

# **Water Economics and Governance in Africa Perspectives and Visions**

Summary and conclusions of the Workshop  
organized by IWEGA in Maputo on the 13 June 2011

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At the occasion of the 3<sup>rd</sup> IWEGA Advisory Board meeting, an international workshop was organized by IWEGA in Maputo in June 2011. This workshop provided the arena to discuss research and development issues related to water economics and governance in Africa. The IWEGA Advisory Board members analyzed and discussed current issues related to human and socio-economic aspects of water management and proposed tools, methods, strategies for research and development programs in Africa.

This policy brief summarizes the presentations of the workshop and provides the main conclusions and the results of the discussions.

## **Summary of presentations**

*S Saranga Loforte* (DNA, Mozambique) presented the dynamics of the legal and institutional reforms in the water sector of Mozambique. She identified the following major challenges for the Mozambican water sector: Unbalanced spatial and temporal distribution of rainfall and runoff throughout the country, limited water storage capacity and high dependence on runoff from upstream countries. To face these challenges, Mozambique approved in 1991 the National Water Law, followed in 1995 by the water policy and in 2007 by the national water resources management strategy, which guides the implementation of the water policy. The national strategy sets the priorities for short, medium and long terms on the following issues: water resources management and development, water supply and sanitation, water for socio-economic development, investments, private sector participation and institutional capacity building. One of the major institutional reforms proposed by the national water law was the decentralization of operational water resources management to regional and local levels. As a consequence, Mozambique created progressively five autonomous Regional Water Administrations (ARAs), responsible for operational management of water resources at regional and basin levels, and more recently eight Stakeholders' Basin Committees, who ensure stakeholders' participation on water resources management and decision making. The major benefits identified in the new

institutional set-up consisted of improved coordination mechanisms, clarification of roles and responsibilities, empowerment of stakeholders through participation, improved resource management and early warning systems. Still major challenges exist in the implementation of the water governance system in the country, and the following points were highlighted as priorities for Mozambique: 1) to enhance water governance by consolidating processes over time through continuous assessment, harmonization of laws and policies; 2) to strengthen the capacity of the Regional Water Management institutions (ARAs) on management of water resources; and 3) to continue promoting active participation of stakeholders in processes of management and decision making on water resources issues as a way to get commitment and enhance water governance.

*H Pienaar* (DWA, now with CSIR, South Africa) illustrated the importance of water for growth and development in South Africa (SA) and provided an overview of the current key national water related imperatives which are confronted by critical challenges in the country. Water has a crucial role to play in all sectors (agriculture, industries, mining, power generation, water services, poverty alleviation), and the competition among different sectors for a scarce water resource remains a critical challenge to water managers and decision-makers. Sharing such resources effectively is therefore of the utmost importance for economic growth, not only in South Africa, but in the whole African continent. SA shares more than half of its water resources with neighbouring countries, and therefore transboundary water management is vital in the region. Three

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examples of operational transboundary cooperation involving SA were illustrated: the Orange Senqu River Commission - ORASECOM, the Limpopo Watercourse Commission - LIMCOM (mostly operating as Limpopo Basin Permanent Technical Committee - LBPTC), and the Tripartite Permanent Technical Committee - TPTC. It was pointed out that the water resource option aimed at improving water availability through inter-basin water transfers and infrastructure enhancement is expensive and can have negative consequences. Water for Growth and Development (WfGD) is a policy framework that offers a long-term perspective on how to ensure future water security, quantity and quality. It establishes the following principles for decision-making: 1) water is the epicenter of all decision-making, 2) ensuring basic access to water for all South African citizens is non-negotiable, 3) social, economical and environmental needs must be balanced, 4) cost-benefit analyses are necessary to assess socio economic costs and benefits of policy decisions. WfGD also establishes the gaps that affect decision-making through the roll-out of reconciliation strategies and feasibility studies to establish most cost-effective ways of ensuring water security. It finally calls for strengthening information for decision-making. Provincial Water Summits with strong focus on WfGD were held by DWA in most South African provinces, and the following recommendations were concluded for short to long-term implementation strategies in terms of water management: Strengthening sectoral co-operation, strengthening institutional capacity, striking a balance between supply and demand, addressing service backlogs, changing water use behaviour. Economic policy instruments such as water charges and tariffs, and economic analytical methods, such as Cost-Benefit Analysis, were indicated as key tools to support water policy implementation within the WfGD framework in SA.

