

# ICED Evidence Library

## IWRM : Managing risks and promoting development in fragile contexts



Tags: Infrastructure, Programme Design, FCAS

*Integrated Water Resources Management (IWRM) is a means of addressing water problems driven by competing water demands for scarce and variable water resources. The approach has been used successfully in fragile contexts to manage risk and promote development. During 2018 ICED undertook a review of successful IWRM approaches in Sudan, extracting lessons learnt on how IWRM can be used to manage conflict and climate risk, and support the transition from humanitarian response to developmental intervention. The study produced a series of guidelines, 5 case studies, and a summary guide on the importance of IWRM all of which can be accessed via the ICED website.*

### Three perspectives on IWRM

We now look briefly at the ideas within an IWRM approach from the following three perspectives

- IWRM: an ongoing process reflecting principles and context
- IWRM to manage risks in humanitarian WASH programmes
- IWRM as the transition from humanitarian to development

#### 1. IWRM: an ongoing process reflecting principles and context

The idea behind IWRM is to have a collective, representative approach to making decisions on water so that all of the water resource is managed sustainability. The approach is based on a set of four principals shown below.

#### Principles of IWRM

1. Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment.
2. Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels.
3. Women play a central part in the provision, management and safeguarding of water.
4. Water is a public good and has a social and economic value in all its competing uses.

There is an important logic that holds these principals together. Once we consider that water resources need to be managed in the environment, not just as individual water demands, then it follows that a participatory approach is useful – so as to be able to have a ‘voice’ that reflects all the competing demands for water. Once we accept that we need to hear a wide range of voices to represent the different water uses and users, then its clear that the voice of women is important given their significance as water users. Women play a key role on water management, both domestically and in livelihoods such as rainfed agriculture. As we’ve seen, its important to link up the water users with other actors in society like traditional leaders and government. The governance arrangement needs to be representative both of different groups of users (e.g. different villages) and of different types of use: agriculture, livestock, domestic etc.

One of the ongoing initiatives on IWRM in Sudan is based on a series of exchange visits between Darfur and South Africa (where IWRM made an important contribution to democratising the water sector after the end of apartheid). In this initiative the delegates found that IWRM could be expressed as a contrast with conventional water programmes that just looked at how to meet one water demand at a time, rather than taking the holistic option of IWRM, as shown in the table below.

<b>Demand based water management</b>	<b>Integrated Water Resources Management</b>
Driven by one type of water demand	Management of the entire resource
One or few institutions involved	Many institutions involved
One sector objectives addressed	Multiple sector objectives addressed
Decisions made in one sector	Collective decision making with multiple sectors and representatives of water users
Managed on political boundaries	Managed on hydrological boundaries (the river catchment or groundwater basin)

Source: "Some, for all, forever." (UNEP 2016)

There are numerous streams of discussion and action on IWRM in Sudan, one of which is in the University of Khartoum's Water Research Centre, who published a major overview of "Water Resources of the Sudan" in 2017. In this volume, Dr Ahmed M Adam and Dr Hassan Abu Bashir Ali make an important observation that can be paraphrased as follows:

*"It is important to note that IWRM is a process not a product... It does not provide a specific blueprint for a given water management problem but rather a broad set of principles, tools and guidelines which must be tailored to the specific context of a country, region or river basin."*

The insight that IWRM consists of a variety of tools that need to be contextualised on a project by project basis is important. We see that IWRM therefore has a dynamic mix of formal processes such as policy and guidelines and an organic process of implementation and evaluation, consultation and refinement. Dr Adam and Dr Bashir go on to observe that IWRM decision making deploys a combination of scientific analysis and democratic governance.

## **2. IWRM to manage risks in humanitarian WASH programmes**

In 2007 it became clear that a number of IDP camps in Darfur were at risk of serious groundwater depletion in the event of a year of low rains. Aquifers at a few camps such as Derieg and Otash in Nyala; and Abu Shouk in El Fasher were running dry. However, by identifying the risks, monitoring groundwater levels and taking action ahead of time, the worst outcomes were averted. In some cases though, emergency tankering was an interim solution before an alternative supply could be arranged. Risk management is therefore a critical element of WASH programming where there are new demands from large populations in dry and drought prone areas. This annex recalls some of the lessons learnt at that time.

