

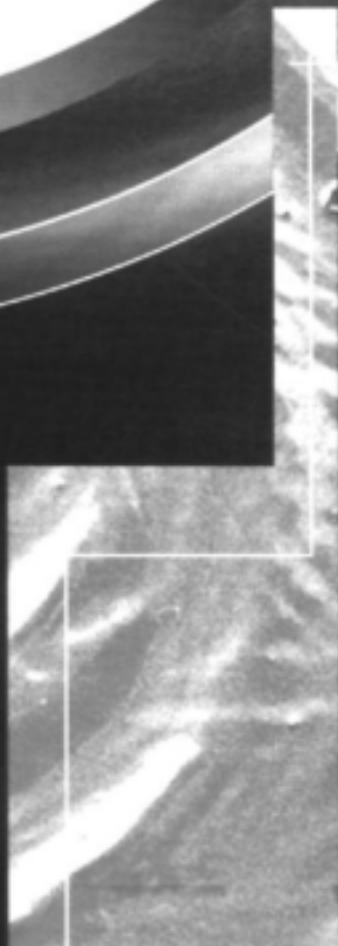
**STRATEGIC REVIEW OF CURRENT AND EMERGING
GOVERNANCE SYSTEMS RELATED TO WATER IN
THE ENVIRONMENT IN SOUTH AFRICA**

**G Pegram • G Mazibuko • B Hollingworth •
E Anderson**

WRC Report No. 1514/1/06



Water Research Commission



**Strategic Review of Current and Emerging Governance
Systems Related to Water in the Environment
in South Africa**

Report to the
Water Research Commission

by

**Guy Pegram, Gugu Mazibuko,
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Pegasys Strategy and Development

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EXECUTIVE SUMMARY

Introduction

The hydrological cycle links the atmospheric, marine, aquatic, terrestrial and subterranean environment through the flow of water in its various phases. Natural disturbances and human activities (including the use of water) in any part of the broader environment therefore have an impact on surface, groundwater and/or marine water resources. On the other hand, ecological processes affect the hydrological cycle and themselves respond to biophysical and biochemical processes occurring within the hydrological cycle.

The governance system related to the environment is shaped and determined partly by social values and imperatives, and partly by the constraints and opportunities afforded by the ecological system around which the governance system has evolved. A particular governance system should be matched to and aligned with the biophysical and ecological processes occurring within the ecological system that supports a society or community.

Recognising these linkages, the WRC formulated this project, "***Strategic review of current and emerging governance systems related to water in the environment in South Africa***" as part of the Environmental Governance Systems thrust, as part of the Water and Environment cross-cutting domain. This is the final report from the project consisting of the review and evaluation of governance elements and the strategic direction for research to support governance systems around water in the hydrological cycle.

Interpreting Water Governance

In the past couple of decades, the concept of integrated water resources management (IWRM) has emerged as the internationally accepted paradigm for water sector. Together, the emerging integrated planning, economic and social development, participatory and decentralised institutional paradigm of IWRM requires a more complex understanding of governance related to all components of the hydrological cycle and the human activities that have an impact on it.

Governance in the water sector has political, administrative and economic dimensions and includes both the activities of government, as well as the interaction of civil society with these processes. Good water governance requires predictability, participation, transparency, equity, accountability, coherence, responsiveness, integrated and ethical decision making. This must be built around open policy-making, a professional bureaucracy and a strong engaged civil society.

The complete system of governance for water may be represented as a three-dimensional system of:

- *elements*, including principles and mandate, policies and legislation, regulatory framework, institutional arrangements and practice
- *levels*, from international, national, regional, local to neighbourhood levels
- *responsibilities* of government, non-government organisations and civil society

The concepts of cooperative governance between institutions and corporate governance within organisations must also be woven into the tapestry of governance systems related to different parts of the hydrological cycle.

International Context

There are a number of political (policy) initiatives and legal instruments at the international level with an impact on national water governance. While international declarations and law are difficult to enforce, they do capture internationally accepted governance principles and objectives, which the South African government is obliged to achieve once South Africa is a signatory.

Defining what constitutes international water law is not simple, due to the preponderance of customary international law at this level. The international declarations by the international community at conferences such as the World Summit on Sustainable Development or the Third World Water Forum do not constitute part of the body of international water law but inevitably reflect aspects of it. For governance of water in the hydrological cycle, the most relevant initiatives are those related to climate change, management of transboundary water resources and environmental management. These initiatives and law are taken as context for the evaluation of national governance.

National Policy and Legislation

The Constitution outlines the principles and mandates for governance related to the water in the environment and specifies the rights of all citizens. South Africa has fundamentally revised its policy and legal environment since 1994 to bring it in line with government objectives, particularly in the water management, service delivery, environmental management (including air and marine) sectors, as well as public sector governance, financing and administration. The following conclusions about the broad legislative environment are relevant for water governance in South Africa:

- The Constitution sets the parameters for good water governance.
- The legislated governance system for water has several elements, with the National Water Act and Water Services Act administered by DWAF at its core.
- A direct safeguard mechanism is the environmental legislation administered with a different mandate by the Department of Environment Affairs and Tourism.
- Local government has the Constitutional mandate to deliver water services and is supported, regulated and monitored by provincial and national government.
- The financial management system provides a further dimension by requiring effective budgeting and sound financial management.
- The administrative system requires cooperative, accountable and transparent governance, as well as transformation of the public sector.

Evaluation of the Governance Systems

While the policy and legal environment has been generally well developed in South Africa in accordance with government policy since 1994, the implementation of this policy and legislation has been generally uneven, inconsistent and often inadequate to meet the challenges facing the country. Therefore the key focus of the evaluation is on the regulatory environment and practice. It does this specifically from the perspective of water governance, and prioritisation is primarily based on the associated impact on the water environment. For practical reasons, the synthesis takes a physical media approach, focusing on governance of air, land and water.

Air Governance

Air related governance has two elements, namely air emissions and weather modification. At a principle level, the policy and legislation is sound and reflects Constitutional and National Environmental Management Act (Act 107 of 1998) (NEMA) principles. Being relatively new legislation, the regulatory framework is still being established. There is very little good

practice in terms of cooperation around the atmosphere as part of the hydrological cycle, either between government departments or between spheres of government, despite the severe social and economic impact air quality deterioration has in parts of the country. Specific issues that may benefit from further investigation include:

- Opportunities and institutional arrangements for joint planning, management and regulation of air and water quality (linked to land quality) at a catchment basin scale, through the catchment management strategy process.
- The technical, procedural and institutional considerations for addressing water resource impacts as part of the air emissions licensing process.

Land Governance

Land is taken to include the terrestrial and subterranean environment, which determines impacts on and water use associated with the water environment. These interactions are the reason that catchment management focuses on land use issues as the means of managing water resources. The nature of impacts on water and governance of land use activities are extremely diverse and catchments are literally made up of a "tapestry" of different activities, responsibilities and associated mandates. From the wide-ranging review and evaluation of land governance from a water-hydrological perspective, the following priority issues have been identified:

- The opportunities for effective coordination of land use governance through catchment management processes, and appropriate mechanisms to institutionalise the required cooperative governance
- The institutional capacity of local government to perform its functions related to management of the hydrological cycle effectively, particularly around integrated development planning, municipal service delivery, waste management and land use authorisation
- The interface between environmental management governance and water governance (as reflected in catchment management approaches), and particularly the mechanisms to ensure alignment at an institutional and implementation level
- Governance of communal land (between local government and traditional authorities/leaders) and the implications for water resources availability and quality, including the goods and services upon which rural communities are typically reliant
- Governance of the land reform process and the needs of beneficiaries in terms of access to water resources and the associated capacity to utilise this access effectively
- Governance and institutional arrangements to engage the emerging understanding of subterranean ecosystems and their impacts on biodiversity and hydrological pathways
- Engaging mechanisms to strengthen stakeholder involvement in administrative decisions making around land management, in order to promote effective and accountable government, for empowered commercial interests and particularly local communities

Water Governance

Water is taken to be ground water, wetlands, rivers, lakes, impoundments, estuaries and the marine environment. It is the most visible part of the hydrological cycle and represents the start and end of the hydrological cycle. The policy and legal framework for water governance and its interactions with other elements of the hydrological cycle is broadly developed. However, delays in the development of key regulatory instruments have meant that the institutional and practical implementation of this framework is not well developed. In addition to the water related issues associated with land governance, specific governance issues related to the water environment include:

- Governance of catchment management agencies at all levels, within a paradigm of cooperative, integrated, developmental and participatory management
- Governance considerations and mechanisms for the development of catchment management strategies through a consultative process and their alignment with local development planning Integrated Development Plan (IDP), Water Services Development Plan (WSDP) and Provincial Planning Processes (PDGS)
- The required institutional change (at all levels) required to move from centralised regulatory DWAF decision-making (governance) to decentralised participatory governance in water resources management
- Alignment in the governance arrangements for managing the coastal zone in conjunction with estuaries, marine outfalls and coastal land, based on Integrated Coastal Zone Management (ICZM)
- Governance of water resources infrastructure development and operation reflecting the institutional change in the water sector
- Formulation of a coherent regulatory governance system for water resources management, particularly around the development/revision of classification, compulsory licensing, water allocation, water pricing and water use authorisation systems
- The development of clear monitoring and evaluation systems to assess the implementation of the water governance system, linked to clear indicators of the state of water resources and associated governance elements

Challenges to Good Water Governance

There are a number of fundamental challenges to improving water governance in South Africa:

- *Change and maturity in the governance systems*
- *Institutional change and decentralisation*
- *Participation and democratisation*
- *Changing management paradigm*
- *Transformation*
- *Institutional memory*
- *Complexity and integration*
- *Information, communication and uncertainty*
- *Technical and management capacity*
- *Financial resources*

Given the magnitude of these strategic challenges, it is remarkable that there is a relatively effective governance system in the water and related sectors. From this synthesis and evaluation, it is apparent that an institutional champion is required for promoting the coherent and harmonised implementation of water governance related to the entire hydrological cycle. While DWAF must continue to play this role at a national policy level, it is proposed that catchment management agencies should provide a focus point for improving the governance of water in the hydrological cycle at a catchment level.

Strategic Direction

The critical requirements to ensure improved governance of water in the hydrological cycle (to address the detailed issues highlighted in the previous sections) are:

- Establishment of an effective regulatory framework (and implementation plan) for water resources management, linked to other sectors' activities and taking consideration of the available institutional capacity

- Establishment of coherent institutional arrangements at a catchment level to promote the alignment of water with air, land and marine management, including the development of adequate institutional capacity
- Promotion and institutionalisation of appropriate stakeholder involvement in catchment and land management processes, taking account of the role of local government in democratic representation

A number of strategic priorities are proposed to give effect to this direction. While they have policy implications, there is a significant requirement for research and case study analysis to inform and advise these processes.

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1 INTRODUCTION

1.1 Background

The hydrological cycle links every component (atmospheric, marine, aquatic, terrestrial and subterranean) of the broader environment, as indicated in Figure 1. This implies that natural disturbances or human activities in any part of the environment have an impact on surface, groundwater and/or marine water resources, through the movement of water between these components. These physical connections are complex in that they are bi-directional, and have direct, second and third order impacts. They follow both natural hydrological processes and human-induced processes, such as water resources infrastructure regulation, abstraction and discharge for use.

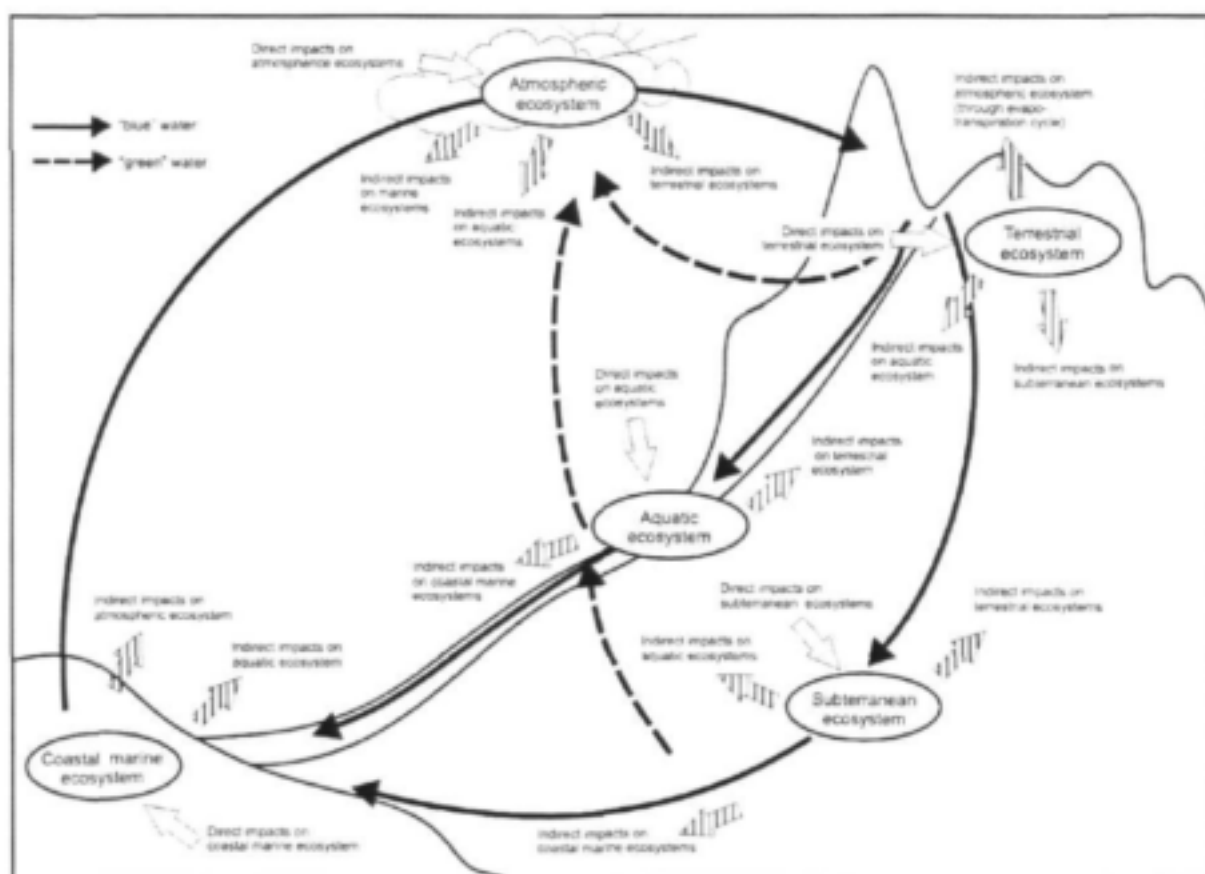


Figure 1 Phases of the hydrological cycle¹

There are biophysical, biochemical and ecological links within and between each of the components comprising the hydrological cycle. Ecological processes play a critical role in regulating the hydrological cycle, and are themselves affected by biophysical and biochemical processes occurring within the hydrological cycle. Ecological functions and processes occurring within the hydrological cycle both affect the humans who are part of the system, and are affected by their activities.

The governance system related to the environment is shaped and determined partly by social values and imperatives, and partly by the constraints and opportunities afforded by the

¹ MacKay H, P Ashton, M Neal and A Weaver. *Investment Strategy for the Crosscutting Domain: Water and the Environment*. Water Research Commission. Report No KV 148/04. June 2004

ecological system around which the governance system has evolved. Conceptually, the governance system can be superimposed onto the ecological system: this highlights the linkages between these systems. There is an underlying assumption here that the ecological system sets constraints and limits on society's activities, and these determine whether or not society can survive, develop and prosper. Ideally, therefore, a particular governance system should be matched to and aligned with the biophysical and ecological processes occurring within the ecological system that supports a society or community. Decisions about the management, use and allocation of natural resources such as water should reflect the realities of the supporting ecological system.

1.2 Background to the Project

The core strategy of the WRC calls for specific mechanisms to address key strategic issues of national importance. These are dealt with in four crosscutting domains that have been established specifically for this purpose. During 2002/2003, the importance of these issues was highlighted when they emerged as major issues in the World Summit on Sustainable Development (WSSD) agenda and the newly developed agenda for NEPAD. These domains form integrating frameworks that cut across the Key Strategic Areas (KSAs) and draw together ongoing programmes and projects within the portfolios of each of the KSAs, and address issues relevant to the domains. The crosscutting domains may also drive specific programmes and/or projects that are overarching and relate to all KSAs in a more general manner.

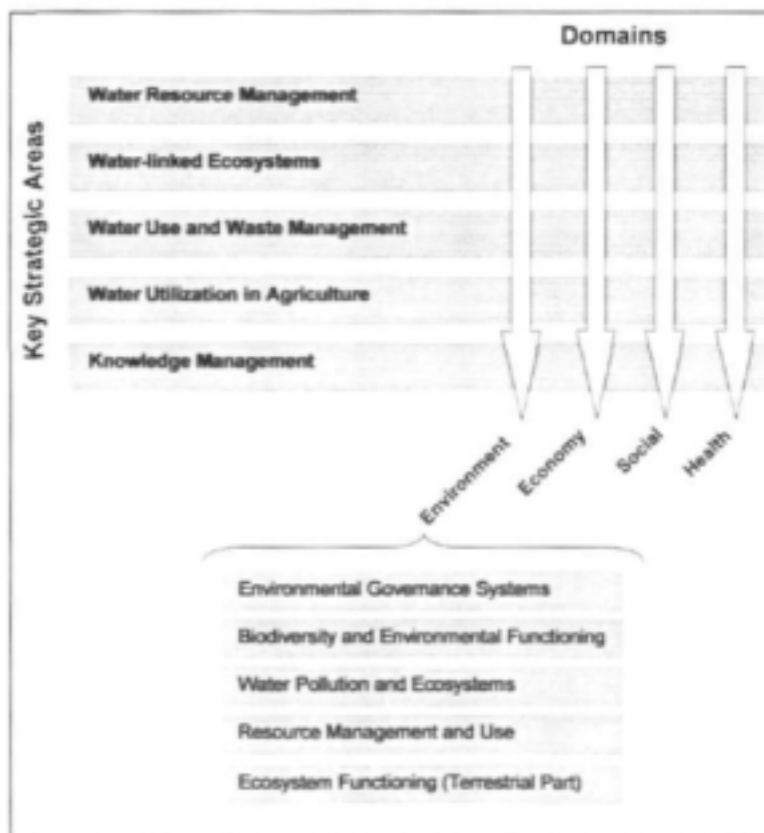


Figure 2 Key Strategic Areas and Crosscutting Domains within the WRC

The crosscutting domains address the following key issues:

- Water and Society

- Water and the Economy
- Water and the Environment
- Water and Health

The 'Water and Environment' domain comprises five strategic thrusts that address specific environmental issues. Each of these thrusts must provide clear guidance to the WRC and the research community as to the specific research needs and information requirements that must be met. These thrusts are:

- Environmental Governance Systems
- Biodiversity Protection and Environmental Functioning
- Water Pollution and Ecosystems
- Resource Management and Use
- Ecosystem Functioning (Terrestrial Part)

As part of the Environmental Governance Systems thrust, the project "*Strategic review of current and emerging governance systems related to water in the environment in South Africa*" was formulated. The objectives of the project are:

- To review and evaluate all relevant governance elements at international, national, provincial and local level in South Africa that directly relate to or have an impact on all phases of the hydrological cycle; and
- To identify and prioritise key issues, areas of conflict or gaps that require research to support the harmonisation of existing governance elements or to develop new governance elements.

1.3 Purpose and Structure of the Report

This is the final report from the project consisting of the review, the evaluation and the strategic direction for research to support governance systems around the hydrological cycle. It is targeted at researchers and managers primarily in water resources management, but addresses many issues that are relevant to managers in sectors related to land use and the atmosphere.

The report begins with an interpretation of governance and related systems in **Chapter 2**. This is followed by a review and evaluation of the international policy and legal context in **Chapter 3**. Then **Chapter 4** reviews national principles, policy and legislation that is broadly relevant to water governance, without focusing on specific sectors. A governance framework is developed in **Chapter 5**, including an evaluation of gaps, challenges and the identification of issues requiring further research attention. Finally, **Chapter 6** presents the strategic direction for research around governance related to water in the hydrological cycle. **Appendices A to L** present the evaluation of governance related to specific components/elements of the hydrological cycle as background to the governance framework.

2. INTERPRETATION OF WATER GOVERNANCE

2.1 Introduction

The interpretation of what constitutes water governance is still evolving internationally. This ranges from the exercise of state authority through to the less tangible dimensions of participation or the moderation of government action by civil society. Therefore, before engaging the governance of the hydrological cycle, it is necessary to explore the concept and definition of governance.

2.2 Levels of the Governance System

A number of levels of governance may be distinguished²:

- At the highest level, **principles** are a statement of society's *values* and the institutional *mandates* to give effect to them. Principles may be generally applicable or sector-specific.
- **Policy** is a statement of *intent* of what government will do to achieve these principles and may include the associated *strategies* for its implementation. Policy tends to be sector-specific, but may also be more general and crosscutting.
- **Legislation** is the primary tool of government for implementing policy, and sets out how policy objectives will be implemented and enforced. Legislation tends to be specific to a sector or crosscutting focus area.
- **Regulation** provides the detail to give effect to legislation and administratively governs everyday activities within society and the economy. Regulations may be tailored to specific situations and can be changed more easily than legislation, to enable the progressive achievement of policy objectives.
- **Practice** covers a wide range of both regulatory and non-regulatory activities that reflect the principles and support the implementation of policy. It is fundamentally dependant upon the *institutional capacity* of government and civil society. Practice can include customary practices, awareness programmes, peer pressure, voluntary agreements, economic instruments and self-regulation. It may be overseen by or from within civil society, whereas policy, legislation and regulation are usually administered by government.

A complete "net" of governance for water, then, would be a three-dimensional system of tools, including principles, policies, legislation, regulation and practice. Each of these would have elements at international, transboundary, national, regional/provincial, local and neighbourhood levels; each element of which might have components for which government, non-government organisations or civil society would be responsible.

2.3 Integrated Water Resources Management and the Implications for Governance

In the past couple of decades, the concept of integrated water resources management (IWRM) has emerged as the internationally accepted paradigm for the water sector. This was largely

² MacKay H, P Ashton, M Neal and A Weaver. Investment Strategy for the Crosscutting Domain: Water and the Environment. Water Research Commission. Report No KV 148/04. June 2004

driven by the increasing demand on limited resources and the deteriorating water quality of key resources, together with an emerging understanding of the greater effectiveness of local decision making as the basis for sustainable natural resources management.

At a technical level, this has resulted in a shift from centralised supply-side water resources engineering, based on the development of infrastructure to increase water yield, to an integrated planning approach based on both conventional and non-conventional options for the reconciliation of supply and demand (including water conservation and demand management measures). This shift has also been apparent in the emerging understanding and treatment of water as an economic good, albeit with a social nature, in terms of the financing and pricing of raw water. Finally, this shift has been generally accompanied by a process of institutional decentralisation to enable local stakeholder participation in decision-making for water resources management.

Together, the emerging technical, economic and institutional paradigm of IWRM requires a more complex understanding of governance related to all components of the hydrological cycle and human activities that have an impact on it.

2.4 Defining Water Governance

2.4.1 Focus of Governance

While governance is often equated with the activity of running government, this definition is not useful for an evaluation of governance related to management of the hydrological cycle with complex challenges and decentralisation in decision making, in a new democracy such as South Africa. A more appropriate conceptualisation is given by the UNDP³:

Governance is the exercise of economic, political and administrative authority to manage a country's affairs at all levels... it comprises the mechanisms, processes and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences.

This definition captures the key elements of governance. Firstly, economic, political and administrative governance reflects three distinct, but interrelated areas. Economic governance focuses on decision-making around economic activities, which fundamentally affects development, equity, poverty and livelihoods. Political governance focuses on the decision-making around the formulation of government policy and legislation. Administrative governance focuses on decision-making around the implementation of government policy and legislation. Secondly, governance represents not only government, but also its interaction with civil society as people and groups.

At the general, non-sector level, Kaufmann et al⁴, define governance as "*the traditions and institutions by which authority in a country is exercised*". They measure governance in six clusters of indicators namely, Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law and Control of Corruption.

For the purposes of this project it is important to highlight particular areas of focus, namely:

- The manner in which government has established policy, legislation and regulations (regulatory framework) to ensure effective *political* governance
- The manner in which government applies policy, legislation and regulations to ensure effective administrative (*regulatory*) governance

³ UNDP. 2001.

⁴ Kaufmann D. et al. *Governance Matters III: Governance Indicators for 1996-2002*. The World Bank. 2003.

- The manner in which public and private sector institutions cooperate to ensure effective administrative (*cooperative*) governance
- The manner in which public and private organisations manage their affairs to comply with regulatory frameworks to ensure effective *corporate* governance
- The manner in which non-governmental and community based *civil society* organises itself to articulate and advocate interests within the framework of economic, political and administrative authority

2.4.2 Water Governance

At the water sector level, the definitions are more specific:

Water governance refers to the range of political, social, economic and administrative systems that are in place to develop and manage water resources, and the delivery of water services, at different levels of society⁵.

Water governance is perceived in its broadest sense as entailing those social, political and economic organisations and institutions and their relationships which are regarded important for water development and management⁶.

“Good governance” depends upon the principles of predictability, inclusivity, representivity, accountability, efficiency, effectiveness, social equity and justice. Other principles such as transparency are necessary to ensure safeguards in the system, while cooperation is necessary in a highly complex system. Causes of “ineffective governance” include corruption, inadequate financial resources, inadequate labour and managerial skills, low prioritisation and poor communication⁷.

Good governance therefore needs to be built on three pillars, namely open policy-making, a professional bureaucracy and a strong engaged civil society. The absence of any one of these jeopardises effective governance. This highlights the need for government responsiveness and accountability to ensure good governance. UNESCO has listed the following criteria for “effective water governance”⁸:

- **Participation:** All citizens, both men and women, should have a voice – directly or through intermediate organisations representing their interests – throughout processes of policy and decision-making. Broad participation hinges upon national and local governments following an inclusive approach.
- **Transparency:** Information should flow freely within a society. The various processes and decisions should be transparent and open for scrutiny by the public.
- **Equity:** All groups in society, both men and women, should have opportunities to improve their well-being.
- **Accountability:** Governments, the private sector and civil society organisations should be accountable to the public or the interests they are representing.
- **Coherency:** The increasing complexity of water resource issues, appropriate policies and actions must be taken into account so that they become coherent, consistent and easily understood.
- **Responsiveness:** Institutions and processes should serve all stakeholders and respond efficiently to changes in demand and preferences, or other new circumstances.

⁵ Rogers P and A Hall. Effective Water Governance. *Global Water Partnership*. TEC Background Paper No 7. November 2002.

⁶ UNDP, GWP, and ICLEI. *Dialogue on Effective Water Governance*. Pamphlet 2002

⁷ Moss J et al. *Valuing water for better governance*. CEO Panel: Business and Industry. 2003.

⁸ UNESCO. *World Water Development Report*. Chapter 15: Stewardship and Governance. p373

- **Integrative:** Water governance should enhance and promote integrated and holistic approaches.
- **Ethical considerations:** Water governance has to be based on the ethical principles of the society in which it functions, for example by respecting traditional water rights and preventing corruption.

A final important criterion is the **predictability** of the political and administrative governance system, in that all role players know the rules and accept that these will be applied consistently.

2.4.3 Corporate Governance

In the corporate environment, the King II Report⁹ listed seven characteristics that constituted good corporate governance as discipline, transparency, independence, accountability, responsibility, fairness and social responsibility. This provides the framework for governance of private sector entities with a focus on risk management that complies with the government's regulatory (administrative) requirements, protects shareholders and stakeholders interests, and ensures efficient and effective organisational functioning.

Important elements of King II are triple-bottom-line accounting, which embraces the economic, environmental and social aspects of a corporation's activities¹⁰. Another is the approach to safety, health and environment (SHE) as a part of integrated sustainability reporting¹¹. The section on environment regards the environment as a stakeholder in its own right¹² and defines reasonable measures or environmental due diligence standards for boards of directors.