*H Sally* (IWMI, Burkina Faso) provided a review of the existence and status of water policies in the West Africa region (i.e. the 15 member countries of Economic Community of West African States - ECOWAS). Particular emphasis was paid to the technical, institutional, social and economic constraints related to the implementation of policies on agricultural water management. It was discussed, inter-alia, the extent to which paradigms such as Integrated Water Resource Management (IWRM), regional harmonization, and decentralization are taken into consideration. ECOWAS represents ¼ of the total African land area, but 25 out of the about 60 (or over 40%) African river basins are situated in West Africa. All countries in the region, with the exception of Cape Verde, share at least one international river, and in some countries a high proportion of renewable water resources is produced outside their borders: the

dependency index (FAO) is > 90% in Niger & Mauritania. Established River Basin Organizations (RBOs) exist in the Niger, Senegal, and Gambia basins. The Volta Basin Authority is more recent. In terms of water resource availability and access, even where water is relatively abundant, deficits & stress exist due to low levels of water development. Almost 40% of people in ECOWAS region have no access to safe drinking water, and 60% of the population have no access to basic sanitation, seriously compromising the achievement of the Millennium Development Goals. Regional policies and institutions exist particularly in the fields of agricultural and industrial development, energy and the environment. In terms of water management, most countries have designed and implemented water policies and irrigation strategies, but a coordinated effort in the direction of IWRM is still far from being in place. Particularly, the following challenges appear to be so far insufficiently treated: How to ensure inter-relations and synergies between continental and regional policies on one hand and national water policies on the other; the influence of external factors e.g. policies related to trade, energy, agriculture must be further studied; the role of government versus the private sector is still not fully clarified. Also, some questions should be addressed in order to assess the potential success of new irrigation facilities. Factors like technology, costs (direct and indirect, e.g. transport), land tenure, donor dependence, markets, and corruption need more scrutiny. The lack of information and data, the weak policy planning and design, and the absence of maintenance and performance monitoring were seen as crucial constraints for the effective implementation of IWRM policies and irrigation strategies in the region. In sum, while the presence of regional institutions, including research & training and some longstanding RBOs, and the existence of political will are seen as the main strengths for IWRM in the region, the main weaknesses are represented by inadequate water infrastructure, poor maintenance & performance of existing facilities, limited investment capability, human capacity inadequacies, and knowledge & skills backlogs.

*G R Backeberg* (WRC, South Africa) reflected on research innovation for agricultural water management. In terms of the Water Research Act of 1971, the mandate of the Water Research Commission is to support research and the application of knowledge for development work. In the Key Strategic Area of Water Utilisation in Agriculture, the strategic focus is on improving the knowledge of 1) biological, technical and economic processes of food production, 2) management processes by people who are using water in the value adding chain, and 3) natural processes and people-induced impacts on

water resource use. Knowledge creation through research has to be purposefully managed and in this regard it is useful to be guided by the dynamics of the innovation process. The innovation cycle involves three stages of creativity through research, practical application of inventions and thereafter exploitation of the commercial potential. Research innovation therefore is the process of turning opportunity into ideas and putting these into widely used practice. The key decision in the real world is when applied research must end and when technology exchange leading to business ventures must begin. Experience has shown that these are not distinct phases but that even during the application stage, further research is required for generating knowledge that is useful for decision and action in practice. Case studies of research outputs and technology transfer actions that support implementation are available which illustrate the process. The techniques and practices already proven as useful include the direct and indirect measuring of water use, systems for river and canal water management, sets of models for calculating capital and operating costs of irrigation equipment, various methods for real-time irrigation scheduling, and procedures for estimating water requirements of irrigated crops. Furthermore, guidelines and training material have been developed for revitalisation of irrigation schemes and knowledge dissemination has been undertaken. Based on many years of research investment in rainwater harvesting and soil water management, capacity building has been done and extension manuals have been produced. Guidelines are available for risk assessment of the quality of water used for livestock watering. Research on water use in homestead gardens is contributing to improving household food security, by implementing and refining resource material for "training the trainers" and household members, in particular women. The realities are that research investment for science-based innovation in agricultural water management is a risky undertaking with long lead times and a relative low success rate. The evidence across a range of research projects is that at least ten years are necessary from initiation of research to some degree of successful application. The main requirements are high quality research followed by technology exchange, with individual drive, team effort and organisational continuity. A core group of researchers, managers and end-users on farms must participate in the process. Lessons for future action are to strengthen the links between research, extension and training. More emphasis should also be placed on effective knowledge dissemination through popular articles, audio-visual material, information days and practical demonstrations.

