

## Shaping new policies in the African water sector: the need for research on governance, institutions and the economics of water

*Background paper*

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### **A first paradigm: development of water supply**

The 20th century has seen a dramatic global restructuring of the natural hydrology, towards **increased water resource abstraction and storage**. Such process aimed at ensuring better protection against extreme events, and at meeting industrialization and urbanization demands, population growth and resulting increased agricultural production needs, and increasing water supply and sanitation needs. As a result, massive infrastructural development took place throughout Africa.

Efforts used to be put mostly on the “**supply**” side, with important resource development taking place (increased storage capacity, irrigation infrastructures, development of distribution and wastewater networks, improved services, quality technology, etc.). Although such efforts remain crucial here and there, opportunities for more development seem unlikely in most countries, owing to **financial issues**. Besides, it is unlikely that further significant increase in abstraction of water from nature at reasonable costs is plausible without **severe environmental disturbance** in most countries.

Furthermore, for decades, the water resource has been centrally controlled and managed.

### **Changes towards a new paradigm: water demand management**

In-depth reforms and new policies in the water sector have been taking place in many emerging and developing countries, in Africa and worldwide during the last 20 years.

In recent decades, as the resource became scarcer, users more diverse and uneven, and environmental issues more acute, an **alternative approach** succeeded previously quantitative phases of utilization and development.

**Resource allocation, demand management and governance** form the core principles of this new phase.

Unlike the relatively stagnant supply, the demand has quickly evolved, along with rapid urbanisation, a diversification of uses and users, raising environmental concerns and issues regarding transboundary basins.

New paradigms have emerged, along with the one of sustainable development, in water resource management:

- Decentralization, and the development of new forms of local governance,
- Participation, and the quest for more equity,
- Liberalization, and the need for financial viability and economic soundness,
- Overall State/public withdrawal in technical and financial terms, and the need for new private-public partnerships.

Such reforms have been implemented through:

- Integrated Water Resource Management policies (IWRM) at river basin level,

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- Irrigation Management Transfer (IMT) policies, and the privatization of schemes,
- The emergence of new decentralised institutions, at both river basin (basin committees, or Catchment Management Agencies) and local level (Water Users' Associations),
- The development of alternative environmental, social, economic and policy frameworks and tools (e.g. registration and licensing of users, water-rights markets, incentives and subsidization, ecological and human reserves, "free basic water" principles, cost recovery and charging principles, local business plans for common resource utilization).

## **Issues and challenges facing the reforms**

In Africa, such changes often take place within the context of increasing resource scarcity, increasing competition between diverse users, rapid urbanization processes, marginalization of rural and peri-urban areas and pervasive poverty, food insecurity and inequality.

In Africa, seventy percent of poor live in rural areas, while there is an urban bias in development and resource allocation strategies. In addition, population growth calls for increased food production. Agricultural production will require nearly 20 percent more water within the next 25 years, even when accounting for increased production efficiency. This sector already extracts 70 to 80 percent of water resources, and is closely linked with rural poverty alleviation and rural food security in Africa.

The objectives underlying policies and reforms at national level often appear mutually exclusive, ranging from social equity to economic efficiency, and from environmental conservation to rural and urban development concerns. Decision-makers and operators often find it difficult to strike a balance by identifying proper implementation and allocation options combining all these objectives. As a result, implementation programmes sometimes experience problems, delays, and unexpected or undesirable outcomes, especially affecting the poorest and marginalized members of the African societies.

The radical social and political transformations that are taking place in most African countries (e.g. end of Apartheid in South Africa and Namibia, most recent de-colonisations, structural adjustment effects, on-going democratization processes) call for a wider and more effective participation in the processes of water management by all groups of stakeholders.

All in all, new governance over water resources and its allocation is required and is currently being shaped. To face this new challenge, new organisations are being established, and new institutions are arising. A clear and urgent need exists for innovative approaches, frameworks and tools facilitating negotiation and participation processes promoted and implemented by these newly established (or still establishing) organisations.

Throughout Africa, practical questions, issues and concerns are very similar and generally revolve around the principle of resource allocation at different geographic scales: from local community to river basin level:

- What is the productivity / value of water as used by the different sectors?
- How can resource allocation decisions be made, matching economic, social and environmental concerns?
- How can negotiations be set-up and facilitated between users? How can conflicts be avoided or solved?
- How can new organisations be established, based on participation and sustainability principles?
- How can new institutions / regulations be introduced, while matching past or traditional ones?
- How should different underlying objectives (e.g. social equity, economic efficiency, financial viability, and environmental conservation) be combined within a coherent and integrated implementation framework?
- What are the prospects for irrigation and rural utilizations, in terms of financial viability, ecological integrity, and social equity?

## **A research hub at the University of Pretoria**

In Africa and worldwide, research teams are attempting to address these issues. Most approaches aim at understanding the institutional, cultural, social, technical, financial and economic contexts in which water reform takes place. Through projects and partnerships with policy- and decision-makers, implementation and development agents, approaches and

tools are tested and developed. They are aimed at understanding and documenting processes, informing decisions, facilitating negotiation, solving conflicts, foreseeing possible outcomes and impacts, and seeking for alternative solutions and scenarios. Many operational toolboxes and approaches already exist, but need to be shared among researchers and development stakeholders. Furthermore, methods must be adapted to local, real contexts.

The University of Pretoria has developed an informal research hub on governance, institutions, policy, and the economics of water management. The hub regroups efforts and staff from the Department of Agricultural Economics, Extension and Rural Development (Head: Prof. J. Kirsten), the Centre for Environmental Economics and Policy for Africa (CEEPA, Head: Prof R. Hassan), and researchers from Cirad (Dr. S. Perret & Dr. S. Farolfi). The team performs research, consultancies, degree and non-degree training, capacity building, and outreach. It benefits from diverse South African and French sources of funding (e.g. French ministries, NRF, WRC, DWAF, NDA). CEEPA receives its core funds from the Rockefeller foundation.

