GUIDANCE NOTE 2

Integrated Water Resources Management

Guidance for Humanitarian Practitioners

Table of Contents

Need to find something quickly?

To navigate this document, simply click on the relevant section listed above. You can also jump directly to individual sections at any time by using the navigation bar located at the top of each page.

List of Figures

Abbreviations

CWCs	Community Water Committees
IDP	Internally Displaced People
IEC	Information, Education and Communication
IWRM	Integrated Water Resources Management
LHL	Local Humanitarian Leadership
MEAL	Monitoring, Evaluation, Accountability and Learning
OiEau	Office International de l'Eau
PES	Payments for Environmental Services
PSL Eau	Projet d'Appui à la Synergie Locale pour l'Eau
PWD	People with Disabilities
SDG	Sustainable Development Goal

Citation

Hamai, L. (2025). Integrated Water Resources Management. Guidance for Humanitarian Practitioners. Oxfam. Oxford.

Acknowledgements

This report was funded by the German Federal Foreign Office and written by Laurence Hamai, with support from Anjil Adhikari, Andy Bastable, and Paul Knox Clarke.

Editing: Peta Sandison

Design: Ibex Ideas

1 Introduction

Integrated Water Resources Management (IWRM) is more commonly used in development projects; it can require long-term investment. Yet it is now an essential approach for humanitarian response due to climate change and the long-term nature of most humanitarian programmes. Addressing water availability affected by climate change over the long term is now a humanitarian issue.

Climate change exacerbates the challenges already faced by the humanitarian sector (such as weak coordination and inadequate water resources management). The unregulated actions of people, including WASH actors, can further degrade the quantity and quality of water resources, as well as aggravate the impact of climate change, floods, droughts and extreme heat.

Some of the most common issues are:

- Depletion of water resources (both surface and underground through decreased recharge or over-pumping/exploitation)
- Salinisation of aquifers
- Damage to WASH infrastructure from flash and river flood impacts, water runoff, erosion and landslides
- Degradation of WASH services resulting from the impact of flash or slow-onset drought
- Organic and chemical water resources pollution

IWRM can help to mitigate these issues. IWRM aims to manage water in a holistic, equitable and sustainable way. It considers the ecological, economic and social dimensions of water, while involving all stakeholders - from governments to local communities (GWPO, 2025). A humanitarian IWRM approach is essential for managing the unpredictable and increasing impact of climate change on groundwater recharge and surface water storage through its holistic analysis and understanding of all stages of the water cycle and local water use practices.

Water is a finite and vulnerable resource, essential to life, development and the environment. IWRM therefore seeks to coordinate different uses of water (e.g., by agriculture, industry or for domestic consumption) to avoid conflicts, preserve ecosystems and guarantee long-term access to water (GWPO, 2025).

2 Purpose and Scope of the Document

2.1 Aim of the humanitarian IWRM guidance

WASH field practitioners, managers, and coordinators are the target audience for this guidance.

The guidance supports WASH actors to develop IWRM action plans jointly with all stakeholders who are using, or have an impact on, the same water resources and water flows connected to WASH humanitarian services. Humanitarian WASH actors are encouraged to consider the whole water ecosystem and its stakeholders, identifying actions to mitigate the impact of climate change beyond the consequences of a specific disaster.

Water resources management seeks to manage pollution, competing demands, and other risks to water resources (such as flood, drought and landslide) so that aquifers, rivers, and lakes can sustainably provide freshwater for different uses (IRC & Water For People 2021).

2.2 Guiding principles

The affected communities and stakeholders should be at the centre of the IWRM process. How their participation will be initiated and nurtured is a key IWRM component. Literature on the implementation of IWRM at a local level highlights the need for the full involvement of local people and other stakeholders/decision makers through the following:

- Effective communication
- The demonstration of IWRM actions
- The creation of community water committees
- A participatory system for regular progress monitoring

Consultation is essential to the process, and benefits from the identification and formalisation of communities of interest. They become an anchor point for consultation and the initiation of community dialogues (CIDR Pamiga, Africa Green Corporation, CREDEL, 2021) (ADDA, 2022).

Decision making, and the design of IWRM remedial interventions, benefit from indigenous knowledge and inputs about, for example, high-water levels, ecosystem changes or water

management practices adapted to the context. Additionally, to ensure the successful introduction of technical and technological innovation, communities should be considered as full partners in the design and construction process (USAID, 2021) and (ADDA, 2022).

As IWRM is highly context dependent, WASH actors should understand the context and people, adapting their ways of working even in humanitarian responses. The process of engaging with stakeholders is as important as the activities which will be defined, designed and agreed upon.

The role of WASH actors must be clear. Are they affecting the water resources in some way (e.g., by increasing the risk of pollution through their sanitation activities, or depleting local resources through their water project) – becoming themselves another stakeholder? Or is their role just to facilitate? WASH actors must be transparent about their interests and what they can bring to the process.

IWRM's principles of inclusivity, local leadership and coordination align with the WASH cluster's global commitments in its 2022-2025 strategic plan. Approaches that cut across all IWRM's activities include local humanitarian leadership, partnership with local entities, gender and inclusion, and cash and voucher assistance. There may be others specific to each organisation which also align with the IWRM process (e.g. community engagement).

2.3 How to use this guidance

The objective of IWRM is to bring together all water resources stakeholders and agree on a common goal and action plan(s). This guidance describes four interconnected IWRM phases and their aims (see also Figure 1):

Sustainable foundations

Context mapping

Co-designing solutions

Planning and implementation

Each phase includes lessons learned, good practice, and key points to support each step of the process.

Practical tools and resources for gathering data and planning budgets are available in Annexe 1: Useful tools and resources for IWRM planning, and see also *Guidance Note 7: Climate Data for WASH Programming.*

3 Humanitarian IWRM phases

Humanitarian IWRM is an approach that integrates environmental and climate change considerations throughout the response. At all stages of a project, stakeholders are identified, interviewed, and information gathered.

