



**Assessing and testing water allocation  
for catchment management strategies  
in South Africa**

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# Assessing and testing water allocation for catchment management strategies in South Africa

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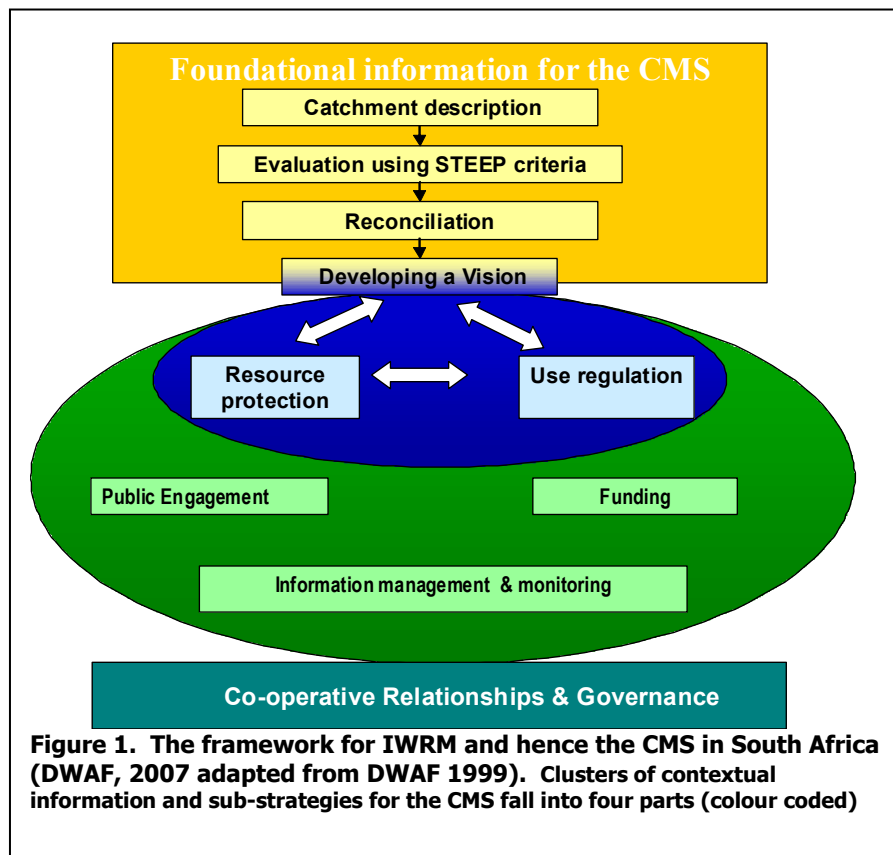
## **Background to IWRM in South Africa**

The South African National Water Act (No. 36 of 1998) makes provision for the establishment of Catchment Management Agencies (CMAs) as the institutional base from which to manage water resources. The NWA incorporates international principles of Integrated Catchment Management (IWRM) and embraces the national values of sustainability and equity, both of which call for a high level of participation from water users. These developments in Integrated Water Resources Management (IWRM) in South Africa are in stark contrast to pre-1998 South African water legislation, and users are adjusting to the realities of operating in this participative mode. South Africa is only starting to implement a comprehensive and functional approach to public engagement at the level of Water Management Areas.

Under the Act, South Africa is divided into 19 Water Management Areas that correspond to hydrological boundaries. Each of these has a CMA expected to execute its duties in collaboration with local stakeholders. There are a number of stakeholder platforms (Catchment Management Forums and Catchment management Committees) where IWRM can be negotiated at more local scales.

These platforms are more than places where stakeholders "trouble-shoot" or defend vested interests in limited water resources. They are opportunities for priority setting, strategic planning and collaborative adaptive management. From a practical point of view, CMAs, along with stakeholders, will be responsible for preparing, implementing and revising catchment management strategies on a five-year cycle that are in line with three specific policy objectives of the National Water Resources Strategy (DWAF, 2004) namely: equitable access to water, sustainable use thereof, in an effective and efficient way. The national government has prepared guidelines to assist CMAs and stakeholders in preparing their strategies (DWAF, 2007). The guidelines take participants through a foundational stage (catchment description; assessment in social and value, political,

economic, environmental and technological terms; and reconciliation of resources), followed by a visioning stage which leads to what are termed in the NWA “resource directed measures” (such as the environmental water allocations or “ecological Reserve”, and classification of rivers for different desired future states) and “source directed controls” (such as water licensing). There are also components dealing with facilitating strategies (such as finance, information management, public engagement) and institutional and co-operative governance to assist ultimate integration. The framework for the CMS is given in Figure 1.



The drafting of the catchment management strategy (CMS) is the nexus for negotiation and consensus-reaching as well as a collaborative ground plan for rolling out water reform, conservation and management. CMSs are essentially the strategic vehicle used by CMAs and their stakeholders to enable action in catchments. Both values and appropriate technical issues are discussed by stakeholders as the CMS is developed, but there is no precedent for this kind of initiative. Even if the participatory process is planned and executed smoothly, there is nothing to suggest that polarisation, tension and protection of vested interests will not occur.

