

22 Menzies, Iain; Suardi, Mario. *OBA in the Philippines: Improved Access to Water Services for Poor Households in Metro Manila*. World Bank, 2009.

23 Ahmed, Rokeya. *ICR for the OBA Sanitation Microfinance Program - P157958*. World Bank, 2019.

Figure 32: Financial Management Cycle



- **Budget formulation:** stems from planning processes that establish physical and financial targets. It includes annual processes for budget preparation (based on anticipated expenditure and revenues to achieve annual plans) and budget approval (budget reviews and authorization of expenditure). The management of public finances typically also includes civil society engagement during budget preparation and approval of budgets by the elected members of the respective legislature.
- **Budget execution:** following authorization, this includes the commitment of funds (including procurement for the creation of new assets, and the operational costs and staffing levels to maintain all assets and revenues) and accounting for them (including the reconciliation of receivables, division of powers and rotation of duties, inventories of asset condition, internal audits and procedures for identifying errors in electronic data).²⁴ The management of public finance typically also includes compliance with public procurement rules, public asset registration requirements and accounting controls monitored by the accountant general.
- **Budget monitoring:** includes the processes for external audits (of financial accounts and processes) and financial reporting (summarizing the financial situation of the implementing agency and projects). The management of public finance typically also includes meeting legal and public financial management requirements established by the auditor general and financial reporting being subject to review by legislative standing committees.

The WASH DRF finance team needs to understand the strengths and weaknesses of the financial management systems of the implementing agencies to ascertain the risks to efficient utilization of recovery funds.

4.5. Conclusion

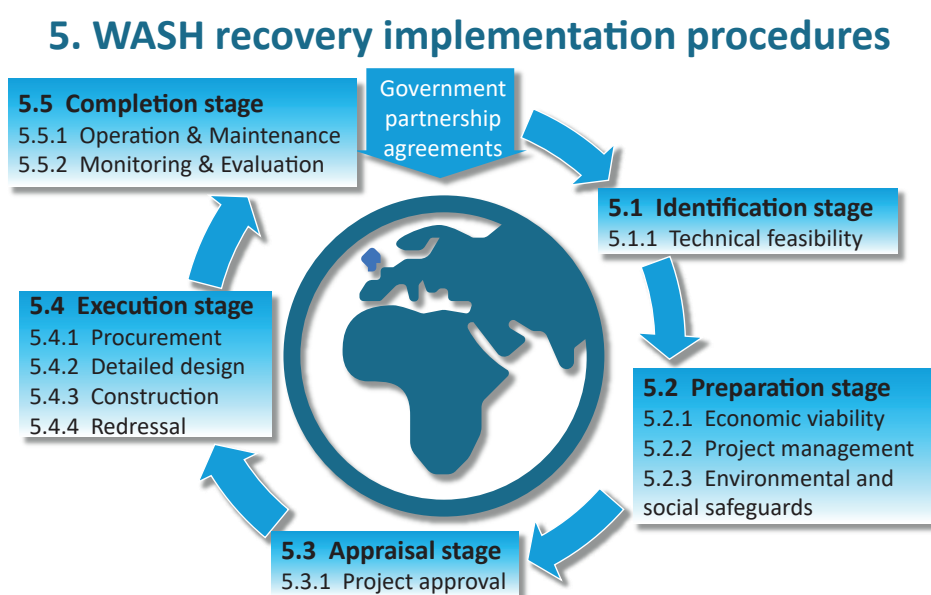
The volume and form of financing available for WASH recovery will affect, and is affected by, the proposed WASH recovery activities and the capacities of the proposed implementing agencies. The WASH DRF Financing chapter is, therefore, both contingent upon, and will affect, the WASH DRF Implementation chapter.

24 Although the International Public Sector Accounting Standards (IPSAs) apply to cash-based accounting systems, they are considered a transition toward accrual-based accounting systems [2021-IPSASB-Handbook_Vol-1_ENG_Web_Secure.pdf](#) (ifac.org).

5. WASH recovery implementation procedures

WASH recovery implementation may be undertaken by government or non-government actors and financed from national or international sources. However, the WASH disaster recovery framework is led by the government in the context of the methodologies and guidelines developed by the United Nations, World Bank and European Union. This means that all WASH recovery implementation activities undertaken by civil society and non-government organisations, bilateral and multilateral development organisations, government departments and the private sector are framed by country partnership agreements. These activities will typically comprise (1) identification, (2) preparation, (3) appraisal, (4) execution and (5) completion stages.

Figure 33: WASH Recovery Implementation Cycle



While the WASH recovery phase tends to adopt implementation procedures that are deployed in development operations, procedures deployed in the humanitarian response do offer opportunities to shorten WASH recovery implementation timelines.

The WASH DRF implementation chapter in a particular context should address the following stages of the implementation cycle.

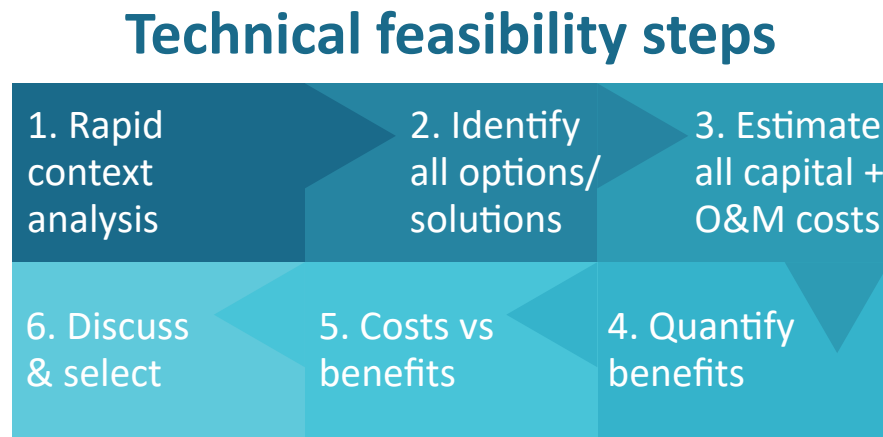
5.1. Identification stage

While the PDNA identifies WASH recovery needs (with financing envelopes) based on the sectoral effects and impacts identified, it does not assess the financial and practical feasibilities of the options for addressing each of the recovery needs. For instance, the loss of drinking water supply may be restored by repairing the existing system, replacing it with a new system addressing the disaster risks or installing a completely different system from a less disaster-prone source. While technical feasibility is often overlooked, it is the most critical point in consideration of build-back-better solutions.

5.1.1. Technical feasibility

At the identification stage, it is essential to assess all the technically feasible means of addressing the WASH recovery needs of the affected population to ensure that recovery goes beyond the replacement of “like-for-like”. This requires quantification of the operation and maintenance (O&M) costs plus the capital costs, compared to the benefits (and risks) of the possible options. Consideration of this analysis should conclude with agreement among the affected stakeholders on the most feasible means of addressing particular WASH recovery needs.

