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An analysis of IWRM capacity needs in Malawi

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Abstract

It is now nearly a decade since the notion of Integrated Water Resources Management (IWRM) was first conceptualized and popularized. Although the significance and value of IWRM has been discussed and debated at many fora, both local and international, the understanding has not filtered down to the grassroots level where tangible programmes can be implemented. IWRM continues to operate at a high and often idealistic level. One of the major challenges is the lack of capacity for the operationalization of IWRM on the ground. IWRM is about the process of integrating ideas and principles which in turn requires stakeholder participation. The overall objective of the study was to identify IWRM capacity building needs for the country. Data collection involved literature review and interviews with representatives of key institutions in the water sector using a semi-structured questionnaire. In this paper, we present some preliminary findings on IWRM knowledge from the Malawian context. We show that as a process, IWRM has only began to have some impact on the ground. The study further shows that capacity building is required in the awareness, planning and implementation processes at different levels of society.

Keywords: Capacity building; IWRM; Millennium development goals; Poverty reduction; Malawi

1. Introduction

Capacity building in the water sector remains one of the major problems in Southern Africa. The region faces a number of challenges which require human, financial and institutional capacity to deal with. Beukman (2002) has cogently summarized some of these issues as follows: inequity in the sectoral allocation of water; inefficient allocation of water; inadequate capacity for decentralization; lack of integration; unsustainable supply side management bias; and the challenges of sharing international rivers. In his review article, Swatuk argued that one of the biggest challenges in Southern Africa is that of training students on how to be good physical and social scientists while at the same time instilling in them the ability to think 'outside the box' (Swatuk, 2005).

The traditional sectoral approach of managing the regions' water resources was viewed inadequate to deal with such complex issues. Hence, a new approach had to be found. In the 1990s, however, a revolution of some kind swept through southern Africa with the promotion of the concept of IWRM. Adoption of IWRM required the consideration of various players in the water sector; thus moving beyond the traditional fields of hydrology and water resources engineering which had hitherto characterized water resources management. A new era had been born where scientists and technocrats had to interact with social scientists on water issues. Naturally, this was no easy task for disciplinary boundaries and orthodoxies can be hard to break. This required a deliberate process of generating awareness and building of capacity across disciplines and nations. It was partly in light of such a situation that Southern Africa became one of the first regions in the world to launch capacity building programmes on IWRM: Global Water Partnership-Southern Africa (GWP-SA), WaterNet and the Water Research Fund for Southern Africa (WARFSA). SADC similarly promoted the integration of IWRM in national water reform processes through the Regional Strategic Action Plan. The operation of these

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organizations took water issues to new heights. In their own ways, all these organizations have contributed immensely not only to the promotion of awareness about IWRM but also to the development of capacity in water resources management.

As part of the global family, GWP-SA seeks to promote collaboration and sustainable utilization and management of water resources in Southern Africa. Its capacity building component lies, among other things, in the promotion of interaction among academics, policy makers and practitioners on IWRM issues. GWP has also done a lot of awareness through the launch of water partnerships in different countries in the region. On its part, WaterNet, a regional capacity building network, has been in the forefront of working with training institutions in the Southern and Eastern African region. Through a decentralized system, various universities are participating in the training of water managers who are equipped with knowledge and skills from a variety of water-related disciplines. In many ways, the Water Research Fund for Southern Africa should be seen as a complimentary partner in capacity building. Through the provision of research grants to scholars and researchers in the SADC region, the WARFSA initiative promotes the dissemination and utilization of research results. At the international level, CAPNET has also championed the cause of IWRM by providing training materials. The enthusiasm in IWRM and the capacity being built is reflected in the quality and quantity of papers presented at the annual symposium some of which are published in the *Journal of Physics and Chemistry of the Earth*.

While IWRM has now been widely acknowledged as a useful and relevant concept, it may not be a panacea for all of Africa's water problems. Indeed, as Van der Zaag has argued, IWRM is an elusive concept which should be taken as providing a common ground for understanding Africa's water problems. If not linked to real issues facing Africa today, it risks becoming yet another amorphous buzzword (Van der Zaag, 2005). Van Koppen similarly argued that IWRM can be useful if it is used to mobilize economic resources for human and development in general and agricultural growth in particular (Van Koppen, 2003).

