



Executive  
summary

# Building adaptive water resources management in Ethiopia

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## Introduction: making the case for water resources management (WRM) in Ethiopia

Ethiopia has a generous endowment of water, but this water is distributed unevenly in space and time. Unmitigated hydrological variability, compounded by climate change, has been estimated to cost the country roughly one third of its growth potential (World Bank, 2006). Despite this, Ethiopia's investments to mitigate these impacts and harness its considerable water assets for power, food production, industry, livestock and improvements in health and livelihoods have been historically very limited (World Bank, 2006). Today, the development of water resources to support 'green growth' and poverty reduction forms a key plank of government policy as the country strives to achieve middle-income status by 2025. Ethiopia's Growth and Transformation Plan (GTP) sets out ambitious targets for a sixfold increase in irrigated land area, and a quadrupling of hydropower generation capacity between 2010 and 2015 (Federal Democratic Republic of Ethiopia (FDRE), 2010).

The establishment of a minimum platform of hydraulic infrastructure to store and distribute water and to buffer rainfall variability can stimulate growth and reduce vulnerability to climate change. But is a development model that prioritises large dams and water-demanding irrigation projects sustainable in the long term? And under what conditions can it secure benefit streams for poor people and preserve the environmental assets on which they depend? The experience of fast-growing economies in South Asia and China indicates that investments in water infrastructure need to be inscribed in an institutional framework that ensures that water resources are developed in a coordinated and sustainable manner, maximising economic returns to water across sectors while protecting local livelihoods and ecosystems (Calow and Mason, 2014).

Against this background the Ministry of Water, Irrigation and Energy (MoWIE) and the UK's Overseas Development Institute (ODI) have co-directed a project entitled 'Building adaptive water resources management in Ethiopia' in partnership with the Ethiopian Institute of Water Resources (EIWR), Addis Ababa University (AAU), and the Water and Land Resource Centre (WLRC). This report builds on the diagnostic study of WRM in Ethiopia that ODI and the MoWIE have conducted during the project's inception phase. It is intended for the MoWIE and other stakeholders with decision-making competencies over water resources in Ethiopia, including Development Partners (DPs). Ideally, the proposed methodology could be replicated by researchers and analysts to understand bottlenecks and strengths of WRM systems in other countries and/or at different governance levels.

## Pressures on Ethiopia's water resources: rapid growth and development, and climate change, as a 'risk multiplier'

Ethiopia is currently experiencing significant natural and socioeconomic changes, which are modifying the availability and demand of water resources. Because of its geography and climate, Ethiopia has always been characterised by high hydrological variability, compounded by the almost total absence of water storage and highly vulnerable watershed (World Bank, 2006). Climate change is expected to lead to more uncertainty and extremes in weather patterns as well as increased rainfall variability (Conway and Schipper, 2011).

In addition, the stunning economic growth and population increases of the last decade demand a lot of good quality water resources and give rise to prominent pollution problems. Nevertheless, Ethiopia's water sector continues to be characterised by little integrated planning, so that water resources are being allocated in ways that neither take into account competing demands nor are based on a systematic understanding of 'how much water' is available. This is already leading to instances of conflict, as demonstrated in the case of the Awash River Basin between upstream and downstream irrigators as well as between irrigators and hydropower operators.

A review of the existing policy and institutional framework for WRM suggested that Ethiopia may not be prepared to cope with these pressures. The existing legal and policy framework for WRM already enshrines the basic principles of Integrated Water Resources Management (IWRM). However, it requires updating and strengthening; and basin planning through embryonic River Basin Authorities (RBAs) remains weak. The establishment of 'good enough' WRM institutions in Ethiopia is hampered by a lack of knowledge of resource conditions, patterns of use, and drivers of change; and a lack of capacity and skills within institutions to plan water allocation, assess the impacts and trade-offs of water resources development and allocation, and ensure that planning is 'climate smart'.

The kind of institution-building effort required to address these challenges will take decades rather than years; it is a complex process, requiring substantial investments in terms of financial, human and technical resources. It should start by identifying the 'bottlenecks' that have blocked concrete action to date and, consequently, need to be removed. In other words, the first step of this long journey should be to produce the evidence base required to make the case for investing in WRM institutions.