The vulnerable camps in Darfur were those that relied on fractured basement complex rocks with poor recharge pathways from alluvial aquifers. Where a basement complex aquifer had no hydraulic connection to the alluvial aquifer then it was dependent on rainfall directly to the camps – these were some of the camps that failed first. By contrast, aquifers that had a hydraulic connection to a wadi were able to draw on the wadi aquifers that leaked into the cracks in the basement rock. These aquifers were recharged each year by the rainfall in Jebel Mara that flowed down the wadi and recharged the aquifers.

For WASH implementers the first step in assessing the vulnerability of an aquifer was to assess whether there was a hydraulic connection from a wadi nearby that would provide recharge from the wadi flows and the water stored in the wadi bed. This was done by measuring groundwater levels near the wadi and in the camp. It was clear to see whether groundwater flowed from the wadi to the camp after the wadi flowed from these records.

It was also important to keep a record of groundwater levels year by year for important boreholes to see how the aquifer was responding to the increased abstraction. Working in collaboration with the Groundwater and Wadis Unit and providing them with data records is important. In addition to the physical analysis of groundwater, it is important to make preparations amongst water users for the event of a year of low rains.

Water use surveys found that a large proportion of water (often about half) is used for livelihoods (such as brickmaking or water-trading). In the event of a year of low rains, then there may be a need to reduce the availability of these economic uses of water and focus on basic life support supplies. However – who will make that decision? There may be powerful interests that want to keep the economic uses going and vulnerable groups may lose out on their domestic supplies.

In response to this problem, the WASH committees in many IDP camps set up drought management contingency plans. These plans were based on water use surveys undertaken with community participation. This transparency meant that everyone was aware of the water demands and how they were met. This meant that a drought contingency plan could be created when the supply was good and implemented when required.

An important element of water resource management in camps is keeping the community informed of groundwater levels. This was sometimes done with the use of a painted post next to important boreholes where the current water level could be marked.

### **3. IWRM as the transition from humanitarian to development programming**

#### **Humanitarian:**

In response to an emergency, the urgent need is for a lifesaving response. This humanitarian phase of a crisis is based on a framework of human rights – people have a right to life, water and dignity and so the immediate priorities are for a sufficient and clean drinking water supply, sanitation and hygiene facilities.

If the crisis is protracted over a long period, then it may be that these emergency supplies are at risk of failing as a result of the resource drying up. The previous section describes how IDP camps can draw on IWRM principals to increase the reliability of their water supply.

Livelihoods are also important in the humanitarian phase of the crisis in addition to providing a platform for recovery. It soon becomes important therefore to consider the water needs for livelihoods in addition to the emergency WASH response. At this stage an IWRM response becomes important.

#### **Humanitarian to sustainable development:**

As the emergency passes and attention shifts towards the need for a sustainable WASH service then then attention broadens towards a fully sustainable supply. The three pillars of sustainable development are economy, social equity and environment. Social equity relates to human rights which is the focus of the humanitarian response, so the transition to recovery and development comprises an increasing focus on economy and on resource management. Water needs to be understood in its livelihood context as well as a requirement for basic survival. The economics and organisational capacity for repairs and supplies of spares needs to be addressed. There needs to be sustainable management of the water resources. The transition from an immediate lifesaving response towards recovery and development sees an incremental implementation of different elements of IWRM.

#### **Resilience and climate adaptation:**

Adopting a longer-term resilience and climate adaptation response, IWRM is important in managing the risks of climate responses. From the outset in which you understand the water users and understand the water resource, then you are in a better position to understand what the impact of a water related climate shock will be and to plan for that eventuality. When you have established suitable governance arrangements then the water users themselves are in a better position to manage the impact of climate shocks.

#### **IWRM and community peacebuilding**

IWRM is also relevant to a post-conflict peacebuilding agenda. Collaboration over livelihoods including joint management of water resources is an essential part of re-establishing peaceful conditions in conflict affected areas. An IWRM programme is a means of rebuilding the social networks that have been torn apart as a result of the conflict. It is significant as a conflict prevention measure too.

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