Much work still remains to capacitate the majority of the people in the region, particularly those at the grassroots level. There is also need to come up with tangible examples that can demonstrate the benefits of IWRM, mainstreaming cross-cutting issues into IWRM as well as integrating IWRM into Poverty Reduction Strategy Paper (PRSP) and economic growth and development strategies. This paper should be seen as part of the effort to understand capacity building using the Malawian context. We discuss the status of IWRM knowledge, capacity building needs and existing training institutions in Malawi. It comes out of a study conducted with the main objective of identifying IWRM capacity building needs for the country. The specific objectives of this study were to review the literature on IWRM status and to identify IWRM capacity building needs of stakeholders and training institutions.

2. Methodology

In order to carry out this study, two methods were used. First, we conducted a review of the literature, which involved an extensive and critical review of water-related documents on IWRM in order to provide a context in which water sector reforms are taking place. We consulted both published and unpublished documents in the libraries, government ministries and departments. Second, we conducted interviews using a semi-structured questionnaire with representatives of key institutions in the water sector. The study involved a purposeful sampling of those individuals and organizations that have knowledge of or are responsible for the implementation of IWRM, namely, policy makers, water providers, consumers, research and training institutions, private sector and non-governmental organizations. The purpose of these interviews was to get information on the knowledge and tangible benefits of IWRM, their training needs and ways in which IWRM could reduce poverty in Malawi.

Data collected from the literature search and interviews were systematically analysed and the findings are presented in the rest of this paper. But before doing so, it is necessary to examine the national context in which IWRM issues are being discussed and planned for implementation. Of particular interest will be the national policy and legislative frameworks.

3. The policy context

In recent years Malawi has undertaken a number of reforms in the water sector. These reforms are driven by the desire to meet changing national and international needs and priorities. The reforms include new water policies and legislation, decentralization of government functions and efforts to harmonise policies in the natural resources area. These reforms have not only exerted pressure on the already understaffed government departments but they have also called for a re-orientation of staff in order to make them conversant with emerging issues and trends.

The vision of Malawi's new national water policy is "water and sanitation for all, always" and seeks to provide every Malawian with "equitable access to water and sanitation services for sustainable socio-economic development of the country" (GOM, 2004). This is a big challenge for Malawi given the country's economic problems and the uneven distribution of water resources. In 2003, the Ministry of Water Development came up with a strategy paper which outlines plans for the implementation of its policies and programmes for 2003–2006 (GOM, 2003). One of the critical aspects of the strategy paper and indeed the 2004 policy is the recognition of the United Nations' Millennium Development Goals and the need to work towards achieving them by 2015. In line with the Johannesburg Declaration of the World Summit on Sustainable Development, Malawi has initiated several activities to attain

water-related targets by 2015. One such important initiative is Canadian International Development Agency (CIDA's) support to the Malawi Government under the Partnership for Africa's Water Development (PAWD) programme facilitated by the Malawi Water Partnership to develop IWRM plans by the end of the projected date of December 2005. The key question is: does Malawi have adequate capacity to implement these IWRM plans? As one of the first five African countries that have received donor funding to develop IWRM plans, what lessons can we learn from the Malawian experience? This paper addresses these issues in light of the study that was conducted with various stakeholders in the water sector.

It has long been recognized that Malawi, like most countries in the southern African region, lacks capacity in various aspects of the water sector. The situation has recently been exacerbated by a combination of several factors. First, the enactment of the decentralization policy in 1999 requires a lot of personnel at the lower levels of government. Many of the functions that used to be handled at central government will now be dealt with at district level (GOM, 1998). However, a major constraint to the effective performance of district assemblies is the lack of human and financial capacity. In the water sector, there is lack of adequately trained personnel to effectively manage water resources in the newly established district assemblies.

Second, there has been a borehole revolution of some kind in Malawi. In part, this is driven by the desire to provide clean and safe drinking water to people in the country. Before 1994, Malawi had about 9600 boreholes but by 2002, the number increased to 21,020. Unfortunately, a good number of these boreholes are dysfunctional due to a variety of reasons, including lack of trained person power, spare parts and inappropriate drilling. About 17% of the boreholes were recorded to be completely out of order in 2002 and it is estimated that by 2004, the number rose to as much as 30% (GOM, 2002a). Malawi needs to build capacity at different levels to ensure that boreholes supply potable water in sufficient quantities to the rural communities of the country.