Besides numerous publications (see examples below), recent activities included the organisation of an international workshop in South Africa (Loskop Dam 8-11/11/2004) on “Water Resource Management for Local Development: Governance, Institutions and Policies”. The workshop has gathered 90 delegates from 17 different countries (case studies from South Africa, Zimbabwe, Tanzania, Nigeria, Mali, Burkina-Faso, Cameroon, Morocco, Senegal and Egypt were presented). The core idea of the workshop was to create an opportunity for exchange, discussion, and knowledge and experience sharing between research teams, and policy and development agents. Full papers and further information on the workshop can be accessed from the website: <http://wrm2004.cirad.fr>

The research hub at University of Pretoria currently runs several projects focussing on participatory methods for investigating the sustainability of water management features, and for facilitating negotiation and conflict resolution around water management. Activities are carried out at different scales: from local level (e.g. the Smile approach on the sustainable management of smallholder irrigation schemes) to regional level (tools and methods to support the definition of multi stakeholder water allocation strategies in a river basin).

Besides CEEPA and the Department of Agricultural Economics, Extension & Rural development, the University of Pretoria also hosts the African Water Issues Research Unit (AWIRU), which focuses on macro, policy and international / transboundary water management issues.

## **Recent publications:**

Hassan, R. & Farolfi, S. (2005) Water value, resource rent recovery and economic welfare cost of environmental protection: A water-sector model for the Steelpoort sub-basin in South Africa. *Water SA*, 31 (1): 9-18.

Farolfi, S. & Jacobs, J. (2005) « Water availability, requirements, and water-related socio-economic aspects of the Kat River catchment: A survey on secondary data » Ceepea/Cirad report, February, 32 p.

Farolfi, S., Hassan, R., Perret, S. & MacKay, H. (2004) « A role-playing game to support multi-stakeholder negotiations related to water allocation in South Africa: first applications and potential developments », Proceedings : *Water Resources as Ecosystems: Scientists, Government and Society at the Crossroads*, Midrand, 5-7 July 2004, South Africa.

Banda, B., Farolfi, S. & Hassan, R. (2004) «Determinants of Quality and Quantity Values of Water for Domestic Uses in the Steelpoort Sub-Basin: A Contingent Valuation Approach », Proceedings : *Water Management for Local Development* , Loskop Dam, 8-11 november 2004, South Africa.

Perret, S. (2004) Local empowerment in smallholder irrigation schemes: a methodology for participatory diagnosis and prospective analysis. In: *International Workshop on Water Management for “Local Development: Governance, Institutions and Policies”*, 8-11 Nov. 2004, Loskop Dam, South Africa, pp. 518-533, ISBN: 1-920-01719-4

Farolfi S. & Hassan R. (2003) "AWARE : a decision support tool towards decentralised water management in South Africa", Proceedings "*Water Governance and Sustainable Development*" Sousse, 9-10 october 2003, Tunisia.

Perret, S. & Mercoiret, M-R. (editors) (2003) Supporting small-scale farmers and rural organisations : learning from experiences in western Africa. A handbook for development operators and local managers. Protea-CIRAD Publ., Pretoria, South Africa

Perret, S. & Stevens, J. (2003) Factors affecting the adoption of water-conservation technologies. Key note address and paper to the International Conference: *Water Conservation Technologies for Sustainable Dryland Agriculture in Sub-Saharan Africa*, 8-11/04/2003, Bloemfontein, South Africa.

Perret, S. (2002) Water policies and smallholding irrigation schemes in South Africa : A history and new institutional challenges. *Water Policy*, 4(3) : 283-300

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Perret, S. (2002) Supporting decision making on rehabilitation and management transfer of government smallholding irrigation schemes: the Smile approach. In : *Rural and Urban Development Conference "Implementing Development: The Practice and Effectiveness of Development Policies in South Africa"*, 18-19 April 2002, Gauteng, South Africa, National Institute for Economic Policy (NIEP), Proceedings published by Document Transformation Technologies, ISBN 0-620-28854-X.

Farolfi, S. & Perret, S. (2002) Inter-sectoral competition for water allocation in rural South Africa : analysing a case study through a standard environmental economics approach. *XXXIX Convegno SIDEA, Firenze, Italy, 12-14 September 2002*.

Thompson, H., Stimie, C., Richters, E. & Perret, S. (2001) *Policies, legislation and organisations related to water in South Africa, with special reference to the Olifants River basin*. IWMI Working Paper 18, Pretoria, SA. ISBN 92-9090-441-0

## **Websites:**

<http://www.up.ac.za/academic/agrirural/> Department of Agricultural Economics, Extension & Rural Development, University of Pretoria – South Africa

<http://www.up.ac.za/academic/ecoagric/> Post Graduate School for Agricultural & Rural Development, University of Pretoria – South Africa

<http://www.cirad.fr/en/index.php> CIRAD - Centre de Cooperation Internationale en Recherche Agronomique pour le Developpement, Montpellier – France

<http://www.smile-cirad.co.za> : Smile © a free-access software for investigating the sustainability of smallholder irrigation schemes

<http://wrm2004.cirad.fr> : the website of the workshop, with full papers for downloading.

<http://www.ceepa.co.za/cma.html> : The CEEPA website with all its research programmes including the project “Tools and methodologies for the sustainable establishment of decentralised water management institutions in South Africa (CMAs)”