While corporate governance in the public sector (particularly devolved public entities that are wholly or partially owned by government) must reflect these broad principles, good corporate governance in the public sector¹³ must also:

- Ensure the implementation of systems and controls that promote service delivery in line with the principles of Batho Pele, including efficiency, effectiveness, ethics and equity
- Enable the effective identification, understanding and management of risk to all elements of the organisational, business and service delivery objectives; and
- Balance the entity's social and environmental responsibilities in addition to its core financial or economic corporate sustainability requirements.

From the perspectives on governance outlined in this Chapter, it emerges that governance has a structural element consisting of laws and institutions, as well as a psychological element consisting of political will, traditions and beliefs in society that participation can make a difference to the way water is governed.

⁹ *King Report on Corporate Governance for South Africa*. Institute of Directors in Southern Africa. 2002.

¹⁰ King op cit p9

¹¹ King op cit p114

¹² King op cit p120

¹³ National Treasury, the Department of Public Service Administration and the Department of Public Enterprise are currently developing a new governance framework and corporate governance guidelines for public entities, based on an assessment of past experience.

3. INTERNATIONAL CONTEXT

3.1 Introduction

This chapter seeks to trace some of the most important political (policy) initiatives and legal instruments at the international level with an impact on national water governance. At the national level, the policy and law is readily identified. However, defining what constitutes international water law is less easily accomplished because of the preponderance of customary international law at this level. The many international declarations by the international community at conferences such as the World Summit on Sustainable Development or the Third World Water Forum do not constitute part of the body of international water law but inevitably reflect aspects of it. These global and African initiatives are presented and discussed, together with international legislation. It is important to note, that while international declarations and law are difficult to enforce, they do capture internationally accepted governance principles and objectives, which the South African government is obliged to achieve once South Africa is a signatory.

3.2 Global Initiatives

This section captures most of the recent initiatives that have had an impact of South Africa's approach to managing its own water resources. Some of the globally driven concepts, such as that of IWRM, have been adopted and customized by South Africa. South Africa has also been actively involved in the development of many of these resolutions. The commitment to these global initiatives means that South Africa should align its own governance philosophy to these global initiatives.

3.2.1 Agenda 21

Chapter 18 of Agenda 21 deals with the protection of the quality and supply of water resources, and the application of an integrated approach to the development, management and use of water resources. It states in its introduction that 'freshwater resources are an essential component of the Earth's hydrosphere and an indispensable part of all terrestrial ecosystems. The freshwater environment is characterized by the hydrological cycle, including floods and droughts, which in some regions have become more extreme and dramatic in their consequences. Global climate change and atmospheric pollution could also have an impact on freshwater resources and their availability and, through sea-level rise, threaten low-lying coastal areas and small island ecosystems.' It proposes the following programme areas for the freshwater sector:

- (a) Integrated water resources development and management
- (b) Water resources assessment
- (c) Protection of water resources, water quality and aquatic ecosystems
- (d) Drinking-water supply and sanitation
- (e) Water and sustainable urban development
- (f) Water for sustainable food production and rural development
- (g) Impacts of climate change on water resources

The first programme area (Integrated Water Resources Development and Management) recommends that IWRM, including the integration of land- and water-related aspects, should be carried out at the level of the catchment basin or sub-basin. It sets out four principal objectives to be pursued, as follows:

- (a) To promote a dynamic, interactive, iterative and multi-sectoral approach to water resources management, including the identification and protection of potential sources of freshwater supply, that integrates technological, socio-economic, environmental and human health considerations
- (b) To plan for the sustainable and rational utilization, protection, conservation and management of water resources based on community needs and priorities within the framework of national economic development policy
- (c) To design, implement and evaluate projects and programmes that are both economically efficient and socially appropriate within clearly defined strategies, based on an approach of full public participation, including that of women, youth, indigenous people and local communities in water management policy-making and decision-making
- (d) To identify and strengthen or develop, as required, in particular in developing countries, the appropriate institutional, legal and financial mechanisms to ensure that water policy and its implementation are a catalyst for sustainable social progress and economic growth

In order to achieve these objectives, effective water governance mechanisms are required, starting, as proposed, with the catchment or sub-catchment scale, which is the unit scale within which all essential components of the water cycle occur. These mechanisms should consider the multi-sectoral character of water use and the need for a framework that seeks to reconcile the competing needs. It calls for appropriate legal, financial and institutional arrangements.

3.2.2 *The Rio/Dublin Integrated Water Resources Management (IWRM) Principles*

Agenda 21 was followed by the formulation of the IWRM principles, commonly called the Rio/Dublin Principles, as the following:

1. Fresh water is a *finite and vulnerable resource*, essential to sustain life, development and the environment.
2. Water development and management should be based on a *participatory approach*, involving users, planners and policy-makers at all levels.
3. *Women play a central role* in the provision, management and safeguarding of water.
4. Water has an economic value for all its competing uses and should be recognised as *an economic good*.

These principles point towards decentralized governance systems and highlight the peculiarity of water as a commodity that is vulnerable and for which the value should be recognised as an input to economic activities.

The IWRM framework highlights the need to achieve a balance between ecosystem sustainability, economic efficiency and social equity. This is achieved through an enabling environment (policies and legislation) that defines institutional roles (central-local, public-private, river basin) and provides for management instruments (assessment of resources, information, allocation tools) that support decision-making. It is being suggested with time that financing is another key requirement for achieving effective IWRM and that it should be reflected in this framework.

3.2.3 *The Millenium Development Goals*

The Millennium Development Goals – global targets that the world's leaders set at the Millennium Summit in September 2000 – are an ambitious agenda for reducing poverty and transforming lives. They include the following targets for 2015, using 1990 as a benchmark:

1. *Halve extreme poverty and hunger*
2. *Achieve universal primary education*
3. *Empower women and promote equality between women and men*
4. *Reduce under-five mortality by two-thirds*
5. *Reduce maternal mortality by three-quarters*
6. *Reverse the spread of killer diseases, especially HIV/AIDS and malaria*
7. *Ensure environmental sustainability*
8. *Create a global partnership for development*

With regard to water, the seventh MDG aims at halving by 50% the number of people without access to safe water by 2015. At the WSSD in Johannesburg in September 2002, the sanitation component was added to this MDG which now aims at reducing by 50% the number of people without access to safe water and proper sanitation by 2015. An attempt has also been made to demonstrate the role of water in all of the MDGs.

3.2.4 The World Water Forum 2

The World Water Forum 2 in The Hague in March 2000 saw different regions of the world presenting their visions related to water. These visions had target dates. The Southern African Vision is described below.

3.2.5 The WSSD Resolution on IWRM and Water Efficiency Plans by 2005

Apart from adding a sanitation component on the MDGs related to water, the WSSD resolved that in order to support the attainment of the MDGs by 2015, countries needed to develop Integrated Water Resources and Water Efficiency Plans (IWRM/WE Plans) by 2005. Efforts have since been made to ensure that most countries have started the development of these plans by 2005.

3.2.6 Some Role Players on the Global Scene

In recent years, several role players have emerged on the global scene, each contributing to several aspects of water resources management, development and use through several activities. These cover awareness raising at all levels on different water related issues, information dissemination, fostering of supporting research, resources mobilisation, developing a framework for supporting water (services) delivery, etc.:

- The World Water Council
- The Global Water Partnership
- The Water Supply and Sanitation Consultative Council
- The Water Supply and Sanitation Programme

Detailed information on each can be easily obtained from the Internet. The existence of these role players simply confirms the progressive realization that a supporting framework in the management, development and use of water resources in a sustainable manner is needed. Such a framework should consider the social and environmental priorities that will emerge as the pressure on water to meet development needs increases.

3.3 Southern African and African Initiatives

3.3.1 The Southern African Vision for Water, Life and Environment

SADC developed a Southern African Water Vision during 1999, which was ratified by the various SADC countries' Water Ministers and presented to the international community during the World Water Forum II in The Hague in the Netherlands in March 2000. The

Southern African Vision for Water Life and the Environment for the 21st Century¹⁴, calls for: “*Equitable and sustainable utilisation of water for social, environmental justice, and economic benefit for present and future generations*”. It has the following eight sub-vision statements:

1. Equitable and sustainable social and economic development in Southern Africa
2. Equitable access to water of an acceptable quantity and quality
3. Proper sanitation for all and safe waste disposal
4. Food security for all households
5. Energy security for all households
6. A sustainable environment
7. Security from natural disasters
8. Integrated water resources development and management

A framework for action (FFA) process was initiated after the formulation of the Vision in order to identify key strategic actions required for the achievement of the Vision. This process is currently being completed. The Vision inspired the definition of the objectives of the Regional Water Policy and the FFA is expected to dovetail with the Regional Water Strategy and support the development of IWRM plans.

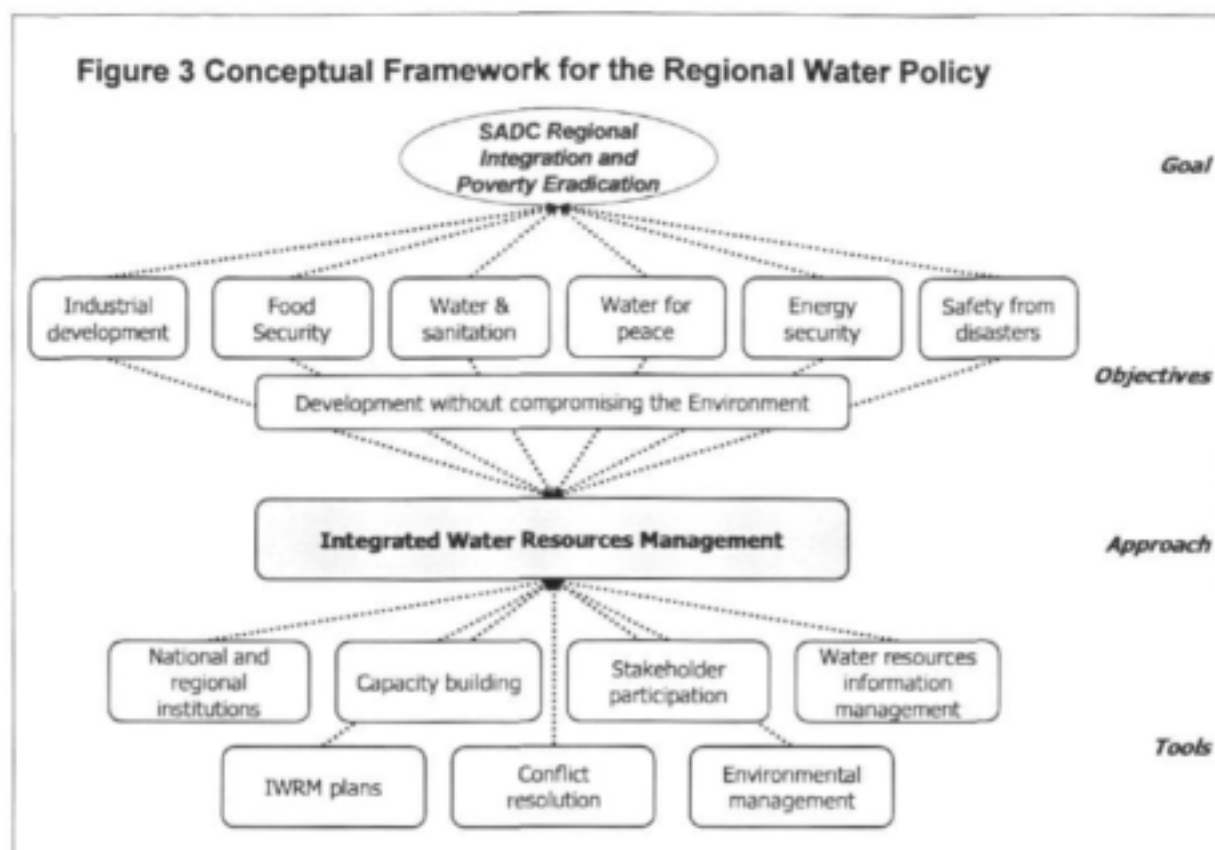
3.3.2 *The SADC Regional Water Policy and Strategy*

A SADC Regional Water Policy was developed through an innovative process which made use of various studies, amalgamated their findings in a logical sequence. The strategy was developed through stakeholder consultations at both regional and country levels. The framework of the policy provided in the figure below shows that the overall goal of the policy is SADC regional integration and poverty eradication. The objectives are inspired by the sub-vision statements of the Southern African Vision for Water Life and Environment earlier described. The policy recognizes IWRM as the approach to achieving these objectives and ultimately the goal. Appropriate tools are then proposed.

The development of a regional water strategy is now forthcoming and is likely to follow a similar process. It is of worth to note that at a strategy formulation level, crucial linkages will be established between the FFA process, the strategy itself, the IWRM plans process and the Regional Strategic Action Plan. The emerging convergence is towards actions that will lead to a sustainable improvement of the livelihoods of the people of Southern Africa through socio-economic development while ensuring that the environment is protected.

¹⁴ SADC and GWP SA. *The Southern African Vision for Water Life and Environment*. 2000.

Figure 3 Conceptual Framework for the Regional Water Policy



The Regional Strategic Action Plan (RSAP) for Integrated Water Resources Development and Management (1999-2004) was prepared by the then SADC Water Sector to provide a framework for an enabling environment that would enable the region successfully to meet its challenge of developing a comprehensive approach to water resources development and management. It is currently being revised and has resulted in four clusters:

- *Regional Water Resources Planning and Management*
- *Infrastructure Development and Support*
- *Water Governance*
- *Capacity Building*

The water governance cluster is further broken down into three broad projects:

- *WG1: Implementation programme for the SADC Protocol on Shared Watercourses*
- *WG2: Promotion of public participation in water resources development and management*
- *WG3: Promotion of implementation of the Regional Water Policy and Strategy*

From a South African governance perspective, the SADC Protocol (discussed below) is the key framework for the management of transboundary water resources.

3.3.3 Initiatives on the African Continent

Africa has the lowest coverage of water supply and sanitation services in the world. About four hundred million people on the continent do not have access to adequate water and sanitation services. Access to improved water and sanitation services is therefore a necessary prerequisite towards achieving the MDGs, eradicating poverty and spurring economic and social development in Africa. Several initiatives are set to influence the management, development and use of water resources in Africa in order to accelerate delivery of services. These include:

- The New Partnership for African Development (NEPAD) which has a water section under its Infrastructure Division, which is set to ensure that water plays its role on the development agenda of the continent. In reference to the Water and Sanitation Sector, the NEPAD Policy Objectives are:
 - Ensure sustainable access to safe and adequate clean water supply and sanitation, especially for the poor
 - Plan and manage water resources to become a basis for national and regional cooperation and development
 - Systematically address and sustain ecosystems, bio-diversity and wildlife
- The African Ministerial Council of Water (AMCOW) is a body regrouping water ministers from African countries with the objective of coordinating the management of the continent's water resources.
- Recently, an African Water Facility was launched under the auspices of the African Development Bank in Tunis in July 2004, in order to support and raise funds for the development of water related infrastructure, which is a key component to achieving socio-economic progress on the continent.

The SADC Water Sector is playing a leading role in the development of these initiatives, while they have been prioritised as part of the South African government's medium term strategic objectives, namely *Building a Better Africa and World*.

3.4 International Law

3.4.1 General

International law, as a determinant of the way international relations should be conducted, is primarily derived from bilateral and multilateral treaties (i.e. what states have "contracted" to do) and from international custom as evidence of general practice accepted as law¹⁵. These two sources emphasise the consensual nature of international law and the principle that non-contracting states are not bound to treaties. Other lesser sources are "general principles recognised by civilised nations", judicial decisions (such as of the International Court of Justice) and teachings of widely recognised jurists. International statements such as Chapter 18 of Agenda 21, the Accra Statement, the World Water Vision and the 2nd and 3rd World Water Forums, do not constitute international water law. This section focuses on the conventions and treaties that form the core of international water law.

3.4.2 UN Convention on the Law of Non-navigational Uses of International Water Courses

During the 20th century, the abstraction of water from rivers has increased exponentially and at the same time there has been a decrease in the quality of the water¹⁶. In 1997, Professor Wouters wrote that, as a consequence of the pressure on resources, "At present, there are serious conflicts over water in most parts of the world"¹⁷.

In 1959 the United Nations initiated a process for the progressive development and codification of international water law. The process continued under the auspices of the

¹⁵ Dugard J. *International Law: A South African Perspective*. Juta, 1994, p23

¹⁶ United Nations, Commission for Sustainable Development. *Comprehensive Assessment of the Freshwater Resources of the World*. Report of the Secretary General, UN Doc E/CN17/1997/9, 1997.

¹⁷ Wouter P. Present Status of International Water Law. Editor's Foreword to *International Water Law. Selected Writings of Professor Charles B. Bourne*. London, Kluwer Law International, 1997.

International Law Commission through to the adoption of the Convention¹⁸ in 1997. Even as it was adopted there were doubts as to whether, in codifying the law, it had effectively reconciled different principles favoured by different states and whether it would be ratified. These latter concerns were well founded, as the convention has failed to attract sufficient ratifications to allow it to come into force. Eckstein¹⁹ discerns trends in the voting patterns and statements of states. Upstream riparian states support the principle of sovereignty and those downstream the principles of prior appropriation or territorial integrity. The Convention however, sets equitable and reasonable use as the dominant principle for international water law. Although not in force, the Convention is nevertheless an authoritative text, evidentiary of the customary law in the field, as shown by the International Court of Justice's decision in the Gabčíkovo-Nagymaros case, which, inter alia, endorses the equitable and reasonable use principle²⁰.

South Africa ratified the Convention so that, although the Convention is not in force, there is a moral argument that it should adhere to the provisions. This is somewhat theoretical, as South Africa is bound in all its dealings with SADC states by the SADC Protocol that is discussed below.

As far as water and the environment are concerned, Articles 20 to 23 of the Convention refer respectively directly to protection and preservation of ecosystems, the prevention, reduction and control of pollution, the introduction of alien or new species and the protection and preservation of the marine environment. Indirectly, environmental concerns run through virtually all the provisions of the Convention²¹.

3.4.3 SADC Protocol

The Southern African Development Community (SADC) is a regional economic community that has as its goal the integration of the regional economy and the achievement of the objectives of poverty alleviation, food security and industrial development. It is structured by a 1992 Treaty that is supplemented by sectoral protocols. The SADC Protocol on Shared Water Course Systems was ratified in September 1998. The Revised Protocol on Shared Watercourses in SADC entered into force on 22 September 2003. South Africa ratified this Protocol.

The objective of the Protocol is:

"to foster closer cooperation for judicious, sustainable and coordinated management, protection and utilisation of shared watercourses and advance the SADC agenda of regional integration and poverty alleviation. In order to achieve this objective, this Protocol seeks to:

- o *promote and facilitate the establishment of shared watercourse agreements and Shared Watercourse Institutions for the management of shared watercourses;*
- o *advance the sustainable, equitable and reasonable utilisation of the shared watercourses;*
- o *promote a coordinated and integrated environmentally sound development and management of shared watercourses;*
- o *promote the harmonisation and monitoring of legislation and policies for planning, development, conservation, protection of shared watercourses, and allocation of the resources thereof; and*
- o *promote research and technology development, information exchange, capacity building, and the application of appropriate technologies in shared watercourses management.'*

¹⁸ United Nations Convention on the Law of Non-navigational Uses of International Water Courses, GA Resolution 51/229 of 21 May 1997

¹⁹ Eckstein GE. Development of international water law and the UN Watercourse Convention in Turton A and Henwood R. eds. *Hydropolitics in the developing world: a southern African perspective*. African Water Issues Research Unit. 2002. p85

²⁰ Tanzi A and Arcari M. *The United Nations Convention on the Law of International Water Courses*. Kluwer Law International. 2001. p32.

²¹ Tanzi A and Arcari M. op cit p224.

The Protocol espouses a number of principles:

- Unity and coherence of each shared watercourse
- Respect for the existing rules of customary or general international law
- Conservation and enhancement of the environment to promote sustainable development
- Cooperation with regard to the study and execution of all projects
- Equitable and reasonable manner utilisation
- Protection of the watercourse for the benefit of current and future generations
- Prevention, mitigation or compensation of significant harm to other Parties

The SADC Protocol is an international treaty that in international law binds the states that have ratified it. Disputes must be amicably resolved in the spirit of regional cooperation, failing which they may be taken to the SADC Tribunal, a dispute resolution body mandated by the SADC Treaty but not yet instituted. The ultimate sanction for a state not adhering to its commitments is expulsion from SADC.

From an international legal perspective, the detail content of the terms of agreement will have to be sought in the practice of states. International declarations, with which a state has identified, provide some moral suasion but are not binding in a legal sense. From a governance point of view, they do provide a framework within which the state can be expected to operate.

The Treaty is also a framework within which international treaties at the basin level can be concluded between riparian states, provided they are not contrary to the Protocol. A recent study identified some forty international agreements that relate to transboundary waters in SADC²². Individuals have recourse within the legal system of the state where they may have suffered significant harm.

The SADC Protocol requires Watercourse States "to establish appropriate institutions such as watercourse commissions, water authorities or boards"²³. The responsibilities of such institutions are determined by the parties to the establishment treaty. Three types of institutions have emerged namely²⁴:

- **Executive organisations** such as the Komati Basin Water Authority which manage particular projects but have no broad policy-making function
- **Commissions** such as Okacom and Orasecom which can be characterised by:
 - The commission is advisory to the governments
 - The commissioners are government officials
 - The chairmanship rotates between the member states
 - The commissions have no executive mandate or capacity (although a study directed at establishing a permanent secretariat has been undertaken in the above two examples)
- **Committees** of a technical nature that enjoy a less formal inter-state status

From a governance perspective, the institutions are governed and managed on an interstate consensus basis. In the course of operations such as planning studies, affected communities are consulted on a direct basis. Overall though, the institutions are remote from the populations that are affected by their deliberations and planning. There are however promising indications that these institutions will engage communities directly at local level.

²² SADC. *Review of Progress on the Implementation of the SADC Water Protocol*. SADC Water Division. 2004.

²³ SADC. Protocol. op cit. Art 5(3)(a)

²⁴ SADC. Review op cit.

The progressive implementation of the Protocol has seen the signing of various agreements and the establishment of river basin commissions, many of which South Africa is party to. Joint infrastructure development projects have also been undertaken such as through the Komati Basin Authority (KOBWA) between South Africa and Swaziland and the Lesotho Highlands Development Authority (LHDA) between South Africa and Lesotho. Shared watercourse agreements have been signed on the Orange-Senque, the Limpopo and the Inco-Maputo basins, while the established Orange Senque River Basin Commission is in the process of establishing a permanent secretariat. All these developments bear testimony to the region's steady drive towards effective governance arrangements for the management of the region's water resources. However, they also highlight the need for water governance within South Africa to engage with governance of the four river basins that South Africa shares with its neighbours.

3.4.4 International Environment Law

3.4.4.1 Ramsar

The purpose of the Ramsar Convention²⁵ is "the conservation and wise use of all wetlands through local, regional and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world"²⁶. As a convention ratified by the parties it is an instrument of international law. Originally the focus was on water fowl, but more recently, the work of the conference of contracting parties has evolved to a broader approach to wetland conservation and sustainable use in achieving full application of the wise use principle and safeguarding wetland resources.

The first key tool is the compilation of a list of wetland sites selected for their international significance in terms of ecology, botany, zoology, limnology or hydrology (Article 2). The Convention places an obligation on a state to "*formulate and implement their planning so as to promote the conservation of the wetlands included in the list, and as far as possible the wise use of wetlands*" (Article 3). There is also an obligation on a state where "*in its urgent national interest, deletes or restricts the boundaries of a wetland included in the list, it should as far as possible compensate for any loss of wetland resources*" (Article 4).

The second important tool is the Conference of Contracting Parties. It is supported by a permanent bureau. The eighth triennial session of this institution was held in 2002. The Conference considers the state of wetlands on the list, receives reports and makes recommendations. The Convention places an obligation on the parties to consider these recommendations in determining the management of their wetlands.

Previously, the link between wetlands and water resources did not receive much attention. In 1999, however the South African delegation reported²⁷:

"A draft resolution on "Guidelines for integrating wetland conservation and wise use into river basin management" was presented. This resolution stems from a lack of clear guidance from Ramsar concerning the integration of wetland-related issues into river basin management. Existing linkages in the Convention between wetlands, water and river basin management were highlighted, as was the important role of wetland

²⁵ UNESCO. *Convention on Wetlands of International Importance especially as Waterfowl Habitat*. (Ramsar, Iran, 1971 and amended in 1982 and 1987).

²⁶ The Ramsar Strategic Plan 2003-2008. *8th Meeting of the Conference of the Contracting Parties to the Convention on Wetlands (Ramsar, Iran, 1971)*. Valencia, Spain. 18-26 November 2002.

²⁷ Cowan G.I. and J.A. Dini. *Report on the attendance of the Seventh Meeting of the Conference of Contracting Parties to the Convention on Wetlands (Ramsar, Iran, 1971)*. South African Wetlands Conservation Programme. Department of Environmental Affairs and Tourism. 1999.

conservation in alleviating the global water crisis. The challenge put before the delegates was to develop techniques for managing wetlands sustainably for their water resources whilst preserving wetland biodiversity and other values."

A number of guidelines have now emerged from the Conference including those on involving local communities in the management of wetlands, developing national wetland policies, international cooperation, integrating wetland conservation into river basins and for allocation and management of water for maintaining the ecological functions of wetlands. It has commenced with the publication of handbooks that include aspects of water resources²⁸.

The Convention has thus generated a considerable volume of good practice that South Africa as a contracting party has an obligation to consider when managing its wetlands.

3.4.4.2 United Nations Framework Convention on Climate Change (UNFCCC)

The UNFCCC has as its ultimate objective:

*"... to achieve stabilization of atmospheric concentrations of greenhouse gases at levels that would prevent dangerous anthropogenic (human-induced) interference with the climate system ..."*²⁹.

The Convention distinguishes three classes of countries to each of which it assigns different commitments. South Africa is in the group of developing countries that are assigned the general commitments to respond to climate change. All Parties agree to compile an inventory of their greenhouse gas emissions, and submit reports – known as national communications – on actions they are taking to implement the Convention. To focus such actions, they must prepare national programmes containing:

- Climate change mitigation measures
- Provisions for developing and transferring environmentally friendly technologies
- Provisions for sustainably managing carbon 'sinks' (a general term for forests and other ecosystems that can remove more greenhouse gases from the atmosphere than they emit)
- Preparations to adapt to climate change
- Plans to engage in climate research, observation of the global climate system and information exchange
- Plans to promote education, training and public awareness relating to climate change

The **Kyoto Protocol** to the UNFCCC has at its core the reduction of greenhouse gas emissions in the developed countries of at least 5 per cent from 1990 levels by 2008-2012. To achieve this, the Protocol supports the country's domestic measures by establishing a number of mechanisms, including a clean development mechanism (Article 12) whereby a developed country can offset part of its emission target by financing projects meeting defined criteria in developing countries.

From a water governance perspective, the UNFCCC and Kyoto Protocol have links to water resource planning through the potential impact on river flows of climate change and the national commitment to observe and report on the impacts of climate change and to prepare to mitigate the effects. The South African National Water Resources Strategy (NWRS) notes the outcomes of a climate change modelling study that predicts a reduction in precipitation and consequently of runoff and:

²⁸ Integrating wetland conservation and wise use into river basin management. Handbook 4: River basin management. *Ramsar handbooks for the wise use of wetlands*. 2nd edition, 2004.

²⁹ Climate Change Secretariat (UNFCCC) *Caring for climate: A guide to the Climate Change Convention and the Kyoto Protocol*. Bonn, Germany, 2003. p6

*"It must be emphasised that these conclusions are not predictions or forecasts. They are at best projections of how the global climate system may possibly evolve in the future, and how such changes may affect climate on a local scale. Water resources planners will use the projections to create scenarios of future water availability, but there must be interaction between all water-dependent sectors to ensure that all available measures are considered to adapt to changing circumstances and reduce vulnerability. Nevertheless, it is important that no development or investment decisions are made that neglect to take into account the actual or potential affects of climate change on water resources."*³⁰

3.4.4.3 United Nations Convention to Combat Desertification (UNCCD)

Desertification is a serious threat, not only to the environment, but also to livelihoods, development, and poverty reduction. The Convention's objective is to:

combat desertification and mitigate the effects of drought in countries experiencing serious droughts, and desertification, particularly in Africa, through effective action at all levels, supported by international cooperation and partnership arrangements in the framework of an integrated approach which is consistent with the agenda.

