**34th WEDC International Conference, Addis Ababa, Ethiopia, 2009**

WATER, SANITATION AND HYGIENE:
SUSTAINABLE DEVELOPMENT AND MULTISECTORAL APPROACHES

# Participatory integrated water resources management (IWRM) planning: Lessons from Berki Catchment, Ethiopia

*Kidanemaraim Jembere, Ethiopia*

REVIEWED PAPER - LOCAL

*Implementing IWRM can often seem overwhelming given the scale and complexity of the changes needed. This article describes how IWRM is a long and participatory process based on an on-going learning process in Ethiopia. The IWRM pilot project in the"Berki" watershed (Ethiopia) has shown that IWRM involves many changes to the existing system through a step-by step- approach that creates a sense of ownership amongst all stakeholders. The case/project has demonstrated that gaining political support at various levels, and multi-stakeholder platforms are crucial for the success of the IWRM process. Building stakeholders' capacities has also played significant role in facilitating the process.*

## Introduction

Ethiopia is endowed with huge water resource potential (about 122 $Bm^3$ annual surface runoff and 2.9 $Bm^3$ groundwater) though it is characterized by uneven spatial and temporal distributions. Irrespective of the huge potential, the country's water resources have contributed little to socio-economic development; access to clean and safe water supply is about 50%; irrigation stands at only 6% of the potential and that of hydropower is at only 2% despite the big potential ($2^{nd}$ in Africa). Most rivers that originate within the country flow across borders to neighbouring countries, and are transboundary.

Problems related to water resources management in Ethiopia include, among others, drought, flood, pollution, deforestation and land degradation. These issues, along with a rapidly increasing human population, rising rates of per capita water requirements, and impact of climate change, which is reducing rainfall and increasing evaporation in some areas, are creating heavy pressure on water resources of the country (UNESCO, 2006).

The policy environment is highly supportive of Integrated Water Resources Management (IWRM) approaches. Ethiopia's five year Plan for Accelerated Sustainable Development to End Poverty (PASDEP) places water as a high priority. The Plan references the overall objective of the National Water Resources Management Policy, which is to enhance and promote efforts towards an efficient, equitable, and optimally utilized water resource that would contribute to the country's socioeconomic development on a sustainable basis (MOWR, 1999).

Ethiopia has adopted the principles of IWRM and has already put in place water policy, legislation, strategy, and program that embrace IWRM principles. However, there are constraints in implementation such as capacity limitations, lack of proper coordination, and lack of integrated and participatory approaches.

To complement the Government's efforts of addressing the above-mentioned constraints, Ethiopia Country Water Partnership (ECWP) is implementing an IWRM pilot project in two selected watersheds with the US Government financial support.

This paper briefly describes challenges of water resources management in Berki (one of the IWRM pilot watersheds); the approaches followed and the achievements made so far. It concludes by sharing key learning from the IWRM pilot exercise in Ethiopia.

## Challenges of water resources management in Berki catchment

Berki Catchment (410 km$^2$) is located in Tigray Regional State, Ethiopia within the Tekeze river basin. It is shared by three weredas (districts): *Atsbi* at upstream, Wukro and Enderta at downstream. Atsbi wereda contributes much of the water resources while the downstream Wukro wereda has less contribution. Enderta wereda shares very small part in the watershed. Deforestation due to agricultural activities, fuel wood collection and free animal grazing have had severe impacts on the ecosystem and hydrological conditions of the area. Almost all inhabitants of the catchment depend on the natural resources for their living.

Farmers at the upstream use pumps to take water from the river and shallow wells, with possible impact on irrigation schemes downstream. *Chuhe* diversion in Atsbi Wereda irrigates around 43ha. In the same wereda World Vision is undertaking conservation activities in the upper catchment area.