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## First, understand the problem: introducing the CC-WRMA methodology

The Climate Change and Water Resources Management Assessment (CC-WRMA), conducted between December 2013 and October 2014, was the primary methodology we used to identify the strengths and limitations of the current system for WRM in Ethiopia. It consisted of: (a) a review of pressures on WRM (based on a desk study of existing policies and strategies in the water sector); and (b) an indicator-based assessment of WRM systems, practices, capacities and outcomes, which took a ‘pathways’ or ‘bottlenecks’ approach to identify the underlying factors supporting or hindering progress towards achieving Adaptive Water Resources Management (AWRM). AWRM was defined as a process that promotes the coordinated development and management of water, land and related resources while being able to adapt to the impacts of changing physical and socioeconomic contexts on resource availability and quality.

The CC-WRMA was conducted at national level; three case studies were also investigated in order to add some detail ‘from the ground’. For this, we focused on those river basins where RBAs have been established, namely: the Awash and Abay (Blue Nile) River Basins and the Rift Valley Lakes (Lake Ziway). Taking inspiration from two internationally recognised methodologies for assessing ‘bottlenecks’ in management systems for water, sanitation and hygiene (WASH), we developed some specific WRM indicators and grouped them into ‘enabling’, ‘developing’ and ‘sustaining’ categories. Indicators in the enabling and developing categories described the very basic conditions that are required to establish and operationalise a WRM system, respectively. The sustaining category encompassed those actions that are needed to make the system adaptive to changes and uncertainties in the long term, for example by ensuring flexibility, encouraging learning loops, and fostering compliance with institutional rules.

Data for the assessment were collected through semi-structured interviews with key stakeholders in the water and water-related sectors at federal, regional and basin levels. With the aim of creating a common understanding and an agreed set of priorities for AWRM, extensive stakeholder engagement and joint reflection and visioning were included in the development and compilation of the CC-WRMA. For each indicator, scores were generated with reference to a range of specific questions (sub-indicators) and a simple visual key allowed easy identification of problem building blocks (barriers).

## Achieving ‘good enough’ WRM: a long-term process that should start by identifying bottlenecks to action

Interestingly, the results of the CC-WRMA indicated that while the institutional system for WRM in Ethiopia performs moderately well in the ‘enabling’ category – indicating that the basic elements of WRM are there or are being established – the conditions for making the system function in the short to long term remain largely unsatisfactory. On the one hand, this can be interpreted as a normal consequence of the fact that WRM is a process; and, as such, it needs to be put in place step-by-step, depending on the resources that are available to the system, and in synergy with development trends in other sectors. On the other hand, however, the CC-WRMA revealed a number of critical bottlenecks that hamper the capacity of Ethiopian institutions to promote the coordinated development and management of water, land and related resources while adapting to the impacts of changing physical and socioeconomic contexts on resource availability and quality.

## Enabling WRM: An ‘IWRM-friendly’ legislative and policy framework, but poorly implemented

Enabling factors refer to the key building blocks of WRM, including the legal and policy framework, the evidence base for decision-making, financial structures and human and technical capacities within the sector. Our analysis revealed that while Ethiopia has a policy and legislative framework that supports IWRM, its implementation is poor. Furthermore, institutional roles are not sufficiently well-articulated, nor are coordination mechanisms for WRM (especially at sub-national level). Three RBAs have been established in strategic river basins in Ethiopia. However, in most cases they lack adequate financial, human and technical resources to fulfil their mandate. Hydrological (for both surface water and groundwater) and meteorological data are collected in a scattered way by different organisations, and information sharing is minimal. Water permits are issued by competing state and federal authorities, often outside the scope of Basin Master Plans (when these exist), and with insufficient consideration given to the sustainable and equitable allocation of water resources.