Third, water quality still remains a serious problem in most water sources in the country. Efforts to achieve the Millennium Development Goals would be difficult without providing clean and safe drinking water to the majority of the people who are also poor. There is a symmetry between water and poverty though it is not known whether this is causal or coincidental. The numbers of those living on less than US$1 per day (1.2 billion worldwide) coincide approximately with the numbers of those without access to safe drinking water supply (1.1 billion). The numbers of those living on less than $2 a day (2.8 billion) coincide approximately with the numbers of those without access to safe sanitation (2.4 billion). (GWP, TEC 8). Lack of adequate personnel and water quality assessment and monitoring equipment only exacerbates the situation.

Fourth, water sector reforms have been initiated to achieve government's goal to improve the accessibility of water to every individual in the country, to reduce state subsidies for water, and to increase stakeholder participation as well as to conform to international trends in water resources management. Central to the overall water reform process is institutional reform, which has seen the creation of various policies and structures to promote integrated water resources management. But implementation of these institutional reforms is beset by a number of problems including lack of human and financial capacity and the uncoordinated implementation of water reform and decentralization policies in the country.

While the need for technical personnel is greatly required, it is also important to compliment that with mid-level to high level managerial training. This is critical for effective policy formulation and implementation. There is need to acquaint management staff with knowledge of IWRM and other national and international goals and objectives such as the PRSP and the Millennium Development Goals (MDGs) (UNDP, 2003; Mulwafu and Msosa, 2005; GOM, 2002b).

4. Results and discussion

This section provides a discussion of key findings from the study. It examines the level of understanding of the concept of IWRM, its relevance to Malawi, the capacity building needs of stakeholders and water-related training institutions.

4.1. Understanding the concept of IWRM

The study revealed that IWRM capacity building is greatly required in Malawi. It showed that although many people accept the importance of integration, they do not adequately understand the concept and how it can be operationalized. When asked to explain the meaning of IWRM, several responses came up. But the key words that emerged are coordination, catchment management, holistic approach to management of water resources and involvement of all stakeholders in the management of water resources. While all these terms are relevant to IWRM, the divergence in understanding reflect the partial level of awareness. In most cases, it is people from institutions closely related to water that possessed this knowledge while those in the periphery expressed ignorance. There is need for a very clear understanding of IWRM by all stakeholders and that the concept should be transmitted to the grassroots level (GWP, 2000; Kasomekera, 2005).

4.2. Relevance of IWRM to Malawi

There was unanimous agreement on the relevance of IWRM to Malawi. Almost 100% of the respondents stated that Malawi needs IWRM. The reasons given ranged from the fact that there was need to avoid duplication of effort to it being a potentially useful approach for solving the