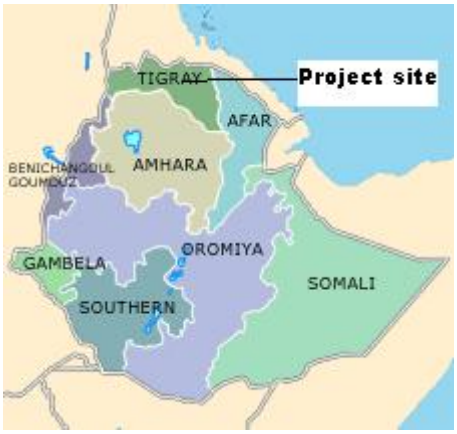


**Figure 1. Location of Berki watershed**

Source: ECWP

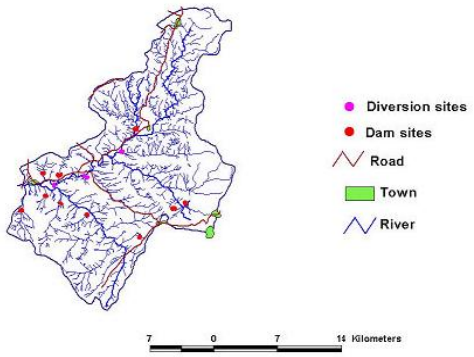


**Figure 2. Berki watershed**

Source: ECWP

In Wukro wereda, there are two diversions; Berki diversion with 100ha, and further downstream Laelay Agula with 70ha command areas.

There is a spring near Berki diversion that is used by the Church for spiritual purposes (holy water). However, the church capped the spring anticipating that the government would develop it to supply water to Agula town. The action taken by the church created conflict between the Church and the Bureau of Water Resources. There is also conflict between downstream traditional irrigation water users and upstream Laelay Agula diversion water users, which resulted in the destruction of the diversion weir by downstream users.

Different government institutions have various mandates/interests in managing water and related resources of Berki catchment such as use of water for drinking, irrigation, catchment protection. The different sectors were not effectively collaborating to deal with water resource management problems in Berki. There was no plan to use Berki water resource for multiple and integrated uses. Similarly, NGOs operating in Berki catchment work independently without being well considered as stakeholders.

Water is scarce in Berki catchment, and there are various water resource management problems, including conflicts among upstream and downstream communities and between administrative authorities. The different water use activities have put heavy pressure on water availability for different purposes, especially for far downstream users. Inefficient use of water, including wasteful technological selections, was also common practices. Communities downstream of Agula town (outside of Berki catchment) suffer from lack of water due to the upstream pumps and diversions. They need to travel long distances to access water especially during dry seasons. Moreover, upstream water users are polluting water (due to washing and cattle drinking) that is being used by downstream users.


**Figure 3. Water conflicts in Berki watershed**

Source: ECWP


**Photograph 1. Water conflicts in Berki watershed**

Source: ECWP

Water resources were being excessively exploited both beyond the natural limits of the system and beyond the regulatory offices' ability to control it. There were no land use plan or water regulations which led to the uncontrolled introduction of private pumps, and changes in cropping pattern and land use. In addition, water and other natural resources of the catchment were not known and decisions were made without adequate knowledge and information. Poor communication among various users and stakeholders and low level of awareness also contributed to this problem.

The biggest challenge was the sustainable use and management of the Berki's water resources for all interest groups, in an equitable and sustainable manner.

## Approaches followed

Realizing these problems and the potential solutions provided by an IWRM approach, ECWP decided to do a pilot activity in Berki watershed for further scaling up. The process involved multi-stakeholder participatory planning at the watershed level.

Specifically the following approach was followed:

- Identifying policy gaps and constraints in implementing IWRM
- Identifying stakeholders, sensitizing them on IWRM approaches and launching the Tigray Regional Water Partnership (TRWP)
- Establishing and training a Technical Team from various disciplines and sectors
- Assessing water and other natural resources of Berki watershed
- Studying the socio-economic dynamics of Berki watershed
- Establishing Wereda Watershed Committees and Inter-Wereda Watershed Committee
- Documenting and sharing experiences on approaches, processes and findings
  ***Note*** *that there were continuous training, awareness raising, and consultations among all stakeholders* at various levels.

## Achievements so far

### IWRM policy gaps and implementation constraints identified

ECWP reviewed the existing policies, laws, strategies and programs with the aim of identifying policy gaps and constraints for implementing IWRM. The process was highly consultative and a range of stakeholders at various levels participated.

The gaps identified include lack of integrating water and land resource management; decentralization without building local level capacity; lack of holistic approach; low level of awareness; lack of regulations for managing demands and conflicts; and limited private sector involvement. The findings lead to the identification of key IWRM change areas for Ethiopia such as managing water demands, managing water

conflicts, and identifying the best regulatory and institutional arrangements for sustainable water resources management.

### IWRM is now widely appreciated among stakeholders

As IWRM was new to the country and to the watershed, creating the necessary awareness and organizing trainings on IWRM at various levels was important component of the program. In this respect, the project has played important roles in promoting and demonstrating benefits of IWRM to the wider stakeholders.