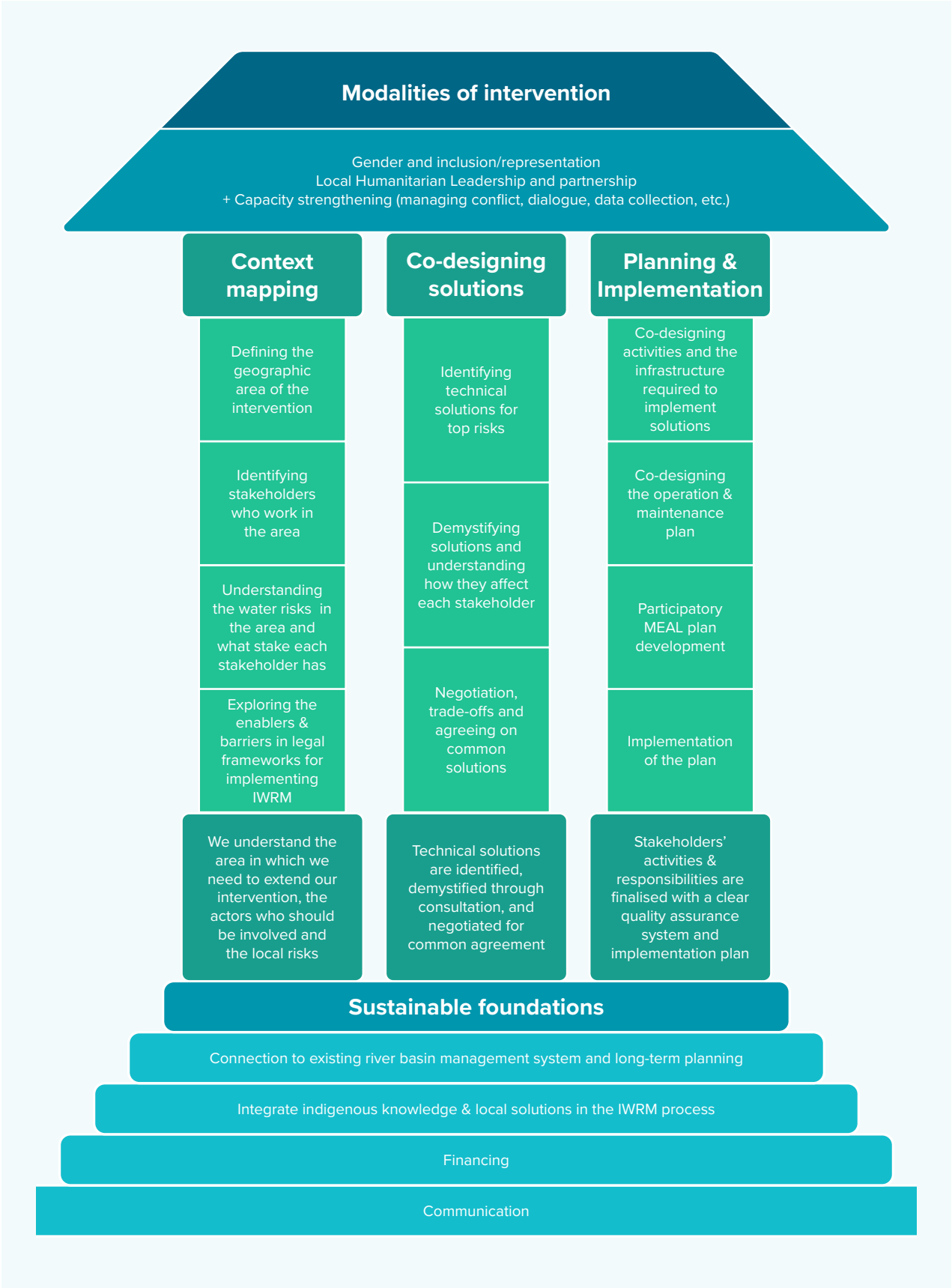
Both traditional humanitarian stakeholders (such as host communities and the affected population, technical departments and local authorities) and less traditional stakeholders (such as farmers and private sector water users) must be consulted and invited to take part in the design and decision-making process to strengthen the sustainability of the plans and activities. Throughout these steps, everybody needs access to the same level of information to work together and to make informed decisions.

Humanitarian IWRM is an iterative process. Initial action plans are typically developed with local stakeholders who are interested in being involved at the start of a project, proposing activities which can produce tangible results within a short period of time. Later, with more time to analyse the water resources and the stakeholders' context, IWRM can focus on longer-term plans in the next cycle of this iterative process, extending its engagement to a wider group of stakeholders.

The snapshot below gives an overview of the four phases and various steps in the process. The process can start at any time during a humanitarian response, but preferably as soon as possible. For example, the context mapping phase can be initiated as part of Anticipatory Action Planning (see *Guidance Note 8: Anticipatory Action in the WASH Sector).*

3.1 Snapshot of process

Figure 1: Snapshot of the Humanitarian IWRM process [created by author]



3.2 Sustainable foundations

Connection to an Existing River Basin Management System and Long-term Planning

How to connect humanitarian work to existing plans?

During preparedness and contingency planning exercises, analyse if and how the government is implementing its IWRM national strategy, and determine its progress in creating a local water coordination platform for the planning and management of local water resources.

Use this analysis to design a humanitarian IWRM intervention - whether to work with an existing local structure, or to establish a new structure (e.g., a local water platform or community water committee). The priority is to engage with local stakeholders, developing action plans that link with national and local IWRM initiatives. The structure should be representative of all types of stakeholders and be transparent in its discussion and decision making. Expertise within the groups should be identified and invited for specific brainstorming sessions before presenting the results to a wider group for selection and decision making (CIDR Pamiga, Africa Green Corporation, CREDEL, 2022).

Guiding Questions

- Is there a local water coordination platform or watershed management structure which includes representatives of all water resources management stakeholders?
- Is there a water users association or any organisation of groups of stakeholders and, if not, can one be established to coordinate with existing systems and provide oversight?
- What terms of reference should the local water platform follow?
- How can a new project be connected to the existing river basin management system for long-term sustainability? What are the entry points for integration?
- What mechanisms can ensure that IWRM interventions align with ongoing and long-term future basin-wide planning efforts?
- Who should be engaged in the transition process to humanitarian IWRM and Operation and Maintenance in the future - and how?
- What institutional or regulatory frameworks need to be considered to ensure the seamless integration of existing and new structures?

End Goal: The project is anchored in the local authority and communities.

Key Points

- The local water coordination platform is a representative organisation of local players to support coordinated local action, and a forum for peaceful dialogue, knowledge of resources, and reconciliation of complementary issues. Based on: (OiEau, 2022)
- Each topic addressed by the management committee is accompanied by capacity-building for its members, so that they benefit from shared skills when making decisions. Based on: (OiEau, 2022)
- Water user associations 'have proven to be an effective means of achieving participation from end-users, through providing structures for community-level contributions, facilitating the distribution of knowledge and providing a channel for grass-root opinions and concerns.' (Robert, 2016)
- Relevant IWRM data and documentation should be shared with existing basin management institutions
- Community dialogues should be based on three principles:
  - Everybody's views should be listened to and respected
  - Everybody has a role to play
  - Everybody should be able to provide feedback on the results of the IWRM activities

Lessons Learned

Set up community water committees at the right time

Ideally, the Community Water Committees (CWCs) emerge only at the end of the information and field demonstration process. By then, those with a strong interest and ability in the management of water resources have emerged and engaged. At least one member of the committee should have experience of running an enterprise/business to professionalise the activity.