Figure 34: Pre-feasibility assessment of options



While the technical feasibility stage may be simplified where there is a strong case for the restoration or repair of existing infrastructure, it should never be bypassed. The feasibility stage is the major point at which long- and short-term social and environmental benefits and costs are assessed against the technology options. Subsequent assessments of social and environmental risks during the Preparation stage simply quantify the risks and detail the measures to mitigate them.

5.2. Preparation stage

Once the most technically feasible alternative for addressing a particular WASH recovery need has been identified, the activities for its implementation tend to be defined within capital works projects. The Preparation stage seeks to assess the viability of each WASH recovery project or set of projects from economic, institutional, social and environmental perspectives.

5.2.1. Economic viability

Assessment of the viability of WASH investment is vital for considering technology choices, decisions to repair or reconstruct, the viability of build-back-better options and distribution of the costs and benefits, to ensure that public investment delivers the intended returns for the public. **Net present value (NPV)**²⁵ enables comparison of the public benefits of the costs of different projects, while the **economic internal rate of return (EIRR)**²⁶ is used to ascertain the public benefits when only one project is being considered. The

25 For mutually exclusive projects, over the same time frame (without cost constraints), the investment with the greatest NPV (and greater than 1) provides the greatest public benefit.

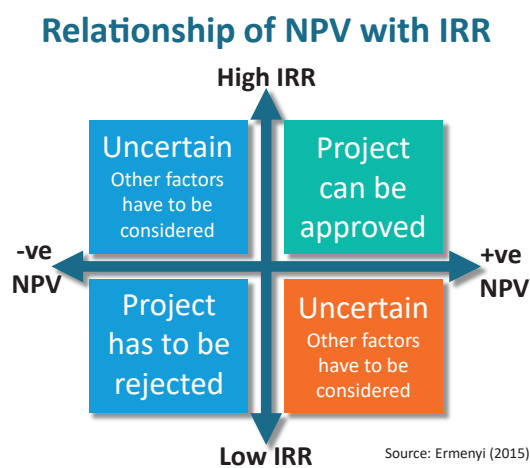
26 The EIRR calculates the interest (or ‘discount’) rate at which the net present value of benefits is equal to their costs (i.e. if the calculated EIRR for the project is greater than the discount rate then the benefits are considered to exceed the costs).

financial internal rate of return (FIRR) is used to assess the financial return on investments for commercial public WASH service providers.²⁷ WASH projects should NOT be approved:

- if the NPV is negative or if another option has a higher NPV, or
- if the EIRR is less than the nominated discount rate,²⁸ or
- if the FIRR is less than the weighted average cost of capital (WACC).

The economic viability of investment in WASH is often higher after a disaster due to the tangible public health benefits, while the financial viability is often lower after a disaster due to an unwillingness to pay (or an unwillingness to charge) full cost recovery water tariffs.

Figure 35: Considering NPV and IRR together



5.2.2. Project management capacity

The following must be assessed to ensure that the executing agencies possess the necessary capacity to oversee the execution of the proposed WASH recovery activities:

- Management systems: to determine the extent to which the implementing agencies have the capacity for scheduling and implementing the proposed WASH project activities.
- Procurement systems: to ascertain the degree to which the planning, bidding, evaluation, contract award and contract administration arrangements provide sufficient assurance of the delivery of the contracted deliverables.
- Financial management systems: to determine the degree to which the planning, budgeting, accounting, internal controls, funds flow, financial reporting and auditing arrangements provide reasonable assurance on the appropriate use of funds and safeguarding of project assets.

Assessments of management capacity are required for national and local implementing agencies to ensure that the assignment of responsibilities is matched by execution capabilities. While such capacities for the creation and management of WASH assets may have already existed, flaws in these capacities may have contributed to the failure of WASH assets in the first place.

²⁷ The FIRR is obtained by equating the present value of investment costs (as cash out-flows) and the present value of net incomes (as cash in-flows). The FIRR represents the percentage financial return on the investment.

²⁸ Discount rates reflect the social marginal rate of time preference. ADB uses a nominal discount rate of 12%.

Limitations of the community management of WASH assets

The demand responsive approach (DRA) that has been the hallmark of the shift to community management of water supply and sanitation schemes presents some key asset creation, operation and maintenance risks that need to be understood during recovery. For instance:

- Village water supply and sanitation committees (VWSC) generally do not exist as legal entities. This means they are not able to bear the liabilities associated with the ownership of public WASH assets (i.e. there is no form of recourse in the event of death or disease from a failure in O&M resulting in the delivery of polluted water to households).
- This means that joint bank accounts bearing the name of the VWSC are opened by two individuals from the VWSC. As a result, all the funds in the VWSC bank account belong to the two individual office bearers from the VWSC, rather than the VWSC itself (i.e. in the event of the removal of these office bearers by the VWSC, the Bank cannot prevent those two individuals from withdrawing all the VWSC funds and they cannot be prosecuted for doing so).
- This also means that VWSCs are not able to legally own the WASH assets, the land on which they are located, or any water allocations rights or easements of land. This typically means that the public WASH assets are 'written-off' the public register as having zero value and placed on donated land ceding control of the assets without recourse to the landowner.

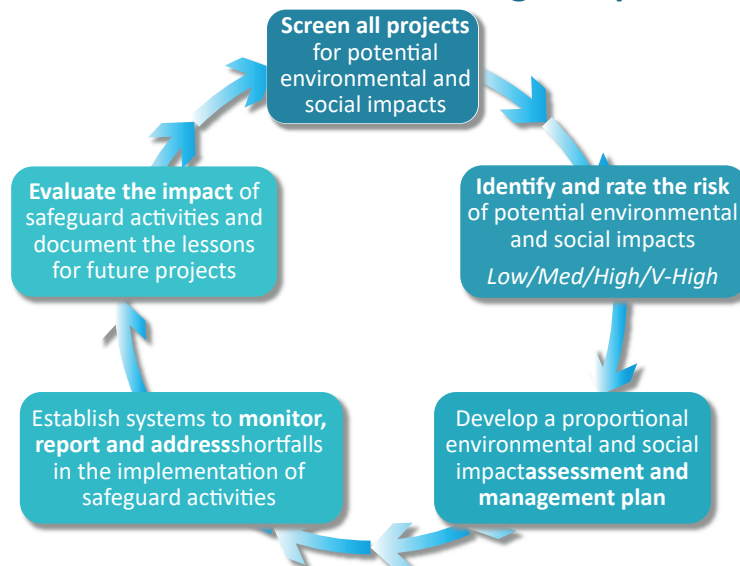
While community participation and demand responsive approaches are vital for recovery, it must be recognised that communities have limited capacity to bear asset ownership liabilities, and financial management and procurement risks.