As with similar conventions, the conference of parties (COP) provides a consultative forum into which the parties report. International cooperation within the COP relates principally to implementing the UNCCD at all levels, particularly in the areas of the collection, analysis and exchange of information, research, technology transfer, capacity building and awareness building, the promotion of an integrated approach in developing national strategies to combat desertification, and assistance in ensuring that adequate financial resources are available for programmes to combat desertification and mitigate the effects of drought. The key mechanism for implementing the Convention is through national, sub-regional, and regional action programmes. The Convention has five regional implementation annexes that detail how these action plans should be drawn up. Noteworthy is that the approach is described at local level and has to be democratic and bottom-up. Governments are responsible for creating an enabling environment including decentralizing authority, improving land-tenure systems, and empowering women, farmers, and pastoralists. The initiatives must form part of broader sustainable development planning.

The COP to UNCCD has established a Global Mechanism (GM) as an innovative approach to resource mobilization that reflects the unique character of the problem addressed by the Convention. Consistent with the crosscutting nature of the challenge, the Parties created the GM as a uniquely flexible, demand-driven instrument, designed to mobilize and channel a wide array of resource flows toward affected countries' multisectoral plans to implement the UNCCD³¹.

The First Draft South African Plan of Action identifies the costs of desertification that relate to water as³²:

- Poor water quality as a consequence of a number of factors including high silt and nutrient load from accelerated erosion, nutrient load from excessive fertilisation, pollution from industry and poorly maintained sanitation systems
- Siltation of dams that reduces the volume and lifespan of dams and results in increased evaporation due to changes in the volume to surface area ratio

³⁰ Department of Water Affairs and Forestry. *National Water Resource Strategy*. 2004. Box 2.10 p 51

³¹ UNCCD. Business Plan 2003-2006: *The Global Mechanism of the UNCCD*. Conference of the Parties. ICCD/COP(6)/MISC.2 GE.03-63611 Sixth Session Havana, 2003

³² Department of Environment Affairs and Tourism. UNCCD: *First Draft National Action Programme: Combating Land Degradation to Alleviate Rural Poverty*.

- Health costs associated with poor water, particularly in poor rural communities, whose health is already vulnerable, are often forced to use unpurified water
- Reduced rural productivity as a consequence of more time being needed to access resources such as fuel and water
- Severity of flooding can be linked directly to desertification, through its effect on the amount of water that is shed off the surface rather than seeping into the soil

From a water governance perspective, the initiatives encouraged by the Convention will have a positive effect on both the quantity and quality of water resources. However, the NWRS merely notes in the context of international cooperation that South Africa has ratified the UNCCD without linking any specific strategies to this fact³³.

3.4.5 Other International Law

3.4.5.1 United Nations Convention Against Corruption (UNCAC)

The converse of good governance is a system permeated by corruption. The international community has addressed this in UNCAC³⁴ to which South Africa is a party³⁵. One of the reasons for the Convention is stated in the preamble as being:

"Concerned about the seriousness of problems and threats posed by corruption to the stability and security of societies, undermining the institutions and values of democracy, ethical values and justice and jeopardizing sustainable development and the rule of law."

The Convention is extensive and covers matters such as requiring party states to develop measures, including legislation, to increase accountability of officials, prevent embezzlement and bribery, encourage public participation in identifying corrupt practices, enable the seizure of assets obtained through corruption and mainly to promote international cooperation in all these matters. The whole process is promoted, as with other conventions through a conference of the parties. As the UNCAC has recently come into force, the COP has not yet convened.

³³ NWRS *op cit* p148

³⁴ The Convention was adopted by the General Assembly of the United Nations on 31 October 2003.

³⁵ South Africa lodged its instruments of ratification on 22 November 2004.

4. SOUTH AFRICAN POLICY AND LEGISLATION

As indicated in the preceding chapters, one of the central dimensions of governance is the legal framework that provides the enabling environment for water governance. This chapter surveys the principle components of the legal framework relevant to governance of the hydrological cycle in South Africa. While the discussion necessarily delves into non-legislative matters at the interface between water legislation and policy, the focus remains on those elements of the legal framework that impact on water governance. Generally, these relate to provisions for safeguards, oversight, institutional functions, participation processes and checks and balances in the system.

The chapter examines the Constitution for the mechanisms that have been introduced in support of the rights-based approach that the Constitution represents, and follows these through to legislation and subordinate legislation that bear directly on formal water and environmental governance, as well as some of the legislation that indirectly influences it such as government administration and local government. Sector-specific policy and legislation is dealt with in chapters 5 and 6, together with the non-legal aspects of water governance. A legal evaluation of South African resource management in general is provided in the WRC report by Maritza Uys³⁶.

4.1 The South African Constitution

South Africa now has one of the most progressive Constitutions in the world. It is the supreme law of South Africa and law or conduct inconsistent with it is invalid (Section 2). It seeks to establish a society based on democratic values, social justice and fundamental human rights and to lay the foundations for a democratic and open society in which government is based on the will of the people³⁷. The Constitution also introduced a rights-based approach, underpinned by the core values of accountability and transparency in governance³⁸. Section 1 talks of accountability, responsiveness and openness. So, the Constitution sets the values, grants the rights and provides for the mechanisms that guarantee them.

4.1.1 Bill of Rights (Chapter 2)

The Bill of Rights confers inalienable rights on persons in South Africa. The rights to environment and water are pertinent:

24. *Everyone has the right-*

- (a) *to an environment that is not harmful to their health or well-being; and*
- (b) *to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that-*
 - (i) *prevent pollution and ecological degradation;*
 - (ii) *promote conservation; and*
 - (iii) *secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development.*

27. (1) *Everyone has the right to have access to-*

- (a)

³⁶ Uys M. *A legal evaluation of the South African natural resources management mechanism, towards integrated resources management*. A Report to the Water Research Commission.(Draft) No K8/424, 2004

³⁷ Constitution of South Africa. Act 108 of 1996. Preamble.

³⁸ Urquhart, P (2001) *National Governance Framework for Environmental Management*. Background Paper commissioned by the Department of Environmental Affairs and Tourism for the Analytical Review of Sustainable Development and Agenda 21.

(b) *sufficient food and water; and*

(c)

(2) *The state must take reasonable legislative and other measures within its available resources, to achieve the progressive realisation of each of these rights.*

4.1.2 *Functions of the Spheres of Government*

Section 40 constitutes government as national, provincial and local spheres that are distinctive, interdependent and interrelated. It is noteworthy that the Constitution uses no phrases such as “level of government” or other that denotes a hierarchy.

The separation of functions between national and provincial government is structured around two of the schedules to the Constitution, namely:

- Schedule 4: Functional areas of **concurrent** national and provincial legislative competence; and
- Schedule 5: Functional areas of **exclusive** provincial legislative competence.

“**Water**” is not listed in either of these schedules and hence is a matter of exclusive national government legislative competence. However, “*water and sanitation services limited to potable water supply systems and domestic waste-water and sewage disposal systems*” is listed in Part B of Schedule 4. This means in terms of section 156(1) that local government has the executive authority and the right to administer this function. Sections 155(6)(a) and 7 however, provide that national and provincial government must through, legislative or other measures, support, promote development of capacity and regulate the exercise of executive authority by local government. Moreover, section 139 empowers a provincial executive to intervene where a municipality fails to fulfil an executive obligation in terms of legislation.

Provincial legislatures are empowered to enact legislation on functions listed in Schedule 4 (section 104(1)(b)(i)), i.e. including for water services, but potential conflict has been averted by national government taking the initiative with the Water Services Act (see below), section 146, which provides that national legislation will prevail if there is any conflict between national and provincial legislation and the imperative of cooperative government in section 41.

“**Environment**” is listed in Schedule 4 as a concurrent competence. It is in Part A, which means it is not a local government matter. This means that either national or provincial government can legislate on the function. As with “water”, national government has taken the initiative and enacted the Environment Conservation Act and the National Environmental Management Act (see below). Furthermore, the administration of these acts and associated regulations has been delegated to the provincial administrations.

Local government may make (non-conflicting) **by-laws** on any matter over which it has executive authority (section 156(2)), namely the functions in Parts B of Schedules 4 or 5 and any others that may be assigned. This then, by operation of the Constitution, includes water and sanitation services but excludes environment which is in Part A of Schedule 4, and which would therefore have to be assigned to local government.

Functional areas in Schedules 4 and 5 of the Constitution with links to the water sector are presented in the following table.

Function	Schedule 4: Concurrent national and provincial		Schedule 5: Exclusive provincial	
	Part A	Part B: Local Gov	Part A	Part B: Local Gov
Administration of indigenous forests	✓			
Agriculture	✓			
Disaster management	✓			
Environment	✓			
Industrial promotion	✓			
Pollution control	✓			
Regional planning and development	✓			
Soil conservation	✓			
Urban and rural development	✓			
Air pollution		✓		
Municipal planning		✓		
Pontoons, ferries, jetties, piers		✓		
Stormwater		✓		
Water and sanitation services		✓		
Abattoirs			✓	
Provincial planning			✓	
Cemeteries				✓
Municipal abattoirs				✓

4.1.3 Safeguard Mechanisms

Governance without control, or as in this case without safeguards, is deficient. The Constitution therefore provides a governance overlay that allows the individual to protect the rights granted to them.

The **Constitutional Court** is the highest court on all constitutional matters (section 167(3)). As such its decisions are the legal mechanism to enforce but also to give form and substance to the rights that are provided by the Constitution. Analysis of the case law is beyond the brief of this paper.

In section 32, **access to information** is granted as a right. Everyone has access to information held by the state. Access to information held by another person is only a right if it is required for the exercise or protection of any rights. The Constitution provides that national legislation must be enacted to give effect to this right, and consequently, the Promotion of Access to Information Act (PAIA) was assented to in 2000 (see below for a brief exposition).

In section 33, the right to administrative action **that is lawful, reasonable and procedurally fair** is granted. This is supplemented by the right to written reasons if rights have been adversely affected by administrative action. As for information, the Constitution provides that national legislation must be enacted to give effect to this right and consequently the Promotion of Administrative Justice Act was assented to in 2000 (see below for a brief exposition).

All the rights granted in Chapter 2 of the Constitution are subject to the **limitations** provided in section 36. This permits a law of general application to limit a right provided such limitation is "*reasonable and justifiable in an open and democratic society based on human dignity, equality and freedom taking into account all relevant factors*" and examples of which factors the section provides a list. The section also means that there must be a balance or proportionality between the limitation of the right and the purpose for which the right is being limited. This limitation clause was used in PAIA to limit access to sensitive state information.

The wide range of rights also obviously results in situations where one person's right infringes on another's, perhaps different, right, for example, the right to privacy (section 14). In such cases, a balance has to be struck.

4.1.4 Cooperative Government (Chapter 3)

The Constitution declares in section 40 that government is constituted as national, provincial and local spheres, which are distinctive, interdependent and interrelated. It sets out a number of principles of cooperative government that the spheres of government (and all organs of state) must adhere to. Disputes must be settled by exhausting all other mechanisms before referring to the courts.

An important dimension is that, in the Constitutional scheme, municipalities as the delivery institution for water services, do not exercise their autonomy independently: they perform their functions and exercise their powers under the supervision of both national and provincial governments. Supervision includes four distinct, but interrelated activities: regulation, monitoring, support and intervention³⁹.

This particular chapter is directed at government action so that the use of "cooperative government" is appropriate and illustrates the concept that governance as a wider concept also embraces societal traditions, etc. This provision is crucial for water governance where several national and provincial departments administer laws that impact on water in the environment or on processes that impact on water quantity or quality.

4.1.5 Public Administration (Chapter 10)

Section 195 elaborates on the basic values and principles that govern public administration. It sets the tone for the interaction between public officials and the public, insisting on high professional ethics, efficiency, effectiveness, impartiality, accountability and transparency. In the context of governance, it calls for proactive dissemination of information and the encouragement of the public to participate in policy-making. Together, these are the key principles of good governance as outlined previously.

4.1.6 Finance (Chapter 13)

This Chapter sets the framework for financial management in all state entities. It, inter alia, provides for the equitable division of revenue raised nationally among the national, provincial and local spheres of government, budgetary processes, supervision by a treasury, municipal fiscal powers and functions and government guarantees. Most of these matters are given effect to in legislation (see below).

4.2 Water Policy and Legislation

4.2.1 Governance Provisions around the Water Cycle in South Africa

The White Paper on a National Water Policy in South Africa⁴⁰, declares that one of the key proposals which will guide water management in South Africa in the future is that '*All water in the water cycle whether on land, underground or in surface channels, falling on, flowing through or infiltrating between such systems, will be treated as part of the common resource and to the extent required to meet the broad objectives of water resource management, will be subject to common approaches.*' This suggests that the governance arrangements around the water cycle should be subject to common approaches.

³⁹ Department of Provincial and Local Government. *A guideline document on provincial-local intergovernmental relations*. 2003.

⁴⁰ DWAF. *White Paper on a Water Policy for South Africa*. 1997.

The White Paper further states that, “[t]he management of water is, constitutionally, a national function, and the role of public trustee of our water resources is, ultimately, a duty imposed on national Government. But since this White Paper also addresses matters such as the environment and pollution control, which are concurrent national and provincial functions, the national Government will address these matters in the spirit of cooperative governance.” The challenge seems to be to translate these good intentions into practical steps in order to achieve the integrated and sustainable management of the nation’s water resources.

The 28 Principles of the National Water Policy are grouped in the following broad categories:

- Legal aspects of water
- The water cycle
- Water resources management priorities
- Water resources management approaches
- Water institutions
- Water services

These principles reflect South Africa’s own internalization of globally accepted water management principles to its own context, given its pre-1994 discriminatory history. They call for an appropriate governance framework that would provide an enabling environment for their practical implementation.

Of particular relevance for this project are:

Principle 2: *All water, wherever it occurs in the water cycle, is a resource common to all, the use of which shall be subject to national control. All water shall have a consistent status in law, irrespective of where it occurs.*

Principle 5: *In a relatively arid country such as South Africa, it is necessary to recognise the unity of the water cycle and the interdependence of its elements, where evaporation, clouds and rainfall are linked to groundwater, rivers, lakes, wetlands and the sea, and where the basic hydrological unit is the catchment.*

Principle 18: *Since many land uses have a significant impact upon the water cycle, the regulation of land use shall, where appropriate, be used as an instrument to manage water resources within the broader integrated framework of land use management.*

Principle 22: *The institutional framework for water management shall as far as possible be simple, pragmatic and understandable. It shall be self-driven and minimise the necessity for State intervention. Administrative decisions shall be subject to appeal.*

Principle 23: *Responsibility for the development, apportionment and management of available water resources shall, where possible and appropriate, be delegated to a catchment or regional level in such a manner as to enable interested parties to participate.*

Together these principles imply a water governance system in which local management of water resources through catchment based institutions is directly linked to the management of water in the hydrological cycle, including on land.

4.2.2 National Water Act (NWA)⁴¹

The purpose of the NWA (as specified in Section 2) is to ensure that the nation’s water resources are protected, used, developed, conserved, managed and controlled in ways that

⁴¹ No 36 of 1998

take into account a list of factors. Specifically it is built around the concepts of sustainable development of the resource (linked to resource protection), equitable allocation of water and efficient utilisation for social and economic development. It specifically recognises the need for redress of past discrimination, the importance of stakeholder involvement in decision-making and the establishment of appropriate representative institutions for local management.

The NWA introduces the concept of the National Government, acting through the Minister, as being the “**public trustee**” of the nation’s water resources (section 3). Public Trusteeship implies, and the NWA expressly states, that the guiding principles are equity, sustainability and the public interest. From a governance perspective, the Preamble to the NWA states:

Recognising the need for the integrated management of all aspects of water resources and, where appropriate, the delegation of management functions to a regional or catchment level so as to enable everyone to participate.

4.2.2.1 Strategies

The NWA provides that the overriding mechanism for water resource management will be the National Water Resource Strategy, which in turn will guide catchment management strategies for each of the nineteen water management areas.

The progressive development of the **National Water Resource Strategy** provides an opportunity for “*consultation with society at large*”⁴² in the national level of water resource management. Section 5(5) provides that the Minister must publish and bring the proposed strategy to the attention of interested parties, all for public comment. Before finalising, she must consider all comments received.

Section 7 requires any institution exercising any power conferred by the NWA to give effect to the NWRS. This ensures consistency, accountability and integration that are some of the dimensions of good corporate governance.

Similarly, the NWA requires the preparation of **catchment management strategies** (section 8). This aligns with the principle of IWRM to the effect that water resource management decisions should be devolved to the optimum level. Strategising at catchment level permits a far greater level of participation by stakeholders and consequently their contribution to governance.

Section 56 provides for a Pricing Strategy for any water use.

4.2.2.2 Measures

Chapters 3 to 5 of the NWA include a wide range of measures that must be implemented to achieve the objectives of the NWA:

- Chapter 3 deals with the protection of water resources through a classification system, the setting of water resource quality objectives, and the creation of a Reserve for basic human needs and ecological sustainability and pollution prevention.
- Chapter 4 deals with the use of water and in particular the authorisation and licensing of widely defined “water use”.
- Chapter 5 deals with financial matters, particularly pricing.

⁴² National Water Act. Heading to Part 1 of Chapter 2

For most decisions in these measures, the NWA requires that the responsible authority must provide for an opportunity for public comment or to hear the views of the individual whose entitlements may be impacted on by the administrative action.

The Minister has wide powers to make regulations on water use and other matters in the NWA. One example of the former is the regulations on mine water⁴³.

4.2.2.3 Institutions

The NWA creates a number of institutions that facilitate governance. The NWA requires the establishment of **catchment management agencies** (CMAs) (section 78). (The first CMAs were in the process of formation at the time of writing.) A CMA is a body corporate with all the powers of a natural person except those that by their nature can only attach to a natural person or which are inconsistent with the Act. It is subject to oversight by and directives from the Minister. While the board of governors is not directly democratically elected, the members are appointed by the Minister only after a prescribed, consultative nomination process that is carefully designed to ensure that the full cross-section of catchment interests is represented. Although the initial powers and functions of the CMA are limited, the NWA provides that many of the powers are exercised by a "responsible authority". The Minister may delegate many of the decisive powers, such as water use authorisations, that are currently vested at the national level of DWAF.

Several mechanisms encourage good corporate governance, including the regular preparation of a business plan (Schedule 4, Article 21), annual financial statements (Article 32) and an annual report (Article 33). All these must be submitted to the Minister, in her oversight role, and Parliament, and published for public information. The CMA is moreover tasked in section 80(e) with promoting community participation in water management.

Chapter 8 of the NWA provides for **water user associations**. These are "*cooperative associations of individual users who wish to undertake water-related activities for their mutual benefit*"⁴⁴. A WUA is a body corporate and operates under a Constitution. The members of the management committee are elected. It only has such powers as may be assigned or delegated or which are in its constitution. The Minister approves its creation, has an oversight role and may issue directives (section 95). As with a CMA it is subject to Schedule 5, which imposes the good governance processes of business plans, financial accounts and an annual report.

When functioning correctly, a WUA can fulfil the ideal of IWRM of managing water resources at the individual user level. Most of the WUAs have converted from being irrigation boards under the dispensation of the old Water Act, 1956, while some new multi-sectoral and developmental (emerging farmer) WUAs have been established.

Chapter 9 of the NWA provides for the establishment of **advisory committees** (section 99). While mainly advisory in nature, they may be delegated powers. Advisory committees play an important role in governance as they broaden the base of inputs to decision-making, often at the highest level.

4.2.2.4 Water Tribunal

The Water Tribunal is an innovative administrative appeals process. It provides any person with ready access to an independent body should they be aggrieved by defined decisions

⁴³ *Regulations on use of water for mining and related activities aimed at the protection of water resources*. Notice No. 704. Government Gazette, 4 June 1999 (Vol. 408, No. 20119)

⁴⁴ National Water Act. Header to Chapter 8

taken by functionaries in terms of the NWA, (section 148). The nature of the process is a re-hearing and the Tribunal can thus delve into the underlying facts that lead to the decision. The Tribunal has upheld appeals on the basis of incorrect interpretation of the substantive law, on questions of administrative justice and for other reasons⁴⁵.

The Water Tribunal is a key element in water resource governance as it provides a safeguard that the state's administrative actions are lawful, reasonable and are taken within sound procedures.

4.2.3 Water Services Act (WSA)⁴⁶

The object of the WSA is to legislate for the supply of potable water and sanitation services. In particular, it provides for the Constitutional right to have access to sufficient water and an environment that is not harmful to health and well-being. It extends this right to mean a right of access to a basic supply of water and basic sanitation.

4.2.3.1 Key Governance Measures

The key planning instrument is the **water services plan** (section 13) that is part of the Integrated Development Plan. Every water services authority must prepare and approve such a plan in the prescribed manner. This plan must be prepared having considered the public comments received on a draft plan. The important governance provision is that substantial deviations from the plan are invalid unless a new plan is prepared in accordance with the prescribed procedure.

The Minister is empowered to make **regulations** on a number of matters for the purpose of achieving national consistency. These must be made available for public comment before finalisation and Parliament has an opportunity to reject the regulation. Regulations have been promulgated for standards (section 9)⁴⁷, tariffs (section 10)⁴⁸ and water service contracts (section 19)⁴⁹.

Section 21 requires every water service authority to make **bylaws** with a prescribed content.

Sections 62 and 63 require the Minister and provincial authorities in the case of local government, to **monitor and intervene** if a water service institution fails to fulfil its functions, comply with national regulations, or comply with any development plan, policy statement or business plan adopted in terms of the Act.

4.2.3.2 Institutions

Local government are the water service authorities. The governance structures of local government are defined by:

- The Municipal Structures Act⁵⁰ that provides for the jurisdiction, formation, powers and functions of the of local councils; and
- The Municipal Systems Act⁵¹ that provides, in the context of this report, for the manner in which municipal powers and functions are exercised and performed,

⁴⁵ Transcripts of most decisions can be downloaded from <http://www.dwaf.gov.za>

⁴⁶ No 108 of 1997

⁴⁷ *Regulations relating to compulsory national standards and measures to conserve water.* GN R 509. GG22355. 8 June 2001.

⁴⁸ *Norms and standards in respect of tariffs for water services in terms of section 10 (1) of the Water Services Act (Act no. 108 of 1997)* GN. R. 652. GG22472. 20 July 2001.

⁴⁹ *Water services provider contract regulations.* GNR 980. GG 23636. 19 July 2002

⁵⁰ Act no 117 of 1998, amended in 1999, 2000 and 2002

⁵¹ Act no 32 of 2000, amended in 2003

community participation and an enabling framework for the core processes of planning, performance management, resource mobilisation and organisational change which underpin the notion of developmental local government.

The Act is also the legislation for **water boards** (Chapter VI, section 28 et seq.). Water boards are bodies corporate with all the powers of a natural person except those that by their nature can only attach to a natural person or which are inconsistent with the Act. Their powers, activities and duties are relatively widely defined. The governance structure of water boards are set up in section 35 and Schedule 1. The latter contains detailed prescriptions for the appointment of members of the board. A public notice must be published calling for nominations to the board. A selection panel makes recommendations through the chief executive officer to the Minister who, considering the need for representation from major customers and other interests, appoints the members. The main planning instruments are a policy statement (section 39) that must be accessible to the public and a business plan (section 40) that may exclude sensitive commercial information and for which there is no requirement for public access. Oversight is provided as both these instruments must be submitted to the Minister and she may direct that they be amended. On the other hand there is, unlike the water services plans of water service authorities, no requirement for public consultation. Other governance measures are that the board must report annually on its activities (section 44) and its financial statements must be audited against generally accepted accounting practice (section 43). The Minister may investigate the affairs and financial position of any water board (section 45).

The WSA provides for **water service providers** and **water service intermediaries** (sections 22 and 24). These institutions may be required to register with the water services authority and are subject to monitoring and directives by the water services authority if they fail to perform their functions effectively.

4.2.4 Emerging Governance Issues from Water Policy and Legislation

From the above discussion, it appears that the issues emerging as critical for the effective management of the water resource in order to ensure its protection throughout the water cycle are the following:

- *The establishment of CMAs*

The CMAs are the institutions that are supposed to manage water within the defined hydrological units, the WMAs. Except for atmospheric and groundwater processes whose impacts can span within or outside the boundaries of a WMA, most processes that will impact on the resource are likely to be contained within the WMA. The role of CMAs is therefore critical in that they will regulate all activities that affect the water cycle and must inherently adopt a developmental, integrated, cooperative and participative approach to managing all aspects of the hydrological cycle at a catchment scale.

- *The development of catchment management strategies*

Once established, a priority of the CMAs should be the development of strategies that will assist in protecting the resource through tools, incentives and disincentives, and other provisions. Together with these, a law enforcement capacity supported by policing monitoring needs to be implemented in order to support decision making in this regard.

- *Enforcing the protection of the resource: the authorisation of water use*

Authorisation of water use, especially in the licensing (compulsory or not) process, needs to incorporate measures for the protection of the resource by the user, especially when it is

anticipated that the activities of the user will affect the resource adversely. In this regard, water conservation and water demand management measures should be expected from the user in order to ensure efficiency use of the resource. The capacity to enforce these measures needs to be addressed by appropriate tools.

○ *Pro-poor governance approaches*

There is a need to acknowledge that the majority of South Africans are still poor. All provisions for effective resource protection should therefore be pro-poor by associating poor communities, especially those who depend on the resource, with the decision-making process. Their dependence on the resource (beyond basic human needs but also for the productive use of water) needs to be acknowledged and protected. The Water Policy of the Asian Development Bank provides some pointers in this regard. Failure to adopt pro-poor approaches could jeopardize the sustainability of any water related initiative, as it could be sabotaged by the marginalised sections of society.

○ *Information management*

Information is critical to supporting decision-making in the management of the resource, including its protection. Information collection should take place in a coordinated manner and at all stages of the water cycle so as to support adequately the understanding of the processes affecting the resource through data analysis, modelling, etc. Rainfall, evaporation, land use, runoff and other data should be collected within an acceptable geographical density and at time intervals that are appropriate to support decision-making. This is critical if more and more sophisticated models are to be used by water managers in the discharge of their duties. Good data could enhance predictive capabilities and therefore facilitate early decision-making in a situation of drought or flood. This requires effective and coordinated design and management of monitoring and information systems.

○ *Capacity requirements (human, technical and financial)*

In order to fulfil their water resources management mandate satisfactorily, capacity constraints of DWAF and ultimately CMAs will need to be addressed. These include human capacity in terms of staff with appropriate and relevant skills, technical capacity in terms of proper equipment, and instrumentation to facilitate data collection and processing as well as financial resources to fund all of the activities required for the sustainable management and development of water resources, including their protection.

○ *Strategic considerations*

Given the pressure on water resources, it is essential that a strategic approach is developed to ensure that competing needs are equitably satisfied without compromising its sustainability. This highlights the need to promote unconventional sources of water, including demand-side measures to reconcile demand and supply.

○ *Appropriate research*

It is increasingly necessary to foster appropriate research that addresses the needs of managers, in order to add value to the understanding of current processes with the hope of contributing to an optimal balance between demand and supply. This would include research in all aspects that would contribute to the protection of the resource and requires effective coordination of academic, research and professional expertise through institutions such as the Water Research Commission. Closer ties need to be made between researchers and managers, in order to effectively build relevant knowledge, institutional memory and expertise in those managers tasked with managing the hydrological cycle.

4.3 Environmental Policy and Legislation

4.3.1 Environment Conservation Act (ECA)⁵²

The ECA and NEMA (below) are key pieces of legislation that govern, *inter alia*, how water is governed and hence are part of the legislative water governance framework.