What is a CWC? A CWC is not an administrative unit. It is a forum for exchanges about IWRM/Water Resources, created on the scale of a catchment area or a more restricted Hydrological Unit, which includes only grassroots stakeholders (farmers, fishermen, market gardeners, fish farmers, processors), and in which these stakeholders themselves define the actions to be carried out.

Integrate Indigenous Knowledge and Local Solutions into the IWRM Process

How to mainstream the traditional practices that work?

Building IWRM on existing practices strengthens community buy-in. IWRM provides the opportunity, before seeking solutions from outside, to examine what has been tried and tested locally, what was successful and what failed, and to analyse the potential root causes (ADDA, 2022).

Guiding Questions

- Which water resource management solutions have local stakeholders implemented in the past? What has worked and what has failed?
- Which traditional water sharing and management practices exist in the area or nearby? How are they implemented and what makes them work?
- Which elements of indigenous knowledge and local solutions can be integrated into the national IWRM process for learning and sustainability?
- What role did local communities and traditional governance structures play in water resource management?
- Are the advantages and limitations of indigenous solutions known and understood by all stakeholders?

End Goal: The traditional practices that are validated in the project are documented and shared for wider acceptance.

Key Points

- Agreement between stakeholders requires a common understanding of IWRM principles which should be linked to local knowledge and languages (OiEau, 2022)
- Indigenous knowledge and solutions are embedded in local practices and result from people's experience and observation of the local context. Consequently, they contain invaluable knowledge that scientific and research practices may be unable to provide

- Indigenous solutions contribute to the ownership of the IWRM process and action plan by local stakeholders, as well as facilitating adhesion and interest (ADDA, 2022). Local actors using indigenous water conservation techniques should be included in the design groups
- Documenting and sharing successful local practices can promote replication in other areas

Lessons Learned

Technical and social sustainability are mainly determined by the ease with which communities adopt and identify with the work, and with the potential for inclusion that it offers. The experience of the Projet d'Appui à la Synergie Locale pour l'Eau (PSL Eau) shows that this is primarily achieved by promoting technically promising and inclusive initiatives that have their origins in the community (ADDA, 2022).

Financing

How to ensure financing for the long-term goal of IWRM?

Humanitarian WASH typically finances initial IWRM activities. Although this benefits long-term water resources management goals, the IWRM momentum can come to a halt once the humanitarian response ends or funds decrease. It is therefore important to support IWRM stakeholders to explore alternative financing opportunities early in the process.

Guiding Questions

- What budget is required to finance the IWRM cycle?
- Which traditional and innovative financing mechanisms are needed to fuel IWRM interventions?
- What kind of financing strategies are required to deliver the scale of finance needed? Have opportunities been identified for leveraging government budgets, subsidies, and grants for IWRM initiatives?
- Can a sustainable financing strategy be developed that delivers short and long-term funding?
- Will a financial monitoring system be established and who will manage it?

- How can the private sector be encouraged to invest in IWRM? Can its financing role be enhanced? Are there cost-sharing approaches available that involve public, private, and community contributions?

End Goal: A Sustainable Financing strategy is developed.

Key Points

- Programmes are best prioritised according to their feasibility (technical, financial, human, etc.)
- Actions should be prioritised according to their real added value. Priority is given to actions that are realistic, operational, benefit from windfall effects, are supported by mutually beneficial association with other actions in the area and, crucially, can be financed (or effectively adapted to available finances)
- The project owners and project managers for the priority actions must be clearly identified beforehand (OiEau, 2022)

Lessons Learned

The surface area of an NGO's IWRM project can be large. Such scale can reduce costs and enhance the continuity of water service through collaboration between stakeholders upstream and downstream of catchment areas. Collaboration also supports the long-term financial equilibrium of operators who lack the funds to repair deteriorating resources. Better recognition and legal supervision of incentive-based schemes such as Payments for Environmental Services (PES) would strengthen and support IWRM.

PES offers local and concrete contractual arrangements between local actors who are dependent on a common resource. In the context of reduced municipal funds and very limited local taxation, any sustainable alternative funding is a good thing. Establishing a financial strategy for building a PES is an important prerequisite. Faced with increasing climate challenges, it is important to highlight the costs of inaction and the benefits of implementing resource management now, to increase the resilience of water resources to future shocks. PES or similar schemes have their place here (OiEau, 2022).

Communication

How to implement IWRM whilst learning and sharing?

IWRM requires an iterative approach, using trials and tests to identify what works (or not) within the local context and social environment. It is therefore important to maintain communication channels with engaged (and disengaged) stakeholders.

Guiding Questions

- What are the best communication strategies to support a smooth transition and continued engagement in IWRM efforts?
- How can key stakeholders remain informed and involved during and after the project period?
- Which platforms and methods would be most effective for sharing updates, lessons, and best practices? Consider multiple channels such as community meetings, digital platforms, and printed materials

End Goal: A communication plan is in place to provide updates to stakeholders and enable continued engagement.

Key Points

- Communications must be adapted to each audience and to their involvement in the IWRM action plan. Language must be accessible (with key IWRM terms translated) and convey the appropriate message at the appropriate time in the IWRM implementation phase
- The communication plan should ensure that all stakeholders, including vulnerable groups, share the same level of understanding and have sufficient, regularly updated knowledge to take informed decisions throughout the process (CIDR Pamiga, Africa Green Corporation, CREDEL, 2022)
- The project's outcomes should be regularly documented and shared, and a final learning event planned to celebrate its achievements and learn from its failures

Lessons Learned

The communication tools for accessing knowledge must be developed jointly with local authorities and users. Like a jigsaw puzzle, each piece of knowledge contributed must find its place. This construction of pieces reconciles specific local interests with broader interests (OiEau, 2022).

Good Practice

Raise awareness of IWRM and its importance through multiple communication channels. Simplify IWRM concepts and focus on good practices that can be achieved in the area - while distinguishing them from bad practices (CIDR Pamiga, Africa Green Corporation, CREDEL, 2022).

3.3 Context Mapping

Defining the Area of Intervention

What area is covered by water flows and contains affected water resources?

National IWRM strategies are based on watershed-level management. However, the officially defined watershed may be too large for humanitarian IWRM, and the project will need to define its area according to water flows, resources, and scope within the local context and social environment. It is therefore important to maintain communication channels with engaged (and disengaged) stakeholders.

Guiding Questions

- Which specific water resources are used by the local communities, and what are their catchment zones? Use transect walks and consultations to map critical and potential water resources
- Which water resources are used and affected by the humanitarian intervention, and what is its catchment zone?
- Where do the heavy rains fall? What paths do water flows and floods take? Do they affect the water resources in the catchment?

- Which administrative, geographical, hydrogeological, or humanitarian zones are linked to these water resources and flows (e.g., refugee camps, IDP settlements, conflict-affected areas)?
- What information is available on the defined area to understand the risks and their impact on people and ecosystems?