5.2.3. Environmental and social safeguards

All proposed WASH recovery projects need to be screened for environmental and social impacts during construction and operation. Depending on these ratings, an environmental and social management plan needs to be prepared detailing how any impacts will be managed, including the timing, budget, roles and responsibilities. This plan needs to be monitored during implementation, with an end-of-life assessment providing an opportunity for learning and sharing lessons for future projects. Social safeguards are particularly important during periods of social, economic and political turbulence that often coincide with the recovery phase.

Figure 36: Managing environmental and social safeguards

Environmental and social safeguard process

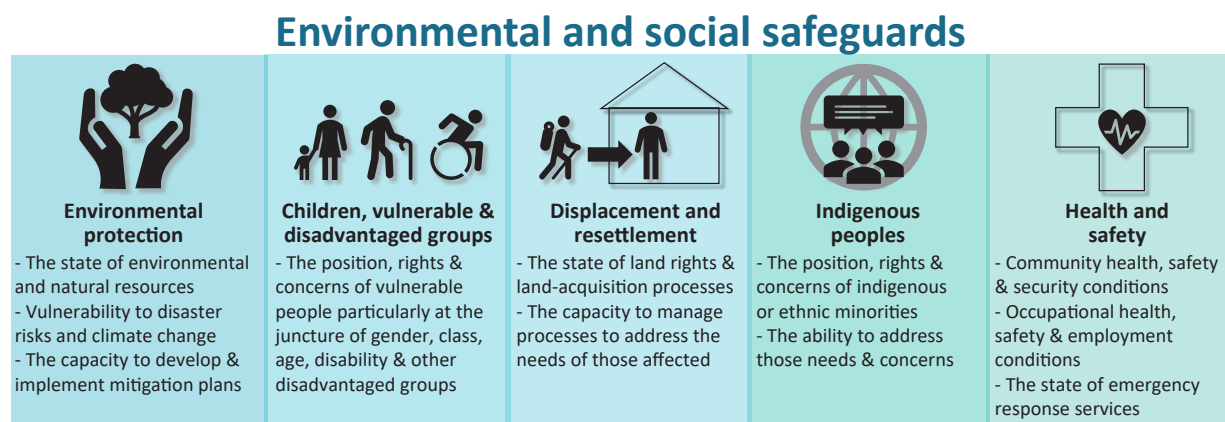


Assessment of the [environmental and social impacts](#) of WASH undertakings should address:

- Environmental protection: including the protection of biodiversity, sustainable use of resources, prevention of pollutants, management of waste, preservation of cultural heritage, and management of disaster risks and climate change via environmental [assessments](#) and [management](#) plans.
- Children and vulnerable and disadvantaged groups: including their identification and engagement to avoid disproportionate negative consequences and ensure a share in the benefits while avoiding unintended consequences that may exacerbate violence or inequalities.
- [Displacement and resettlement](#): including the effects of implementing the legal compulsory acquisition, or access to, possession of or use of land and the appropriate avoidance, mitigation or compensation measures to minimize negative impacts on the most vulnerable.
- [Indigenous peoples](#): including their full and equitable participation in consultation processes in a manner respectful of their dignity, human rights, aspiration, cultures and customary livelihoods that enables them to continue to pursue indigenous economic, social and cultural priorities.
- [Health and safety](#): including avoidance of the use of forced labour, work detrimental to child well-being and unsafe work practices, coupled with appropriate consultation, information, training, equipment and health and safety incident reporting systems for safe working.

Provision of special environmental and social safeguards may be required for international waterways, disputed areas and the safety of dams.

Figure 37: Elements of environmental and social safeguards²⁹



Source: adapted from DFAT (2019)

Securing the land for WASH assets is essential for the safety and security of WASH services. Failure to secure the rights of the WASH assets to the land on which they are located cedes control of the assets from the owner of the WASH asset to the landowner. Placing publicly funded WASH assets on donated land, private land or even public land without binding acquisition, lease or easement agreements allows landowners to exercise control over access to the WASH assets. In the recovery phase, the land should already be secured for the owner of the WASH assets. However, in many cases, failure to secure the land for WASH assets is a contributing factor to failure of the assets.

²⁹ Australian Government Department of Foreign Affairs and Trade. *Environmental and Social Safeguard Policy*. 2019.

Securing the land with WASH asset ownership

Failure to secure the ownership of WASH assets (and liabilities) with the rights to the land can have perverse consequences, as illustrated in these examples of recovery initiatives in Pakistan, Bangladesh and Vanuatu.

- In Pakistan, public handpumps placed on donated land appeared to have disappeared where households constructed purdah walls on their property, impeding public access to the handpumps.
- In Bangladesh, most public handpumps are placed on private land typically donated by the most powerful and wealthy landowners. Similarly, the free provision of public sanitation facilities by NGOs in informal settlements in Dhaka has been accompanied by higher rents being charged by those who control that land and housing stock, effectively displacing those with the least capacity to pay.
- In Vanuatu, village piped water systems that run through customary land without easements for the pipes have resulted in water pipes being cut when tribal disputes erupt.

5.3. Appraisal

All WASH recovery project proposals should undergo some form of appraisal process to secure approval, irrespective of whether the projects are approved by government departments, parliamentarians, NGOs, bilateral donors or lending agencies. This necessitates the compilation of summaries of the benefits against the costs, and the means of mitigating risks. Project appraisal processes generally solicit input from stakeholders, peers (such as associated departments and colleagues) and senior management (policy makers) to ensure that alternative perspectives have not been overlooked.

5.3.1. Project approval

While the processes associated with the appraisal and approval of development projects by NGOs, governments, donors and financing institutions can be extremely protracted (typically lasting over 6-12 months), there are several avenues for shortening project approval processes during the recovery phase, such as:

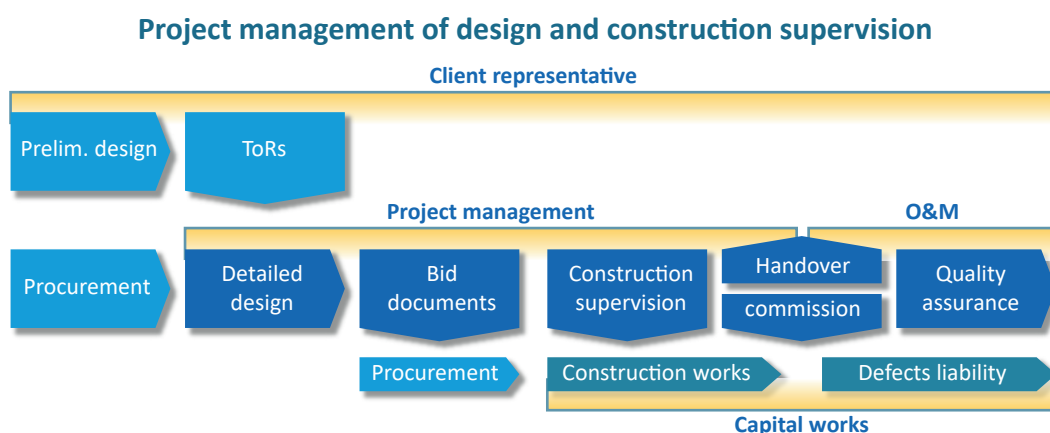
- Some World Bank WASH projects include a zero-budget allocation for emergency response under pre-defined streamlined procurement and disbursement procedures. This allows for the rapid reallocation of funds from other project components and may even serve as a conduit for additional funds to be allocated to the WASH project for early recovery.
- Some Asian Development Bank WASH projects require a percentage of the total infrastructure contracts to have been advertised prior to project approval. Pursuing additional financing for operational recovery projects can significantly reduce project preparation and approval processes, due to the ability to utilise existing due diligence assessments and staffing capacity in project management units, and the potential to issue contract variations for contractors engaged through competitive processes.

5.4. Execution

Most WASH recovery projects entail the management of design (including all civil, mechanical and electrical works), construction (and supervision of construction) and commissioning (including defects liability) capacity. While responsibilities for project management, procurement, design, construction, supervision and commissioning may be outsourced to one or more entities, client representation is essential at all decision points in the recovery process.

The notion of 'the client' is particularly important in understanding the performance of infrastructure works. 'The client' typically refers to the asset owner, but it can also refer to the entities responsible for design, procurement, construction, operation, maintenance and testing of WASH assets.

Figure 38: Managing the design and reconstruction of WASH services



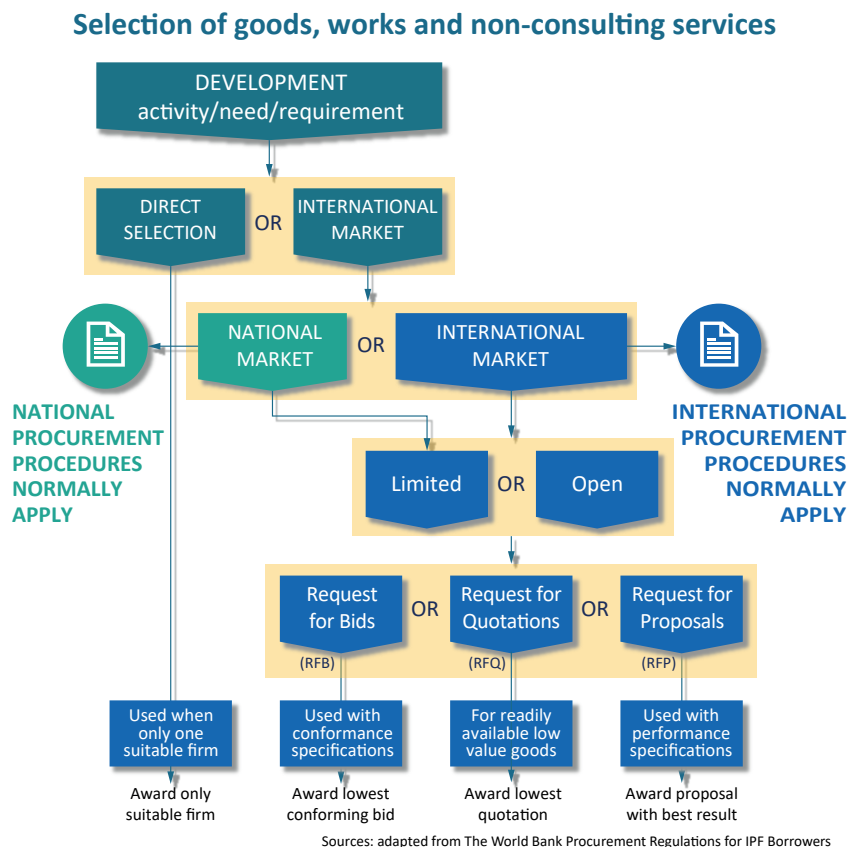
While establishing a project management unit (PMU) within a client organisation appears to enable combination of client representation and project management capacity, it does not replace the need for regular client feedback from the departments responsible for asset design, construction, operation, maintenance and testing.

- For example, a large government water utility may have: a project management branch; civil, mechanical and electrical design branches; and an operations branch. In managing recovery projects, the project management branch needs to ensure that the client (i.e. the operations branch) has regular opportunities to provide feedback on proposals from the design branches.
- Alternatively, a government water engineering department that builds and transfers WASH assets to municipalities may have established a project management unit that employs a private engineering firm for design and supervision of construction. In such cases, the project management unit needs to solicit client feedback on construction standards from the design client (i.e. the department responsible for design standards) and the operation and maintenance client (i.e. the municipality).

5.4.1. Procurement

A significant portion of the funds allocated for recovery will typically be disbursed through procurement from engineering design firms, construction companies, project management organisations and supervision consultants. Given the significant risks that this entails, [international procurement procedures](#) have been developed by multilateral finance institutions for a range of contexts to provide a 'best practice' framework. These procurement procedures are often tailored by national governments to suit requirements that may be limited by scope, timeline and capacity.

Figure 39: National and international procurement procedures

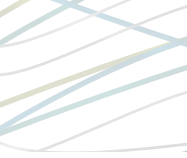


As the competitive procurement of goods and work is generally preceded by competitive procurement of technical advisory services, procurement processes usually absorb a significant amount of the time in the performance of WASH projects. However, there are a various options for reducing procurement timelines during recovery:

- During early stages of recovery, direct selection can sometimes be justified. However, this can jeopardise value for money by reducing competition. Due to these patronage risks, there are usually very strict rules about direct selection of contactors. In some cases where WASH recovery activities are relatively well defined (i.e. the drilling and development, casing and testing of production boreholes), competitive empanelling of contractors at a standard rate prior to a disaster (i.e. the cost per metre of borehole drilled and developed) can significantly reduce procurement timelines.
- During recovery, issuing contract variations to existing contractors that have been selected competitively can present an opportunity to balance value-for-money imperatives with shortened timelines. However, there are usually limits of less than thirty percent variation in costs on work under a competitively selected contractor.

5.4.2. Detailed design

While government departments, public utilities and NGOs historically may have had the capacity to prepare detailed designs for WASH assets, WASH design capacity now tends to be concentrated in specialist engineering design companies. These companies are usually familiar with international engineering standards and national construction practices, and can often take on the project management roles of design, procurement support, construction supervision and commissioning.



While engineering design and project management capacity may be engaged from the private sector, client representation expertise is imperative in the review and approval of detailed designs. This means that detail design drawings and specifications should be referred to expert departments representing the client for approval, irrespective of whether the recovery project is executed by a client representative project management unit or a non-government organisation.