Table 1
Capacity building needs for Malawi

Capacity building needs	Target group	Content/facilities	Strategy	Output
Awareness	Policy makers and politicians	IWRM/WE concept and benefits	Workshops field trips	Political will Awareness raised Report available
	Water Providers	IWRM/WE concept and benefits, supply/demand management	Workshops Field trips,	Awareness raised Report available
	Water Users (Media, Traditional leaders, Councillors, local leaders, communities)	IWRM/WE benefits water harvesting technologies	Workshops, media coverage, documentaries Jingles, field trips	Awareness raised Grassroots support. Report available
Education	Trainers and Training Institutions, Technicians	IWRM/WE concepts and benefits	Workshops,	Report available,
	District water officers	Supply/demand management Water treatment and pollution control	Short courses	Certificates awarded
		IWRM/WE planning and implementation concepts	Demonstration activities	Knowledge and skills gained
		Water quality assessment, monitoring and evaluation	Debates	
		Computer skills (use of GIS, etc.)	Trophies	
		Borehole/shallow well Construction, Geology/ hydrogeology, Groundwater modeling, Catchment management		
Project planning and implementation	Project Planners, Directors and Coordinators	IWRM/WE concept IWRM/WE (WDM) tools and guidelines Fundraising Facilitation skills Project management Transboundary issues	Workshops Short courses	Reports available, Certificates awarded Knowledge and skills gained
Research	Universities, colleges and research institutions	Proposal writing	Workshops	Reports available, Certificates awarded
		Research methods Monitoring and evaluation Water harvesting technologies Soil and water conservation Development of air & water quality standards	Short courses Attachment/affiliation	Research skills gained
Knowledge management	Project managers, research institutions	Designing and updating of IWRM/WE websites	Short courses	IWRM/WE database
		Collection and dissemination of publications, Data management	Workshop	
Cross-cutting issues	All stakeholders	Gender and IWRM/WE HIV/AIDS and IWRM/WE	Workshops Drama Posters	Reports, knowledge and skills gained
Equipment/facilities	Research and Training Institutions, NGOs, Government, Water Providers	GIS software, WE/WDM equipment, Water quality and quantity assessment tools		Equipment secured
Project management team	Malawi Water Partnership SC & PAWD Core Team	IWRM/WE concept Planning process, facilitation skills, fundraising/marketing, mainstreaming cross-cutting issues, conflict management & resolution, and advocacy	Workshops Short courses Field trips Attachment/affiliation	Reports available, Knowledge and skills gained

country's environmental problems. Below is a list of reasons why Malawi needs IWRM:

- Different sectors look at specific water needs in an uncoordinated manner.
- It will help to use and manage resources in an equitable and sustainable manner.
- Currently, there is poor management of water resources: hills are bare and water resources are over-utilized.
- There is siltation and dwindling of income from water-related resources such as fish production, unreliability of dry-season cultivation.
- Peoples' livelihoods depend on water.
- It will enable people have access to clean water.
- There would be increased productivity because time spent by women/girls fetching water would be reduced.

4.3. IWRM capacity needs

In the context of IWRM, the importance of training and capacity building cannot be overemphasized. The planning and implementation as well as regulation of IWRM principles will need well-trained staff at various levels. Such training should reflect not only the needs of water users at local basin level but also those at national and transnational levels.

For Malawi, IWRM implementation is crippled by the limited capacity in terms of funding, manpower and facilities. Some of the commonest problems that came out of the study are:

- Inadequate personnel at professional and technical levels.
- Frequent shortages of equipment. Most institutions indicated that they got equipment as donation from international agencies or as part of funding package. However, maintenance is a major problem. The equipment is usually manufactured in the country of the funding agency and once broken down, repair becomes a problem as the spares are usually not available locally.

Lack of capacity is generally manifested in the scarcity of qualified and well-trained water resources experts, professionals and technicians in Malawi. As stated earlier, most technicians do not have formal IWRM training. This is the case in public institutions as it is in private sector organizations which face serious problems with regard to equipment and software.

The little capacity building that has taken place has often been done through the initiative of donor or professional networks in the water sector. There is need for Malawi to deliberately mount training programmes for capacity building. Training is required in geology, drilling and borehole construction technology, hydrogeology, ground water modeling, geophysics, shallow well technology, pumps/lifting devices, water analysis, computer sciences, water harvesting technologies, soil and water conservation techniques, supply and demand management principles and other areas. Table 1 above provides a summary of the training and capacity building needs that came out of the study.

4.4. IWRM training

About 90% of the respondents indicated that they had not done any formal training in IWRM. All the knowledge possessed had been acquired through participation in or attendance of meetings and workshops. A few respondents said that they had received training in environmental management which included some aspects of IWRM. Most training institutions in the country do not offer courses on IWRM per se. They cover in broad terms water resources and environmental management issues. Hence, there is need for training at various levels so that awareness is generated in the country. Initially, such training should equip a cadre of flag bearers who would be critical in the planning and implementation of IWRM programmes. These include professionals at the management level and technicians at lower levels.

For Malawi, training in IWRM is a priority given that the country is currently in the process of implementing the PAWD project. At the moment, only a very limited number of institutions provide professional training at degree level in water resources development and management. The Civil Engineering Department of the Malawi Polytechnic offers a water resources undergraduate course as part of its curriculum. Mzuzu University offers courses on water resources as well. The Natural Resources College plans to revise its curriculum in which it proposes to introduce a course in natural resources management, which would include some aspects of water resources management. Table 2 below provides a summary of training institutions and capacity building needs in Malawi.