End Goal: The area where the quality and quantity of the water resources are affected is identified and demarcated.

Key Points

- If the exact area of a hydrological unit cannot be defined (e.g., in a flatland), a geographical and social approach can be used to define the area by analysing the water sources and the population sharing them. Selecting an official local administration unit helps the project's connection with local authorities and decision-making bodies
- Surface water flows can be mapped through discussion and transect walks with communities and by consulting local experts and institutions (such as government technical departments)
- Consult with local authorities (official and customary) and technical departments (water resources, agriculture) to review and verify the map of the proposed area, its water flows and resources
- Information, Education and Communication (IEC) materials showing the defined IWRM area and essential information gathered can be developed, shared and updated throughout the project

Identifying Stakeholders in the Area

Who would be affected by the water resources identified?

Different users and other stakeholders will be affected by changing water resource management plans. It is important to understand their resource needs, responsibilities, influence and local knowledge.

Guiding Questions

- Who uses, shares, and manages the water resources in the selected area (private, public, communities, associations, committees, leaders, local authorities, IWRM coordination/ decision bodies, and grassroots organisations and WASH actors)?
- Which stakeholders have the legal responsibility to manage and oversee water resources and water flows, make and enforce decisions at different levels (e.g., municipal, province, state, federal)?
- Are there other stakeholders who indirectly impact or influence the areas' water flows, such as grassroots organisations, youth groups, women's associations, leaders, customary authorities, religious authorities, elders and businesses, etc.?
- Will stakeholders share local knowledge and solutions about water resource and flow management and any important history of water use, conflicts, or sharing?
- Is there a dedicated IWRM coordination & decision-making platform or committee, and does it represent the interests of marginalised groups?

End Goal: A list of stakeholders is identified who influence, are affected by, or can solve water resources management issues.

Key Points

- Humanitarian WASH actors are not neutral and should be consulted and included in the list of stakeholders
- Disasters can mobilise stakeholders to collaborate and adapt (Morris-Iveson & Day, 2021)
- Consideration of gender and inclusion is essential if stakeholder lists are to be effective and representative
- Documenting the main characteristics and interests of each type of stakeholder supports planning and negotiations, and identifies potential synergies and collaboration
- Start with the willing; make the process as transparent as possible and communicate the outcomes to attract the attention of the less willing on the next iteration

Understanding the water risks in the territory and their impact on the stakeholders

What is the risk?

Using the IWRM area maps and holding focus group discussions with the identified stakeholders (see above), discuss and map specific threats - particularly those increased by climate change. Examples of risk include increased salinisation of a specific water resource due to higher evaporation and lower recharge, and decreased availability of water for domestic and agricultural activities.

Long-term trends influenced by climate change, including risks to water resources created by flooding (such as latrines overflowing and contamination of water following flash floods), should all be examined. Some risks are linked to other risks, for example, soil erosion upstream affecting water recharge can also be linked to higher flood risks downstream.

This exercise can be facilitated by referring to Annexe 2 (Risk assessment structure). More details and recommendations can be found in *Guidance Notes 1: Climate Change Adaptations for WASH* and *3: Climate Change Adaptation for Hygiene Promotion, Vector Control, Outbreak Preparedness and WASH in Health Facilities*.

Guiding Questions

- Which water-related risks are affecting the people in the defined area (including the humanitarian intervention zones)?
- What are the root causes and their impact on the water-related risk(s) identified?
- What are the causes and consequences of the selected water-related risks, their relationship with water flows, people's activities, and water usage. Which risks have the greatest impact?
- Which risk(s) should be prioritised for now - from the community and technical point of view?
- Who is primarily affected?

End Goal: A list of prioritised and technically verified water risks that are also linked to other risks.

Key Points

- Use maps to localise risks. Water-related risks must be specific and contextualised, including their seasonality and frequency (OiEau, 2022)
- Some concepts and terms may not have an equivalent word in the local language. Seek advice to ensure that appropriate descriptions and definitions are developed prior to meetings with communities (OiEau, 2022)
- Some risks are the consequence or cause of other risks. Discuss and record these connections during community consultations
- Examine links between the risks and the humanitarian response: risks can be created or worsened by humanitarian WASH activities or the risks may impact the WASH response and infrastructure
- Combine the community's assessment of the top water-related risks with the assessment of technical experts. The selection of the final top water risks should balance perceptions, facts and local government's advice
- The risk assessment is useful for other stakeholders and should be shared with government and other relevant institutions, such as the WASH cluster

Exploring Enablers and Barriers of Legal Frameworks in Implementing IWRM

Do the laws enable or create barriers for IWRM?

Guiding Questions

- Which locally applicable policies and legislation should IWRM stakeholders and WASH actors be aware of (e.g., environmental rules, water resource protection zones, rules about water extraction, land cover and management, and water user codes and regulations)? How far are these understood?
- Are there traditional rules and codes of conduct to manage the sharing of resources (including water) at a local level? How do they interact with policies and legislation?

- How is water and land ownership legally and traditionally defined? How does it relate to traditional and local customs and practices? Are there any contradictions between the legal and traditional definitions?
- Have there been challenges in enforcing IWRM policies and legislation locally? Who is responsible for enforcing them? Are there penalties if IWRM codes and regulations are not followed?

End Goal: A clear understanding of the legal and customary barriers and enablers in implementing IWRM.

Key Points

- Policies exist on paper but are often weakly enforced locally. Humanitarian actors must navigate informal systems and power dynamics in water governance
- Traditional water-sharing customs and water source rights may contradict national laws. Local mediation approaches may be needed to resolve disputes (OiEau, 2022)
- Watersheds are often divided into multiple administrative boundaries, leading to fragmented water governance. A clear coordination mechanism should be developed based on existing local mechanisms (OiEau, 2022)

3.4 Co-design the Intervention

Identifying technical solutions for the top risks

What is the solution?

Typically, there isn't one clear cut answer. Understanding existing local solutions is the first step (see indigenous knowledge and local solutions above), but additional solutions may be needed, especially in view of climate change-related challenges.

Technical solutions that have not originated in the community but have been tried in various contexts can be found in *Guidance Notes 1: Climate Change Adaptations for WASH*, *3: Climate Change Adaptation for Hygiene Promotion, Vector Control, Outbreak*

Preparedness and WASH in Health Facilities, 10: *Climate Change and Community-Based Water Resources Management, and 11: Climate-Resilient Faecal Sludge Management*. These solutions can be assessed along with local solutions and explored with local technical departments and experts.

