Integrating biodiversity concepts with good governance to support water resources management in South Africa

PJ Ashton[1]*, MJ Patrick[2], HM MacKay[3] and AvB Weaver[4]

[1] CSIR-Environmentek, PO Box 395, Pretoria 0001, South Africa

[2]CSIR-Environmentek, PO Box 17001, Congella 4013, South Africa

[3]Water Research Commission, Private Bag X03, Gezina 0031, South Africa

[4]CSIR-Environmentek, PO Box 320, Stellenbosch 7999, South Africa

Abstract

Despite recent reforms in its water sector policies and legislation, South Africa's water governance system remains somewhat fragmented because of the need for separate management approaches to address different environmental components of the hydrological cycle. With the responsibility for different components of the hydrological cycle spread amongst several government agencies at different levels of government, integrated management of water across the hydrological cycle will require improved co-operative governance. Examination of existing governance systems and current understandings of biodiversity provides evidence to suggest that a far closer alignment between a particular governance system and the biophysical components and ecological processes comprising a specific environmental system that supports society could significantly enhance our systems of environmental governance. In turn, this would offer society the chance to design water resource management systems that better anticipate, reflect and respond to changes in environmental components and processes within the hydrological cycle. In future, greater emphasis will need to be placed on increased levels of co-operation between relevant governance systems related to water, as well as increased trans-disciplinary research that can better define the links between environmental governance systems and ecological systems.

Keywords: biodiversity; governance; ecosystem; integrated water resource management (IWRM); hydrological cycle; policy

Introduction

The priorities and approaches to management of water resources in South Africa have undergone significant changes in recent years. Prior to 1994, water resource management focused on the development of water resources (i.e. dam construction, inter-basin transfers and irrigation schemes) and primarily supported the provision and allocation of water for development in the agricultural, urban and mining sectors (MacKay, 2003). After the first democratic elections in 1994, social equity emerged as a key political priority. In terms of water resource management, this took the form of the challenge to provide basic water and sanitation to the majority of South Africa's population, and to ensure equitable access to water for all people (De Coning and Sherwill, 2004). These political changes informed the process of reform of the policy on water resources and water services, culminating in the promulgation of the Water Services Act (WSA: Republic of South Africa, 1997) and the National Water Act (NWA: Republic of South Africa, 1998).

The NWA recognises that water resources occur in different forms that reflect the different components of the hydrological cycle (aquatic, terrestrial, subterranean, atmospheric and marine), and that integrated management of all these components and aspects of water resources is necessary in order to achieve sustainable use of water for the benefit of all its users (Republic of South Africa, 1998). In order to fulfil this requirement, a shift in thinking is necessary, from a point where water is seen simply as a commodity to one where water resources are recognised as integral parts of a larger ecosystem. This ecosystem approach requires an understanding of the relationships between the various components of the hydrological cycle and the linkages and inter-relationships between these components. The dynamics of these complex inter-relationships and feedback loops are regulated by ecosystem processes. These ecological processes are important, from a human-needs perspective, for the goods and services they provide. Recognition of the central role that biodiversity plays in maintaining ecological processes and hence in ensuring the maintenance of the flows of ecosystem goods and services on a sustainable basis, is critical to successful water resource management (MacKay et al., 2004).

In addition to understanding biodiversity concepts as they relate to water resource management, it is important to understand the dynamics of the governance systems that are in place, which determine how water resources are managed and how water policies are implemented. Prior to 1994, most water management decisions in South Africa were undertaken by the national government via a centralised, bureaucratic system. This system was virtually inaccessible to the general public and did not allow public participation in decision-making processes (MacKay, 2003). The Constitution of South Africa (Republic of South Africa, 1996) introduced a new approach to public policy and hence to water management decision-making. Two central tenets of the constitution are that people should participate in decision-making processes that affect them, and that national government mandates are most effectively carried out by the lowest appropriate levels of government (Republic of South Africa, 1996). These principles of inclusion and

* To whom all correspondence should be addressed.
☎ +2712 841-3293; fax: +2712 841-2689;
e-mail: pashton@csir.co.za
Received 26 May 2005; accepted in revised form 22 July 2005.