The necessity of expert client representation in design review

While there are numerous technology options and multiple brands compliant with international standards that can fulfil a particular purpose, WASH asset owners tend to adopt standard technologies and brands that maximize/improve operability and minimize spare parts. A review of detailed designs usually requires expert input from the client organisation for:

- Structural works (i.e. the client's standards for elevated tanks including the specifications of materials, operator access, corrosion protection, foundations and aesthetics)
- Civil works (i.e. the client's standards for pipe materials of particular sizes including the detailed specifications for above and below ground use, coatings (internal and external), joints (types of welding/fixing) and fittings (Ts, elbows and retail connections)
- Mechanical works (i.e. the client's standards for materials, mechanical seals, impellers for submersible or suction pumps and detailed specifications for foot valves, air valves, check valves, gate valves, butterfly valves, water meters and backflow prevention devices)
- Electrical works (i.e. the client's standards for electrical transformer ratings, peak/off peak tariffs, switchboard components configuration and electric motor sizing/brands for pumps and valves)
- Instrumentation works (i.e. the client's standards for electronic flow meters, water quality sensors, tank water level indicators, PLC standards and SCADA input/output requirements)

Ideally, the project management unit will seek expert feedback from within the client organisation to ensure that cutting-edge-design (often by private engineering firms) is tailored to fit the client's knowledge, aptitude and practices for system operation and maintenance.

5.4.3. Reconstruction

While WASH reconstruction works is typically the responsibility of contractors, and while the risks for failures to meet construction standards are borne by the contractors, construction supervision by or on behalf of the client organisation, is essential:

- to ensure that the quality of construction is compliant with the contracted design standards
- to provide an informed response to construction queries or alternatives raised by contractors
- to advise on issues beyond the scope of the contract that affect the execution of the contract (i.e. access to land, shutdowns of existing equipment and community relations)
- for informed negotiation on necessary contract variations in the interests of the client
- for verification of the release of scheduled payments against contractor invoices.

Construction supervision is particularly important when there are important unknowns (i.e. for the drilling of wells where the yield and the quality of water are unknown until the production borehole has been drilled and developed, which can then affect treatment, storage and distribution systems).

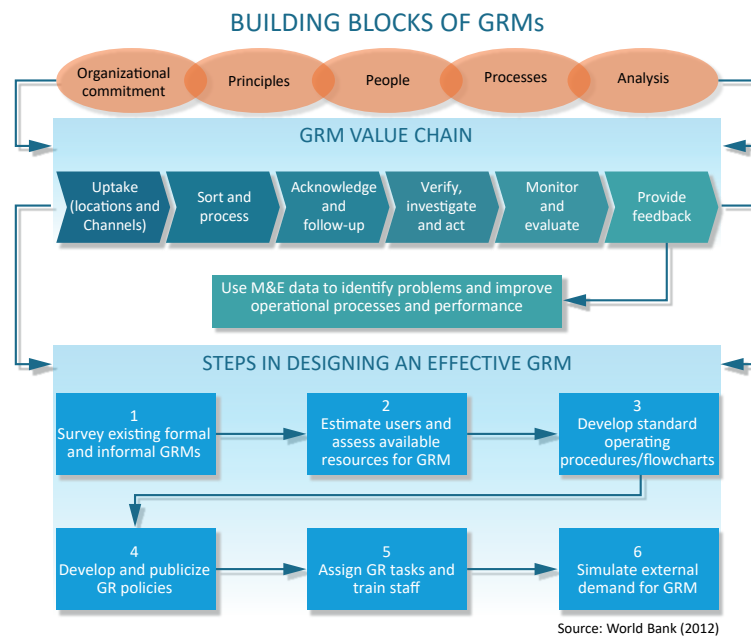
During the recovery phase, local access to quality materials, qualified personnel and skilled labour may be limited, affecting the price, pace and sustainability of recovery projects. The value-for-money imperatives need to be managed so as to not undermine long-term sustainability (by accepting sub-standard materials), distort markets (by bypassing local supply chains) or deplete resources (by capturing all available resources).

While recycling of materials from damaged structures can present a number of benefits in the recovery process (i.e. they are immediately available, reduce the environmental impact and the amount of debris that needs to be cleared, and reduce the cost of construction and transportation) this needs to be balanced against the potential costs (i.e. flaws in the quality of materials and additional labour costs for processing materials).

5.4.4. Grievance redressal

Grievance redress mechanisms (GRMs) are necessary to ensure that recovery processes are more accountable, transparent, and responsive for beneficiaries. GRMs can improve recovery processes by generating public awareness about the recovery project objectives, deterring fraud and corruption, mitigating risk and providing project management staff with practical feedback.

Figure 40: The theory and practice of grievance redress



There are five building blocks for developing and six steps for implementing GRMs that are tailored to the context and responsive to the grievances of all those affected (especially the poor and marginalised), according to the World Bank.^{30,31}

While GRM mechanisms may be

- ‘project based’ to specifically address project communications and redressal risks;
- ‘utility wide’ enabling the escalation of unredressed grievances to more senior management; or
- ‘public sector wide’ offering a single avenue for grievances and corruption across sectors;

there is an opportunity during recovery to establish a single GRM that is ‘area based’ to respond to the multi-sector needs of citizens in the recovery catchment area.

30 World Bank. *Part 1: The theory of grievance redress*. Washington, DC, World Bank, 2012.

31 World Bank. *Part 2: The practice of grievance redress*. Washington, DC, World Bank, 2012.

5.5. Completion

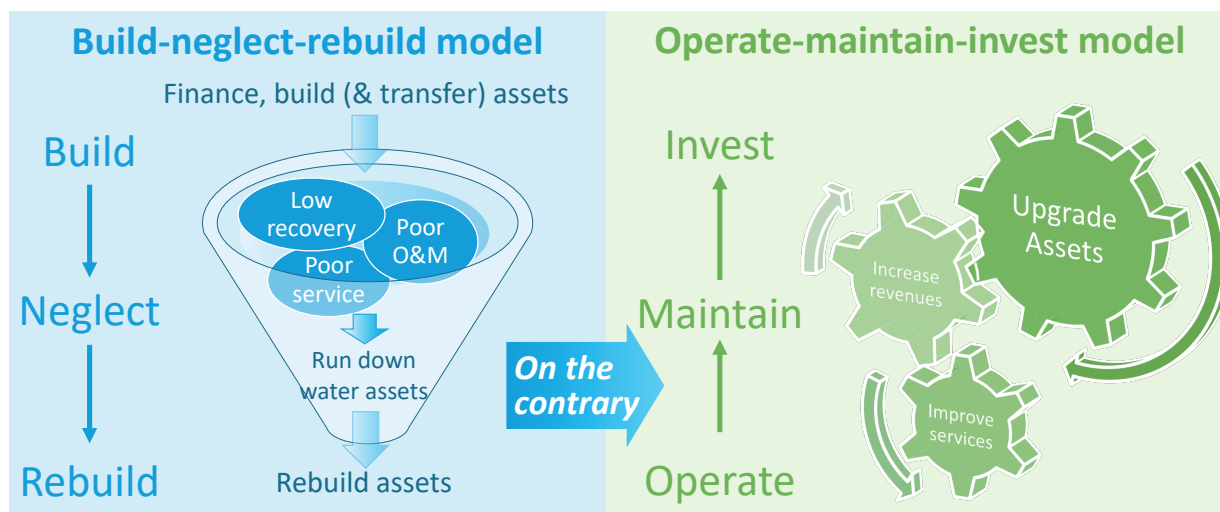
At the completion stage of a project, the ownership (and responsibility) for reconstructed WASH systems transfers from the contractor to the project management unit (i.e. the client's representative) to the client (i.e. the asset owner). In the completion stage of recovery activities, it is essential to ensure that the asset owner has the required capacity (human resources, spare parts and mobile plant) to operate and maintain the WASH assets.