Figure 2: Examine potential solutions with local people

Guiding Questions

- Which indigenous solutions have already been tried, successfully or not (build on the findings from the Sustainable Foundations phase above)? What were the lessons?
- Which technical solutions for similar risks have been successfully implemented elsewhere? Are they feasible (or more acceptable) for this context?
- How can new technical solutions be shared in a way that is understandable for all stakeholders, including non-technical audiences?
- What human and material resources are needed and can they be mobilised?
- How will each proposed solution affect the water resource system over time? Is it sustainable?
- Has the cost and effort of Operation and Maintenance (O&M) been assessed? It can be better to invest in solutions with a higher capital cost if the (O&M) costs are low?

- Which solutions offer the best balance between feasibility, cost, local capacity and long-term impact?

End Goal: Technically and economically feasible solutions that mitigate the top priority risks.

Key Points

- Selecting the priority risks is a process that uses community perspectives, technical expertise, resource availability, and an analysis of the long-term impact
- Additional benefits can be generated when the solutions link to other activities to provide additional income (such as anti-erosion barriers planted with fruit trees. See Planning and Implementation below)

Lessons Learned

Common technical IWRM interventions to address the risks are:

- Water supply systems: protecting and installing boreholes, hand-dug wells, small-scale water treatment plants, and piped networks
- Irrigation and drainage: creating and maintaining canals and water-efficient irrigation systems
- Small and medium dams/reservoirs: for irrigation, rural water supply, livestock, and small hydropower plants
- Flood protection measures: such as embankments, levees, diversion channels, and retention ponds
- Rainwater harvesting systems: roof catchments, tanks, farm ponds, and check dams
- Groundwater recharge structures: such as check dams, sand dams, and ponds
- Protecting wastewater and sanitation infrastructure to prevent environmental contamination
- Watershed rehabilitation works: such as soil bunds, terraces, gabions, and reforestation combined with physical erosion control
- Basic monitoring stations: such as river flow gauging, rainfall stations, and groundwater level monitoring

Demystifying Solutions and Understanding How they Affect each Stakeholder

Who is affected by the proposed solutions and how?

Stakeholders will either be implementing the solutions or be impacted by them, or both. For example, protecting a water source may require changes to farming practices or water conservation techniques to ensure an equitable share of water resources. Mitigating downstream flood risks may require the construction of anti-erosion structures; planting trees could reduce the available land for farming. If possible, demonstrate the new technology to the stakeholders.

Guiding Questions

- Do the affected stakeholders understand and accept the impact of the solutions?
- How and where can the solutions be demonstrated to the community (logistics, finance, location and partnership agreements etc.)?
- What concerns do stakeholders have, and how can we mitigate or address these concerns?
- What are the stakeholders' shared objectives, and how can the project align them with the proposed solutions?

End Goal: Stakeholders understand the solutions; their concerns have been considered and will be discussed during the negotiation step below.

Key Points

- Prepare IEC materials adapted for different IWRM stakeholders to explain each proposed solution in a clear, accessible manner, avoiding jargon and technical complexity. This may include multiple layers of explanation, ranging from detailed technical details to the more pragmatic aspects of building, implementing and managing the solutions for the various stakeholders
- Invite local people, who have implemented some of the solutions elsewhere, to describe their experience

Good Practice

Carry out concrete demonstrations in the field

Through concrete demonstrations, communities can more easily see the relevance of IWRM.

For example: *encouraging water infiltration into the soil and storage:*

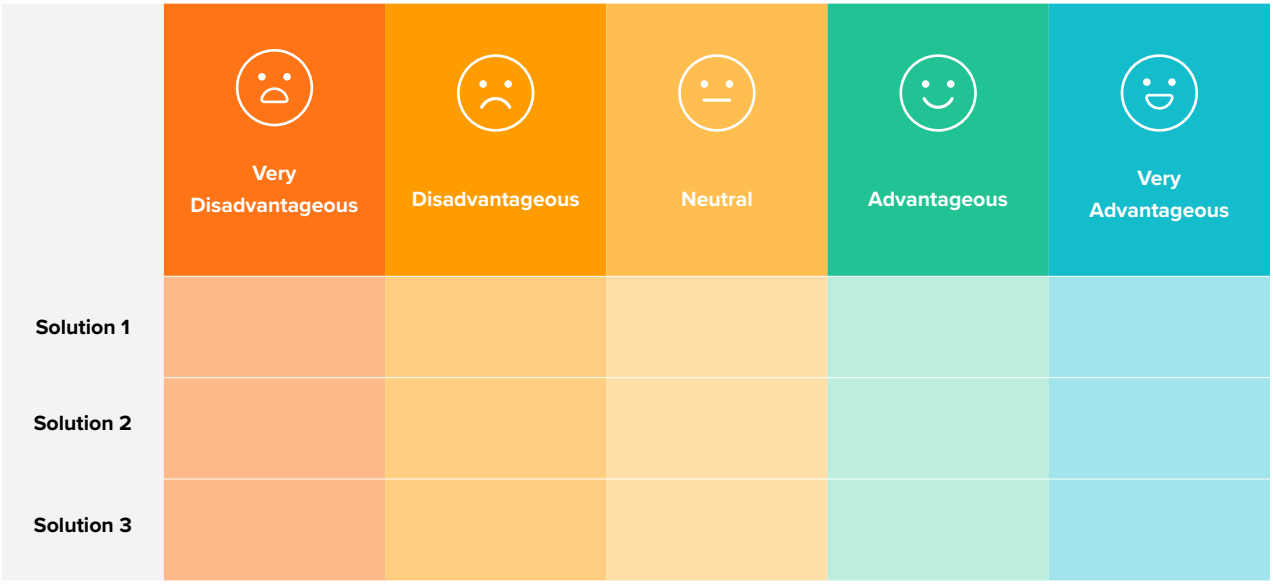
To reduce run-off, erosion and flooding, interventions normally prioritise water infiltration into the soil and storage. This often goes against the wishes of local people, who want to drain off the water - without addressing the potential impact downstream. IWRM could demonstrate a combination of localised drainage with downstream storage, by defining a flood expansion zone (CIDR Pamiga, Africa Green Corporation, CREDEL, 2022).

Negotiation, Trade-offs, and Agreeing on a Common Solution

Which solution(s) are agreed to?

The proposed solutions will impact stakeholders differently, so the selection must be negotiated and responsibilities assigned. Transparent debates and inclusion of all stakeholders, including those more marginalised, should mitigate future disagreements (e.g., people who are not served by a new water distribution system may take water and risk degrading the operation of the system).

Figure 3: Voting board



Guiding Questions

- How can the negotiation process ensure that all voices, particularly those of marginalised groups, are heard?
- What are the areas of agreement among the stakeholders, and how can these form the basis of a shared solution?
- What trade-offs or compromises are stakeholders willing to make, and how can mutually acceptable solutions be found?
- What steps must be taken to document and formalise the agreement, and how can accountability be supported in the future?

End Goal: A documented, formal agreement that is clear, actionable, and accountable to all parties.