Organizing trainings, awareness sessions, consultation meetings, public meetings and partnership meetings were some of the mechanisms for raising awareness of stakeholders on IWRM. World Water Days were specifically targeted to promote IWRM to the general public towards creating an IWRM-conscious society in Ethiopia. Use of materials such as documentary films, CDs, published materials assisted the promotional activities. The media and civil society have been supported to appreciate IWRM.

Raising stakeholders' awareness on IWRM facilitated the participatory process as it improved the capacity to actively participate in the process.

### Participatory forums established for facilitating the process

IWRM, being a participatory process, requires establishment of multi-stakeholder platforms that brings together stakeholders at various levels for consultation, experience sharing and coordination/networking. Water partnerships at Tigray regional, Berki watershed, and Wereda levels were established.

Tigray Regional Water Partnership (TRWP) has now more than 30 members representing various stakeholders. It has a Regional Steering Committee and a Technical Team. The wereda watershed committees were established encompassing concerned government line offices, NGOs, and communities. A joint Watershed Committee was also established in Atsbi-Wukro that includes members from the two wereda watershed committees. Much effort has been made to ensure balanced representation of all stakeholders in different water partnerships.

The forums have laid the foundations for all stakeholders to jointly plan and implement sustainable water resources management, and to manage water related conflicts.

### About ECWP

Ethiopia Country Water Partnership (ECWP), under the auspices of the Global Water Partnership (GWP), was launched in December 2003 with the goal of promoting and implementing integrated water resources management (IWRM). Its members, among others, include institutions from Federal and Regional Government offices, Local and International NGOs, Donors, Research and Academic Institutions, Women and the Private sector.

ECWP has a General Assembly of members that meets every year. It represents all members of the partnership and is the highest decision making organ. Currently more than 90 members exist.

The Partnership has a Steering Committee of 11 members, elected by their constituencies. Steering Committee members are elected for two year terms at the Annual Partners Meetings. The Ministry of Water Resources is chairing the ECWP Steering Committee. ECWP has a small secretariat office that is hosted by WaterAid Ethiopia.

ECWP is serving as a useful national forum/network for consultation and information sharing.

**Photograph 2. Stakeholders appreciating water resources management challenges in Berki**

Source: ECWP

### Generation of knowledge and preparation of Catchment IWRM plan

Lack of information on the potential of water and other resource as well as overall socio economic activities was one of the problems faced at the Berki watershed. Water resources assessment is one of the key components of IWRM implementation, and in most cases it is one of the biggest challenges. Water resources assessment (geology/hydrology, water resources potential, environment, water uses) and socio-economic studies were carried out for the Berki watershed. The studies were conducted with multi-disciplinary professionals from key stakeholders: concerned government line bureaus at the regional and district levels as well as experts from academic institutions and NGOs. The process involved all stakeholders, including local communities. Several consultation and review sessions were also carried out at various levels to enrich the study. The study helped to create an understanding of the issues, such as conflicts among users of natural resources, and also helped in the prioritization of problems and the identification of possible solutions and gain further commitment of stakeholders.

These studies were the basis for preparing the Berki cacthment IWRM Plan, which is widely accepted and owned by all stakeholders. The pilot is also demonstrating knowledge-based sustainable development planning, showing development to be based on available water and other natural resources, and also planning to include both development and management of natural resources.

## Outcomes

Some of the outcomes/impacts are the following:

### Change in beliefs and practices of communities and local governments

Communities now have better awareness of water resource ownership and understand its implications on others. People speak about equitable water allocation, conflict resolution, and integration of different water uses. For example, before the intervention, local communities used to think that any water that flowed in their fields, was their own property. Now that thinking has changed and they see water as shared resource by all in the watershed. One clear indication of the increased awareness is the interest shown by the downstream wereda to contribute to the conservation program at the upstream wereda. Atsbi wereda's plan to introduce about 100 more water pumps was revisited because of the raised awareness by the local authorities. Moreover, water efficient technologies like drip systems are being introduced and plan is prepared for artificial groundwater recharging.

The existence of the partnerships so far is also a sign of changing long held ideas, beliefs and practices entrenched in linear planning and single agency responsibility in the region and at the watershed level.

### Bringing together key stakeholders

The establishment of multi-stakeholder forums at various levels (Tigray regional, Berki watershed, and wereda) has given the opportunity for interaction among various stakeholders. This is also providing an opportunity to lay a framework for integrating/coordinating activities by various sectors/stakeholders.