The 1989, the ECA was largely superseded by NEMA, but important sections remain in force. The ECA is of a framework nature, and the Minister is empowered to make regulations pertaining to most aspects of environmental conservation. The administration of the ECA has been largely assigned to provincial governments, as it covers a functional area of concurrent national and provincial legislative competence in terms of Schedule 4 of the Constitution.

Section 20 provides for the licensing of waste disposal sites. It prescribes a role for the Minister of Water Affairs so that protection can be afforded to underground water resources from polluted seepage.

Section 21 provides a prohibition on any identified activities⁵³ that may have a detrimental effect on the environment unless an authorisation has been issued. Furthermore, an authorisation cannot be issued unless reports on the potential impact have been compiled. Conditions may be attached to the authorisation and the authorisation may be withdrawn if there is a failure to comply with such conditions.

Water resources are key targets for protection under the ECA, while water resource developments are one of the identified activities. The interaction between DWAF, with a conservation and development role and mandated to implement the NWA, and DEAT (and provincial governments) with a protection and conservation role and mandated to implement the ECA (and NEMA), is a key element of water governance. It ensures that water resource projects are subject to the scrutiny of separate authorities under different sets of imperatives.

4.3.1.1 EIA regulations

The EIA regulations set out in detail the procedures for environmental assessment and the compilation of EIA reports. Public consultation processes are central to these prescriptions and the project proposer is required to answer the concerns raised by the public thus promoting accountability for the project proposer as well as the authority granting the authorisation. The "record of decision" is a public document thus enhancing transparency, an important element of good governance.

In the water resources sector, there has been criticism of the EIA regulations to the effect that they are narrowly project-focused and thus do not account for cumulative impacts of a number of projects within a basin context. At the time of writing, a draft revision of the regulations was open for public comment and it appears that this concern may be allayed.

4.3.2 National Environmental Management Act (NEMA)⁵⁴

The purpose of NEMA as stated in the header to the Act is to give effect to the Constitutional rights to an environment that is not harmful to health or wellbeing and that is protected. In

⁵² No 73 of 1989

⁵³ Minister of Environmental Affairs and Tourism. *The identification under section 21 of activities which may have a substantial detrimental effect on the environment*. GN. R. 1182, GG18261, 5 September 1997. [Amended by GN R 1355 of 1997-10-17, GN R 448 of 1998-03-27, GN R 670 of 2002-05-10, GN R 782 of 2002-06-07.]

⁵⁴ No 107 of 1998

order to do this it provides, *inter alia*, for cooperative environmental governance by establishing principles, institutions and procedures for coordinating the environmental functions that are exercised by organs of state.

NEMA, also in the context of governance, promotes:

- Certainty with regard to decision-making
- Public participation in environmental governance
- The enforcement of environmental laws by civil society

4.3.2.1 National environmental management principles

NEMA, as did the ECA before it, states in section 2, a considerable number of principles that must serve as a general framework guiding all activities that impact on the environment. A number of these reflect good governance practice, including:

- That a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions
- Environmental justice must be pursued
- Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued
- Decisions must take into account the interests, needs and values of all interested and affected parties
- Decisions must be taken in an open and transparent manner
- The environment is held in public trust for the people
- The beneficial use of environmental resources must serve the public interest
- The environment must be protected as the people's common heritage

In particular, section 2(4)(f) provides the following principle:

The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.

4.3.2.2 Institutions

The **National Environmental Advisory Forum** (section 3) is established to inform the Minister of the views of stakeholders regarding the application of the principles set out in section 2 and on any matter concerning environmental management and governance. The Minister appoints persons who represent stakeholders, and persons who have experience, expertise or skills. The Forum thus provides another platform for stakeholders rather than being reliant on bureaucratic structures.

The **Committee for Environmental Coordination** is established (section 7) as an inter-departmental structure, to promote the integration and coordination of environmental functions by organs of state. Members are mostly the directors-general of relevant departments. No public participation is provided for.

The 2003 amendment of NEMA provides for the appointment of **environmental management inspectors**, who will have wide powers of investigation, issuing of compliance notices and, in some instances, of attachment.

4.3.2.3 Procedures for cooperative governance

Section 11 of NEMA requires national, provincial and local government to prepare **environmental implementation and management plans**. The purpose of these plans is to coordinate and harmonise the environmental policies, plans, programmes and decisions of the various role players.

It is important to note that section 16 requires that every organ of state must exercise every one of its functions that may significantly affect the environment substantially in accordance with the plan.

4.3.2.4 Civil society remedies

An innovation in the NEMA, made possible by the new Constitution, is that sections 32 and 33 allow civil society of any person, acting in their own, or in the public interest, or in the interest of the protection of the environment, to institute and conduct a prosecution in respect of any breach or threatened breach of any duty, other than a public duty resting on an organ of state, that is imposed in any legislation, from national to local by-laws, where that duty is concerned with the protection of the environment and the breach of that duty is an offence.

4.3.3 *National Environmental Management: Biodiversity Act*⁵⁵

This Act operates within the framework provided by NEMA. The Act is important to water governance mainly because Section 52 creates a mechanism for protecting ecosystems that are threatened or in need of protection, and Chapter 5 deals with alien species that would, as the regulations emerge, relate to invasive species that threaten water resources.

4.4 Local Government Legislation

Local government, as water service authorities, plays the major role in the delivery of water services. In addition to the sectoral requirements in the Water Services Act (see above), it is primarily regulated by the suite of legislation administered by the Department of Provincial and Local Government. This means it has a separate and distinct set of rules that provide a substantial contribution to water governance. This review is not intended to be an exhaustive analysis, but rather seeks to highlight the principal contents that provide a contribution to water governance.

4.4.1 *Municipal Structures Act*⁵⁶

The Municipal Structures Act legislates for the structure of local government in the country. Firstly, it defines the three categories, namely metropolitan, district and local types of municipalities, and their creation. Secondly, it regulates the internal structuring and functioning of municipalities; addressing in this regard, for example, the election, composition, membership, operation and dissolution of the council, its committees and ward committees. Thirdly, it sets out the powers and functions of municipalities and the division of these between district and local municipalities. Finally, it deals with some miscellaneous matters such as cross-provincial boundary municipalities and the Minister's power to make regulations.

⁵⁵ Act No 10 of 2004

⁵⁶ Act No 117 of 1998, amended in 1999, 2000 and 2002

4.4.2 *Municipal Systems Act*⁵⁷

The Municipal Systems Act sets out the core principles, mechanisms and processes that give meaning to developmental local government and seeks to empower municipalities to move progressively towards the social and economic upliftment of communities and the provision of basic services. A key feature, from a governance point of view, is the introduction of legislated participation by the communities that the local government serves, particularly in planning, service delivery and performance management.

Chapter 4 deals with community participation. Section 16 obliges a municipality to develop "*a culture of municipal governance that complements formal representative government with a system of participatory governance*". It must create the conditions that allow this and must take a pro-active role in facilitating participation and building capacity in the community. The participation relates to the IDP, performance management, budgeting, strategic decisions and other matters. The chapter goes on to make specific provisions related to communication, notices, etc. These requirements go beyond those in the Water Services Act and would prevail in terms of the sectoral legislation rule. The Minister is empowered to make regulations.

Chapter 5 is central to water services, as it is this chapter that requires the preparation and adoption of integrated development plans (IDPs), of which the water services plans that are required by the Water Services Act (see above) form a part. Sections 23 to 25 set out the general principles of IDPs, namely that they are development-orientated and prepared in the context of cooperative government. Section 26 provides the core components of IDPs while sections 27 to 34 provide the process for planning, drafting, adopting and review of the plans. In particular, section 29(1) provides for the local community to be consulted on its development needs and priorities and to participate in the drafting of the IDP. Organs of state, including traditional authorities and other role players, must be identified and consulted on the drafting of the IDP. Once adopted, the IDP binds the municipality in the exercise of its executive authority (section 35) and it must conduct its affairs in a manner which is consistent with it (section 36).

Chapter 6 requires, in some detail, that the municipality establishes a performance management system that embraces its main functions. The purpose of this system is to ensure that the progress of the municipality is openly, objectively and accurately assessed; such purposes being one of the cornerstones of good governance. An annual report reflecting the performance using indicators against targets, must be prepared and publicised.

Chapter 7 is concerned with the administration of local government. It seeks to establish a culture of service that, *inter alia*, sets as requirements a responsiveness to the needs of the local community, a culture of public service and accountability amongst its staff, performance orientation and focus on the objects of local government, etc. Included as schedule 1 to the Act is a Code of Conduct for councillors and in schedule 2 one for staff. The remainder of the chapter deals with details of administration and human resource management.

Chapter 8 deals with the provision of services. Section 73 requires:

73. (1) A municipality must give effect to the provisions of the Constitution and—

(a) give priority to the basic needs of the local community;

(b) promote the development of the local community; and

(c) ensure that all members of the local community have access to at least the minimum level of basic municipal services.

⁵⁷ Act no 32 of 2000, amended in 2003

The section goes on to list the principles of service delivery as being equitable and accessible; prudent, economic, efficient and effective use of available resources; financially sustainable; and environmentally sustainable.

The chapter also includes detailed requirements on service tariffs, delivery mechanisms, service agreements, competitive bidding and the establishment of internal and multi-jurisdictional municipal service districts.

Chapter 9 regulates credit control and debt collection and chapter 10 gives substance to the provincial and national monitoring and standard setting system. Chapter 11 is on legal issues and chapter 12 on miscellaneous.

4.5 Financial Management Legislation

A brief review of financial management legislation is provided here, because the regulation of the finances of the institutions concerned with water management is an important governance overlay to their core functions.

4.5.1 Public Finance Management Act (PFMA)⁵⁸

The object of the PFMA is to secure transparency, accountability and sound management of the revenue, expenditure, assets and liabilities of the institutions to which it applies (section 2). Parts of the Act are concerned with national departments and the Department of Water Affairs and Forestry is included in that part. An exposition of the requirements placed on the national departments (chapters 3 to 5) is not considered necessary for the purposes of this paper.

The other institutions of importance in the water sector which fall under the ambit of the Act by virtue of their listing are the Trans-Caledon Tunnel Authority (schedule 2 – major public entity) and the Water Research Commission (schedule 3 – national public entity) and the water boards (schedule 3 – national government business enterprises). The Minister of Finance must bring other public entities under the Act (section 47). Once formed, the catchment management agencies will be included under the PFMA. The water user associations, as mainly private institutions, are not included. Water service authorities as local government are regulated by the Municipal Finance Management Act (see below).

Section 49 requires that every public entity has an “accounting authority”. This is usually the board or other controlling body. It places fiduciary duties on the accounting authority and the members of that authority, such as the individual members of the board. These include matters such as not using information acquired for gain, declaring conflicts of interests and the like. The powers and duties may be delegated to an official of the entity.

Section 51 contains a long list of general responsibilities of the accounting authority including, for example, matters related to keeping books of account, risk management, revenue collection, internal audit, protection of assets, discipline for financial management transgressions, etc. The public entity is required to submit to the accounting officer of the department that is responsible for that entity, an annual budget and details of defined major transactions (e.g. acquisition or disposal of shareholdings).

The public entity must prepare annual audited financial statements using generally accepted accounting practice as published by the Accounting Standards Board. It is required to submit

⁵⁸ Act No 1 of 1999, amended in 1999

these and an annual report with prescribed content, to the Treasury, the Auditor-General, and the relevant department, as well as tabling them in Parliament (section 55). The Auditor-General is given powers to investigate or audit any public entity.

Chapter 8 requires all borrowing of entities subject to the Act to be authorised by the Act or other legislation. For the water sector entities mentioned above, the Minister's authority is required for borrowing and other specified commitments.

The provisions of the PFMA are supported by regulations that spell out the requirements in more detail⁵⁹. The Reporting by Public Entities Act⁶⁰ provides for reporting requirements to Parliament.

From a governance perspective, the PFMA ensures that the finances of water entities that fall under the Act are prepared in standard ways and are open and transparent. It places accountability for sound financial management firmly with the controlling structures of the entity.

The National Treasury and the Department of Public Services and Administration are currently reviewing the governance framework for the public sector, and are proposing far-reaching changes that should be promulgated in new legislation during 2006. Specifically, the governance of public entities is being addressed, including the possibility of establishing autonomous government agencies within government departments to fulfil certain types of mandates and functions.

4.5.2 *Municipal Finance Management Act (MFMA)*⁶¹

The MFMA applies to all local government and hence to all water service authorities.

2. The object of this Act is to secure sound and sustainable management of the fiscal and financial affairs of municipalities and municipal entities by establishing norms and standards and other requirements for-

- (a) ensuring transparency, accountability and appropriate lines of responsibility in the fiscal and financial affairs of municipalities and municipal entities;*
- (b) the management of their revenues, expenditures, assets and liabilities and the handling of their financial dealings;*
- (c) budgetary and financial planning processes and the coordination of those processes with the processes of organs of state in other spheres of government;*
- (d) borrowing;*
- (e) the handling of financial problems in municipalities;*
- (f) supply chain management; and*
- (g) other financial matters.*

The MFMA is a comprehensive and detailed setting-out of the financial matters related to and within local government. Key topics include:

- Treasury supervision over local government finance management
- Establishment of a Municipal Financial Recovery Service
- National and provincial interventions
- Dealing with revenue, cash and bank accounts
- Current and capital expenditures
- Prohibition on incurring obligations or risks in foreign currencies
- Asset management
- Public-private partnerships

⁵⁹ Treasury Regulations. Government Notice No R345 of 09 April 2001

⁶⁰ Act No 93 of 1992 amended by Act No 30 of 1997

⁶¹ Act No 56 of 2003

- Municipal budgeting
- Debt and risk management
- Financial recovery plans where necessary
- Responsibilities of mayors, accounting officers and other officials
- Financial reporting and auditing
- Supply chain management for goods and services
- Financial misconduct by officials

Key characteristics and points from a water governance perspective are:

- Close monitoring and intervention powers by National and Provincial Treasuries and the Auditor-General
- Obligation to notify any occurrence of financial problems
- Structured budgeting and limited scope for deviating from approved budgets
- Strong linkages with the Municipal Systems Act (see above)
- Disclosure requirements for intergovernmental and other allocations
- The meetings of a municipal council at which an annual report is to be discussed or at which decisions concerning an annual report are to be taken, must be open to the public
- Transparent financial reporting requirements according to **generally recognised accounting practice** prescribed in terms of section 91(1)(b) of the PFMA (see above)
- Clear assignment of responsibility and accountability

4.5.3 *Division of Revenue Act*⁶²

The principal object of this Act, a version of which is promulgated every year, is to provide for the equitable division of revenue anticipated to be raised nationally among the three spheres of government. It further seeks, in the area of financial management, to promote cooperative governance, better coordination, predictability, transparency, equity and accountability.

4.6 Administrative Legislation

4.6.1 *Promotion of Administrative Justice Act (PAJA)*⁶³

PAJA and the Promotion of Access to Information Act (see below) are the main two safeguard measures that enable the individual and groups to exercise their Constitutional rights. Moreover, they promote transparency, accountability, responsiveness and equity which are important indicators of good governance.

4.6.1.1 Principles

The adoption of PAJA is required by the Constitution in order to give effect to the rights conferred by the Constitution. The Act is, to a large extent, a statement of the administrative common law. Three core requirements contribute to good governance by preventing arbitrary decision-making. These are:

- “Lawful”, means that decisions must comply with the requirements of all the sources of law on the topic (Constitution, legislation, regulations, common law, case precedent)
- “Reasonable” means that decisions it must exhibit a proportionality between the objective facts and circumstances and the consequences, effect or result of the decision

⁶² Act No 5 of 2004

⁶³ No 3 of 2000

- “Procedurally fair” means that regular procedure should be followed and specifically the affected party must be given an opportunity to present an informed position, but it also depends on the circumstances (section 3(2)(a)).

Scope of administrative action

“Administrative action” is widely defined and means any decision taken, or any failure to take a decision, by an organ of state, when exercising any of its powers. The limited exclusions relate mostly to legislative and judicial functions but do not impact on the question of governance.

Overview

The core of the Act:

- Sets minimum requirements for procedure when a decision is to be made that affects:
 - An individual; including matters such as notice, appearance, etc.
 - The public; including public meetings, public inquiries, etc.
- Sets how reasons for decisions are to be communicated
- Reinforces the courts’ role in controlling administrative action

Although both the NWA and WSA set out requirements related to administrative justice, e.g. section 35 of the NWA (verification of existing lawful use), administrative action taken in terms of the acts will also have to comply with PAJA and PAIA.

Courts’ right of review

The important governance issue is that section 6(1) provides:

Any person may institute proceedings in a court or a tribunal for the judicial review of an administrative action.

This legislative provision reinforces the inherent common law right of the courts to review administrative action. It is qualified to the extent that all other remedies available in law must be exhausted before the court can take the matter under review. It goes beyond the common law position by removing any need for the party to establish *locus standi* in the court. It is also noteworthy that a failure to make a decision is also reviewable. The section also legislates many of the common law rights of the courts.

The Water Tribunal, mandated by the NWA, is an administrative appeals body that is not part of the judiciary. It could fall within the ambit of this provision but in a sense goes beyond it. The NWA allows an **appeal** to the Water Tribunal against a list of administrative actions taken in terms of the NWA. It defines the process as a “re-hearing”, i.e. the Water Tribunal considers the merits of the case but inevitably draws on the manner in which the administrative action was performed. A **review** per section 6(1) is concerned with process.

4.6.2 Promotion of Access to Information act (PAIA)⁶⁴

PAIA and PAJA (see above) are the two main legislated safeguard measures that enable individuals to exercise their Constitutional rights. Moreover, they promote transparency, accountability, responsiveness and equity, which are important indicators of good governance.

The purpose of PAIA is to give substance to the Constitutional right of access to information contained in section 32. In the general sense, it seeks to:

⁶⁴ Act No 2 of 2000

- Promote transparency, accountability and effective governance of all public and private bodies
- Limit any burden on the information providers that may have been imposed by manifestly frivolous or vexatious requests, or substantial and unreasonable diversions of resources

It addresses five main elements, namely:

- The right of access to any information held by the state
- The right of access to information held by another person to everyone when that information is required for the exercise or protection of any rights
- That the right of access to any information held by a public or private body may be limited to the extent that the limitations are reasonable and justifiable in an open and democratic society based on human dignity, equality and freedom. These include the reasonable protection of privacy, commercial confidentiality, and effective, efficient and good governance
- The establishment of voluntary and mandatory mechanisms or procedures to give effect to the right in a manner which enables persons to obtain access to records of public and private bodies as swiftly, inexpensively and effortlessly as reasonably possible
- Assigns a facilitator and monitoring role to the Human Rights Commission

Meaning of "record"

PAIA introduces the concept of a "record". This is widely defined as any recorded information, regardless of the form or medium, that is in the possession or under the control of that body and irrespective of whether that body created the record. It is made an offence to dispose of or to destroy any record to avoid providing access.

Right of access to public records

The Act works on the basis that there is access to all records irrespective of the requester's reasons for wanting the information (section 11). In succeeding sections the extent of limitations are spelt out in detail. Examples from the range of limitations are cabinet papers, matters of defence, security and international relations, third party privacy, criminal prosecution, commercial confidentiality, South African Revenue Service records, individual health records and more. Some exclusions are mandatory, some discretionary, while others have conditions attached.

Every public body must appoint an information officer to whom the Act assigns functions (some of a discretionary nature) and responsibilities. Every public body must publish a "manual" (section 14) in the prescribed form that sets out how information can be administratively accessed from that public body. Every public body must report annually to the Human Rights Commission (section 32).

Right of access to private records

The right of access to records held by a private body differs from that to a public body in that access is only granted for the purpose of the exercise or protection of a right. In other respects, the provisions of the Act are much the same as for public bodies

Appeals

In respect of decisions taken by public bodies to refuse an application for access to records, the requester has a right of internal appeal to the public body and must exhaust this avenue before appealing to the courts. The court is given unfettered access to examine any record

held by any public or private body that relates to an appeal before it (section 80). It may, however, only disclose the record in certain circumstances.

Regulations

Regulation R197 of 15 February 2002 provides administrative procedures whereby qualifying persons may gain access to the information manual required in terms of section 10 of PAIA and to the records of public and private bodies needed for the protection of rights.

4.6.3 Intergovernmental Relations Framework Bill⁶⁵

The purpose of this Act will be the implementation and promotion of the concept of cooperative government as set out in chapter 3 of the Constitution. It provides a framework for the national government, provincial governments and local governments, and all organs of state within those governments, to facilitate coordination in the implementation of policy and legislation, to contribute towards:

- (a) Coherent government
- (b) Effective provision of services
- (c) Monitoring implementation of policy and legislation
- (d) Realisation of national priorities

It would require government and organs of state to seek to achieve the above objectives by:

- (a) *taking into account the circumstances, material interests and budgets of other governments and organs of state in other governments, when exercising their statutory powers or performing their statutory functions;*
- (b) *consulting other affected organs of state in accordance with formal procedures, as determined by any applicable legislation, or accepted convention or as agreed with them or, in the absence of formal procedures, consulting them in a manner best suited to the circumstances, including by way of—*
 - (i) *direct contact; or*
 - (ii) *any relevant intergovernmental structures;*
- (c) *co-ordinating their actions when implementing policy or legislation affecting the material interests of other governments;*
- (d) *avoiding unnecessary and wasteful duplication or jurisdictional contests;*
- (e) *taking all reasonable steps to ensure that they have sufficient institutional capacity and effective procedures—*
 - (i) *to consult, to co-operate and to share information with other organs of state; and*
 - (ii) *to respond promptly to requests by other organs of state for consultation, co-operation and information sharing; and*
- (f) *participating—*
 - (i) *in intergovernmental structures of which they are members; and*
 - (ii) *in efforts to settle intergovernmental disputes.*

It also establishes intergovernmental structures at national, provincial and local level to promote cooperation and coordination between spheres of government, government departments and organs of state. As such, it should fundamentally change governance in South Africa, although there are questions around the institutional capacity of government to effectively implement these requirements.

4.6.4 Transformation of the Public Service

Transformation in the public sector is largely driven by policy and legislation including:

- White Paper on Transformation of the Public Service

⁶⁵ This is currently a Bill before parliament.

- White Paper on Transforming Public Service Delivery
- Employment Equity Act
- Codes of Good Practice for Broad-based Black Economic Empowerment
- Broad-based Black Economic Empowerment Act⁶⁶

These policies and Acts provide a robust framework within which all government departments align themselves. Consequently, it is required that components within government and external agencies comply with the legislation and policy guidelines.

The principal aim of the White Paper on Transformation of the Public Service is to establish a policy framework to guide the introduction and implementation of new policies and legislation aimed at transforming the South African public service. However, in recognition of the diversity of the public service, the White Paper does not attempt to elaborate detailed strategies for the implementation of the policies outlined. As with all policy documents of this kind, it is a statement of intent. The development of specific implementation strategies is the responsibility of individual departments and provincial governments. These strategies should be located within the policy framework and legislation.

The White Paper outlines a strategic framework for change, by specifying policy objectives, guidelines and instruments to carry the transformation process forward in the following priority areas:

- Rationalising and restructuring the public service
- Institution building and management
- Representativeness and affirmative action
- Transforming service delivery
- Democratising the state
- Human resource development and training
- Employment conditions and labour relations
- The promotion of a professional service ethos

More specifically, the White Paper acknowledges the need:

- *to create a genuinely representative public service which reflects the major characteristics of South African demography, without eroding efficiency and competence*
- *to facilitate the transformation of the attitudes and behaviour of public servants towards a democratic ethos underlined by the overriding importance of human rights*
- *to promote the commitment of public servants to the Constitution and national interest rather than to partisan allegiance and factional interests*
- *to assist in creating an integrated yet adequately decentralised public service capable of undertaking both the conventional and developmental tasks of government, as well as responding flexibly, creatively and responsively to the challenges of the change process*
- *to promote human resource development and capacity building as a necessary precondition for effective change and institution building*
- *to encourage the evolution of effective accountability and transparency in public management processes*
- *to upgrade the standards of efficiency and effectiveness and improve the quality of service delivery*
- *to create an enabling environment within the public service, in terms of efficiency and stability, to facilitate economic growth within the country.*

⁶⁶ Act 53 of 2003

The core of public service transformation is therefore to address the challenges of representivity (employment equity) and responsiveness (service delivery), together with broad-based black economic empowerment (BBBEE).

The White Paper on Public Service Delivery is primarily about how public services are provided, and specifically about improving the efficiency and effectiveness of the way in which services are delivered. It is not about what services are to be provided – their volume, level and quality. The delivery imperatives are driven by Batho Pele principles which intend to ensure that high standards of service are being met in practice. The White Paper is a framework which frees up the energy and commitment of public servants to introduce more customer-focused ways of working. The approach is encapsulated in the name which has been adopted by this initiative – *Batho Pele* (a Sesotho adage meaning 'People First').

The White Paper provides guidelines to ensure that service levels are appropriate. These guidelines include:

- *a mission statement for service delivery, together with service guarantees;*
- *the services to be provided, to which groups, and at which service charges;*
- *the principle of affordability, and the principle of redirecting resources to areas and groups previously under-resourced;*
- *service standards, defined outputs and targets, and performance indicators, benchmarked against comparable international standards;*
- *monitoring and evaluation mechanisms and structures, designed to measure progress and introduce corrective action, where appropriate;*
- *plans for staffing, human resource development and organisational capacity building, tailored to service delivery needs;*
- *the redirection of human and other resources from administrative tasks to service provision, particularly for disadvantaged groups and areas (including financial plans that link budgets directly to service needs and personnel plans);*
- *the development, particularly through training, of a culture of customer care and of approaches to service delivery that are sensitive to issues of race, gender and disability.*

4.7 Customary Law

South Africa has legal pluralism in the common law and customary law systems. The Constitution provides for the recognition of the institution, status and role of traditional leadership and for their observation of a system of customary law. The courts must apply customary law where applicable (based on conflict of laws rules) but subject to the Constitution and any legislation dealing specifically with customary law⁶⁷. "Indigenous law and customary law" is a functional area of concurrent national and provincial competence⁶⁸.

The general spatial structure of customary societies consisted of areas of exclusive individual use for homesteads and horticulture and communal areas for anyone's use including the grazing of cattle and the taking of other resources such as firewood and water. The law was that natural resources in the common area, including water, were available to all. The chief or headman, in consultation with his councils and acting in the broader community interest, determined any local rules that might be applicable to any activity on communal areas and administered compliance. Limiting use in times of scarcity and the prevention of cattle from polluting springs are examples of such rules. Where an individual obtained the chief or

⁶⁷ Constitution of South Africa. Section 211. See also *Thibela v Minister van Wet en Order en Andere* 1995(3)SA 147, where the court held it had a duty to apply "indigenous law", provided it was not opposed to the principles of natural justice and public policy.

⁶⁸ Constitution of South Africa. Section 44 read with Schedule 4.

headman's permission and invested money or labour in tapping a supply, such as digging a well, they could gain exclusive rights to what was previously deemed a common resource⁶⁹.

The influences of monetary and trade policy, markets and development strategies

Various linkages, both direct and remote, exist between the governance and management of water resources, and trade and monetary policy at an international and a national level, movements in the markets, and national and international development strategies and investment initiatives. This section seeks to highlight some of these linkages using specific examples and, although vastly simplified, we aim to demonstrate the extent of the linkages and the need for targeted research to further elucidate these linkages and their implication.

Changes in international trade policy and the conditionality associated with trade agreements can have a significant influence on water governance at a local, national and even international level. For example, there is strong pressure arising from bilateral trade negotiations for South Africa (and other developing countries) to provide greater access to her services markets. The World Trade Organisation (WTO) negotiations on the liberalisation of agricultural markets in the developed world is mirrored by provisions under the General Agreement on Trade in Services (GATS)⁷⁰ for increased access to the services markets in the developing world. When extended to water services, this implies greater privatisation of supply and sanitation, and an opportunity for international water companies to compete for service provision tenders that may, previously, have been protected by state regulated barriers (legal instruments, subsidies and tax differentiation).