Earlier work in the WMA indicates that different sectors have developed their own understanding and therefore their own practice around water resources management

(Pollard and Du Toit, 2004). Further work with mental model methodologies in the Crocodile Catchment (Etienne, et al, 2007, Biggs et al, 2008,) corroborated this.

### **A participatory exploration tool to support collaborative planning**

Whilst multiple stakeholder platforms have the potential to be highly troubled environments, dialogue and collective planning are important and constructive points of departure in deriving strategic plans for managing the water resources. Whether this happens or not will depend on the application of sound and considered interventions. We assume that collective modelling of catchments followed by an exploration of the uses, practices and management options in a controlled and simplified environment may offer such an opportunity. Such approach is sometimes also referred to as "participatory simulation", when using a computer based model (Ramanath, Gilbert, 2004), "role playing games" or "companion modelling" (Barreteau & al, 2003).

The method that we propose to test in conjunction with the CMS development consists of 3 key areas:

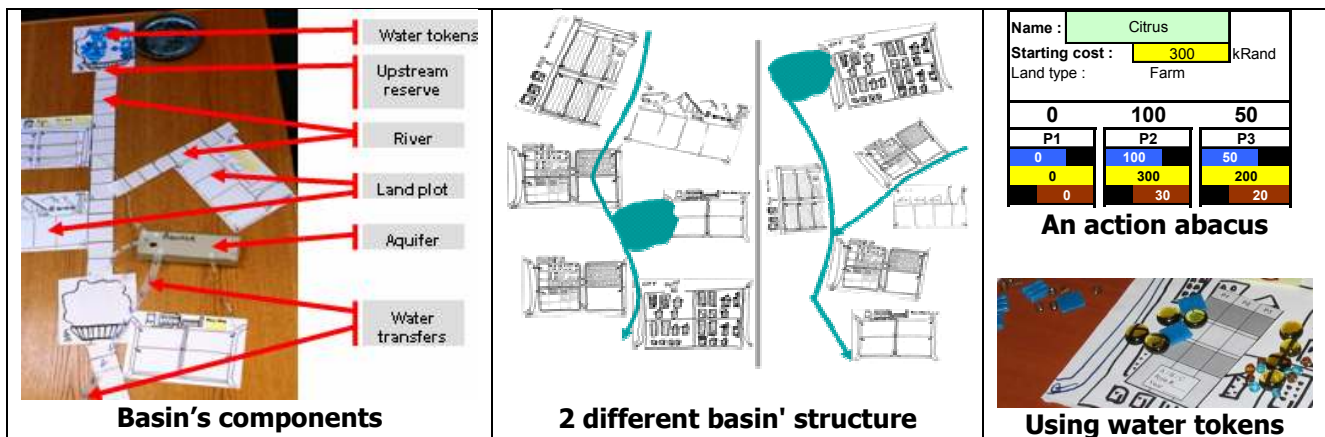
1. The collective understanding of the water related dynamics by the inhabitants and users located in the catchment
2. An exploration of the consequences of the practices and management options arrived at by the stakeholder groups in order to test for sustainability, equity and efficiency
3. The development and deliberation of new or expanded management options for water management tested for their appropriateness and desirability

We have designed a process and the attached tool, WAT-A-GAME (Ferrand, Farolfi, Abrami, 2009), that aims at facilitating exploration and transformation of water management and water use at the catchment scale. It gives a simple but enlightening view of the various consequences of individual and collective choices, including regulation policies.

Its main features are:

- Representing any water basin accurately; being adaptable to the real basin structure, to various resources use including water, land, labour, money, and to different contexts, countries, participants.
- Scalable for basin size and number of participants (1-15).
- Easy to set and play, cheap; no computer required.
- Average session duration is 2-3 h.
- Sessions' results are measurable.
- It can be calibrated with real data or used qualitatively.
- Sessions can be self-designed by the participants.
- Interesting, fun, and attractive for many kinds and levels of participants.
- It can be used to test and compare different policies.

In the tool, each participant has to manage some "land's plots cards" where (s)he can install different "action cards". Action cards give a simplified production function linking water use with income and return flow (usually polluted)etc. The whole set of land's plots represents the whole basin, with a realistic topology upstream to downstream, tuned to the real basin structure. During a round, or season, some water is distributed and shown as tokens. Participants can decide to abstract and use some water, receive income, and return some (polluted) water. "Events" are randomly dealt with and sustainable management indicators are tracked.



This game has been tested in France to support change and implementation of water policies. In the context of South Africa the intention is to link the decision-making tool to the development of Catchment Management Strategies. The tool offers the opportunity to engage with the visioning process, scenario planning, the viability and implementation of water resource protection strategies, inform water use regulation and monitoring functions.

This process aims to work collaboratively with the Inkomati Catchment Management Agency during 2009. The aim is to run such a test case in the Sand River Catchment alongside the CMS development process with a number of stakeholder groups.

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