4.5. IWRM research

There are very few individuals or institutions that have done research on IWRM in the country. Although the interest is there, most institutions lack the requisite resources for conducting IWRM research. Currently, the only research activities worth the name deal with IWRM only tangentially. These include:

(a) The upgrading or rehabilitation of old systems as in the case of the Northern Region Water Board/Ministry of Water Development.
(b) Research on crops (especially coffee) and livestock, and the provision of advisory services on technology by Lunyangwa Agricultural Research Station.
(c) Research on drought/weather forecasting using traditional methods such as season to season, day to day pattern – birds whizzing (listening to birds). In

Table 2
List of training institutions and their capacity building needs

Institutions	Programmes offered	Capacity needs
Chancellor College	Hydrology, Geology, Land & Water Resource Use, EIA, Environmental Sciences, Biomonitoring, Wastewater Management	Equipment Funding Expertise to teach specialized courses Preparation of customized courses
Mzuzu University	Climatology, Hydrology, Geology Meteorology	Equipment Funding Expertise to teach specialized courses Preparation of customized courses
Natural Resources College	Irrigation, Water Management, Urban Environmental Management, CBNRM, Soil & Water Conservation	Equipment Funding Expertise to teach specialized courses Preparation of customized courses
Malawi Polytechnic	Geology, Hydrology, Water and Waste Water Engineering, Environmental Engineering, Public Health Engineering Environmental Chemistry Environmental Science and Technology	Equipment Funding Expertise to teach specialized courses Preparation of customized courses
Bunda College of Agriculture	Soil and Water Conservation, Irrigation Engineering	Equipment Funding Expertise to teach specialized courses Preparation of customized courses
Technical Colleges	Plumbing, Water Pollution, Water Resources Assessment, Water and Wastewater Treatment	Equipment Funding
Ministry of Works Training Centre	Plumbing, Water Pollution, Water Resources Assessment, Water and Wastewater Treatment	Equipment Funding
Malawi Fisheries College	Aquaculture	Equipment Funding
College of Forestry & Wildlife	Forest Management, Forest Products, Conservation, Natural Forest and Plantations, Wildlife Management, Eco-Tourism/Tourism Management, Forest research	Equipment Funding

addition, there is a study on the use of vegetation – root trees such as potatoes to forecast weather. This study is being undertaken by Mzuzu University.

(d) Research on soil and water conservation – that is, using different techniques for ridging and technologies for rainwater harvesting by Chitedze Agricultural Research Station.
(e) Water resources assessment by COMWASH and WaterAid.
(f) Water point mapping by Ministry of Water Development.

If well coordinated, these studies could provide a useful starting point to generating information on the value and implementation of IWRM. Research can show what may or may not work in the context of Malawi.

5. Conclusions and recommendations

The study has come up with a basic framework for understanding IWRM capacity building needs for Malawi. It has shown that such needs may be grouped into four main categories, namely awareness creation, planning and implementation, training, and lack of equipment and facilities. The paper also shows that IWRM needs to be well understood by all stakeholders if it is to yield the desired results. IWRM is about all sectors working together since different uses of water are interdependent. Consequently, users need to know and appreciate the fact that water is both a social and an economic good and that it should be treated as such. The study has also highlighted some constraints on building capacity in IWRM in Malawi. Notable among these constraints are lack of funding, lack

of coordination and conflicting policies existing in the water and water related sectors.

Finally, the study has identified a set of recommendations which may be useful to Government, training institutions and other appropriate organizations involved in the planning and implementation of IWRM.

- Government should develop tools for IWRM planning and implementation.
- Government should create an enabling environment (policy harmonization, participation fora, awareness creation, etc.).
- Establishment of management instruments (water allocation, economic tools, etc.) and institutional roles of IWRM.
- Establishment of case studies where IWRM and its benefits could be demonstrated.
- Training institutions should incorporate IWRM in their curricula at different levels.
- Develop sound ways of managing information and documents on the water sector in Malawi.

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