Reform of national and international markets may, equally, influence the governance of water in a variety of ways. Reforms in the European Common Agricultural Policy (CAP), for example, will significantly affect the global market, and global trade, in agricultural produce. On 22 June 2005, the European Commission proposed far-reaching reforms to the Common Market Organisation for sugar. These reforms, which include an aggregate 39% cut in producer support for European Union farmers, are expected to create opportunities for South African sugar producers. However, it is not clear that the water resources exist in the country's sugar producing areas to facilitate the anticipated expansion. Moreover, sugar is considered by some as an important crop to achieve poverty alleviation and equity in the agricultural sector: increased international market opportunities and a higher world market price for sugar may drive water reallocation and redress agendas.

Shifting global reserves (and prices) of raw materials may drive dramatic changes in water governance at a local and national level. The energy sector is a pertinent example, with the high current price of Brent Crude oil and the present geopolitical climate resulting in a shift in production focus to biofuels⁷¹, natural gas, coal-to-fuel technology⁷², hydropower and other alternatives⁷³. Owing to the highly strategic nature of energy and its importance in the national and international economy, shifting energy supply and demand, and the associated land- and water-use adaptations to accommodate changes in the energy market, have significant governance implications for water resources, both quantitatively and qualitatively.

⁶⁹ Bennett TW. 2004. *Customary Law in South Africa*. Juta. p398.

⁷⁰ GATS may cover, *inter alia*, areas such as pollution control, qualification requirements for service providers, water licenses and other quantitative caps, the ownership of water and water rights, and water pricing.

⁷¹ Brazil, for example, has long been converting sugar into methanol – for use as fuel – when the price of Brent Crude rises above a certain threshold value.

⁷² Through, *inter alia*, the Sasol Process.

⁷³ The global leader in petroleum production and supply, British Petroleum (BP), have recently launched an extensive multimedia campaign to have their brand associated with the phrase "Beyond Petroleum".

Changes in local development policy and initiatives, within a climate of poverty alleviation and redress, can have important implications for the governance and management of water resources. For example, Spatial Development Initiatives (SDIs) promoted by the Department of Trade and Industry (DTI) to encourage industrial and economic growth⁷⁴ or a regional focus on small-scale irrigation agriculture, can result in a significant shift in water governance structures within a local area, and can result in numerous changes in the demographic and geographic characteristics of access to, and control of, the resource.

International development policy, and the conditionality associated with international donor funding, has resulted in extensive changes in the governance of water, particularly in the water services. Structural adjustment, a requirement of International Monetary Fund (IMF) and World Bank lending during the late eighties and nineties, required liberalisation of water services with marked shifts in the governance of water services and, in many cases, serious consequences for delivery of water supply and sanitation.

The various linkages outlined above, although weak at first glance, prove to be profound under detailed scrutiny. National and international trade and investment decisions clearly affect the governance of water resources in a multiplicity of ways and, in return, the availability and quality of the resource is often a key constraining (controlling) factor in the outcomes of such policies, initiatives and commitments. There is a need to further explicate these issues and to explore the implications of international and national trade, markets and monetary policy on the governance and management of water resources in South Africa. One such issue receiving some attention is the concept of trade in water, through the trade in water-intensive goods between resource rich and resource poor countries, and the resultant optimisation of water resource utilisation following comparative advantage⁷⁵. However, such trade engenders a degree of (inter)dependence and economic integration that raises concerns of sovereignty, security and self-sufficiency, and is, therefore, not yet widely accepted within the sanctioned political discourse. Further research in this and related fields will begin to elucidate the complex linkages between international trade and investment, and the access to, and control of, local (and national) water resources.

4.8 Preliminary Conclusions

The following conclusions about the broad policy and legislative environment are relevant for water governance in South Africa:

- The Constitution sets the parameters for good water governance as it creates an open and democratic society based on democratic values and social justice with individual rights to sufficient water and a healthy environment entrenched in the Bill of Rights, along with safeguard provisions of access to information and administrative justice.
- The legislated part of the governance system for water has several elements. At the core of these are the Acts administered by the Department of Water Affairs and Forestry.
- A direct safeguard mechanism is the environmental legislation administered with a different mandate by the Department of Environment Affairs and Tourism.

⁷⁴ e.g. the Coega development in the Eastern Cape (RSA).

⁷⁵ The concept of "virtual water" is built on this principle: "virtual water" represents the water "embedded" within a commercial good and is that water that was consumed in the production, transport and trade of the good.

- Local government has the Constitutional mandate to deliver water services and is supported, regulated, monitored and subject to intervention by provincial and national government. Each of these provides governance overlays.
- The financial management system provides a further dimension by requiring effective budgeting and sound financial management, thus creating certainty and a further safeguard against arbitrary decision-making, while the administrative system requires cooperative, accountable and transparent governance.
- In the water resources sector, the system of national and catchment management strategies is at the core of the planning process. The measures of resource classification, resource quality objectives and others promote an environment that is characterised by rationality and certainty when decisions that impact on individuals concerning matters such as issuing of licences are made.
- Aligned with the Constitutional principles, all of the legislation provides for participation by stakeholders.
- The accounting, auditing and reporting systems required are all aligned to openness and the scrutiny of other state organs and stakeholders.

While the broad principles, policies and legislation related to water and environmental governance are coherent, the regulation, institutional arrangements and implementation of these has not always been even, effective and coherent. Furthermore, the policy and legislative environment for other sectors with an impact on the hydrological cycle is not always aligned with this water governance system, as outlined in the Appendices of this report.

5. GOVERNANCE FRAMEWORK FOR THE HYDROLOGICAL CYCLE

5.1 Introduction

The international and national policy and legal context of water governance in South Africa has been thoroughly described in the previous two chapters. This chapter focuses on the different parts of the hydrological cycle and explores the associated governance issues and interconnections. In so doing, a governance framework is presented highlighting the important synergies and critical gaps for governance related to all parts of the hydrological cycle. This framework represents a synthesis of the detailed works presented in the Appendices.

5.2 The Hydrological Cycle

5.2.1 Elements of the Hydrological Cycle

It is recognised that understanding and unpacking governance around the hydrological cycle is an inherently overwhelming task, given the complex interactions and systems that apply to different parts of the cycle indicated in Figure 4. Therefore, in order to systematically address the challenge, the hydrological cycle was subdivided into distinct elements associated with the atmospheric, terrestrial, subterranean, aquatic and coastal marine environments, each of which has its own governance system and arrangements.

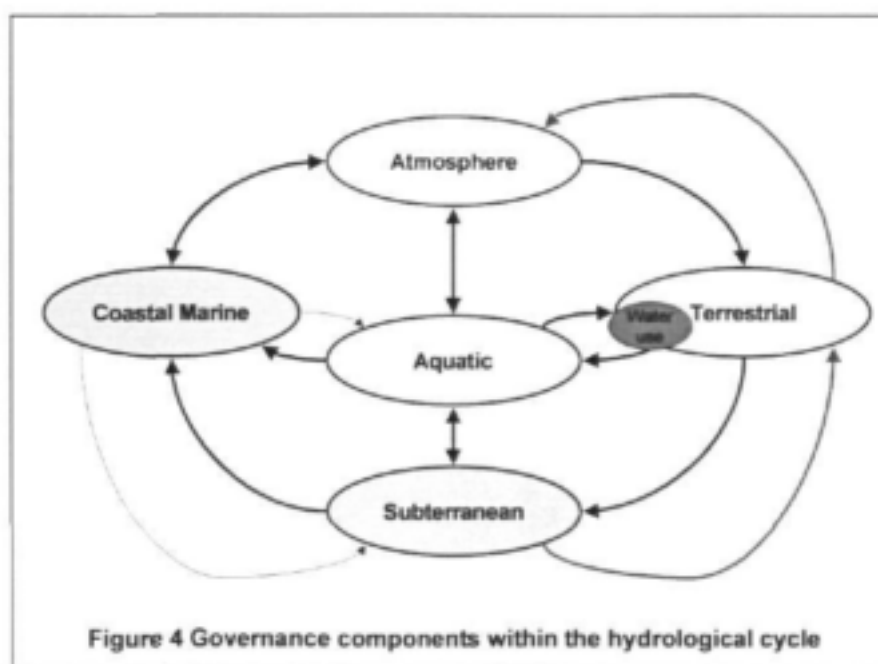


Figure 4 Governance components within the hydrological cycle

In focusing on the hydrological cycle, it is important to recognise that the processes of water abstraction, use and discharge are inherently part of the cycle. However, rather than nesting another cycle within the “natural” flow cycle, water use is addressed as a part of the terrestrial (land) component, as well as the aquatic component (for recreational and instream use).

➤ Atmospheric

The atmosphere is a critical element of the hydrological cycle and has key linkages to global processes, as well as the terrestrial, surface and marine environments, with air emissions and weather modification being the key governance focus.

➤ *Terrestrial*

Land is where most of the human impacts on the hydrological cycle take place (including atmospheric, deposition and washout) and where abstracted water is generally used and discharged from, which from a governance perspective is further subdivided into:

- Urban/municipal areas and the main concentration of human settlement and activity under the jurisdiction of local government
- Communal lands (in the former homelands) with shared governance responsibility by local government and traditional authorities
- Agricultural lands
- Forest lands
- Mining and industrial areas
- Protected areas

➤ *Subterranean*

The subterranean environment within the hydrological cycle includes shallow and deep groundwater with interaction with the surface and marine environments, as well as an interface with the terrestrial component through the sub-surface unsaturated zone.

➤ *Aquatic (surface water resources)*

Surface water resources are the most visible part of the hydrological cycle with impacts on all other components, which for governance purposes has been separated into:

- Wetlands, representing an interface with the terrestrial environment
- Surface water, including rivers, lakes and dams
- Estuaries, representing the interface with the coastal marine environment

➤ *Coastal marine*

While the sea is fundamental to the hydrological cycle and also has global linkages, the focus is taken to be the coastal portion and its interface with estuaries, coastal land and coastal groundwater.

There are complex interactions in the physical processes between these elements. This complexity is matched by the fragmented mandates and distinct governance systems that apply to each of these elements. Detailed evaluations of governance within these key components are presented in Appendices A through K, focusing on the implications of the relevant policy and legislative environment on regulation and practice.

5.2.2 *Cycles and Issues of Concern*

At a global scale, climate change, together with the nitrogen and the carbon cycles, are of great importance. However, for the purposes of this study, the governance arrangements for these processes are interpreted as the context within national governance occurs, although national governance arrangements and systems must comply with global requirements to which South Africa is a signatory.

At a national level, the critical human induced hydrological issues of concern (as distinct from natural background conditions) related to the water environment are:

- *Water flow pattern* changes (including flooding) that occur through water resources infrastructure control (dams and transfers), water abstraction, changing land use (such as forestry and urbanisation) and effluent discharge.

- *Salinisation* of surface water through mining, industrial, power generation and municipal effluent discharge, together with concentration of salt loads associated with irrigation return flow.
- *Acidification* of surface water primarily associated with mine drainage.
- *Eutrophication* of nutrient enriched impoundments primarily from municipal waste water, certain industrial effluents, diffuse runoff from urban, peri-urban and rural settlements and agricultural washoff of applied fertilizers.
- *Microbiological contamination* of surface water, the coastal zone and groundwater largely associated with poorly maintained sanitation systems and livestock management areas (confined facilities and rangeland).
- *Sedimentation* of impoundments and surface water resources associated with poorly managed agricultural and forestry areas, rural settlements and urban developments.
- *Toxic contamination* of surface and ground water by heavy metals and hydrocarbons from municipal and industrial effluent, as well as washoff and infiltration from urban, industrial and mining areas.
- *Temperature pattern* changes in surface water associated with industrial and power generation (cooling) effluent and releases from impoundments.

All of these issues have an impact on the health of aquatic ecosystems, the direct use of the associated ecosystem resources by people, and the utilisation of the water resources for consumptive and waste discharge purposes.

5.3 Priority Issues for Evaluating Water-related Governance Systems

5.3.1 Government Strategic Objectives

It is relevant to highlight government's six Medium Term Strategic Objectives (MTSOs) and their relevance for water sector related governance. Each of these should be promoted through the implementation of the governance system in the relevant sector.

- * *Speeding up delivery of basic human needs*
Water is fundamental to basic human needs and service delivery, in terms of access to domestic water services, water in the resource and the goods and services that water resources provide for household livelihoods. The requirement for a healthy and sustainable environment is fundamental to basic needs.
- * *Human resource development*
The critical technical and managerial skills shortage in the South African water sector (specifically historically disadvantaged individuals) needs to be addressed through capacity building within institutions, empowerment of stakeholders and effective partnership with academic and research institutions. The linkages with and requirements of other sectors related to the hydrological cycle need to be understood.
- * *Building the economy and creating jobs*
Water is both an economic and social good, serving "economic" users, "social" users and environmental requirements. Opportunities for economic development in the formal economy must be considered in the development and utilisation of water resources, while

specifically engaging the needs of poor and marginalised communities in subsistence and informal economies.

★ *Transforming the state*

Service delivery, employment equity and black economic empowerment are at the heart of government's transformation agenda, each of which must be promoted through the institutional change in the water sector. At the same time, government has recognised the need to restructure and decentralise to become more effective and efficient.

★ *Fighting crime and corruption*

The governance arrangements for the water sector need to minimise the possibilities of corruption through effective corporate governance, particularly with the decentralisation of functions to other institutions.

★ *Building a better Africa and world*

Governance of the hydrological cycle in South Africa should align to SADC, continental and global initiatives.

Together, these objectives bring together the different strands of the broad governance context in South Africa. It is worth noting that the President prioritised the following issues in his 2005 State of the Nation Address:

- ↳ *Increase investment in the economy*
- ↳ *Improve economic inclusion*
- ↳ *Improve service delivery*
- ↳ *Provide skills required by the economy*
- ↳ *Infrastructure investment for growth*
- ↳ *Lower the cost of doing business in South Africa*
- ↳ *Government business enterprises being drivers of growth and development*

These are consistent with the MTSOs, but place a greater emphasis on service delivery, social development and economic growth as the immediate priorities in South Africa.

5.3.2 *Approach to the Governance Evaluation*

While the policy and legal environment has been generally well developed in South Africa in accordance with government policy since 1994, the implementation of this policy and legislation has been generally uneven, inconsistent and often inadequate to meet the challenges facing the country. Therefore the key focus of the evaluation needs to be on the regulatory environment and practice.

The difficulty of doing such an evaluation across sectors that have significant differences between provincial and local government jurisdictions required that an anecdotal and illustrative approach be adopted, rather than a rigorous scientific survey of governance practice. Furthermore, the differences in the development and implementation of policies between elements of the hydrological cycle ("sectors") have resulted in significant differences in the level of detail and analysis presented in the individual appendices.

The remainder of this chapter attempts to synthesise and draw out the key governance issues and lessons from this diverse and complex environment. The evaluation addresses four broad areas (related to the elements of the governance system referred to in chapter 2):

- *Mandate* for governance provided by the Constitution and overarching principles, specifically distinguishing between spheres of government and government departments, as well as the potential roles of the private sector, non-governmental sector and labour
- *Policy and legislation* (including regulatory requirements) established to fulfil the mandate and specifically addressing the degree of integration, alignment and/or cooperation required with other elements of the hydrological cycle
- *Institutional capacity* required and broadly available to implement the required policy and legislation, including the necessary resources and systems in the relevant regulators and implementors
- *Practical experience* in implementing the governance system as envisaged in policy and legislation, including the understanding and acceptance of new paradigms by responsible personnel within the relevant institutions

This synthesis highlights the overlaps, conflicts, limitations, gaps and inconsistencies to indicate priority areas for the governance research strategy in the final chapter of the report. It does this specifically from the perspective of water governance, and prioritisation is primarily based on the associated impact on the water environment. It is intended to engage:

- The effectiveness of environmental governance systems to address IWRM
- Alignment with national priorities (such as poverty reduction, economic growth and equity) and with regional SADC and global priorities
- Factors that promote alignment or complementarity between governance elements in different sectors
- Key strategic and implementation challenges to ensuring good governance for sustainable management of water resources in South Africa

For practical reasons, the synthesis takes a physical media approach, focusing on the governance of air, land and water.

5.4 Evaluation of Governance Related to the Atmosphere

Air-related governance has two elements, namely air emissions and weather modification. While their global connections to climate change initiatives are self-evident, national governance is less aligned. Air emissions are governed by the recently promulgated Air Quality Act (Act 39 of 2005), while weather modification (rainfall augmentation) is governed as a controlled activity under the NWA. Appendix A provides a background evaluation of atmospheric governance.

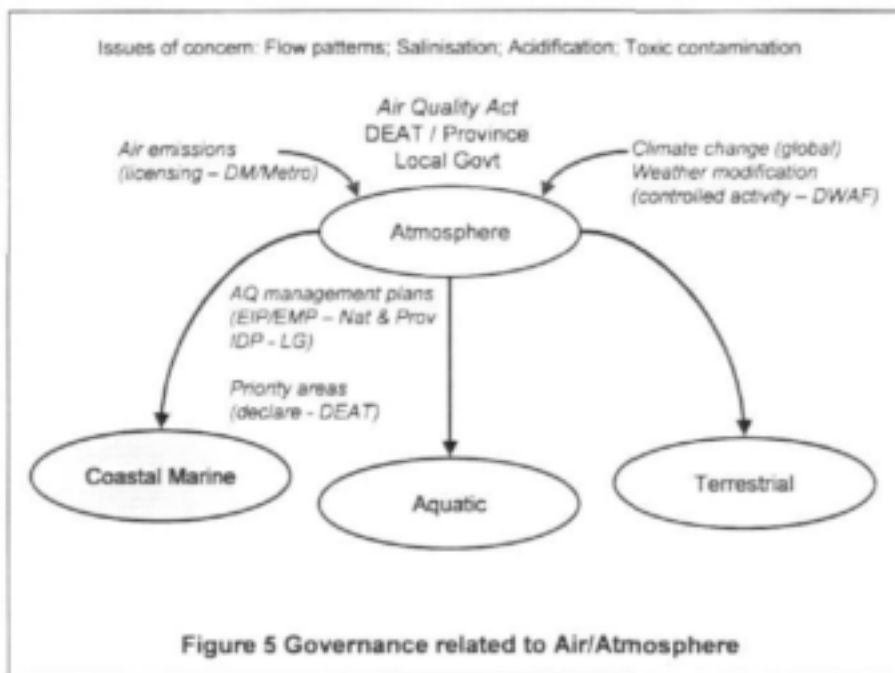
At a principle level, the policy and legislation is sound and reflects Constitutional and NEMA principles. However, the air quality legislation does not explicitly recognise the linkage with water resource management in terms of salinisation, acidification or toxic contamination of water and even the impact on land is not strongly formalised.

Being relatively new legislation, the regulatory framework is still being established and listing of emissions still needs to take place. Implementation responsibility is primarily placed with local government, following the Constitutional mandate, but there is a significant concern about the institutional capacity and priority that local government has for air quality. While point emissions are addressed, it is not clear how diffuse air emissions could or should be addressed within a regulatory framework.

Experience under the previous legislation is that air quality is not well resourced or managed at a local or provincial level, and that intervention only follows local community mobilisation once ambient air quality deteriorates to create obvious and localised respiratory health problems. Apart from some general studies on the Highveld, the economic and environmental linkage between air quality, land quality and water resource quality has not been addressed at a management level. As such, there is very little good practice in terms of cooperation around the atmosphere as part of the hydrological cycle, either between government departments or between spheres of government, despite the severe social and economic impact air quality deterioration has in parts of the country.

Specific issues that may benefit from further investigation include:

- Opportunities and institutional arrangements for joint planning, management and regulation of air and water quality (linked to land quality) at a catchment basin scale, through the catchment management strategy process
- The technical, procedural and institutional considerations for addressing water resource impacts as part of the air emissions licensing process



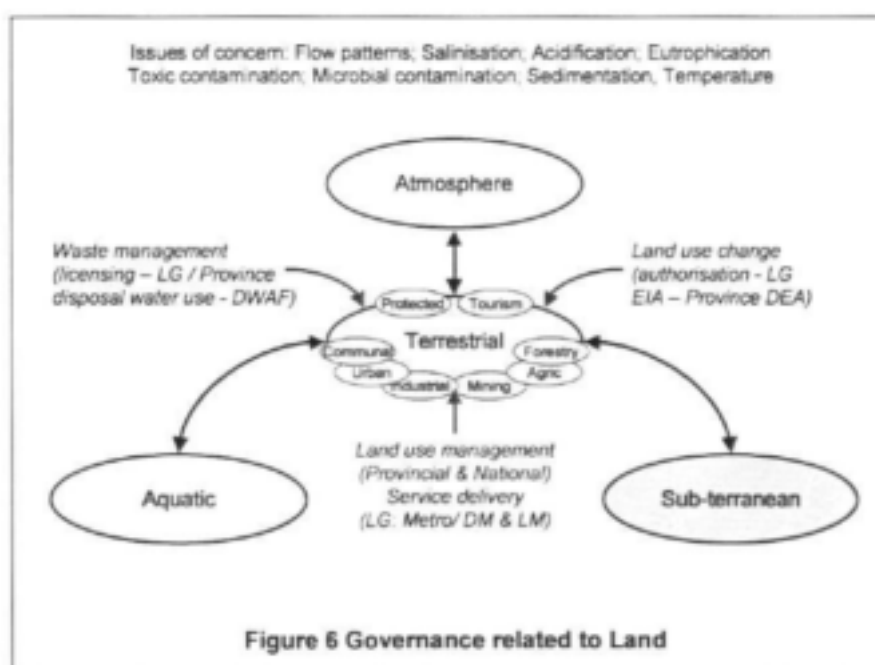
On the other hand, the regulation of rainfall augmentation should explicitly address the impact on the hydrological cycle, being part of the policy and legislative responsibility of DWAF (or a CMA). Cloud seeding is still in its infancy with some testing over the past couple of decades, and there is as yet no clear regulatory or planning framework to integrate this into water resources management. This may become important if and when weather modification is shown to have a significant and reliable impact on water resources (as a realistic water resource reconciliation/augmentation option). Until this time, the governance issues do not really require particular attention.

Finally, the issue of whether certain land use has an impact on localised micro-climates, and therefore rainfall, may become relevant if and when mega-cities develop in South Africa and to some degree forestry. These may have an impact, and then the governance issues around this may need to be unpacked, but the science related to the hydrological cycle needs to provide guidance about the importance of this issue.

5.5 Evaluation of Governance Related to Land

For the purposes of this report, land is taken to include the terrestrial and subterranean environment (although groundwater is included as part of the water environment). Land use is the primary determinant of the impact that the terrestrial and subterranean environment has on the hydrological cycle, because the associated activities influence runoff, infiltration and evapotranspiration. Similarly, land use determines the type and extent of water use (abstraction and discharge) associated with surface or ground water resources. On the atmospheric side, land receives most of the atmospheric deposition from air emissions, while land use determines the point and diffuse air emissions and evapotranspiration of water back into the atmosphere. These interactions are the reason that catchment management focuses on land use issues as the means of managing water resources.

The nature and impacts on water and governance of land use activities are extremely diverse and catchments are made up of a "tapestry" of different activities, responsibilities and associated mandates. To engage this complexity, it is firstly important to engage each "land use sector" separately, as has been done in Appendices B to G for urban/municipal areas, communal land, agriculture, forestry, mining and industry, and protected areas. Secondly, it is also useful to acknowledge that associated with each land use, the issues of *land use change*, *waste management* and *land management* are particularly relevant to the hydrological cycle. This summary does not focus on the sectors separately, but rather highlights key issues for consideration within and between the sectors, noting their impact on the hydrological cycle.



5.5.1 Governance of National and Provincial Mandates

Firstly, it is important to note that the policy and legal environment for land has been fundamentally changed since 1994. This has the consequence of significant policy and legislative alignment to the broad Constitutional and NEMA principles including cooperation, sustainability and equity. On the other hand, there has been a significant paradigm and institutional change associated with this national legislative review, which is compounded by changes in all sectors, so that there is still a lack of governance stability and maturity in the

policy environment. It is overly ambitious to expect complete coherence and alignment (even at a policy and legislative level) while everything is changing.

Despite this, there is general alignment in national policy and legislation for land management, as well as a degree of consistency at a provincial level. In particular, the policy and legislation for the mining and forestry (as national competencies), as well as environmental management and agriculture (as concurrent national and provincial competencies) is relatively consistent, whereas the governance arrangements for communal land is still uncertain, particularly between local government and traditional authorities. In most cases, consideration of the implications for ground and surface water is required, but *alignment between land and water management planning processes is not always obligatory.*

Implementation of national and provincial legislative requirements is generally uneven both between sectors and geographically, depending upon the degree to which a supporting regulatory framework has been developed (since the legislation was enacted) and the institutional capacity has been developed to implement it. In many cases, effective governance is built around inter-personal relationships rather than institutionalised processes. This places huge risks on effective governance, particularly where there is high turnover, new appointments and limited institutional memory or knowledge.

5.5.2 Governance of Local Government Mandates

The national and provincial policy and legislation around local government is also relatively coherent and consistent, particularly for municipal structures, municipal systems, water services and even waste management. However, there is considerable inconsistency in the policy and legislation (by-laws) at a local government level, both between municipalities and with national/provincial legislation, often because the by-laws have not been updated since 1994 and are framed under previous legislation. This severely hampers coherent engagement of the water sector with municipalities around issues of municipal service delivery (including water services and waste management) and land use change (management), both of which are primarily local government responsibilities. This is further complicated by the different powers of district, local and metro municipalities in different parts of the country.

These problems are severely compounded by uneven and inadequate institutional capacity at local government level, particularly in terms of human and financial resources, but also in terms of organisational structures, systems and procedures that have been inherited through the demarcation and amalgamation of previous councils. The lack of institutional capacity to implement policy and legal requirements raises an important issue around the policy development process. On the one hand, it may be argued that this is due to inappropriate and complex policy, and that it is a policy failure requiring policy review. On the other hand, it may be ascribed to inadequate capacity, which required intensive capacity building programmes. A more balanced approach recognises that policy implementation is an evolving process, and that while policy must be simple and pragmatic, it must indicate or reflect government's medium term objectives and principles. Rather than revising policy to match existing capacity, implementation strategies must recognise and support gradual achievement of objectives linked to the development of institutional capacity.

An important issue that is emerging is the difference between participatory management at a sector institutional level and democratic process through local government, particularly in a country with limited political maturity. Certain councils imply that they represent all interests in their jurisdiction, while sectors and interests are opposed to this view. This issue is likely to increase in importance as democratically elected local government matures and decentralised institutions strengthen.

5.5.3 Environmental Governance

The integrated environmental management policy and legislative environment associated with NEMA should promote alignment and coordination between the various sectors, particularly environmental impact assessments (EIAs) and strategic environmental assessments (SEAs). But there is even inconsistent implementation of this policy and legislation at a provincial level, due to political agendas and capacity constraints. On the other hand, there is experience with effective coordination of land development at a provincial level, where the Provincial Growth and Development Strategy/Plan formulation processes are effectively integrated, consulted and unpacked within provincial government departments. In some cases, where these strategies are centred around water, DWAF has been engaged to some degree to provide input and the implications of different development scenarios.

The role of civil society and the private sector in governance of land is also highly variable between sectors and parts of the country. There is considerable consultation and input to the political governance process around land use management, particularly in the establishment of policy, legislation and regulatory environment, but far less involvement at the administrative governance (implementation) level. South Africa's national civil society is relatively weak in the areas of environment and resource management, having largely focused on liberation before 1994, while local community based organisations are often well established. The degree to which catchment management processes will facilitate civil society involvement in land use processes and decisions remains to be seen, but this provides an important opportunity to improve governance of land from a water perspective.

While there are opportunities within the NWA to specifically define land use that requires regulatory control by water resources managers, this introduces complex issues of jurisdiction and mandate. It also requires unpacking the relative advantages of water and environmental management legislation.

The National Treasury is in the process of establishing an environmental tax policy as an umbrella for economic instruments aimed at managing environmental externalities and enabling adoption of the "polluter pays" principle. This is a fundamental development in the economic governance system, but one that has thus far had limited application related to the hydrological cycle. The waste discharge charge system represents charges raised within the context of this policy.