Key Points

- Consider using participatory tools, such as a Venn diagram, to understand the power dynamics
- Identifying a respected local leader to facilitate discussion and reduce tension can assist the negotiations
- Highlight what motivates different stakeholder groups, what will facilitate cooperation, and the issues that create shared concerns or antagonism between stakeholders. The highlights can inform conflict mitigation and management measures

Lessons Learned

A shared, collective concern must be rooted firmly in the area so that many people can identify with it and feel motivated to safeguard the resource.

A common concern goes beyond individual preoccupations; it could be the degradation of a water resource whose use is vital to the users, such as a river, groundwater, coastline, watercourse, or wetland, or the pollution of drinking water.

In practice, it is often the preservation of the quality and quantity of the water resource supplying drinking water that triggers the involvement of local residents (OiEau, 2022).

3.5 Planning and Implementation

The final IWRM phase consolidates the information and processes of the earlier phases, turning them into detailed plans for implementation.

Co-designing the Activities and Infrastructure for Implementation

Which solutions will be implemented and how?

Each technical solution and its location should be identified (e.g. planting of trees, construction of contour bunds or check dams and installing a micro-irrigation system). For each project, identify an owner and a manager with the responsibility to co-design and implement their element of the solution (CIDR Pamiga, Africa Green Corporation, CREDEL, 2022).

For more details, refer to *Guidance Notes 10: Climate Change and Community-Based WRM, and 9: Nature-Based Solutions to Address Climate Change in WASH.*

Guiding Questions

- Which tools and approaches can be used to ensure appropriate participation in the co-design process?
- Which activities and infrastructure are required to implement the solution(s)? Can these be connected to local practices and solutions?
- Who will be implementing the projects and how? Can a participatory implementation plan be developed with local stakeholders to increase ownership?
- Which of the planned IWRM infrastructure projects and activities will be selected as demonstration examples? Prioritise quick set up and high impact within a short period of time, achievable with available resources, short logistics cycle, affordable, disaster-resilient and replicable by local communities
- Are materials locally available? Are sources of local materials sustainable (respecting ecosystem regeneration) and/or legally accepted to extract?

- Who are the most active stakeholders who can be involved in the construction and IWRM activities?

End Goal: IWRM activities are designed and ready for implementation.

Key Points

- Local resources (human, technical capacity, supply chains, locally available materials and equipment) should be used wherever possible. Plan for the potential impact of climate change on these resources
- Verify ownership and rights of way on any land where IWRM infrastructure and activities will be implemented
- While the IWRM infrastructures are being built, review meetings and site visits can identify issues and potential improvements to the initial design
- MOUs and discussions with participants regarding goals and respective responsibilities help to ensure that only willing and interested parties are involved
- Operation and Maintenance should be included in the co-design stage

Lessons Learned

Local IWRM Micro-Actions:

Specific, often small, actions can serve as a springboard for the initial implementation of IWRM. This could be the installation of bundles of brushwood or other materials to strengthen earthen structures ('fascines') or the planting of vetiver grass to reduce erosion.

Other plot-based agricultural and physical measures include water and soil conservation measures such as bagged sand bunds, composting, mulching, Zaï planting pits, fascines, vegetated bunds and stone barriers, reforestation, hedges and agroforestry, etc.

Infrastructural actions include reservoirs, desilting and unclogging watercourses (CIDR Pamiga, Africa Green Corporation, CREDEL, 2022).

Good Practice

Design informed by experience:

During the Cape Town drought, a comprehensive water strategy was built upon lessons learned, including:

- Don't lose the lessons learned during the drought
- Consider, plan for and mitigate shocks such as drought, tariff increases, localised flooding, storm surge and protest action) and stresses (inward migration, informal settlements, poor hygiene and sanitation, sub-optimal institutions, ageing infrastructure)
- Diversify supply by reducing reliance on rainfall; introduce redundancy
- Maintain water conservation and demand management, support household resilience
- Resolve the management of catchments, requiring cooperation between all spheres of government
- Price water appropriately
- Embed water-sensitive design by managing the entire urban water cycle (Morris-Iveson & Day, 2021)

Co-design the Operation and Maintenance Plan (O&M)

How will the solutions be operated and maintained?

This step should be conducted at the same time as the co-design of activities and infrastructure (see previous step). The costs and seasonality of IWRM activities and infrastructures should also be taken into account (e.g., digging and desilting a pond or a reservoir).

Guiding Questions

- What resources (human, material, financial) are required for operation and maintenance?
- Who will be responsible for which (O&M) activities and on what schedule?
- Can local supply chains ensure the long-term provision of externally sourced materials and skills?

- Are there rules required to maintain operations (e.g., maintaining a protection perimeter around specific water sources, managing solid waste to reduce pollution risks and preventing the blocking of drainage channels)?

End Goal: All planned IWRM activities have full operation and maintenance plans.

Key Points

- Include an analysis of the cost of inaction and lack of maintenance in the O&M plan
- O&M is strengthened by early planning for the required human resources, materials, and costs of recurring and emergency maintenance
- Future problems in sourcing materials locally can be mitigated by mapping out potential local suppliers for spare parts and materials, and identifying alternatives in case of supply disruptions
- Integrating new IWRM infrastructure with the local communities' asset list can help to ensure O&M costs are included in local budgeting and increase the sustainability of the infrastructure

Participatory MEAL Plan Development

How should IWRM be monitored?

A wide range of Monitoring, Evaluation, Accountability and Learning (MEAL) guidance is available in the sector. This section focuses on MEAL elements of importance to IWRM.

Guiding Questions

- What indicators and resources can be used to monitor the implementation and the success of the IWRM infrastructure and activities (for example, identifying longer-term impact indicators of water availability may be relevant)?

- Who should collect and analyse what data and at which frequency?
- What feedback mechanisms are needed to ensure transparency and accountability in the implementation of the IWRM action plan?

End Goal: IWRM activities have full MEAL plans.

Key Points

- Include quality assurance monitoring when contracting for IWRM works
- Maintain the co-design approach for planning MEAL and include the participation of stakeholders in the definition of indicators and data gathering activities
- MEAL can monitor routine short-term WASH indicators, such as water quality, availability, system functionality, and user satisfaction, but IWRM MEAL can also monitor environmental impact and long-term climate-related changes (such as changes in groundwater levels)
- Monitoring and evaluation can capture valuable lessons for future IWRM

Lessons Learned

The co-production of 'indigenous' knowledge and community-based monitoring, such as citizen observatories, is rapidly expanding. Encouraging public participation means that communities have the potential to offer timely and low-cost solutions to the collection of data by catchment science (Starkey, et al., 2017)

Implementation of the Plan

What are the final considerations?

Working with willing and engaged stakeholders, standard humanitarian implementation steps should be strengthened through a focus on sustainability, integration with established water resource management, preservation of the ecosystem and protection of water sources threatened by climate change supply.