## Developing WRM: Lacking the conditions to establish who needs what, when and how

The functioning of the WRM system in Ethiopia is hampered by several factors. First and foremost, coordination between planning units at different levels (and especially between basin and regional states) and across sectors (e.g. in terms of land and water management) is very limited. Secondly, expert personnel, technology and

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budget for monitoring the quality and availability of both surface and ground waters are insufficient. The lack of a system for releasing water-use and pollution permits makes it difficult to understand who is using how much water. Further challenges relate to the capacity-building needs of RBAs' staff – particularly in terms of conflict resolution and stakeholders' engagement and communication. Finally, the linkages between data/information and decision-making and planning processes were found to be poor or even non-existent in certain cases.

### **High staff turnover, capacity gaps and poor scenario planning: threats to sustainable WRM**

Our analysis also identified several bottlenecks in the actions required to ensure that WRM structures continue to be effective in the long run. WRM institutions and activities are undermined by the absence of a long-term financing system and high staff turnover rates, coupled with numerous capacity-building gaps. Planning efforts fail to sufficiently take into account projections and scenarios on the impacts of climate and socioeconomic changes, which are done on an ad hoc basis by researchers but remain disconnected from the decision-making process. Because provisions for water allocation and pollution reduction are not enforced, the needs of poor and marginalised communities risk being eclipsed by the interests of the most powerful groups and actors.

### **WRM in Ethiopia: transforming good intentions into concrete actions**

We do not want to suggest that an entirely new system for WRM should be created in Ethiopia. But clearly, the existing one should be improved. To this end, Ethiopia's rich natural water resource endowment, its rapidly growing economy and its ambitious government agenda offer significant opportunities. It is important to understand what these opportunities are, and capitalise on them. For example, the formulation of the second GTP (GTP-2) can provide an entry point to reinforce the links between WRM and land resource management and to set aside funding for the establishment of stakeholder coordination and data-sharing mechanisms at all levels. There is also an opportunity to ensure that the Climate Resilient Green Economy (CRGE) strategy is mainstreamed within the three main areas of economic growth (agriculture, industry and energy generation). This would allow promoting knowledge-sharing between the actors involved, and would reduce the likelihood of environmental conservation being 'traded-off' in favour of pure economic growth imperatives. The One WASH National Programme midterm review in 2015 also offers an opportunity for the MoWIE to integrate WASH, watershed management, environmental protection and climate resilience initiatives.

A fundamental consideration to retain is that there is no single formula for institutional building and development. The efficient planning of activities will need to be adjusted to fit the specifics of the local and national planning processes. Also, it is not possible to implement all the identified activities at once. Instead, one needs to understand what 'bottlenecks' to address, and when and how. We proposed the following criteria for action prioritisation: the relevance of the problem for the overall functioning of the water management system; the time frame for implementation; the institutional and coordination requirements; and the resource intensity of the planned action.

Efforts to improve WRM in Ethiopia should encompass a wide range of interventions. In the short term, we recommend that the MoWIE focuses on putting in place the key building blocks of WRM, in collaboration with other water stakeholders at federal, regional and basin level, and with the support of DPs, the research community, the private sector and civil society where appropriate. A concurrent regulatory effort must be made to define and assert the mandate of RBAs and clarify their relationships with actors that may have competing water management functions (in particular regional states) through the River Basin High Councils (RBHCs). We recommend that the setting of the WRM institutional framework is matched by the definition of financial requirements and mechanisms, to ensure the transparent allocation of budget at different levels and especially for RBAs – in a harmonisation effort similar to the one conducted for WASH.

Once the enabling environment for WRM is set up, the actual planning and management functions can be exercised. A priority for the MoWIE should be to ensure that RBAs have enough resources to fulfil their tasks, including competent personnel, budget and equipment. RBAs should also be capacitated to engage water users and managers in inclusive and participatory decision-making with regards to the allocation and use of water resources. The MoWIE should make the water permit system coherent and effective, introducing water and pollution charges on a clearly established legal basis, with the involvement of the Ministry of Finance and Economic Development, and in coordination with other ministries. At this stage, it is vital to start adopting a longer-term perspective and embed elements of climate change adaptation (e.g. in the form of flood and drought management) into the WRM system.