5.5.1. Operation and Maintenance (O&M)

The transfer of subsidized WASH assets to service providers can undermine incentives for professional operation and maintenance. Subsidising assets can lead to under-pricing of services and low recovery of revenues. This can lead to a lack of funds to operate and maintain the assets, and declining service standards, until the assets need to be rebuilt to restore the services. The build-neglect-rebuild cycle of service delivery is a function of poorly targeted public funding and unviable service providers (i.e. with expensive WASH assets and low revenues). This is one of the reasons for the lack of commercial finance in the WASH sector.

Requiring the repayment of the cost of WASH assets from the asset owner increases the likelihood of the generation of sufficient revenues to operate, maintain and invest in the expansion of WASH services in the future. This improves the likelihood that commercial lenders will make finance available to WASH service providers. Increased commercial finance in the WASH sector is then likely to be linked to increased revenues from improved operation and maintenance procedures by service providers, leading to a virtuous operate-maintain-invest cycle of service delivery.

Figure 41: The shift from a public service to a commercial service model of WASH delivery



Imposing strict budget constraints on service providers (including the liability for WASH assets and the land) reduces the risk of political patronage

5.5.2. Monitoring and Evaluation (M&E)

An M&E system is much more than a project management information system (MIS). Most WASH project MISs are designed to measure the inputs and outputs associated with the delivery of public works or services. While a WASH project MIS will tend to generate a large amount of information on the status of the delivery of a package of works or services for managers, such systems rarely provide any information on the effectiveness of those services in addressing the intended project outcomes (e.g. measuring the financial and physical progress in the delivery of improved drinking water infrastructure does not give any indication as to whether this system is being safely operated and maintained, or whether the water is being consumed safely by households).

Wherever possible project M&E systems should seek to generate WASH data for indicators that enable some comparability with global or national indicators. UN Water has developed an Integrated Monitoring Guide for SDG 6 including [good practices for country monitoring systems, targets and global indicators](#) and [step-by-step methodologies](#). While the global definition of indicators for the WASH sector may not be directly applicable to a recovery project in a local context, explicitly identifying the relationship to national or global datasets will enable the project's achievements to be assessed within the context of the SDGs.

The DRF sector guide is a living-document providing a reference for recovery in the sector until it returns to its pre-disaster levels. It is, therefore, important to monitor and evaluate recovery projects and activities regularly, and to update the WASH DRF itself as necessary based on the monitoring results. The updating of the WASH DRF document will also reflect evolving economic and social contexts.



Annex 1. Example of COVID-19 recovery framework for WASH

COVID-19 has had an unprecedented impact on the economy, lives and livelihoods of nations, communities and individuals. The impact of the pandemic, and the measures taken by governments to mitigate or contain its spread, has not been limited to public health and has extended across economic, social and national boundaries. While the provision of water, sanitation, and hygiene (WASH) is a key preventative measure for reducing the spread of COVID-19, with handwashing and deep cleaning at the forefront of the response in many countries, sustaining the inclusive delivery of WASH services during the COVID-19 pandemic has posed significant challenges.

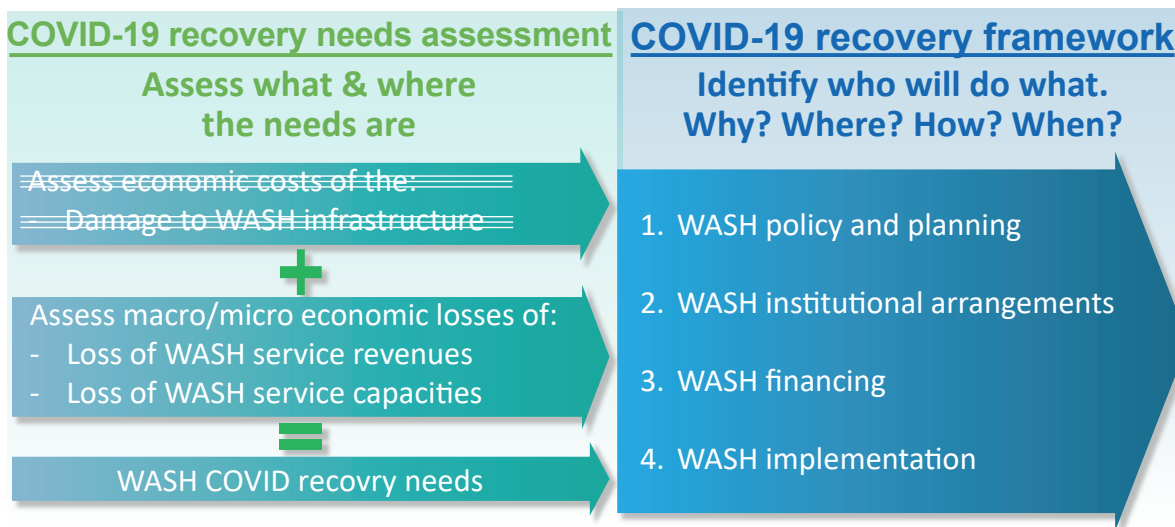
In assessing the losses associated with the COVID-19 pandemic, some countries have initiated a COVID-19 recovery needs assessment (CRNA) for multiple sectors, including WASH. After identifying the COVID-19 recovery needs for the WASH sector, the next step is to prepare a COVID-19 recovery framework (CRF) detailing the policies, institutions, financing and implementation arrangements to guide the WASH recovery process.