### Decline in local level conflicts

As a result of establishing multi-stakeholder platforms and various consultations, water related conflicts have been minimized. There is now recognition of the importance of the multi-stakeholder partnerships at the local level and working together is viewed as a way to resolve water conflicts. For example, two key conflicts in the catchment were resolved without any legal or administrative intervention.

### Common vision and joint planning (catchment as a water resource management unit)

In Berki, the catchment is considered a planning/management unit despite the wereda boundaries. An integrated watershed development and management plan is already prepared for Berki, and stakeholders have agreed to implement the plan within the partnership framework.

### Practical experience on addressing institutional arrangements for IWRM

There is now a search for ways and means to implement IWRM locally because the establishment of the partnerships in Berki gave ample lessons and an alternative option for addressing institutional arrangements for IWRM. Additionally, the Berki IWRM process is providing knowledge and information for implementing IWRM in bigger river basins.

## Key lessons

### Ownership of the change

The IWRM change process needs to support people's livelihoods. Water resources management should not be done for its own sake, rather for sustaining the livelihoods of communities. It is only when people understand that their livelihoods depend on sustainable management of water and land resources that they can own and meaningfully participate in the change process. The challenge faced by ECWP in piloting IWRM was a long planning process, which made it difficult for the local communities to understand its linkages to their livelihoods. There was a high level of expectation around a quick fix physical infrastructure that would address their practical problems.

### Political commitment

Government commitment to IWRM process is crucial. IWRM requires an enabling environment (policy, legal and institutional framework) at the national level. Existence of an enabling environment and ownership of the process by government and other stakeholders facilitated the IWRM process. High level commitment of the Tigray Regional Government and other stakeholders at various levels was very useful.

A high level consultation meeting with government officials of Tigray Region raised the level of awareness about IWRM and the challenges of water resources management in Tigray and Berki watershed. The meeting also increased the interest of key institutions that further strengthened the regional partnership. The Tigray Regional Government reconfirmed its commitment to support the IWRM approach by delegating the Deputy Chief Administrator of the Regional Government as the chair of the Tigray Regional Water Partnership (TRWP) Steering Committee. Stakeholders in TRWP have designated focal persons and also contributed free expertise by designating their technical staff to the Technical Team.

Ethiopia operates under a decentralized government and local authorities have decision making power and authority over resources. They have the power to manage water and other natural resources within their constituencies. The wereda authorities are responsible for the preparation of development plan and coordination of development activity in the Wereda. They are also given a budget to execute their plans. Thus, any activity in the wereda must be approved by the wereda government and the role of weredas in the Berki pilot IWRM watershed was significant. Practically nothing could have been done without their interest, willingness and mobilizing role. The weredas played a key role in mobilizing all stakeholders in their respective weredas for participation in the process, in establishing wereda watershed committees, in contributing experts for the IWRM process and in owning the whole process.

### Communication among stakeholders

IWRM requires participation and ownership by all stakeholders, and communication facilitates participation. People down the chain often do not get enough information, do not get it in the right ways or do not have direct lines of communication available to them.

Relationship building takes time and this was one of the challenges that ECWP have to overcome. Even though it is not an easy task, facilitating communication among all stakeholders at all levels by adapting local situations is crucial, as is the adaptation of traditional knowledge systems to spread information about IWRM.

### Multistakeholder partnership building is time consuming

Institution/process building is not immediate, but rather long and tiring process. Participation, ownership and trust building among stakeholders were challenges but they were achieved through investing efforts and energy in establishing the water partnerships.

### Capacity building and awareness raising as integral parts of the IWRM change process

IWRM is a participatory process and it requires capacity building of stakeholders' for proper participation. ECWP's approach of combining awareness raising /capacity building with piloting was a helpful approach. It was mostly done through a training of trainers (TOT) program where experts from federal and regional levels were trained outside of the country to train other experts at country level, particularly regional experts. This was followed by training of regional and wereda experts by the trained national/regional experts. The wereda and regional experts, in turn, trained the communities.

Capacity building on IWRM cannot be handled by an organization or an individual. The approach followed by ECWP was to mobilize individual stakeholders by training them to assist with the capacity building process in the country. Academics and the regional water resource bureau professionals played a key role. They participated in various training programs and also in carrying out technical studies (both water and other natural resources assessment and socio-economic studies). They have also contributed a lot in replicating the trainings down the line for different decentralized partnerships. Most of all, the training has been instrumental in the introduction of knowledge-based decision making.