5.5.4 Governance around Land Use Change

A change in land use to agricultural use can lead to an increase in nutrients and biocides entering the hydrological cycle through agricultural runoff. This form of non-point source (NPS) pollution is increasingly difficult to monitor and regulate through a waste discharge pricing system. A Waste Discharge Charge System (WDCS) has been proposed to promote waste reduction and water conservation. However, there are significant challenges in developing a common approach for the inclusion of NPS impacts into the WDCS, and to develop a methodology for calculating NPS charges⁷⁶. The best means of reducing NPS pollution may be through programmes such as the Land Care Programme that uses education and awareness to create a land care ethic that assists in making people committed to good management of their natural resources. The Land Care Programme is currently small in scope and requires additional government leadership, legislation, funding and capacity building to adequately equip staff to implement the Land Care philosophy.

⁷⁶ Department of Water Affairs and Forestry. 2005. *Waste Discharge Charge System Phase 3 – Inclusion of Non-Point Sources in the WDCS for the Industrial Sector. Discussion Draft V1.0.*

In 1994 the government committed itself to redistribute 30% of agricultural land to black owners by 2014⁷⁷. The political pressure to realise this objective needs to be balanced with appropriate support services and capacity training in agriculture so that land can more effectively be taken up for agricultural purposes⁷⁸. The Land Reform and Agricultural Development (LRAD) programme is designed to provide this support. In this context, there are opportunities to link the activities of LRAD with the LandCare programme so that new entrants in the farming sector are capacitated to implement sustainable agricultural activities that limit the impact of NPS pollution on the hydrological cycle.

5.5.5 Governance of the Subterranean Environment

There is an emerging recognition that subterranean ecosystems are complex and biologically diverse, and that these ecosystems and their health have an important affect on the hydrological pathways from land to water resources. Governance of the subterranean environment is either based on resource utilisation (such as mining) or groundwater management as a water resource for direct utilisation or surface water baseflow. Local government has a regulatory responsibility, but the scope of this requires greater clarity. In this context there may be a need to revise the governance arrangements for subterranean ecosystems and their influence on biodiversity and hydrological processes.

5.5.6 Priority Issues for Land Governance

In conclusion, except for changes of land use, the governance interrelationships between the different land use sectors are of less interest from a hydrological perspective than their consideration of impacts on the water environment. For this project, this therefore should be the focus of governance related to the land environment. From the wide ranging review and evaluation of land governance from a water-hydrological perspective, the following priority issues have been identified:

- The opportunities for effective coordination of land use governance through catchment management processes, and appropriate mechanisms to institutionalise the required cooperative governance
 - The possible role for catchment management agencies as a key institution promoting the effective governance of land related issues within the context of catchment management
 - The important role of local government in these catchment management processes and their legal, strategy and cooperative relationships with CMAs
 - The possibility of using catchment management processes to empower local communities and stakeholders to engage in land use management processes and decisions that affect water resources as well as their quality of life and livelihoods.
- The institutional capacity of local government to effectively perform its functions related to management of the hydrological cycle, particularly around integrated development planning, municipal service delivery, waste management and land use authorisation
 - The importance of clarity in understanding mandates and responsibilities of local government compared with provincial and national departments in the management of the hydrological cycle, specifically around bulk water supply, pollution control, waste management and stormwater

⁷⁷ Bernstein, A. 2000. *Land reform in South Africa: A 21st Century perspective*. Research Report no 14. The Centre for Policy Development and Enterprises, Johannesburg. p7

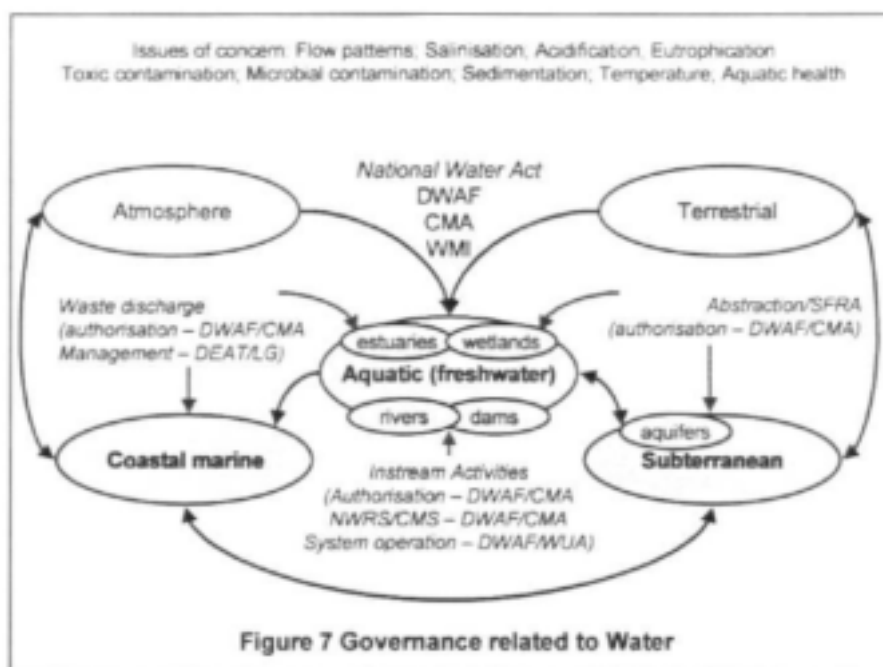
⁷⁸ Department of Agriculture. 2001. *The strategic plan for South African agriculture*. 27 November 2001. p9

- The current ineffectiveness of the IDP process - including water services development planning - in many municipalities and the implications for effective water resources (and catchment) management
 - The role that local government should take through the IDP and local economic development processes in directing or influencing spatial land use patterns and activities that have significant water requirements, and the mechanisms for alignment between local planners and catchment managers
 - The governance implications of participative management of local natural resources on democratically representative local government, particularly given the youth of South Africa's democracy
- The interface between environmental management governance and water governance (as reflected in catchment management approaches), and particularly the mechanisms to ensure alignment at an institutional and implementation level
 - The alignment of environmental management processes at a provincial level with land use change management at local government level to ensure that land use authorisation reflects environmental and hydrological considerations
 - The governance around control of land use activities with a demonstrably detrimental impact on water resources needs to be unpacked (within the context of national water law), addressing possible advantages/disadvantages over environmental legislation, particularly for:
 - Streamflow reduction activities (in addition to forestry), such as certain dryland agricultural crops
 - Non-point sources defined as controlled activities (water use), such as irrigation return flow and urban stormwater
 - Resource quality objectives specifying "the regulation or prohibition of instream or land-based activities which may affect the quantity of water in or quality of the water resource"
 - The riparian zone as part of the water resource, and the way in which this should be defined and managed to control land use encroachment
- Governance of communal land (between local government and traditional authorities/leaders) and the implications for water resource availability and quality, including the goods and services upon which rural communities are typically reliant
 - Governance of the land reform process and the needs of beneficiaries in terms of access to water resources and the associated capacity to utilise this access effectively
 - Governance and institutional arrangements to engage the emerging understanding of subterranean ecosystems and their impacts on biodiversity and hydrological pathways
 - Engaging mechanisms to strengthen stakeholder involvement in administrative decision-making around land management, in order to promote effective and accountable government, for empowered commercial interests and particularly local communities

5.6 Evaluation of Water-related Governance

In this section, water is taken to be ground water, wetlands, rivers, lakes, impoundments, estuaries and the marine environment (Appendices H to L). This is the most visible part of the hydrological cycle and the management of these resources is assumed to be at the heart of the project. These water resources/bodies are directly and indirectly impacted on by the air and

land environment (as has been outlined above), but they also return water to the atmosphere through evaporation. As such they represent the start and end of the hydrological cycle.



Groundwater (shallow and deep aquifers) has been included in this section, while the subterranean environment was linked to land, because the governance of these elements has both land and water aspects (Appendix H). Similarly, wetlands represent an interface between land and water with specific governance challenges and multiple mandates, but with some important lessons for complex governance arrangements (Appendix I). Estuaries on the other hand represent an interface between freshwater (surface and ground water), coastal marine and often land governance (and physical) systems, but one that does not have good governance experience (Appendix K).

5.6.1 Governance of Water Resources

In some respects, coherent governance of the aquatic environment has been simplified by the definition of water resources under the NWA to include a “watercourse, surface water, estuary, or aquifer”, where a watercourse is broadly defined as a river, spring, natural channel in which water flows regularly or intermittently, wetland, lake, dam (but not the coastal marine environment). A watercourse includes its bed and banks, while resource quality refers to the quantity, quality, habitat and biota of a water resource. These broad definitions together with the broad definition of water use to include abstraction, storage, streamflow reduction, waste discharge (including sea outfalls), waste disposal (with impact on water), instream activities and recreation, provide a relatively integrated basis for water resources management.

South Africa’s water resources policy and legislation is firmly grounded in the principles of the Constitution, considers international best practice around IWRM (including decentralisation and participation) within the historical context of South Africa requiring redress, and reflects NEMA principles. The NWA develops a coherent and integrated governance framework around these concepts, addressing catchment level strategic planning (and allocation), protection, development and utilisation of the water resources and the pricing of water (as outlined in Appendix J). It further provides for decentralised institutional arrangements for water resource management, based on the establishment of CMAs.

However, the development and implementation of the necessary regulatory framework to enable the policy and legislation has been slow, particularly in the delayed:

- Establishment of CMAs
- Transformation of WUAs
- Establishment of a water resources classification system
- Reallocation of water use entitlements, including compulsory licensing
- Development of catchment management strategies
- Authorisation of water use within a catchment paradigm
- Development of economic instruments under the pricing strategy, such as the waste discharge charge system

Together, these represent some of the core institutional and regulatory elements that imply a changed paradigm for the water governance system. Although the practice of water governance (specifically stakeholder involvement and “integrated” planning processes) over the past 15 years began to adopt many of the principles of IWRM, this has not been fully realised within DWAF. Water resources management is still relatively centralised and implemented in a “silo” manner. The recent restructuring of DWAF has attempted to promote and give practical effect to the governance principles and requirement of the NWA, but this will only take on its full dimension once CMAs are established and functions have been decentralised. Before expanding upon CMAs and water governance, it is relevant to unpack the governance of infrastructure management, wetlands and the coastal marine environment.

5.6.2 Governance of Water Resources Infrastructure Management

The development and operation of water resources infrastructure is and will continue to be required for the reliable supply of water in an arid country with spatially and hydrologically variable water resources such as South Africa. The majority of water in South Africa is currently used by agriculture, but urban domestic and industrial use continues to increase. There is a broad policy intent not to allocate any additional water to commercial agriculture (redress and allocation to emerging farmers must however occur), but it is expected that about R20 billion of new water resources infrastructure will be required to supply economic, social (and environmental) requirements over the next 20 years.

An important implication of government’s broad policy direction that economic infrastructure should be funded off-budget from commercial sources is that the governance arrangements for developing this infrastructure has changed and is changing. The Trans-Caledon Tunnel Authority (TCTA) has been established and is being directed to implement off-budget projects such as the Berg River Project for Cape Town, which required the negotiation of implementation and off-take (water supply) agreements between DWAF, TCTA and Cape Town before development could begin. This has fundamentally changed the nature of infrastructure decision-making, placing significant decision-making (and financial) responsibility with the “economic” user rather than DWAF.

Institutional arrangements are being put in place (definitely a DWAF Infrastructure Branch with TCTA, but possibly an external Infrastructure Agency) to finance, develop, operate and maintain the national infrastructure, with non-national local infrastructure to be transferred to local institutions (local government and WUAs). The governance related to this infrastructure (including the setting of operating rules, collecting water use charges and negotiation of water supply agreements) requires further clarity. Of particular interest for water users is the governance process associated with the setting of charges for infrastructure management.

This institutional change needs to be aligned with the institutional reform process in the water services sector, particularly for bulk water services provision. The boundary interfaces

between catchments, water resource infrastructure systems, bulk service schemes and water services authorities need to be aligned to ensure efficient and reliable supply. This highlights the governance issue around bulk water supply and the role of local government in water resources infrastructure management (as discussed in the land governance section).

5.6.3 Wetland Governance

The governance of wetlands provides a useful illustration of the way in which policy and legislation from different perspectives may result in gaps and inconsistency in the management of the hydrological cycle, but how the engagement of civil society can specifically engage and partially address these problems (see Appendix I). Wetlands are typically located at the interface between land use, groundwater and surface water, and are relevant for biodiversity/environmental management, water resources management and agriculture. This has resulted in three main pieces of legislation addressing wetland management, namely NEMA, the NWA and the Conservation of Natural Resources Act, each of which defines wetlands differently and enables distinct management instruments and institutional responsibilities. This has contributed to a situation of inconsistent management of wetlands under differing situations.

A strong and relatively well resourced wetland-related civil society has developed over the past decade, consisting of the Mondi Wetlands Project with academics and researchers. This group has been further mobilised through the multi-departmental Working for Wetlands forum, which was established to rehabilitate wetlands. This has led to greater awareness of the multi-faceted nature of wetland management and the recognition that CMAs may play an important coordinating role in their management through other institutions.

There are some interesting parallels between the management of wetlands and the management of riparian zones as part of the water resource. Agricultural, forestry and urban encroachment has a significant impact on water resources, but water resources managers have not been particularly effective in controlling this. The role of Working for Water in rehabilitating these zones is also potentially relevant.

5.6.4 Governance of the Coastal Marine Environment

Governance of the coastal marine environment also raises a number of issues that have not yet been resolved (see Appendix L). While the coastal zone is defined from the high water mark to 12 nautical miles into the ocean, impacts on this environment are related to ecosystems and activities upstream along rivers, in estuaries and on land along the coast. DWAF has responsibility for managing sea outfalls as a water use, while local government is responsible for land and storm water management along the coast (with confusion with traditional authorities on coastal communal lands in the former homeland areas).

While the proposed Bill on coastal zone management (under NEMA) indicates the sound concept of integrated coastal zone management, this has not been tested or practiced in South Africa. There is a real need to understand the coastal marine environment as a receiving resource and set management objectives accordingly, to guide the activities and discharges that can be accepted. Coastal local governments' IDPs have also not adequately engaged the challenges of coastal zone management.

The ecological interface between the coastal marine environment and estuaries is not adequately reflected in the legal or institutional governance arrangements, with estuaries being correctly defined and managed as water resources. This enables resource classification and Reserve determination to set the management objectives for estuaries, but this has not yet been adequately implemented. Estuaries suffer the same difficulties as the coastal zone and

wetlands, with upstream activities and local development, encroachment, waste discharge and storm water runoff causing significant degradation of the ecosystem functioning.

5.6.5 Water Governance through Catchment Management Agencies

Being water focused, the establishment of CMAs represents a real opportunity to improve water governance at a catchment level, as long as they adopt a cooperative and coordinating role (in addition to their regulatory functions). This will require a paradigm shift from the way in which DWAF has practiced water resources management, which is premised on effective change management processes. Furthermore, new skills will be required in CMAs to fulfil their statutory requirements and cooperative opportunities. They will need to be built on effective corporate governance, so that the skills of Board members will need to balance understanding of local interests with fiduciary duties. A fundamental institutional capacity building programme is required in the water sector to meet these requirements.

Water governance may be uncertain as CMAs are established and functions are delegated, particularly in terms of the roles of DWAF and the CMA. Certain functions will remain primarily DWAF responsibilities, namely national planning, classification, and compulsory licensing, but these will require alignment with CMA planning and activities.

Even though there has been some experience with catchment forums, South Africa has limited experience with such fundamental decentralisation of responsibility and decision-making around natural resource management. The challenge is significant, but the opportunity for improved governance of the entire hydrological cycle is potentially greater.

5.6.6 Priority Issues for Water Governance

In conclusion, the policy and legal framework for water governance and its interactions with other elements of the hydrological cycle is broadly developed. However, delays in the development of key regulatory instruments has meant that the institutional and practical implementation of this framework is not well developed. While this is not ideal, it has allowed improved understanding and implicit change within the sector and implies that the fundamental regulatory change may be introduced in a coherent manner over the next few years. In addition to the water-related issues identified in the land governance section above, specific governance issues related to the water environment include:

- Governance of CMAs at all levels, within a paradigm of cooperative, integrated, developmental and participatory management:
 - Corporate governance of CMAs (as the primary responsibility of their Boards)
 - Cooperative governance with other institutions, particularly local government, provincial government and water management institutions
 - Interaction with international water bodies, particularly shared watercourse commissions established in terms of the SADC protocol
 - Institutionalising stakeholder participation in decision-making
 - Oversight responsibilities, instruments and capacity of DWAF to ensure effective governance and functioning of CMAs
- Governance considerations and mechanisms for the development of catchment management strategies through a consultative process and their alignment with local development planning (IDP, WSDP) and provincial planning processes (PDGS)
- The institutional change (at all levels) required to move from centralised regulatory DWAF decision-making (governance) to decentralised participatory governance in water resources management:

- Requirements to empower civil society (particularly rural communities, women and the poor) to promote effective water governance at a local catchment scale
- Move from civil society challenging DWAF to cooperation with CMAs
- Alignment in the governance arrangements for managing the coastal zone in conjunction with estuaries, marine outfalls and coastal land, based on integrated coastal zone management (ICZM):
 - Clarity in the institutional arrangements between DEAT (also on provincial level), local government and DWAF/CMAs
 - Alignment of ICZM with catchment management strategies and estuarine resource directed measures (class, RQO and Reserve)
 - Development of coastal zone management objectives as the basis for management and authorisation of marine outfalls
- Governance of water resources infrastructure development and operation reflecting the institutional change in the water sector:
 - Interaction between the management of water resources by one set of institutions and the development and operation of that infrastructure by other institutions
 - Coherent governance of national and non-national infrastructure in a coordinated manner by different institutions
 - Governance of the relationship between infrastructure management institutions and water services institutions, particularly at the interface with bulk water supply
- Formulation of a coherent regulatory governance system for water resource management, particularly around the development/revision of classification, compulsory licensing, water allocation, water pricing and water use authorisation systems:
 - Ensuring that these are coherent and have a transparent administrative process
 - Developing clear institutional roles and cooperative arrangements, particularly between DWAF and CMAs
 - Enabling effective stakeholder participation and ownership of these processes
- Developing clear monitoring and evaluation systems to assess the implementation of the water governance system, linked to clear indicators of the state of water resources and associated governance elements

6. STRATEGIC EVALUATION OF WATER GOVERNANCE IN SA

6.1 Requirements of Good Water Governance

Good water governance is underlined by a number of critical elements which institutions should endeavour to achieve, viz.:

- *Trustworthy*

All stakeholders / role players should be able to trust that all water related activities will be managed / governed in a manner that will lead towards creating a balance within the Hydrological Cycle.

- *Informed*

Good water governance must be based on well informed understanding of the broader water issues. This in turn will form the basis for well informed decision making.

- *Democratically based*

Democracy must be an element cutting across all water governance activities until at decision making level.

- *Promotion of participation*

Water is used by different stakeholders for different needs. They therefore need to be part of all processes involved in the governance of water. It is therefore critical that promotion of participation is made one of the institutional arrangements for good water governance.

- *Transparency*

All activities embarked upon in water governance must be transparent for the benefit of all stakeholders.

- *Equity*

Different stakeholders require water for different needs; other stakeholders are more powerful than the others then result in it not being shared equitably. It is therefore part of requirements of good governance that water be shared equitably between all stakeholders who need it. South Africa has embarked on a process of redress in order to achieve equity.

- *Accountability*

Institutions involved in the water governance must be able to account for all actions and decisions taken.

- *Coherency (policy development)*

Institutions must be coherent in decisions taken and must also be coherent in developing policy guides management of the hydrological cycle.

- *Responsiveness*

Water management is constantly changing; institutions should therefore be able to respond to these changes by, e.g. developing relevant policies and governance arrangements to deal with changes.

- *Integration*

Water is managed through various regulatory processes; secondly, other regulated areas, e.g. environmental and land management have impact water management. Integration between these processes is therefore critical for good water governance.

6.2 Challenges to Good Water Governance

The preceding chapter outlined the key issues associated with governance elements for the hydrological cycle. However, there are a number of fundamental challenges to improving water governance in South Africa.

- *Change and maturity in the governance systems:* It is important to recognise that the policy and legal environment in South Africa has changed fundamentally over the past decade. This dynamic environment has had consequences for the stability and predictability of governance, particularly when other sectors are changing at the same time. Further time is required to develop a mature governance system, because in many cases the regulatory frameworks, institutional arrangements and practices required for governance within and between sectors are only now being developed.
- *Institutional change and decentralisation:* There has been and continues to be significant institutional reform and change in the water sector, to achieve decentralisation in management to the most appropriate level. This change needs to be carefully managed to ensure continuity in governance and service delivery and achieve the benefits to all that were intended (not just vested interests at a local level).
- *Participation and democratisation:* Involvement of stakeholders at a local level is a key premise of the institutional change process in the water sector (and many other sectors). The type and level of participation necessary for water resources management in a new democracy such as South Africa tends to be higher, due to the lack of social maturity of democratic representation through local government structures. This causes potential tension between these institutions and requires the effective alignment of planning and management processes.
- *Changing management paradigm:* Water resources policy and legislation is built on a new paradigm of integrated, participatory and developmental management (IWRM), which requires a fundamental shift in the skills, approaches and mindset of water resources managers. Organisational and institutional restructuring of DWAF and the water sector to achieve this is the first step, which needs to be followed by a complete change in the way the sector and water resources themselves are managed.
- *Transformation:* Government has outlined an ambitious programme of transformation in South Africa, focusing on demographic representation in organisations (employment equity), improved service delivery by government for all people (*Batho Pele*) and broad based black economic empowerment. This has profound implications for governance, as this has required a rapid change in the approaches (rules) and the people (bureaucrats) responsible for management.
- *Institutional memory:* Institutional and organisational change, together with the significant turnover in staff experienced in the public sector, has resulted in the disintegration of institutional memory in the water and related sectors. This has negative impacts on service delivery and opportunities for cooperation, particularly where mechanisms to institutionalise individuals' knowledge have not been put in place.

- *Complexity and integration:* The physical hydrological processes upon which the water sector is based are highly complex, while the institutional and governance arrangements impose challenges to alignment and integration. This is compounded by the fragmentation in governance of the land and air, which has an impact on water in the hydrological cycle. Appropriate research projects and integrated assessment and planning should begin to unpack this complexity, leading to alignment and harmonisation (if not integration).
- *Information, communication and uncertainty:* While South Africa has relatively good monitoring and information systems associated with the water sector, there is still significant scientific uncertainty in the information and knowledge required to make decisions. In many cases managers avoid making decisions. Inadequate governance around the communication and sharing of information, as well as poor institutional linkages between managers and scientists contributes to this situation. Mechanisms must be developed to improve information availability, as well as to provide support and protection to managers who do make decisions under uncertainty.
- *Technical and management capacity:* To effectively engage the preceding challenges, a high level of technical and managerial capacity (skills and experience) is required. Unfortunately there is a limited pool of capacity in South Africa, but intensive and innovative processes of capacity building and education of new graduates is required, particularly focusing on the needs of transformation. An important element of this process is to ensure that managers have a sound understanding of the principles and approaches for good governance.
- *Financial resources:* As always, resources are a limiting factor to achieving the objectives of government and governance. On the other hand, there are considerable resources available within government, the private sector and civil society than can be leveraged when the governance system is functioning effectively for the benefit of all.

Given the magnitude of these strategic challenges, it is remarkable that there is a relatively effective governance system in the water and related sectors.

6.3 Implications for Good Water Governance in South Africa

The criteria for good water governance were outlined in chapter 2 as including predictability, participation, transparency, equity, accountability, coherence, responsiveness, integration and ethics. The chapter went on to indicate that good governance required open policy making, a professional bureaucracy and a strong engaged civil society.

As a synthesis of all of the above evaluation, the following key conclusions about the state of governance related to water in the hydrological cycle may be derived:

➤ *Predictable, open and enlightened policy making*

Generally, policy making and legislation related to water in the environment in South Africa is sound and coherent, and is developed in line with clear government priorities and the Constitution. There are some inconsistencies, gaps and overlaps, particularly between environmental, land and water policy and legislation, but the greater problem lies in the lack of well-developed and harmonised implementation strategies and regulatory frameworks taking account of the existing institutional capacity.

- *Professional bureaucracy acting in the public interest*
There is fundamental institutional and organisational change in the water resources public sector, associated with changing paradigms, new skills requirements and transformation imperatives. While the core water resources management staff in DWAF are professional and technically competent (and are adequately administering the governance system), the requirement for innovation, client service, cooperation, integration and participation has not necessarily been internalised at all levels. However, administration and policy implementation through partner departments in provincial and local government is extremely uneven between sectors and geographical areas, and even greater change management and capacity building is required at these levels.
- *Strong civil society participating in public affairs*
Civil society engagement with political and administrative governance in the water resources and related sectors is unevenly developed. There is some involvement by organised groups in policy processes and an emerging involvement in local processes by community and non-governmental groups. However, the development of an effective water governance system will require improved institutionalised involvement of stakeholders at a catchment level and empowerment of marginalised groups to ensure that their interests are articulated. This must also be translated into effective involvement and/or review of the administration of water resources management.

6.4 The Emerging Institutional Champion for Water Governance

From this synthesis and evaluation, it is apparent that an institutional champion is required for promoting coherent and harmonised implementation of water governance related to the entire hydrological cycle. While DWAF must continue to play this role at a national policy level, it is proposed that CMAs should provide a focus point for improving governance of water in the hydrological cycle at a catchment level, for the following reasons:

- CMAs are to be established as the coordinator and responsible authority for water resources management at a local level, and they must follow the participatory, developmental and integrated principles of IWRM captured in the water policy and legislation.
- To be effective, CMAs will have to foster cooperation with other institutions, particularly those responsible for land management, and must develop important cooperative governance relationships with local government.
- Also, being established as new organisations while the emerging regulatory frameworks are being implemented in the water sector, CMAs have an opportunity to adopt the required governance framework and paradigms and possibly build the required competencies.

The strategic direction outlined in the next chapter should build on this proposal.

7. STRATEGY PRIORITIES FOR WATER GOVERNANCE RESEARCH

7.1 Strategic Priorities

The critical requirements to ensure improved governance of water in the hydrological cycle (to address the detailed issues highlighted in the previous chapter) are:

- Establishment of an effective regulatory framework (and implementation plan) for water resources management, linked to other sectors' activities and taking consideration of the available institutional capacity.
- Establishment of coherent institutional arrangements at a catchment level to promote alignment of water with air, land and marine management, including the development of adequate institutional capacity.
- Promotion and institutionalisation of appropriate stakeholder involvement in catchment and land management processes, taking account of the role of local government in democratic representation.

7.2 Recommendations

The following (preliminary) strategic priorities are proposed (pending discussions at the WRC Steering Committee):

- i. Management of the different boundaries between surface water resources, aquifers, atmospheric deposition, regional infrastructure and political/administrative boundaries requires particular attention to ensure the coherent management of the hydrological cycle. In particular the water services jurisdiction of municipalities and associated water resources boundaries creates serious dilemmas for the management of the water sector to serve domestic and industrial users' needs.
- ii. CMAs should be the focus for implementing coordinated and aligned governance for water in the hydrological cycle at a catchment level, linking to other government departments and spheres of government responsible for the air, land and marine environments.
 - a. This must be built around good corporate governance practices to ensure that these organisations fulfil their promise.
 - b. Organisational design and staffing of these organisations must achieve the objectives of integrated, participatory and developmental water management, taking account of representivity and service delivery imperatives.
- iii. Civil society should be enabled, empowered and encouraged to engage political, economic and administrative governance, to ensure that the bureaucratic processes are sound and that there is local acceptance and understanding of the outcomes.
- iv. Policy and legislative implementation processes that reflect institutional capacity and focus on phased/gradual implementation, partnerships and capacity building should be promoted.
- v. Approaches to institutionalising the governance knowledge and practice of key individuals within the public sector should be promoted, as well as good practice mechanisms being adopted by individuals to ensure cooperation.