COVID-19 recovery needs assessment (CRNA)

The primary effect of COVID-19 has been an increase in the demand for WASH services and a decrease in the ability to pay for them, coupled with a decrease in WASH capacity and an increase in the costs of supplying WASH services. While many governments have intervened to ensure the continuity of critical water services during the pandemic, the financial burden and service delivery challenge is primarily borne by WASH service providers. The costs of protecting the poor by the government mandated freezing of water rates, suspension of disconnections and the introduction of payment schemes (including deferrals and discounts) are ultimately also borne by water service providers. The extension of temporary access using tankers and communal tap stands in informal settlements has proven difficult to sustain by service providers due to the expense. Ensuring the safety of workers and consumers while maintaining services also poses significant costs on service providers in terms of human resources and customer management. This is not to mention the increased costs and management challenges associated with disruption and escalating prices in the supply chains for electricity, chemicals and essential equipment. The secondary effect of COVID-19, and the principal challenge for the recovery, is the undermining of the viability (i.e. increasing debt and reduced investment in assets) of WASH service providers.

Adaptation of the PDNA process into the CRNA methodology in the wake of the pandemic suggests that the major recovery needs are associated with the loss of WASH service capacities and revenues. (N.B. this is in contrast with other forms of disasters, where the major WASH recovery needs are associated with the economic costs of damage to WASH infrastructure). Preparation of the CRNA estimating the recovery needs is followed by preparation of the COVID-19 recovery framework (CRF).

Figure 42: Differences between a PDNA and a CRNA



Summary of the WASH CRNA findings from Zambia

While COVID-19 has led to an increase in the demand for access to ‘safely managed’ WASH services in Zambia, it is the capacity of supply chains to respond to the increase in demand that has defined the effect of COVID-19 on the WASH sector. In Zambia, this has played out differently for the water supply, sanitation and hygiene subsectors, with hygiene being the most affected by the pandemic.

Hygiene: COVID-19 led to an increase in knowledge, access and practice (KAP) in relation to good hand hygiene at entrances to public places (e.g. markets, bus terminals and shops), in public care facilities (e.g. schools and healthcare facilities) and within households.

- COVID-19 recovery needs include sustaining the existing high levels of hand hygiene (or bearing the public health costs of a decrease in hand hygiene).
 - o Identifying the triggers/nudges/incentives (beyond the fear of contracting COVID-19) needed to sustain good hand hygiene is critical for minimising health costs after COVID-19.

Water supply: COVID-19 led to an increase in demand for domestic water supply ‘on the premises’. In urban areas, this was offset by a decrease in demand for non-domestic (commercial) water supply. The associated decreases in revenues and increases in costs (of electricity, chemicals, spare parts and occupational health and safety) have seriously undermined the viability of water providers.

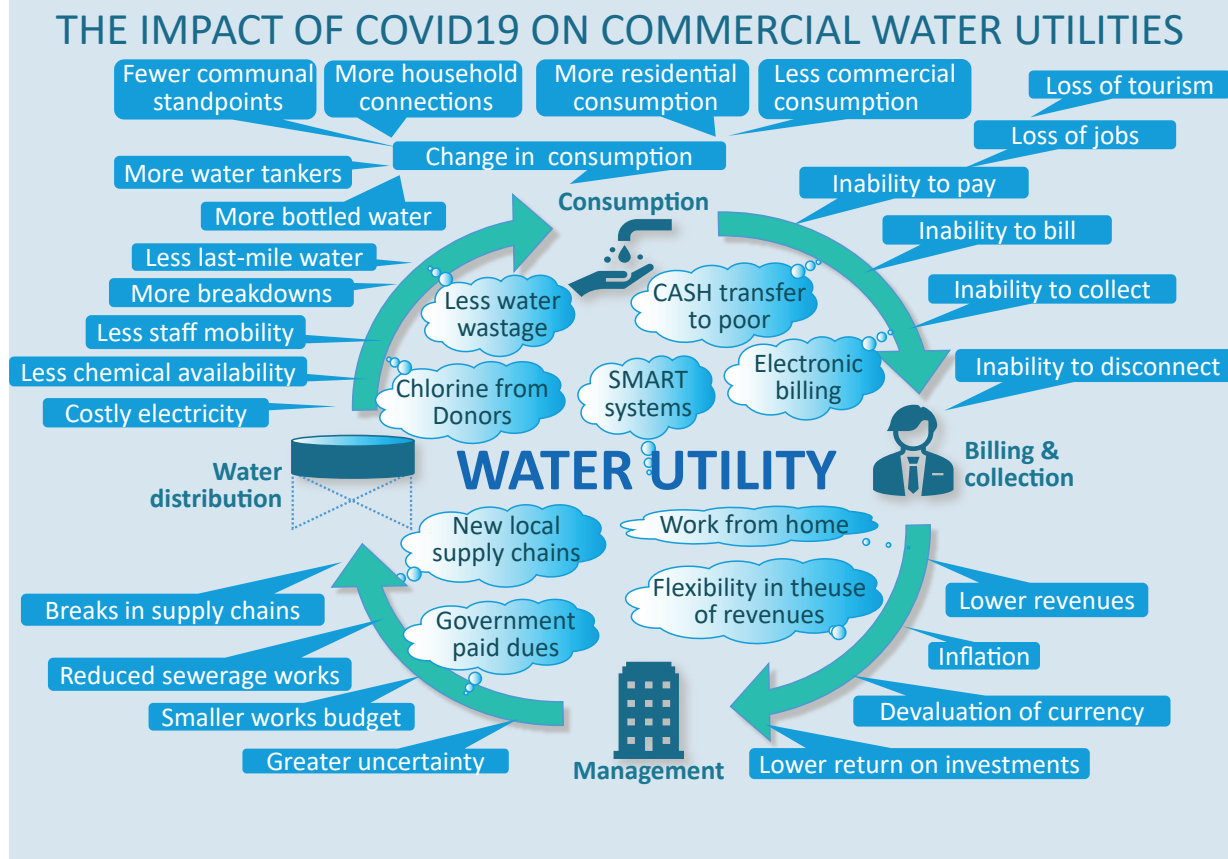
- COVID-19 recovery needs include supporting the capacity of utilities to improve socially distanced access to WASH services (i.e. customer access to water and bills and collection and complaint mechanisms on the premises) without undermining strict budget constraint. Potential COVID-19 recovery options for water utilities include:
 - o Contactless billing (email and SMS) and collection (mobile money, credit cards and direct debit)
 - o Utility call centre (SMS and Robocall), call activated grievance escalation management systems
 - o Utility website, Facebook page, Twitter handle, Instagram to communicate with customers
 - o SCADA system enabling operators to remotely control pumps and valves, water tanks and pressure
 - o Connecting the underserved by converting public standposts into household connections

The complex effects of COVID-19-related changes in demand, supply and the enabling environment (positive and negative) for commercial water utilities in Zambia are set out in figure 2 below.

Sanitation: COVID-19 led to an increase in demand for on-site sanitation facilities that are not shared with other households. However, this did not result in an expansion in access to sanitation in spite of the opportunities presented by ‘lockdowns’ and ‘working from home’ requirements to undertake do-it-yourself (DIY) activities to build ‘basic’ (i.e. improved and not shared) household sanitation facilities.