*P Fabre* (CIRAD, France) gave a perspective in terms of research and training strategies for water governance and rural development in Southern Africa, focusing on the CIRAD experience. The Southern African Development Community (SADC) encompasses countries among the poorest in the world. These countries are also characterized by high GINI index, showing inequity in the distribution of welfare. SADC economies are based on export of raw products (oil/minerals or agricultural commodities), which reduces the local capital accumulation. Average water bulk availability is relatively high in the area, while water access is poor. Agriculture is the major water user, followed by residential and industrial uses. Exporting (virtual) water through minerals or agricultural commodities is a common practice, and a duality characterizes the agricultural sector, with irrigated agriculture mainly for export crops and rainfed agriculture for local food crops. The two main paradigms for water management in the region are: 1) the modernist/hydraulic mission, aiming at water supply improvement through investments for development (dominant in the south, governments) and 2) the environmentalist approach, also giving voice to society and stakeholder participation, aiming at water demand management (dominant in the north or through civil society and international organizations). CIRAD is a French public center of agricultural research for development, doing design and implementation of participatory and applied research in the field of water economics and governance in order to provide solutions to the above mentioned problems, combining the two indicated paradigms (i.e. production and sustainability). CIRAD conducts research for and through action, facing the challenges by building solutions with the stakeholders. Capacity building and education are crucial components of the CIRAD approach. Several research projects about water economics and governance were implemented in the last twelve years by CIRAD in the SADC region, from local to national and regional scales, through the mentioned participatory approach and mobilizing socioeconomic methods ranging from conventional tools such as economic valuation techniques up to more innovative platforms such as role-playing games.

### Discussion, conclusions, way forward

The workshop clearly indicated that across Africa (SADC and ECOWAS regions), societies and governments face basically the same problems in terms of water access and management. Inadequate water infrastructure, poor maintenance & performance of existing facilities, limited investment capability, human capacity inadequacies, limited institutional coordination, and knowledge & skills backlogs were

identified as the main weaknesses of the water management systems both in West Africa and in the SADC region.

Moreover, the lack of secure land and water rights implies no incentives to make productive use of resources for economic development. This is a general problem in African rural areas where institutional failures in common property are widely prevalent, raising a range of challenges for governance and water economics.

To face these problems, national governments and regional institutions put in place policies and strategies that on one side aim at enhancing water supply through investments and improved infrastructures, while on the other side try to apply the principles of IWRM to the difficult realities represented by the African countries.

Reconciliation policies, decentralization processes, transboundary water management, promoting environmentally sustainable water uses, water demand management are policies and institutional dynamics that go in the direction of an integrated management of water resources. Water governance, according to GWP, is the range of political, social, economic, and administrative systems that are in place to regulate the development and management of water resources and provision of water services at different levels of society. Following the dynamics indicated above, African countries' water governance is experiencing drastic and radical changes in the last fifteen years or so.

Social applied research in the fields of water governance and water economics can help understanding better these dynamics and provide tools to improve decision making in the water sector at all levels, from local to international.

The lack of socio-economic information and data to support decision making was pointed out as one of the

major problems for water management in Africa. Particularly, information on costs and benefits of policy decisions and projects implementation, economic and monetary values of water for different (often conflicting) uses, calculations of the economic trade-offs between alternative water allocations (off stream but also in stream) were identified as very important elements of knowledge for informed decision making in the water sector.

Participation of stakeholders at various geographic and institutional levels, especially at the local level, was addressed as a crucial factor to improve water management and increase people's empowering. Social research can be of determinant help also by providing tools and approaches to facilitate stakeholders' involvement in the design and implementation phases of water management and allocation strategies.

To generate "useful" knowledge for the entire society, the whole innovation cycle involving creativity through research, practical application of inventions and exploitation of the commercial potential must be present and active. Conversely, this is very seldom the case in African realities. As a consequence, research investment for science-based innovation in water management (not only in the agricultural sector) is an even more risky undertaking in Africa than in western countries. Donors should be aware of this fact when providing research funds for the water sector in Africa. Capacity building is crucial to improve water management and governance at all levels, and to increase the probabilities of success of innovative research findings. It becomes therefore vital to strengthen the links between applied research in water economics and governance, extension and training (both at degree and non-degree levels).

## IWEGA

The mission of the International Center for Water Economics and Governance in Africa (IWEGA) is to enhance the capacity of African researchers to conduct water economics and governance inquiry of relevance to African problems and increase the awareness of environmental and economic managers and policy makers about the role of water economics and governance for sustainable development. IWEGA's Policy Brief series seeks to inform a wide and general audience about research and policy findings from IWEGA studies and initiatives.