Finally, we recommend that actions are taken to ensure that WRM structures continue to function in the long run. To this end, coordination between the MoWIE and government agencies in water-using sectors at different levels must be improved. The current capacity gap that affects the Ethiopian water sector also needs to be addressed by providing adequate trainings and support to staff (especially in RBAs), and incentives to reduce high turnover rates. To address the present and future

impacts of climate-related and other pressures, through collaboration with the research sector and DPs, climate and socioeconomic scenarios need to be developed and used to inform investment and allocation decisions. All these activities are rather resource intensive, meaning that, realistically, they can only be conducted in the framework of robust and coordinated institutions, financial mechanisms, and adequate human and technical resources. To win investments, it will be essential to make a credible economic case for WRM at the highest political level and among DPs and investors.

## Recommendations for ‘Building AWRM’ in Ethiopia

In order to strengthen the institutional framework for WRM, which is necessary to ensure that infrastructure development is ‘climate smart’ and delivers broad-based economic and social benefits to Ethiopia and its people, we recommend the following:

- **Baseline information is key for planning and managing investments in water infrastructure.** Our analysis revealed that WRM in Ethiopia is hampered by a lack of knowledge of resource conditions, patterns of use, and drivers of change, and a lack of capacity and skills within institutions to plan water allocation, assess impacts and trade-offs and ensure planning is ‘climate smart’. As investment in water ramps up, there is a real danger that unconstrained development and weak management will undermine the resource base, and squander opportunities for the kind of broad-based economic growth envisaged by the GTP.
- **Water infrastructure needs water institutions.** Therefore, while a minimum platform of hydraulic infrastructure is required, one should not forget the equal importance of investing in an institutional framework that disciplines water resources management and hence development. If there is only a focus on water resource development and no management framework, substantial difficulties and conflicts are bound to arise.
- **A fixation with ‘implementing IWRM’ is not always useful;** it can create paralysis, and get in the way of more pragmatic, problem-focused solutions. As a first step, it is important to recognise that WRM is a long-term endeavour with no quick returns. Change is hard, and it can only be triggered by a clear understanding of why it is needed. Therefore, in order to improve the institutional system for WRM, one should start analysing emerging problems (‘hot spots’) and potential solutions (‘problem-driven approach’), working within the existing frame of power and resources.
- **Ethiopia needs an operational plan with clear institutional mandates** that clarifies relations especially between the regions and RBAs, detailing who will do what, when it will be done, and how much it will cost. This needs to happen as soon as possible. The relevant ministries (with the support of DPs and the research community) should also develop a system for data collection and management. Water data must be available across all government and for different users including the private sector and those working in the agricultural or energy sectors.
- **Everything cannot be done at the same time.** Interventions to strengthen institutional mechanisms in the water sector need to be prioritised according to their relevance for the functioning of the water management system, the time frame for implementation, the institutional and coordination requirements for their implementation, and their (financial, human and technical) resource intensity. Short-, medium- and longer-term actions need to be identified for gains in WRM.
- **Political will is essential to achieve all of the objectives above.** As our study demonstrated, a strong steer from a high level (e.g. through RBHCs, Water Minister’s or Prime Minister’s Office) in support of WRM is needed, to send a political message and make the case for more investments into the system’s capacity and resources. In turn, creating political will implies ‘framing the question right’ by quantifying and visualising the risks of mismanagement to growth and transformation. To date, in Ethiopia, donors have focused more on water, sanitation and hygiene. However, without a concurrent effort in WRM, which allows dealing with increasing competition for water resources, benefits of WASH also will be lost.
- **‘Start small, stay focused and be opportunistic’** is the way to find specific solutions that actually work in the short term. Ultimately, WRM should be purported as an enabler of ‘green’ and ‘climate resilient’ economic growth and transformation. Shaping the WRM operational plan around the GTP-2 and CRGE offers a window of opportunity to strengthen the links between water and land resources management and to align the water sector strategy with climate-resilient agricultural, energy and industrial policy.
- **We recommend reaching out beyond the water community** to make the case for WRM – engaging with those actors that implement interventions on watershed management, irrigation, forest and sustainable land management, hydropower generation, etc. International benchmarking and experiences can serve as inspiration to solve specific problems, but with the caveat that what has worked in one country may not be appropriate for Ethiopia (‘the context matters’).



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