- COVID-19 recovery needs include increasing access to knowledge and materials and/or access to finance and construction expertise to enable households to upgrade to basic (improved and not shared) sanitation services.

Figure 43: Impact of COVID-19 on Commercial Water Utilities in Zambia



WASH COVID-19 recovery framework (CRF)

Following the multi-sector consolidation of the CRNA findings for the WASH sector within the Planning or Disaster Management Departments, Finance Ministries may approve the allocation of financial and human resources to the recovery process. In such cases, the next step is preparation of a COVID-19 recovery framework (CRF) detailing the policies, institutions, financing and implementation arrangements to guide the recovery process for the sectors most affected.



WASH COVID-19 recovery policy and planning

The key policy imperative for COVID-19 recovery that can be learnt from the experiences of the water, sanitation and hygiene subsectors to respond to the challenges of COVID-19 is the need to strengthen the capability of WASH supply chains to respond to changes in the demand for WASH services.³²

While there is an imperative during the COVID-19 response phase for the government to subsidise the provision of water supply, sanitation and hygiene services, the policy imperative during the COVID-19 recovery phase should be to prioritise the technical, financial and social capacity of WASH markets.

- In the urban WASH subsector, recovery planning should prioritise activities that improve efficiency and social distancing in the provision of access to safely managed WASH services while increasing accountability to consumers for the generation of revenues from services.
- In the rural WASH subsector, recovery planning should prioritise activities that leverage private finance, production facilities and supply chains to respond to the COVID-19-related increase in demand for WASH services from rural households.

WASH COVID-19 recovery institutional arrangements

The key institutional imperative for the COVID-19 recovery is strengthening of coordination amongst the agencies primarily responsible for hand washing and, potentially, water supply.

- The increase in access to handwashing facilities and hand hygiene behaviour during the COVID-19 pandemic potentially reduces the risks of healthcare associated infections (HAI) and anti-microbial resistant diseases, the incidence of diarrhoea and acute respiratory infections (ARI), acute and chronic undernutrition (i.e. wasting and stunting in children) and health related absenteeism from school and work. Failure to sustain these improvements in hand hygiene may have significant negative health consequences. Establishing an inter-ministerial taskforce to quantify the benefits of improved hand hygiene during COVID-19 may be a first step to ensuring that improved hand-hygiene behaviour is sustained.
- Investment by Health, Education and Local Government Ministries to provide access to water ‘on the premises’ in healthcare facilities, schools and public buildings to reduce the risks of COVID-19 transmission should be linked to investment by Water Ministries to provide access to water for the communities in the area of these facilities. Failure to do so may result in households being drawn into higher risk sites (i.e. healthcare facilities and schools) to access household drinking water. Coordination of plans to improve water supply on public premises (i.e. schools, healthcare facilities and government buildings) with plans to improve networked public water services reduces the risk that improved access to water also increases health risks.

32 [WASH supply chains](#) refer to the sequences of processes involved in the production and distribution of water, sanitation and hygiene products and services.

WASH COVID-19 recovery financing

The key COVID-19 recovery financing imperative, from both an accountability and a sustainability perspective, is the leveraging of repayable finance. The tendency in the response phase to rely on public subsidies (from national or international sources) can undermine downward accountability to consumers, fostering inefficient service delivery and unviable service providers. Leveraging repayable finance for recovery activities is only possible when both investment decisions and utility governance are economically viable and reliable.

For water and sanitation utilities, repayable finance is constrained by high risk, while the deals are small or risky or the creditworthiness of water utilities is weak. These tendencies have been further exacerbated during COVID-19 due to the increases in service delivery costs and reductions in revenues, characterised by increases in subsidies or declines in service quality. In such situations, public financing can be deployed to leverage repayable finance.

- Access may be enhanced through blended financing (i.e. public and private financing), intermediary institutions (i.e. publicly owned and commercially operated) and access to local capital markets (i.e. to reduce foreign exchange risks).
- Financial absorption capacity may be improved by enhancing corporate governance and technical assistance to prepare “bankable” proposals.

With the increase in household demand for WASH services ‘on the premises’ during COVID-19 that has not been met with an expansion in the supply of WASH services, leveraging repayable finance at the household level can trigger an expansion of WASH supply chains. This may entail:

1. extension of non-productive loans by micro-finance institutions (MFIs) to poor households to improve their water or sanitation facilities, or
2. deployment of output-based aid (OBA) to utilities for each new poor household that is connected to the piped water network.^{33,34}

Alternatively, the blending of output-based aid (OBA) with the wholesaling of loans to micro-finance institutions (MFIs) can make commercial finance and market expertise available to households willing to construct WASH facilities that are compliant with minimum specified standards.³⁵

33 [Output-based aid \(OBA\)](#) ties the disbursement of public funding in the form of subsidies to the achievement of clearly specified results that directly support improved access to basic services.

34 Menzies, Iain; Suardi, Mario. *OBA in the Philippines: Improved Access to Water Services for Poor Households in Metro Manila*. World Bank The World Bank, 2009.

35 Ahmed, Rokeya. *ICR for the OBA Sanitation Microfinance Program - P157958*. World Bank, 2019.

WASH COVID-19 recovery implementation

From a COVID-19 recovery perspective, activities should be prioritised that facilitate social distancing in access to safely managed WASH services, while simultaneously increasing revenues or reducing costs. For water utilities this may include:

Contactless billing	SMART metering enables water consumption to be accessed remotely for billing (particularly for 'hard-to-reach' areas).
Contactless collection	System development enabling remote payment of bills via bank transfers, mobile phones, credit cards, etc.
Grievance redressal	Complaints logged via a call centre automatically escalating to more senior tiers of management if not redressed.
Helpline	Customer call centre manned 9-5 (or 24/7) to assist customers with quality-of-service or payment challenges.
IPC for customers	Provision of permanent handwashing facilities, signs, social distancing barriers and deep cleaning for office sites that are accessed by customers.
Last-mile connections	Replacement of the temporary water tanks and standposts filled by water bowzers in peri-urban areas and informal settlements with last-mile piped connections.
OHS for staff	Equipment, signs and training on standard operating procedures (SOPs) for COVID-19-safe staff operations.
Payment of COVID-19 dues	Incentives (such as lottery tickets and hand sanitizer) for payment of outstanding water bills from the COVID-19 moratoriums on disconnection for unpaid bills.
Phasing-out standposts	Enabling social distancing by replacing public standposts with household water connections.
SCADA	Supervisory control and data acquisition (SCADA), enabling remote management and balancing of water system pressure, pumps, chlorinators and tanks.
Website/ Facebook	Increasing social media presence to enable customers to access information remotely on changes in service delivery due to planned outages, works and extensions.