Figure 4: Half-moon (ICRISAT, Demi-lune technology rainwater harvesting method, 2025)

Figure 5: Contour bunds (ICRISAT, Contour Bunding Technique: contour bunds for water harvesting, 2024)

Guiding Questions

- Are there outstanding issues to resolve or gaps to be filled in the co-designed plans of phase 3 (e.g., roles, responsibilities or agreements)?
- Have all appropriate actions been taken to support the sustainability of the solutions, such as local management and integration with government systems?
- Has learning from the demonstration sites been integrated into the final implementation?
- How will the IWRM coordination mechanism (established earlier) align the implementation with local governance, environmental regulations, and existing water management frameworks?
- Will the IWRM solutions help to preserve the ecosystem and protect long-term access to water?

End Goal: The activities are fully implemented.

Key Points

- Where possible, the implementation plan should be integrated into local authorities' annual plans
- Learning should be gathered from MEAL feedback during implementation to review and adapt the activities and the communication outputs
- Activities which also generate economic benefit (e.g., increased yields for the farmer) should be prioritised (CIDR Pamiga, Africa Green Corporation, CREDEL, 2022)
- Community-level infrastructure (e.g., reservoirs) should establish a dedicated management committee, integrating representatives of the landowners and users to sustain its long-term use and maintenance
- An adaptive management approach increases the effectiveness of IWRM by incorporating stakeholder feedback, addressing challenges in real time, and adjusting the activities

Good Practice

Support concrete actions on the ground that generate economic benefits:

Will the local populations gain economically from the IWRM solutions? This is the best guarantee that it will be sustainable.

Example: Plot-based actions such as composting and 'fascines' (bundles of brushwood or other materials to strengthen earth barriers): people notice increases such as higher yields or an increase in the area available for cultivation.

Conversely, dykes or anti-erosion barriers are negatively perceived as a loss of space: by planting vetiver instead, the barrier becomes a productive resource. Banana trees can be planted along the banks of the embankments or reservoirs.

Example: Actions that support multiple use with economic value added: the creation of a dam or reservoir is quickly perceived by local people as an opportunity for market gardening, fishing and fish farming, palm oil processing and rice growing.

Dredging enables the sand to be recycled for construction purposes. (CIDR Pamiga, Africa Green Corporation, CREDEL, 2022)

4 Risks and assumptions

Risks of relevance to IWRM could include:

With communities and local authorities

- Communities and key informants may not want to participate and collaborate in the process
- Knowledge of climate and IWRM-related risks may be limited in some communities or specific groups
- The participation of stakeholders, especially from the private sector, may be complex and difficult to encourage
- If a national IWRM process has not been implemented locally, buy-in from local authorities may be limited

Data risks

- Limited access to reliable water data in crisis-affected areas
- Missing data may take too long to collect or require external resources and additional funding to be collected. There may be a proxy for evaluating the data, such as the presence of a specific plant, or the behaviour of an animal or insect that indicates water availability, levels or flow
- Climate change is injecting an element of unpredictability into the water cycle which means that past events may not be sufficient to predict the extent of future disasters

Process risks

- Concern and ranking of water-related risks may vary considerably between different community groups and complicate the selection of top priorities. Connecting the risks between communities may help in the selection of a group of interconnected risks
- The national legal framework may not be flexible enough for humanitarian contexts
- Local conflicts in water-related issues in a humanitarian context may take time to resolve

References

- ADDA, F. (2022). *Capitalisation du processus de mise en oeuvre du PSL Eau: proposition d'une démarche de mise en oeuvre des projets de GIRE locale.* SNV and VNG. Available here
- Brangeon, S., and Crowley, F. (2020). *Environment Footprint of Humanitarian Assistance - Scoping Review*. URD. Available here
- CIDR Pamiga, Africa Green Corporation, CREDEL. (2021). *Capitalisation. Solutions fondées sur la Nature. SNV, Agence de l'Eau Seine Normandie*. Available here
- CIDR Pamiga, Africa Green Corporation, CREDEL. (2022). *Guide de bonnes pratiques pour une opérationnalisation de la Gestion Intégrée des Ressources en Eau - GIRE*. SNV. Available here
- Desbleds L., K. J.-F. (2023). *GIRE locale dans la zone des Niayes au Sénégal : faire commun autour des ressources en eau? Nogent-sur-Marne: Éditions du Gret, 64 p, Carnet Faire commun n° 4*. Available here
- Global Water Partnership. (2000, March). *IWRM explained.* Retrieved from IWRM Action Hub. Available here
- GWPO. (2025). *The need for an integrated approach*. Retrieved from global Water Partnership. Available here
- ICRISAT. (2024). *Contour Bunding Technique (CBT) contour bunds for water harvesting*. Retrieved from TAAT Technology e-catalogs. Available here
- ICRISAT. (2025). *Demi-lune technology rainwater harvesting method*. Retrieved from TAAT Technology e-catalogs. Available here
- IRC and Water For People. (2021). *Climate Change, Water Resources, and WASH Systems*. The Hague, the Netherlands and Denver, United States (US). Available here
- Kergoat, A. G. (2020). *The Power of Local Action: Learning and Exploring Possibilities for Local Humanitarian Leadership*. Available here
- Morris-Iveson, L., and Day, S. J. (2021). *Resilience of Water Supply in Practice: Experiences from the Frontline*. IWA Publishing. Available here
- OiEau. (2022). *Cahiers de retours d'expériences pour une mise en oeuvre opérationnelle de la Gestion Intégrée des Ressources en Eau (GIRE) à Madagascar*. Available here
- Robert, H. (2016). *Improved Water Management in Rural Jordanian Communities Hosting Refugees: An examination of community participation as a facilitator.* Lund, Sweden: The International Institute for Industrial Environmental Economics. Available here

- Starkey, E., Parkin, G., Birkinshaw, S., Large, A., Quinn, P., and Gibson, C. (2017). *Demonstrating the value of community-based ('citizen science') observations for catchment modelling and characterisation*. Journal of Hydrology Volume 548, May 2017, Pages 801-817. Available here
- USAID. (2021). *Technical brief 11: Water Resources Management*. Available here

Annexe 1: Useful tools and resources for IWRM planning

See also *Guidance Note 7: Climate Data for WASH Programming*

Sources of information

- Local disaster response or contingency plans of the affected area
- A copy of databases related to water, if available
- Humanitarian Response Map (e.g., OCHA situation maps, UNHCR camp layouts, WASH cluster data) and other Official maps, OCHA maps, topographic maps
- Hydrological and water supply system maps if available
- Remote sensing tools (Google Earth, Sentinel, Landsat) for assessing land and water body changes
- The IWRM data portal, which provides the survey questionnaire used for the Sustainable Development Goal (SDG) 6.5.1 monitoring survey on IWRM, and provides the scores rating the level of IWRM implementation in various countries. There are also individual country reports, which provide information through the comment sections
- National WaSH Act, Water Resource Act, Land Act, Environmental Law relevant to IWRM
- Local water user agreements and any other bylaws
- WASH cluster, OCHA, technical departments, other WASH actors as well as local leaders are initial key informants and sources of information

