

# Challenges for catchment management agencies: Lessons from bureaucracies, business and resource management

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## Abstract

Catchment management agencies (CMAs) have no tested precedent in South Africa and will have to evolve in complex and changing business, social and natural environments as they strive to ensure that equity and social justice are achieved within ecological limits. Traditionally, very different styles of management have been used for resource exploitation and resource protection and this will present a serious dilemma for CMAs.

As the human population has grown and natural resources have declined, there has been increased effort to control nature in order to harvest its products and reduce its threats. Initially such "command-and-control" management has been successful as agencies prosper on short-term gains. However, when natural variation is reduced the ecosystem loses its resilience and ability to "bounce back" from disturbances. The first lesson we can learn is that the longer term consequence of command-and-control management is always either a reduction or cessation of resource supply.

The second lesson comes from adaptive resource management (ARM). ARM acknowledges that, because nature is in a continual state of flux and our understanding of ecosystem functioning is poor, a fundamental problem for decision makers is that they must deal with uncertainty from an imperfect knowledge base. A learning-by-doing approach becomes a prerequisite for effective management. Unfortunately, there has been a tendency to superimpose adaptive management on bureaucratic institutional structures. Such flouting of the fundamental management axiom "form must follow function", has thwarted many attempts at adaptive management. This provides our third lesson.

Recognition that authoritarian, command-and-control, bureaucracies respond too slowly to survive in changing environments has led managers in government, industry and businesses to create "learning institutions" which combine adaptive operations and generative leadership (lesson four). Effective knowledge management is seen as a critical success factor in turning command-and-control management into adaptive, learn-by-doing management (lesson five).

CMAs which recognise the dangers of excessive command and control, the need to integrate stakeholder values and activities, and the potential of an adaptive and generative management approach, will need to structure their activities carefully.

At present there is much focus on the structure of CMAs and much less on how they should function. Form is preceding function in many instances. When function is discussed it centres on how regulatory mechanisms and permit systems will keep resource use under control. The concern is seldom with how the ecosystem will be managed. This sort of thinking could lead to a classic command-and-control management approach if not tempered with a more adaptive process.

Strategic adaptive management (SAM) is a local derivative of ARM designed to generate consensus management which is inclusive, strategic, adaptive and creative. SAM is a process in which effective knowledge management is central to building a partnership between science, management and society to achieve a common vision. It has considerable potential for application to CMAs.

## Introduction

South Africa's new Water Law is commendable for its mix of "water use for development" and "protection of the resource" but are we aware of the dilemma this creates for the catchment management agencies (CMAs) which must protect the ecosystems which supply the resource they use.

The dilemma comes from the different styles of management which have been traditionally used for resource exploitation and those that are needed for resource protection. In most countries these two functions are performed by different agencies. It is a dilemma compounded by paradigm shifts which democratisation of decision making and the global explosion of knowledge, force on managers and government in South Africa. For example:

- CMAs have no tested precedent and will have to evolve in complex and changing business, social and natural environments. They will have to be adaptive, learning organisations. This will be no mean feat for an organisation born out of a government bureaucracy.
- CMAs will find that by far the majority of decisions in a catchment are made by individual land owners/resource users. They will need to ensure inclusive, participatory management which exposes and meets the needs and values of stakeholders.
- CMAs will find themselves relying on consultants to perform many functions and this will fragment and dissipate any knowledge base they attempt to build. Effective knowledge management will be paramount to successful service delivery and resource protection.
- CMAs will have to ensure that equity and social justice are achieved within ecological limits if they are to meet the full requirements of the new Water Law. Sustainable development and sustained ecosystem functioning will need to have explicit and audited outcomes.

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