- vi. Governance mechanisms and practices need to be developed around the interface between the air, land, water and marine environments, linked to the alignment of catchment management strategy processes with other processes such as the local government integrated development plans, specifically:
 - a. Ensuring that the management of air emissions aligns with land and water requirements at a policy and implementation level
 - b. Ensuring improved coordination of coastal marine, estuary and coastal land management through integrated coastal zone planning and management
 - c. Ensuring coherent management of wetlands and water resource riparian zones, through effective inter-agency cooperation
- vii. Governance mechanisms and practices should be developed to enable the coherent management of land and water resources, particularly addressing the regulatory opportunities for:
 - a. Streamflow reduction activities
 - b. Non-point sources management (as water use-controlled activities)
 - c. Regulation of land use in terms of resource quality objectives
 - d. Control of riparian zones as part of the resource
- viii. Governance around water resources infrastructure management should be clarified, taking account of the institutional change process in the water sector, specifically addressing the management of:
 - a. National water resources infrastructure, including off-budget funding
 - b. Non-national local single purpose infrastructure by local institutions
 - c. Bulk water supply by local government
- ix. The governance roles and responsibilities of local government with respect to water resources should be engaged within the context of their service delivery and integrating planning mandates, including unpacking the governance of communal land, the role of traditional authorities and the implications for water resources management.
- x. Issues of economic governance around water resources should be addressed, particularly:
 - a. The process of setting charges in an institutionally decentralised environment
 - b. The opportunities provided by the emerging environmental tax policy

7.3 Programmatic Research Issues

While all of these areas have policy implications, there is a significant requirement for research and case study analysis to inform and advise these processes.

Priority Issue	Rank	Comments
Programme 1: Integrated planning processes		
1.1 What role can the catchment management strategy process play in aligning the management of catchments with the governance of political administrative, atmospheric, ecological and aquifer boundary areas?	1	This is fundamental to all governance issues around water in the environment and feeds into many of the other issues.
1.2 How should the impact of significant abstraction from large (multi-WMA) or deep aquifers on water planning be managed and aligned with catchment planning?	7	
1.3 What opportunities are there for alignment between the regulatory and planning systems for atmospheric emissions and catchment based water management?	11	
1.4 What lessons does the South African experience in multi-governance systems around wetland management provide to the management of complex interface systems (such as riparian zones and estuaries)?	12	
1.5 How can catchment management strategies align/link with integrated coastal zone management planning processes to ensure coherent management of freshwater (surface and groundwater) systems with estuarine and coastal marine systems?	8	Links with 2.8
1.6 How can water governance mechanisms enable water (catchment) management planning to influence land management, in order to reduce non-point sources impacts on the resource?	7	Links with 2.5
1.7 What governance mechanisms/systems will promote cooperation and alignment of the CMAs' catchment management strategy processes with provincial government's growth and development and local government's integrated development planning processes?	4	
1.8 What governance arrangements are required to ensure that the institutional separation between water resources management and infrastructure management does not jeopardise integrated water resources management?	8	
1.9 What governance arrangements are required to ensure that the water resources class balance local government development priorities with national strategic water resources responsibilities, while preventing local "institutional capture" of the classification process?	10	
Programme 2: Harmonisation of national governance systems related to water in the environment		
2.1 What are the implications of inadequate cooperation between water resources managers (CMAs) and local government, and how can this be avoided?	6	The WRC project on Cooperative Governance between CMAs and Local Government provided guidance, but this must be operationalised through case study level research.
2.2 What are the priorities and governance arrangements required to promote cooperative government between CMAs and provincial government, regionalised national government and relevant organs of state?	5	
2.3 How can the governance of water resources management and specifically water allocation reform practically align with land reform processes?	3	

Priority Issue	Rank	Comments
2.4 What are the opportunities and pre-requisites to ensure harmonisation of environmental management (at provincial government level), land management (at local government level) and water management (at CMA level), particularly through the relevant environmental, land and water use authorisation processes?	2	
2.5 What realistic opportunities are there for water managers to directly control land use, through specification of resources quality objectives, streamflow reduction activities, non-point sources and controlled activities and riparian zone controls?	6	
2.6 What opportunities and requirements are there for ensuring harmonisation between the aquatic ecosystem protection (through the Reserve) and emerging environmental management systems (including biodiversity, etc.)?	11	
2.7 What opportunities and constraints exist for rationalising the institutional roles and responsibilities of different government departments and/or spheres of government with respect to governance of water in the environment?	7	A preliminary review/scoping may identify where possible rationalisation may be pursued.
2.8 What are the opportunities and requirements for harmonising the management of the coastal zone, linking responsibilities in terms of water and environmental management legislation?	6	There is an opportunity to influence emerging legislation to ensure harmonisation
Programme 3: Policy mapping		
3.1 What are the implications of the evolving policy and governance systems for traditional leadership (and their responsibilities particularly around communal land) for water management and governance related to the hydrological cycle?	10	While this is an important issue, the dynamic nature of the policy and legislative context for traditional leadership makes this difficult to research.
3.2 What are the policy and governance implications of the emerging understanding of the subterranean environment and aquifers as complex ecosystems?	9	It may be that the science needs further development before governance arrangements can be addressed.
3.3 How can and should water-related pricing (including waste discharge charges) be used to manage water in the environment, how does this link with other user charging and environmental tax systems, and what are the implications for regional economies and economic governance?	5	
3.4 What are the impacts that South Africa's macro-economic and trade policy (including response to major international economic trends) has on patterns of water use and the management of water resources?	6	
3.5 What impacts do South Africa's spatial and rural development policies have on water resources management?	8	
Programme 4: Regional and global governance		
4.1 What are the priorities for the alignment of historical agreements with recent shared watercourse management, in the interests of good regional water governance, and how can these be managed?	8	

Priority Issue	Rank	Comments
4.2 What water governance arrangements at and between regional, national and catchment level are needed to enable a coherent response to climate change, and how should these interact with the governance systems of other sectors?	7	
4.3 What should the role of shared watercourse institutions (i.e. basin commissions) be in the governance of water resources at a national level, and how should they interact with local institutions and civil society?	6	
4.4 What are the priorities for alignment of South Africa's legislative and governance system responses by different departments to ratification of international treaties relating to water and the environment, and how should these be coordinated?	9	
4.5 What is the practical effect of ratification of international water and environmental treaties on water resources management and is this in South Africa's interests?	10	
4.6 What are the political, economic and institutional barriers to the widespread implementation of the concept of comparative advantage in production through water use (including "virtual water") and its role in SADC regional integration?	8	The concept of comparative advantage is being addressed by SADC while the "virtual water" concept is being resisted by some member states.
Programme 5: Institutional strengthening for water governance		
5.1 How should good water governance be interpreted and evaluated in the decentralised institutional context of CMA establishment, considering leadership and participatory management?	2	
5.2 What are the key requirements and mechanisms for good corporate governance within CMAs as public entities (and what lessons are there from other sector entities), considering the representative nature of the Governing Boards?	4	DWAF is focusing on this issue with the establishment of CMAs, but there may be need for research to support the practical guidelines that DWAF is developing
5.3 Where are the priorities for strengthening the institutional capacity of local government to enable cooperation and ensure that the relevant mandates and functions are adequately performed with respect to managing the water cycle?	5	
5.4 What level of civil society participation is required to ensure good governance, distinguishing between policy and administrative processes?	3	
5.5 What are the priorities for strengthening the capacity of civil society to engage water resources management decisions and thereby strengthen the systems of water governance, and what should CMAs do to promote this?	5	
5.6 What is the governance role of DWAF as sector leader in a decentralised institutional environment?	7	

APPENDICES: EVALUATION OF SPECIFIC GOVERNANCE SYSTEMS

A: Atmosphere

B: Urban and Municipal Services

C: Communal Lands

D: Agriculture

E: Forestry

F: Mining and Industry

G: Protected Areas

H: Groundwater

I: Wetlands

J: Surface Water Resources

K: Estuaries

L: Coastal Marine Environment

APPENDIX A: Atmosphere

A.1 Introduction

While there are a number of international initiatives on the global level regarding the atmosphere and climate change (see Chapter 2), national governance of the atmospheric environment in terms of the hydrological cycle revolves around air emissions (pollution) and weather modification. The governance arrangements for these are completely separate.

A.2 Atmospheric Emissions (Air pollution)

“Air Pollution” is listed in Part B of Schedule 4 to the Constitution. This means it is a functional area of concurrent national and provincial competence and moreover, in terms of section 156(1) that local government has the executive authority and the right to administer this function. Sections 155(6)(a) and 7 however, provide that national and provincial government must through legislative or other measures support, promote development of capacity and regulate the exercise of executive authority by local government. Section 139 empowers a provincial executive to intervene where a municipality fails to fulfil an executive obligation in terms of legislation.

A.2.1 Air Quality Act⁷⁹

The Air Quality Act was promulgated on 24 February 2005 to align air quality legislation with the framework created by the National Environmental Management Act, to take over from the Atmospheric Pollution Prevention Act of 1965. In the preamble the legislation notes the poor condition of the atmosphere in many areas and that the burden of health impacts associated with polluted ambient air falls most heavily on the poor while the polluter seldom bears any of the social, economic and environmental costs. It furthermore notes the atmospheric emissions of ozone-depleting substances, greenhouse gases and other substances have deleterious effects on the environment both locally and globally. All these are contrary to the Constitution’s environmental rights⁸⁰. Note that “water” does not appear in the Act and any link between air and water quality is via ecological degradation.

Objectives of the Act

The objective of the Act is to give effect to the environmental rights in the Constitution by the protection and enhancement of the quality of air and the prevention of air pollution and ecological degradation. This will secure ecologically sustainable development while promoting justifiable economic and social development.

National Framework and National, Provincial and Local Standards

The Act requires the Minister to establish within two years a national framework that will give effect to the objectives of the Act. Some content is prescribed for the framework and aspects that must be dealt with through mechanisms, systems, procedures, national norms and standards include:

- ambient air quality standards;
- international agreements and commitments;
- emissions from point and non-point sources;
- air quality management planning; and
- air quality information management.

⁷⁹ National Environment Management: Air Quality Act, No. 39 of 2005

⁸⁰ Section 24 of the Constitution

Section 7 goes on to require:

(2) National norms and standards established in terms of subsection (1) must be aimed at ensuring—

- (a) opportunities for public participation in the protection and enhancement of air quality;*
- (b) public access to air quality information;*
- (c) the prevention of air pollution and degradation of air quality;*
- (d) the reduction of discharges likely to impair air quality, including the reduction of air pollution at source;*
- (e) the promotion of efficient and effective air quality management;*
- (f) effective air quality monitoring;*
- (g) regular reporting on air quality; and*
- (h) compliance with the Republic's obligations in terms of international agreements.*

Congruent with the Constitutional position of "air pollution", the framework allows for national, provincial and local norms and standards where such distinctions are justified by the conditions.

National Air Quality Advisory Committee

The Minister may establish a National Air Quality Advisory Committee as a subcommittee of the National Environmental Advisory Forum, established in terms of the National Environmental Management Act, to advise the Minister on the implementation of the Act.

Air quality management plans

Every national department or province responsible for preparing an environmental implementation plan or environmental management plan in terms of Chapter 3 of the National Environmental Management Act must include in that plan an air quality management plan. Similarly, every municipality must include in its integrated development plan contemplated in Chapter 5 of the Municipal Systems Act, an air quality management plan. The Act goes on to prescribe minimum content for such plans.

Air Quality Management Measures

Chapter 4 establishes a number of specialised measures which the Minister may invoke which generally take the form of a declaration and attendant regulations, including for:

- priority areas;
- activities resulting in atmospheric emissions;
- controlled emitters;
- controlled fuels; and
- priority air pollutants.

Licensing System

Chapter 5 sets up a licensing system for all emissions that the Minister declares should be licensed. Included are minimum requirements for the processes and procedures. Metropolitan and district municipalities are charged with implementing the atmospheric emission licensing system.

International Air Quality Management

Chapter 6 establishes the administrative powers and functions for cross border air quality management.

A.2.2 Current Practice

The implementation of the 1965 Atmospheric Pollution Prevention Act was extremely uneven, due to differences in perceived problems and more specifically institutional capacity

limitations. However, there have been specific successes over the past couple of decades, usually within urban areas where communities have mobilised against severely degraded air quality with associated health impacts.

It may be expected that there will be severe capacity constraints in the implementation of the 2005 Act, particularly at the local government level. Because the Act is new, it is not yet clear how it will be implemented, both at a regulatory and practice level. However, it does provide some scope to intervene in this important component of the hydrological cycle.

The possibilities of linking air quality management plans (and the associated local air emission licensing regime) to catchment management strategies should be explored, particularly where washout from the atmosphere has an impact on water quality of surface and/or ground water resources. This could create an explicit link between air and water, which is currently lacking in the legislation.

A.3 Weather Modification

Over the past 2 decades, South Africa has been experimenting with weather modification (particularly through cloud seeding), with the objective of increasing the likelihood of rainfall from particular cloud patterns.

Weather modification is regulated by the responsible authority (DWAF or ultimately CMAs) as a controlled activity (water use) under Section 21 of the National Water Act. The specific clause in section 37(1) is:

(b) an activity aimed at the modification of atmospheric precipitation

As such, weather modification (cloud seeding) is closely aligned with the governance arrangements for water resources management, although this approach has not yet become common practice.

APPENDIX B: Urban and Municipal Services

B.1 Introduction

The hydrological cycle process links together a number of components which together make up the broader cycle within which the environment should be viewed. These components include atmosphere, marine, aquatic, terrestrial and subterranean. The link between these components indicates that a change of atmospheric water component can affect the other components of the hydrological cycle. It is therefore critical that these are managed in a manner that will ensure sustainability.

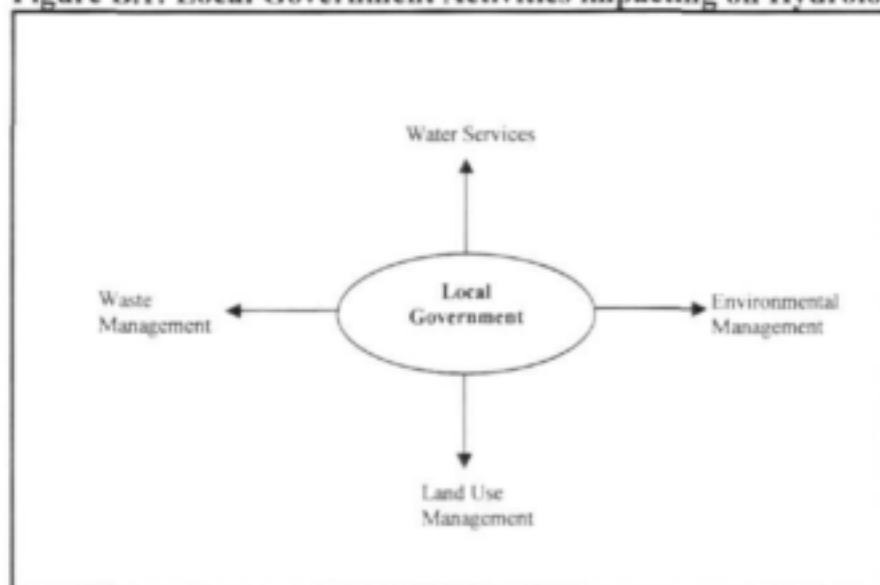
Secondly the hydrological cycle is affected by the processes of landscape change. These can be changes induced by physical processes (blue water) as well as changes induced by biological processes (green water). In terms of governance much concentration is on blue water management within the different phases of the hydrological cycle. Specific government departments are mandated to manage blue water through integrated governance systems. An example is the department of Water Affairs and Forestry (DWAF) which has a mandate for integrated water resource management. Integrated governance systems extend to management of other activities that impact on the hydrological cycle, i.e. land and environmental activities. These are managed by other government spheres, i.e. Local Government and provincial governments.

Governance Systems refers to the institutional systems, policies and procedures that are developed and put in place by relevant government departments mandated for managing specific activities that impact on the hydrological cycle. Through these systems, policies and procedures, government institutions are given mandates and powers to make decisions. While powers and mandates are given, it is critical to highlight the fact that all decisions should be based on integrated or cooperative relations between government institutions. However this still remains a challenge for most of government institutions.

Local government as a sphere of government nearest to communities and a vehicle for service delivery has a number of activities that highly impact on the hydrological cycle. Further specific legislation give local government powers to govern and make decisions on a number of activities that impact on the hydrological cycle. Local Government has specific areas that impact on the management of the Hydrological Cycle. These are Land Use Management, Waste Management, Environmental Management and Water Services. All of these activities are in the realm of planning (for sustainability) and service delivery (development). The implications are that local government has to create a balance between development objectives which focuses on service delivery and sustainability of the hydrological cycle.

The following discussion focuses on the role of local government and the governance of activities that impact on the hydrological cycle based on its mandates. It further provides the broader governance pictures of each activity including the roles of other government spheres. Finally it highlights the challenges and some possible considerations for sustainable management of the hydrological cycle.

Figure B.1: Local Government Activities impacting on Hydrological Cycle



B.2 Local Government Activities that Impact on the Hydrological Cycle

B.2.1 Land Use Management

Although decision making on governance of land use management rests with the minister for land affairs at national level and to a limited extent the provinces, through tribunals. The greater activities are at the local level where local government has to deal with a number of land use management activities. These include developing a framework for land use decision making, developing Spatial Development Framework, making strategic decisions on land use applications and finally enforcing decisions and ensuring compliance. The implications of these roles and functions imply that Local Government to a greater extent makes decisions on land use that will somehow have an impact on the Hydrological Cycle.

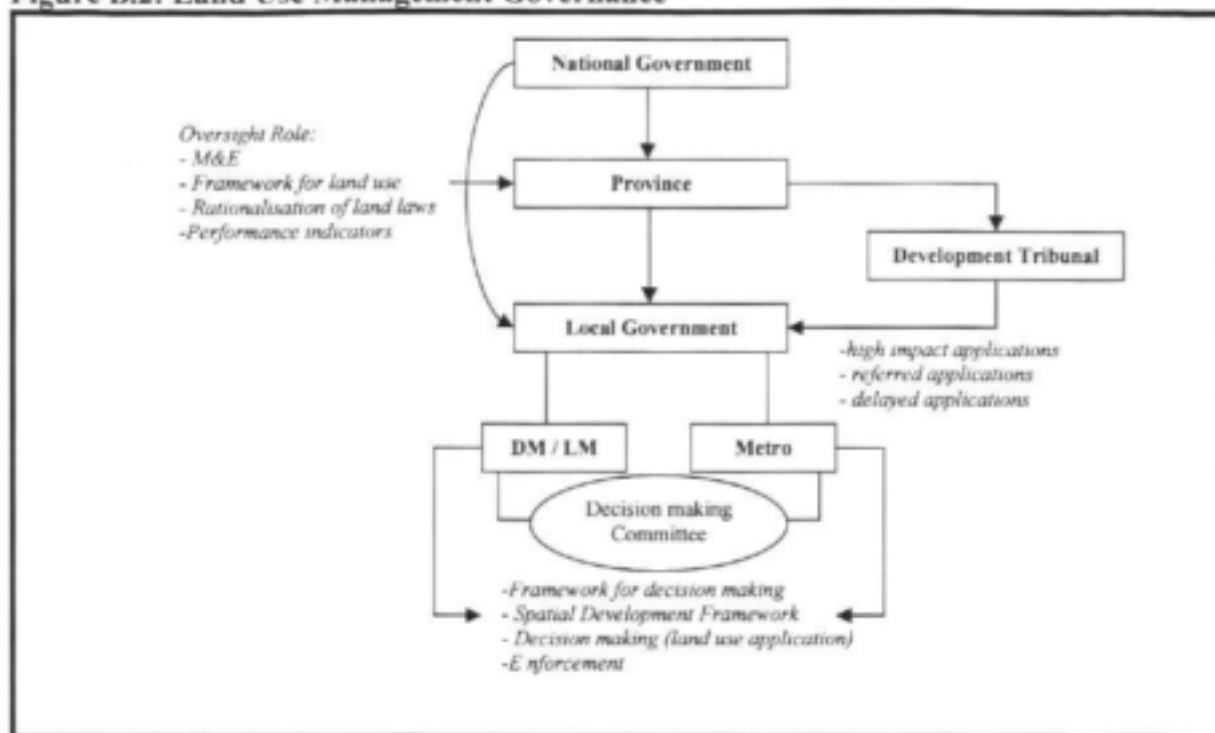
The white paper on land use planning and management describe the objective of land use management as ⁸¹“to facilitate allocation of land to the uses that provides greatest sustainable benefits and provides the transition to sustainable and integrated management of land resources”. A number principles are attributed as the base upon which this objective would be achieved. In the context of this subject, the principle of sustainable land use management is critical. It highlights the importance of sustainable management and use of resources making up the natural built environment. Every decision take on land development should take into account the likely negative impact of the on the environment, community and the economy.

In terms of policy the following should be the norms of this principle:

- Land may only be used or developed in accordance with law;
- The primary interest in making decisions affecting land development and land use is that of national, provincial or local interest as recorded in approved policy;
- Land development and planning processes must integrate disaster prevention, management or mitigation measures;
- Land use planning and development should protect existing natural, environmental and cultural resources;
- Land which is currently in agricultural use shall only be reallocated to other uses where real need exists and prime agricultural land should remain in production.

⁸¹ White Paper on Land Use Planning and Management

Figure B.2: Land Use Management Governance



The second critical principle is integration, which should take into account that all the other critical sectors that impact on the management of land use are included in the decision making processes. This principle requires an understanding of other government sectors' roles and functions as well as how they impact on land use management. The objective should be to satisfy efficiency and sustainability in terms of governance and the achievement of the intended government objectives.

In certain instances different legislation apply for different spheres of government or departments. It is therefore critical that institutions cooperatively develop mechanisms in order to manage land in an integrated manner as well as make integrated decisions.

The Challenges and Considerations

These principles place a very strong responsibility on local government whom, as indicated above has the responsibility of taking land use decisions that impact on other components of the hydrological cycle. In terms of practice a number of issues have been indicated as the challenges for local government both in terms of planning procedures and decision making.

- *The need to have a single legislation and procedures for land use management*

Although this challenge is still in the process of being addressed; a number of different legislation procedures are still used in land development. It would be important to have single land use legislation and procedures.

- *The need for alignment of land development procedures with those of from other processes from a different legislation, e.g. EIA processes.*

Land use decision impact on a number of other sectors and components of the hydrological cycle. It is therefore important that there is an alignment of activities between local government and other spheres of government for an integrated decision. A number of cooperative mechanisms can be developed.

- *The need to see land use management as a mechanism for sustainable land management and related components rather than a technical requirement – (approvals)*
- *The need to strengthen institutions in terms of staff capacity i.e. understanding of roles and functions and the impact of decision making*

In terms of practice this function is normally seen as a procedure prescribed by legislation without taking into account the impact a decision taken would have on the environment and other components. Staff need to be capacitated to assist in reaching a fair and sustainable decision. Capacity should focus on understanding roles and functions as well as the weight of responsibility.

- *Composition of the decision making body*

In the local government context, decisions on land use applications are made by a committee of political Councillors. However they are assisted by the management staff. Although there is involvement of management staff in the processes leading to decision making the committee has the powers to make a final decision. There is a need to consider the composition of the committee to include a mix of specific skills required for decision making. These could be sourced from province or national departments. This consideration could help towards decreasing an opportunity for decisions taken on political considerations rather than environmental considerations.

- *The need to strengthen institutions' coordinating and cooperative capacity*

Although the nature of our governance system is largely based on coordination and cooperation, particularly between government spheres and institutions, this still remains a major challenge. Currently the realisation of cooperation is mainly based on the individual's understanding and capacity. These elements are not institutionalised and kept within the institutional memory. It is therefore critical that capacity within local government is built around understanding the broad governance picture in order to achieve cooperation with other institutions with similar activities and impact.

- *Capacity to monitor and evaluate decisions and enforcement*

Local government as indicated earlier is granted the powers to make decisions on land use applications. There is an indication that the institutions do not have or there is little monitoring and evaluation on land decisions taken. This refers to the monitoring and evaluation on the impact of the decisions taken as well as the enforcement in the cases of transgression.

There is a need for local government institution to consider monitoring, evaluating and enforcing the decisions taken on use applications. In order to strengthen capacity and expertise, there could be cooperation with the other spheres of government, e.g. DEAT.

B.2.2 Water Services

The second area of impact is the water services function. In terms of the Water Services Act local government has a duty to provide adequate water services and sanitation to its constituencies within their areas of jurisdiction. Although this function may be outsourced through a contract, it remains a local government function.

The impact of this function in the hydrological cycle comes through abstraction of water from water resources, treatment and supply to the communities. The second impact is waste water discharge through sanitation, local industry, etc. back to the resource. This whole process is governed through authorisation procedures that are based on a license with specific conditions. All of the activities that impact on the national water resources are governed by the National Department of Water Affairs and Forestry (DWAF).

Local Government based on its water services functions has a Water Use impact on the Hydrological Cycle. Water use refers to all the activities that have a direct or indirect impact on the source of water, quantity of water in the resource; quality of water in the resource and the environment surrounding the resource. The NWA refers to water use as being the following activities:

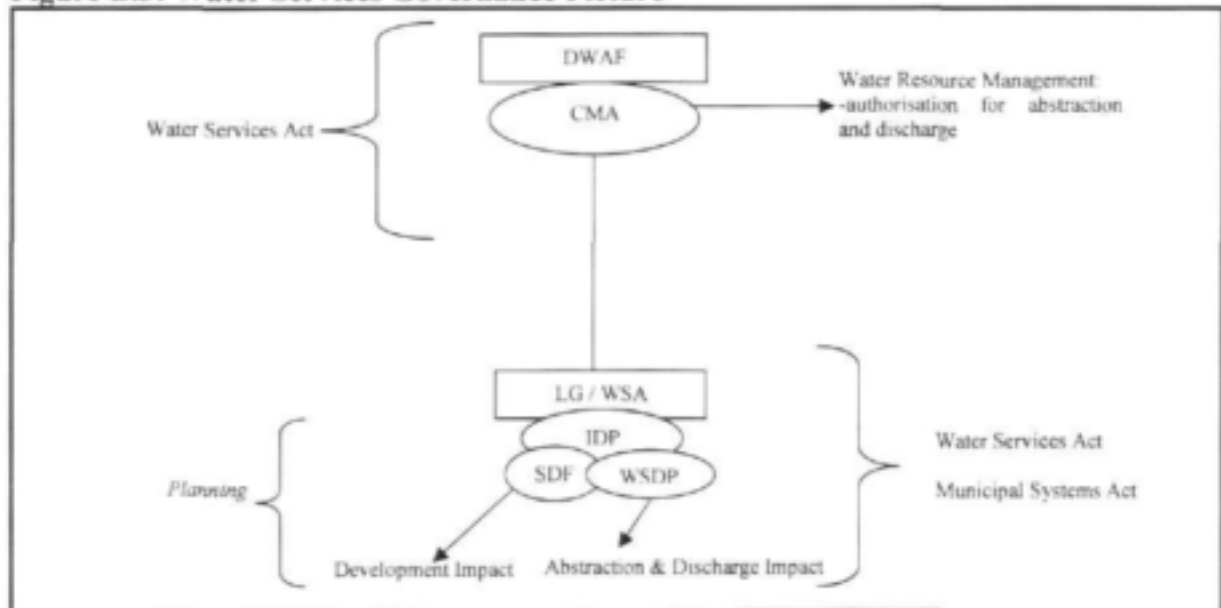
- taking water from a water resource (abstraction)
- storing water
- activities which reduce stream flow (for example forestry)
- discharging waste or water containing waste into a water resource
- controlled activities (activities which impact detrimentally on a water resource, for example irrigating land with water containing waste, or power generation activities which alter the flow of a water resource)
- changing the physical structure of rivers and streams (altering a watercourse, obstructing or diverting the flow of water in a watercourse)
- removing underground water
- using water for recreational purposes

Within these activities Local Government has the water use functions of taking water from a water resource (abstraction), discharging wastewater into a water resource and changing the physical structure of rivers and streams (altering a watercourse, obstructing or diverting the flow of water in the watercourse). This function in certain cases is done by the Water Services Provider on behalf of the municipality. In this case municipalities may build a dam in the river or pump water directly from the river.