Data collection and support to decision-making

- Maps with key landmarks (different sizes up to A0 for community meetings; where possible use Google Earth)
- Maps of the watershed or area targeted for an analysis of water flow and water risks
- List of types of water-related risks and their translation into local languages (different types of droughts, flood, pollutions, etc.) – see Translators without Borders
- Forms to record information that characterise the identified water-related risks (description, location, population, and type of stakeholders affected)
- List of symbols to visualise information on maps
- Forms to record and detail information collected during transect walks (preferably on

phones or tablets, which can take photos to keep track of key points)

- Forms to record information collected during Key Informant Interviews
- List of potential outputs (e.g., reduce flood risks, increase aquifer recharge, increase water infiltration and storage, improve water quality, reduce water wastage, etc.), and various options to achieve them (ensuring these options include local solutions implemented by local communities)

Consultation and engagement

- Participatory tools, for consultation and information sharing, to facilitate discussion, prioritisation, and decision making (e.g., the IFRC's Vulnerability and Capacity Assessment tool)
- Visual communication materials and translated legal documents
- Translations into the local language(s) of key IWRM topics to be discussed
- Set of symbols to illustrate various IWRM elements and issues
- Template for the action plan
- Key references from IWRM national regulation and laws that people should be aware of when developing projects

Budgeting

Internal Costs

Human resources

- Plan for at least two staff, male and female, with the social and technical skills to engage with communities and various IWRM stakeholders. The total number of people needed depends on the targeted area and population size, as well as the time allocated for the different steps of the process. A recommended way to increase the impact of the organisation's team is to collaborate with grassroots organisations, agreeing on respective responsibilities, collaborating to define objectives, tools and processes, and providing the necessary capacity building and support.
- Depending on the organisation's structure, staff-associated costs should also be included. Once the number of staff is decided, coordination with the human resources department is recommended.

Logistics and admin costs

- Various expenses need to be included in the budget to support staff activities such as transportation and communication, stationery and procurement and the cost of the logistics team, etc.

Partnership costs

- Entering new partnerships or maintaining existing ones incurs costs which should be included when calculating the budget. The partner may have overheads and other non-programmatic costs to budget for.

External Costs

Costs to support the process of developing an IWRM action plan.

- The organisation and facilitation of workshops, the communities' meetings, training and capacity building are some of the expenses to consider when assessing the budget.
- If partnering with local organisations, include the costs of programme and support staff as well as staff-related expenses to be evaluated and costed.

Costs to support the implementation of an IWRM action plan

- Supporting the development and setup of an IWRM monitoring system can include the procurement of data collection devices such as a borehole datalogger, water quality sensors, remote data transfer and website management expenses. It can also include the installation of gauges to measure water levels, or any other devices and activities to enable the community to gather information and analyse indicators as part of the MEAL plan.
- The IWRM action plan may include the construction of major infrastructure or small infrastructures as part of trials and demonstration sites to convince more IWRM stakeholders and concerned communities to adopt and build the solutions.
- Designing appropriate IWRM infrastructures may require the funding of feasibility studies, watershed topographic surveys and other types of survey. These surveys can become essential initial investments enabling communities to develop well-documented grant or loan proposals to donors.
- An initial funding contribution to the O&M costs may be needed until the financing plan is set up and yield funds sufficient to ensure the O&M and sustainability of IWRM systems and infrastructures.

Annexe 2: Risk assessment structure

The risk assessment approach is to identify which hazards are of concern, how likely they are to occur and then assess how they may impact existing vulnerabilities.

Hazards – climate change-related disasters

What is the likelihood of:

- 'Flash flooding' (pluvial floods)
- Landslides or mudslides
- Riverine flooding
- Coastal and estuarine flooding
- Heatwaves
- Cyclones and tropical storms (Saffir-Simpson level 3-5)
- Storm Surge
- Drought (meteorological drought, due to precipitation deficiency and higher evaporation can lead to *hydrological*[1] and *agricultural*[2] droughts with different temporalities)
- Glacial Lake Outburst Floods
- Dust storms
- Wildfires[3]
- Increased atmospheric pollution (ozone)[4]

Note that because of climate change, future occurrences of these events are unlikely to be the same as current events. In determining the likelihood, users should use both the experience of key stakeholders **and predictions that incorporate climate models.**

Hazards – longer-term climate impacts

What is the likelihood of:

- Decreased surface water
- Decreased groundwater
- Increased heat (long term)
- Increased pathogen activity in water
- Changes in disease vector activity

- Salination and saltwater intrusion
- Desertification
- Riverine / coastal erosion
- Siltation
- Sea level rise
- Subsidence
- Ecosystem changes

In some cases, local data may be available on, for example, the frequency of specific hazards. Otherwise, (e.g., increased pathogen activity) it may be necessary to extrapolate from global or regional trends.

Vulnerabilities

For the key hazards, now identify how and to what extent they will affect:

- Demand for water (overall and seasonal variation)
- Availability of drinking water
- Availability of water for agriculture and livestock
- Competition and conflict between water users
- Access to water (particularly by marginalised groups)
- Quality of water
- Functioning of water systems and infrastructure (treatment, storage, distribution)
- Availability of sanitation
- Access to sanitation
- Functioning of sanitation systems (including conveyance and treatment)
- Functioning of drainage systems
- Availability of water and materials for personal use, food preparation and domestic hygiene
- Incidence of waterborne diseases
- Incidence of food-borne diseases
- Incidence of vector-borne diseases
- People and animal migration
- Emergence of Zoonotic disease
- Emergence of new infectious diseases

- Increased human contact with pathogens
- Disruption of the supply chain of health and hygiene materials
- Impact on hygiene practices and behaviour
- Weak health systems
- Weak health surveillance because of uncertainty/unpredictable disasters
- Access to health services
- Change in hygiene practices and behaviours
- People with Disabilities' (PWDs) access to WASH services
- PWDs capacity to maintain hygiene/menstrual hygiene

End notes

1. Hydrological drought when there is reduced streamflow, inflow to reservoirs, lakes, and ponds; reduced wetlands, wildlife habitat.
2. Agricultural drought when there is soil water deficiency and, as a result, plant water stress, reduced biomass and yield.
3. Not generally a hazard that affects humanitarian contexts, but may be a threat in some peri-urban environments.
4. Not generally a WASH concern?


ADAPT


german
humanitarian
assistance
DEUTSCHE HUMANITÄRE HILFE


OXFAM