### Piloting and scaling-up approach

ECWP is now to move from institution building to implementation on a larger scale. The experiences so far from ECWP's activities are being fed into other national programs as a way of promoting IWRM, especially at a river basin scale. For example, due to increasing environmental degradation and investment opportunities at the same time, the Rift Valley is a basin of national importance and at the top of the government agenda. The Ministry of Water Resources has appreciated the inputs from other stakeholder groups in river basin master plan development (to broaden the focus from water resources development to more integrated development and management of water resources), and to establish a Rift Valley Lakes Basin Organization. ECWP also involved and shared its experience during the establishment of the River Basin Organization for the Ethiopian Blue Nile.

## Build on existing systems and link with key water resources management problems/issues

ECWP takes advantage of its having many stakeholders together to present different issues and initiate dialogue around key issues of national concern such as on challenges of water resources management in the Ethiopian Central Rift-Valley lakes sub-basin, and the Akaki cacthment. As a result of such discussions, a multi-stakeholder working group (the Central Rift Valley Lakes sub-basin Working Group) was formed which, with ECWP support, plays a key advocacy role within the Ministry of Water Resources towards establishing river basin organization for the Rift valley Lakes basin and highlighted the importance of multi-stakeholder involvement in water resource management. Similarly another Task Force was recently formed to address the water resources management of the Akaki catchment in the Awash river basin which is being compromised by urban and industrial pollution from the City of Addis Ababa and its surroundings.

### IWRM as an approach for managing water conflicts

In Berki, water resources are scarce and there are actual and potential water conflicts. A clear case was the destruction of an irrigation diversion weir by downstream traditional irrigation water users. The partnerships played facilitating role in conflict resolution. Organizing a joint visit program (by both downstream and upstream users/stakeholders) helped all concerned stakeholders to understand the problems from both sides, and also contributed to managing conflicts. Awareness raising and training also contributed to developing a shared vision for the watershed and to building trust among stakeholders. In this regard, the establishment of the partnerships played key role in the management of conflicts through shared vision planning and consensus building.

## Conclusion

This case from Ethiopia demonstrates that IWRM is a long and participatory process. It requires many changes by building on the existing system in a step-by step- approach which creates a sense of ownership among all stakeholders. It also showed that decentralized participatory multi-stakeholder platforms are the key for a successful IWRM planning and implementation process because they are mechanisms that address practical water management issue at the grassroots level. In an IWRM process, gaining political support and active government involvement at various levels is crucial. Tailored trainings, awareness raising and experience sharing activities play significant role in facilitating the process. Though it may vary from country to country, this Ethiopian case showed that piloting IWRM in a smaller watershed for scaling-up could be a better approach than promoting radical changes to a large system. Finally, to ensure the systems' sustainability, formalized and institutional multi-stakeholder forums are necessary.

### Acknowledgements

This document is an output from an IWRM project funded by the US Government. The author would like to extend thanks to the United States Government for its financial support. Appreciation also goes to the Host Institution, WaterAid Ethiopia. The opinions expressed in this article are those of the author and do not necessarily reflect the views of the Department of State.

### References

Debora De Cosmi(2007), Communication within Multi-Stakeholder Platforms in Water Resource Management Ethiopian case study- M.Sc Thesis. WEDC, Loughborough University, UK.

ECWP unpublished documents(2005-2008).

Steenbergen F. and Dassenaike L.(2006) Local Action through Area Water Partnerships, GWP Stockholm .http://www.drivkraft.skane.se/gwp/library/AWP_Report.pdf

GWP and Cap-Net(2006). IWRM Resources: The IWRM ToolBox.

Nigel Hawkesworth and Kari Sann(2007), Independent Evaluation Ethiopia Case Study, Version 2 December 2007- Draft (unpublished).

Ministry of Water Resources(1999). Ethiopian Water Resources Management Policy. Addis Ababa, Ethiopia.

SIWI(2006). http://www.siwi.org/documents/Resources/Synthesis/2006_Abstract_volume.pdf: Practical Experience towards Implementing IWRM for Sustainable Management of Water Resources in Ethiopia: the Case of Two Pilot Watersheds.

UNESCO(2006). Second United Nations World Water Development Report: Ethiopia case study PP477-479.

### Note

Kidanemariam Jembere is the Country Coordinator for Ethiopia Country Water Partnership (ECWP), under the Global Water Partnership (GWP) Network.

### Contact details

Kidanemariam Jembere
Ethiopia Country Water Partnership(ECWP). c/o WaterAid Ethiopia. Debre Zeit Road, Addis Ababa.
Tel: +251(0)114661680
Fax: +251(0)114661679
Email: kidanej@wateraidet.org or k_jembere@yahoo.com