The management of water at this level is done through authorisations. Depending on the extent of impact the institution has on the resource, they may be required to register as low risk users under general authorisations, (may require licence in certain instances) or be required to apply for water use licence as high risk users. In most cases local government water related functions are high risk users therefore requiring water use licence application with the relevant authority, i.e. DWAF / CMA. Certain conditions apply to the licences that are issued by the relevant authorities. These conditions include period during which licence will apply and the conditions that will ensure that the activity does not have a negative impact on the resource. The challenge for local government in this context is the failure to comply with the licence conditions therefore to certain extent impact on the environment.

Local government water use is based on planning that determines water would be abstracted from the resource as well as water that would be required as a result of spatial development. This is governed by Integrated Development Planning (IDP) which has sector plans of Water Services Development Plans (WSDP), Spatial Development Plans (SDF) etc. By implications IDPs and its sector plans highlight the impact of water abstraction and discharge. However this will require investigation of the possibility of these local government requirements and the impact on the resource and its environment.

Figure B.3: Water Services Governance Picture



Currently the challenge around planning is the issue that majority of these plans are developed in isolation of other plans by other institutions or sectors of government, e.g. Catchment Management Strategies and plans (CMS). These plans can help local government plan accordingly as well as devise options for their development objectives as they set out what is possible and not possible in a specific water resource. The limited capacity on understanding the need for broad strategic alignment of planning between institutions results in poor management of impact on the hydrological cycle by local government.

The Challenges and Considerations

Local Government being at the forefront of service delivery to the communities; it is normally faced by a number of challenges that sometimes push decisions that may be negative towards the sustainable management of the environment. There is a need to create a balance between service delivery and environmental considerations. It is therefore critical that these challenges are addressed.

- *Adherence to water license conditions*

Water abstracted and discharged back into the resource is based on a licence conditions that are based on the standards set for that particular resource in order to achieve sustainability and biodiversity. Stricter measures and incentives are required to conform to the license conditions.

- *Alignment of Planning*

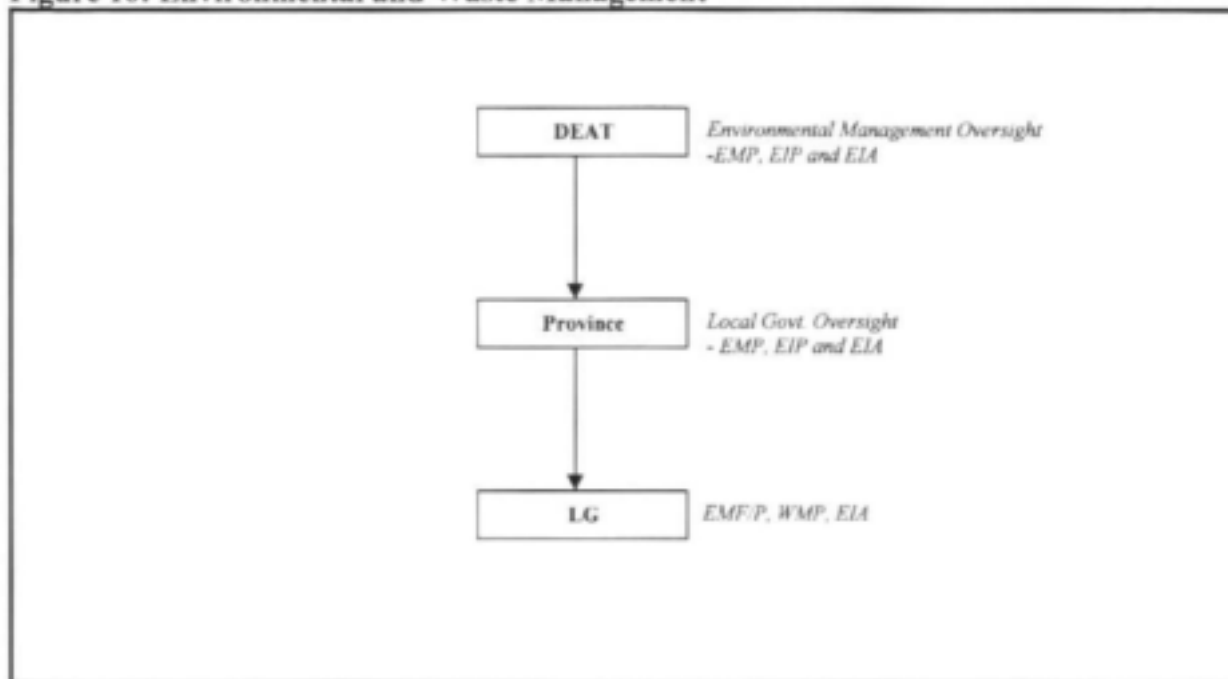
Local government successful development and implementation of its plans is largely influenced by a number of other plans outside its legislative realm. Therefore there is a need to build institutional capacity to align planning procedures governed by different legislation. Alignment of planning will also increase accuracy in achievement of development promises to constituencies.

Alignment of planning should be based on cooperative relations that recognise the autonomy of each institution involved and the need to develop cooperative mechanisms for efficiency.

B.2.3 Environmental and Waste Management

In terms of the Constitution local government has a duty to “*promote a safe and healthy environment*”. Local government therefore has a role in creating healthy and clean environment within their areas of jurisdiction. The implications are that local government has powers for decision making and advice in all environmental and waste management matters within their areas of jurisdiction. However decisions and advises should be cooperation with the provincial and national departments.

Figure 10: Environmental and Waste Management



The role of local government in environmental and waste management can be summarised as follows:

- Promote integrated environmental management within their areas of jurisdiction, (Environmental Management Framework)
- Develop waste management plans
- Promote environmental health based on national and provincial legislation;
- Develop environmental management awareness within their areas of jurisdiction;
- To consider and provide comments on high impact developments within their areas of jurisdiction, subject to EIA regulations;
- To coordinate comments on EIA's; and
- To identify environmental risks and hazards that requires priority intervention. This should be coordinated with the department in charge of the relevant resource and Environmental Affairs.

In terms of environmental and waste management governance at local level, local government have to develop environment and waste management plans that are based on the national and provincial legislation. These should guide all development that has impact on the environment. Local government has a number of areas where these plans are applicable, viz:

- Land use management activities
 - o Rezoning
 - o Township establishment processes
 - o Proclamation of areas
- Local industry waste monitoring
- Management of conserved areas within municipal jurisdiction

- Management of municipal open space.

Certain activities within local government may have high impact therefore require National and / or Provincial governments' coordination for assessment of environmental impact, e.g. the Environmental Impact Assessments.

The challenges and Considerations

A number of challenges are still experienced within local government for management of environment and waste. This in turn affect the hydrological cycle. A number of these challenges are institutional and capacity issues.

o Capacity within Local Government Institutions

Although it is a constitutional obligation for local government to ensure a healthy and safe environment, a number of local government institutions do not have dedicated departments and personnel to deal with environmental management and the impact it has on the hydrological cycle. It is mostly the Metro councils and a limited number urban local and district municipalities. In the municipalities where these exist there is still a challenge of capacity on the staff.

There is a need to consider developing the capacity of the municipalities around environmental and waste management particularly where there are adverse effects on the environment. Building of capacity should be linked to provinces that should assist local government in performing this function.

Certain activities that impact on the hydrological cycle require provincial government involvement. Capacity deficiency that exists at this level further makes it difficult for local government to be seen to be delivering services. There is a need to build capacity at this level in order to strengthen local government.

B.3 Conclusion

Local government has a number of activities that impact on the hydrological cycle. Based on the governance policies, systems and procedures that exist; there is awareness that these are required for effective and sustainable management of the hydrological cycle. However based on the discussions above there are a number of challenges that should be addressed for effective governance.

- **Implementation**

Governance systems in place provide a framework around which sustainable management of hydrological cycle and implementation will be achieved; however there is an indication of deviation when it comes to implementation. Other drivers other than sustainability tend to take prominence.

- **Limited capacity to understand governance requirements**

Successful implementation is dependent on capacity to understand the broad governance picture of roles, responsibilities and mandates of all governance institutions as well as the overall objectives. The limitations in this regard impact negatively on prospects of integrated governance efforts.

- Closing the gaps between policies and legislation

Different legislation and policies by different government institutions govern the management of all activities that impact on the hydrological cycle. There is a need to harmonise policies / procedures that are aimed achieving similar objectives.

- Monitoring and Evaluation

Management of activities that impact on the hydrological cycle are based on decisions that have sustainability as the drivers. There is a need for institutions particularly local government to monitor decisions taken on specific developments or activities that may impact on the hydrological cycle.

- Governance / Decision making Structures

Decisions at local government level are based on committees that are appointed for various functions of the municipality, included in these are the activities that impact on the hydrological cycle. The challenge with some of the structures is the composition, which is characterised by councillors (politicians) who may have limited understanding of the issues at hand. Although there is an argument that committees' decisions are based on recommendations by "experts", the decisions remain with politicians who may have other drivers other than sustainability. There is a need to reconsider some of the procedures for decisions making

- Cooperative Governance

Different institutions are involved or have to make comments on a number of land activities that impact on the hydrological cycle. There is a need to develop integrative mechanisms that will promote cooperation between institutions.

- Accountability of institutions on decisions taken

Decisions taken in any of land governance issues have serious future implications therefore rendering a need for accountability of institutions involved in the decisions making. Currently at local government there is little accountability of municipalities on the activities that impact negatively on the hydrological cycle. This is sometimes the case at provincial level as they in certain instances provide comments. There is a need to consider institutions accountable for decisions taken.

APPENDIX C: Communal Lands

C.1 Introduction

South Africa is currently in a changing state moving towards development of democratic society and institutions governed by the constitution and relevant statutory laws. However this country has a background of former independent states that were largely rural and were based on pockets of traditional governance. Traditional authorities covered all aspects of governance including management of communal lands, management of local water resources, conflict resolution within and between authorities, etc. In the new era the authorities continue to operate, particularly in the remote areas where most of government democratic institutions have not reached / have least impact.

C.2 Role of Traditional Authorities

The role of traditional authorities in the new democratic South Africa is still a debate in relation to their role in governance, particularly in local government structures. While the role of traditional authorities is a debate, there is recognition that they have a role helping government achieve its objectives, particularly in the rural areas. The white paper on traditional leadership and governance describe the role of traditional authorities at local level as being:

- advise government in developing policy impacting on rural communities;
- advise government in the development of legislation that impacts the rural communities;
- participate in international and national programmes geared towards the development rural communities; and
- participate in national and provincial initiatives meant to monitor, review and evaluate government programmes in rural communities.

Traditional authorities also have functions or roles that impact on the hydrological cycle; these are:

- *Natural resource management*

Traditional authorities have a role to promote sustainable use of traditional approaches to water resource management.

- *Environment and Tourism*

Traditional authorities have a role to promote environmental management and sustainable use of cultural resources by the communities.

- *Land and agriculture management*

Traditional authorities as responsible authorities for management of land and they have powers to allocate land and its administration.

While there are indicated roles of traditional authorities in governance at local level, the challenge is the investigation of governance and the processes leading to decision making in some of these roles. Various departments have legislation and policies governing decision making however, not undermining the traditional approaches, there is little indication that

these are also applied in the traditional authority context, this is largely based on certain interventions where departments have had to intervene in order to protect against negative impact on the environment.

C.3 Traditional Authorities and activities that impact on the Hydrological Cycle

Land Allocation

Beginning with allocation of land, various land use applications are made to the traditional authorities for approval. Some of the approvals are not based on specific legislation that takes into account specific circumstances for decision making. This in turn makes it difficult to achieve sustainable land use for the benefit of all. It may be appropriate to link these land activities with the relevant local government and provincial departments for sustainability purposes. The provincial department of agriculture, district municipality and the regional offices of land affairs may want to be part of the process in making decisions. This should not be viewed as removing traditional authority powers but a process towards sustainability.

Environment and Water Resources Management

Communities around rural areas are still dependent on the environment for a number of purposes including use of plants for traditional medicines, use of wetlands for livelihoods, etc. Although this may be argued, majority of these activities are not based on sustainable means therefore leading to some of the plants extinction as well as spoiling of some of the wet lands. There is therefore a need to link most of these activities to relevant department who may introduce sustainable measures for continued benefits as well as minimisation of the impact on the hydrological cycle.

In relation to management of local water resources, traditional authorities are in charge of allocating water to different users as well provide authorisations to different uses. The challenge around this role is that some of the water activities approved have a potential of a negative impact on the resource. Reference could be made to the communities around strategic resource areas where traditional authorities have granted authorisations for water abstractions without involvement of water resource management institutions.

C.4 Challenges and Recommendations

o Traditional authorities operate independent of statutory laws

Based on the above, the indication is that although there is existence of statutory law for a number of activities that affect the hydrological cycle, a number of traditional authorities in communally owned lands still operate independently without the support of democratic structures. There is rural legal pluralism that currently exists, which both institutions should consider for effective governance of resources. There is a need to adapt some of the traditional customs into the new state of affairs.

o Lack of cooperative relations between traditional authorities and democratic establishments

Existence of traditional authorities is recognised by the Constitution and majority of legislation and policies. The recognition by the Constitution dictates that there is a need to develop cooperative mechanisms that will facilitate integration of activities particularly those that impact on sustainable development issues. Currently there is tension on the relationships between democratic establishment and traditional establishments, particularly with local government. It is recommended that these institutions consider provisions of chapter three of

the Constitution. The outcomes of these considerations should cover providing among other things clear indications of how customary law would be engaged governance. In the end cooperation should achieve:

- Uniform legislation for all development activities;
- Clear indication of roles and responsibilities of all stakeholders involved.

In order to deal with hydrological cycle impacts on communally owned areas, government departments in charge of the governance activities that impact on the hydrological cycle should consider prioritising engagement with traditional authorities in communally owned lands.

APPENDIX D: Agriculture

D.1 Background to the Agricultural Sector

South Africa is not richly endowed with agricultural resources and there are inherent limitations to the natural resource base in terms of agricultural production⁸². 86% of the surface area is used for agriculture, only 14% of which is arable land. The remaining 74% is natural veld. Nearly 91% of the country is arid, semi-arid and dry sub-humid⁸³. In 2003 agriculture contributed 3.1% (R35,6 billion) to the total GDP.⁸⁴ This figure does not include backward and forward linkages to the national economy. Formal agriculture provides employment for about 940 000 farm workers, while the smallholder sector provides full or part time employment to a further 1.3 million households⁸⁵. 70% of South Africa's poor people reside in rural areas and agriculture is therefore seen as an important means of creating livelihood support for rural communities.

Due to increasing costs and a sharp reduction in subsidies, commercial agriculture has become more demanding and competitive. The number of commercial farmers has dropped from 78 000 to 45 000 over the past 15 years⁸⁶. The South African economy is shifting away from primary and secondary economies and there is a growing tertiary economy. Tourism is the fastest growing sector of the economy and in 1999 it contributed 10% of GDP, significantly more than agriculture⁸⁷.

D.2 The impact of agricultural activities on the hydrological cycle

Agricultural activities have a significant impact on the natural landscape; many of these impacts are directly linked to the hydrological cycle. The most important impacts include siltation of freshwater systems through soil erosion, salination through the evaporation of irrigated water, increase in nutrients and biocides from agricultural runoff, increase in invasive plants through the reduction in natural habitat and the use of water for irrigation purposes. These areas will be discussed in more detail.

D.2.1 Siltation

The loss of soil from the land is a natural process but when it happens at a greater rate than soil can be formed, the process is called soil erosion. South Africa is estimated to be losing 300 million tons of soil annually⁸⁸. Much of this soil is washed into freshwater systems, leading to an increase in suspended levels and consequently a range of chemical and physical effects on aquatic ecosystems⁸⁹.

D.2.2 Salinisation

Long-term irrigation in dry areas, or areas that have high concentration of minerals, results in human-induced salinisation of soils and water. Salinisation is caused by the evaporation of irrigated water that is collected in the soil. As the water evaporates it leaves salts behind, often

⁸² Department of Agriculture. Undated (post 2002). Policy on agriculture in sustainable development. A discussion document. p. 7

⁸³ Department of Agriculture. Undated (post 2002). Policy on agriculture in sustainable development. A discussion document. p. 7

⁸⁴ Department of Agriculture. 2004. Sectoral overview and performance review. p. 12

⁸⁵ Department of Agriculture. 2004. Sectoral overview and performance review. p. 12

⁸⁶ Bernstein, A. 2000. Land reform in South Africa: A 21st Century perspective. Research Report no 14. The Centre for Policy Development and Enterprises, Johannesburg.

⁸⁷ South Africa's national biodiversity strategy and action plan. Final Draft. 6 May 2005. p. 12

⁸⁸ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban. p 198

⁸⁹ Davies B. and Day J. 1998. Vanishing waters. University of Cape Town Press, Cape Town. p. 181

making the soil infertile. As rain flushes out the salt, rivers are subjected to unnaturally high concentration of salts. Salination is recognised as one of the major threats to South Africa's water resources⁹⁰.

D.2.3 Increase in nutrient and biocide levels

Nutrients, such as phosphorous and nitrogen, are added to the soil to stimulate agricultural growth. An increase of these nutrients in aquatic system is not lethal to organisms even in high concentration. However, they stimulate plant growth which significantly alters the structure and function of biotic communities, leading to cultural eutrophication characterised by cyanobacterial and algal blooms. These blooms are often toxic to organisms and costly to remove.

In addition to the use of nutrients and fertilizers, current-day agriculture relies on biocides (such as herbicides, insecticides and fungicides) to control pest organisms. Biocides enter the aquatic system as runoff from agricultural practices. Well known examples of biocides include DDT and dieldrine. These are highly toxic to organisms, are insoluble to water, are photosable (i.e not broken down by light) and accumulate in living organisms⁹¹.

D.2.4 Increase in invasive plants

The transformation of natural vegetation to monocultures results in significant habit loss and is described as one of the most important threats to biodiversity in South Africa⁹². The removal of natural vegetation often leads to encroachment from weeds and plant invaders. Many of these plants use considerably more water than indigenous vegetation. Provisional estimates show that annually close to 3% (1 400 million m³) of South Africa's mean annual runoff is intercepted by invading alien vegetation⁹³.

D.2.5 Use of water for irrigation

Agricultural irrigation represents 62% of the total water requirements in the country⁹⁴. Water losses through current irrigation practices range from between 30 and 40%⁹⁵. Many of these losses are due to inefficient irrigation systems that do not reach the root of the crops. Water efficient irrigation systems, such as drip irrigation, are not widely used. In addition, leaking canals, soil type, irrigation scheduling, soil preparation and crop selection all impact on water efficiency in the agricultural sector⁹⁶.

In August 2004, DWAF released the Water Conservation and Water Demand Management Strategy for the Agricultural Sector. The strategy outlines eight objectives to "promote equitable and efficient use of water to increase productivity and to reduce past inequities in the sector, especially with regard to new entrants⁹⁷".

⁹⁰ Davies B. and Day J. 1998. Vanishing waters. University of Cape Town Press, Cape Town.

⁹¹ Davies B. and Day J. 1998. Vanishing waters. University of Cape Town Press, Cape Town.

⁹² Department of Environmental Affairs and Tourism. 6 May 2005. South Africa's national biodiversity strategy and action plan. Final Draft.

⁹³ Department of Water Affairs and Forestry. 2004. National water resource strategy. First Edition. p. 46

⁹⁴ Department of Water Affairs and Forestry. 2004. Water conservation and water demand management strategy for the agricultural sector, August 2004. p. 7

⁹⁵ Department of Water Affairs and Forestry. 2004. Water conservation and water demand management strategy for the agricultural sector, August 2004. p. 7

⁹⁶ Department of Water Affairs and Forestry. 2004. Water conservation and water demand management strategy for the agricultural sector, August 2004. p. 7

⁹⁷ Department of Water Affairs and Forestry. 2004. Water conservation and water demand management strategy for the agricultural sector, August 2004. p. 2

D.3 Legislative environment to protect the hydrological cycle from agricultural activities

The Conservation of Agricultural Resources Act 43 of 1983 (CARA) is the most important Act responsible for the holistic management of the agricultural sector. CARA is the successor to the Soil Conservation Act 76 of 1969 and it is possible that it will soon be replaced with the Agriculture Resources Act. CARA makes provision for the conservation of the natural agricultural resource of South Africa through:

- Maintaining the productive potential of the land,
- Combating and preventing erosion,
- Preventing the weakening or destruction of water sources,
- Protecting the vegetation, and
- Combating weeds and invader plants⁹⁸.

CARA is not applicable to urban area, to land vested in the South African Development Trust, and to land declared under the Mountain Catchment Act.⁹⁹ A central instrument of CARA is that the Minister may prescribe control measures to which all land users have to comply¹⁰⁰. The Minister has published numerous control measures and directions (to order a land user to comply with a particular control measure). Some control measures most relevant to the protection of the aquatic environment include the following:

- Cultivation of virgin soil,
- Cultivation of land with slope,
- Protection of cultivated land against erosion through the action of water,
- Protection of cultivated land against erosion through the action of wind,
- Prevention of water logging and salination of irrigated land,
- Utilisation and protection of vleis, marshes, water sponges and water courses, and
- Regulating the flow pattern of water¹⁰¹.

Other important mechanisms under CARA include the ability of the Minister, in accordance with the Minister of Finance, to establish schemes in which finances may be given to land users to implement certain measures. Schemes may be established in four areas, soil conservation schemes, flood relief schemes, bush control schemes and weed control schemes¹⁰².

The Act also allows the Minister to establish Conservation Committees for certain designated areas. The Committees are to promote conservation of the agricultural resources of the area concerned¹⁰³.

Table D.1: A summary of legislation that affects agricultural activities¹⁰⁴.

Policy	Objective	Responsible Department
Conservation of Agricultural Resources Act 43 of 1983	Control over the utilisation of the natural resources of South Africa in order to promote the conservation of	Department of Agriculture

⁹⁸ Department of Agriculture. CARA legislation made easy.

⁹⁹ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban.

¹⁰⁰ Republic of South Africa. National Water Act. 36 of 1998. Section 6.

¹⁰¹ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban.p 215

¹⁰² Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban.p 216

¹⁰³ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban p. 218

¹⁰⁴ Based on Glazweski J. 2000 and Department of Agriculture. Undated (post 2002). Policy on agriculture in sustainable development. A discussion document.

	the soil, the water resources and the vegetation and the combating of weeds and invader plants.	
Subdivision of Agricultural Lands Act 70 of 1970	Designed to prevent the subdivision of land into uneconomic units but now concerned with zoning regulation to prevent unauthorized change in land use.	Department of Agriculture
Genetically Modified Organisms Act 15 of 1997	Provides measures to promote responsible development, production, use and application of genetically modified organisms.	Department of Agriculture
Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act 36 of 1947	Registration and regulation of fertilisers, farm feeds, agricultural remedies, stock remedies, sterilising plants and pest control operators.	Department of Agriculture
Agricultural Pests Act 36 of 1983	Provides measure to control plants for the prevention of plant diseases.	Department of Agriculture
Foodstuffs, Cosmetics and Disinfectants Act 54 of 1972	Control on the sale, manufacture and importation of foodstuffs	Department of Health

D.4 Land Care Program

In 1997, the Government of South Africa launched the National LandCare Programme, administered under the Land Use and Soil Management Directorate, in the Department of Agriculture. The programme was modelled on the Australian LandCare Programme. The national goal of the South African LandCare programme is to optimise productivity through sustainable use of natural resources to improve food security and employment, thus delivering a better quality of life for all¹⁰⁵. The Draft LandCare Policy Statement (2004) outlines the six principles of the Programme:

1. Integrated sustainable natural resource management embedded within a holistic policy and strategic framework where the primary causes of natural resource decline are recognised and addressed.
2. Fostering group or community based and led sustainable natural resource management within a participatory framework, including all land users both rural and urban, so that they take ownership of the process and the outcomes.
3. The development of sustainable livelihoods for individuals, groups and communities utilising empowerment strategies.
4. Government, community and individual capacity building through training, education, and support mechanisms.
5. The development of active and true partnerships between governments, LandCare groups and communities, non government organisations and industry.
6. The blending together of appropriate upper level policy processes with bottom up feedback mechanisms. Feedback mechanisms should utilise effective LandCare institutional frameworks to give voice to the Programme beneficiaries and supporting participants¹⁰⁶.

The LandCare programme recognises the growing nationally and internationally trend that legislative mechanisms alone do not result in sound natural resource management. The programme uses education and awareness to create a land care ethic that assists in making people committed to good management of their natural resources¹⁰⁷. Most of the LandCare projects are small community-based development projects designed by Provincial Department

¹⁰⁵ Holt, R. 2004. Towards sustainable LandCare practices in South Africa: Caring for our, land, caring for our people. Australian Government and LandCare South Africa. P. 10

¹⁰⁶ Holt, R. 2004. Towards sustainable LandCare practices in South Africa: Caring for our, land, caring for our people. Australian Government and LandCare South Africa.

¹⁰⁷ Holt, R. 2004. Towards sustainable LandCare practices in South Africa: Caring for our, land, caring for our people. Australian Government and LandCare South Africa. P. 9

of Agricultural (PDA) Staff. There are several successful examples of how these projects work to alleviate poverty and promote sustainable agricultural development (See Box). In 2001 there were 90 projects nationally and over 200 in 2004. A small group of PDA staff are committed to implementing LandCare. However most PDA staff do not have time to work closely with communities to further the LandCare approach. Additional government leadership, legislation, funding and capacity building is required to equip staff to adequately implement the LandCare programme¹⁰⁸.

Many of the principles of LandCare are encompassed in existing legislative such as the Conservation and Agricultural Resources Act. A new Sustainable Utilisation of Agriculture Resources Bill is being drafted that in its current form will more explicitly support LandCare Initiatives¹⁰⁹.

The Department of Agriculture has recently launched a strategy for large scale planning in which local people identify and address the concerns of the community while striving to improve or maintain the health of the land. The strategy is called LandCare Area Wide Planning. The strategy uses the IDP vehicle to assist local individual and communities to solve problems that integrate social, economic and ecological concerns. The approach aims to bring together stakeholders from government, civil society and industry¹¹⁰.

D.5 Working for Water

The Department of Agriculture (DoA) is an implementing agency for Working for Water. The Department has had significant successes in implementing this program through collaborative action with land owners¹¹¹. The DoA provides financial support and technical advice to support the removal of aliens on private land.

D.6 Land reform and agriculture

The close links between agriculture and land reform is illustrated by the union of Agriculture and Land Affairs into one Ministry. The Land Reform process has an imperative to redress the apartheid planning that confined eighty percent of the population to twenty percent of the land area¹¹². Gaining access to land, and the subsequent finances and technical knowledge that is required to farm the land sustainably is one of the most pressing concerns facing rural South Africa. The land reform process is the first step in addressing this problem.

D.6.1 The land reform process

The Restitution of Land Rights Act 22 of 1994 is the main statute dealing with land reform in South Africa. The Act was developed in response to the fact that more than 3.5 million people and their descendants were victims of racially based dispossession and forced land removal. Under the legislation, a person or his direct descendants are entitled to restitution of land that they were dispossessed of through discriminatory practices after 13 June 1913¹¹³.

¹⁰⁸ Holt, R. 2004. Towards sustainable LandCare practices in South Africa: Caring for our, land, caring for our people. Australian Government and LandCare South Africa.

¹⁰⁹ Holt, R. 2004. Towards sustainable LandCare practices in South Africa: Caring for our, land, caring for our people. Australian Government and LandCare South Africa.

¹¹⁰ Steyn, F. 2003. LandCare area wide planning. Department of Agriculture, South Africa. p. 3 and Francis Steyn. 2005. Department of Agriculture. Personal Communication.

¹¹¹ Francis Steyn. 2005. Department of Agriculture. Personal Communication.

¹¹² Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban. p.32

¹¹³ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban. p. 222

The land reform process has had some significant successes over the past 10 years, with 70% of land restitution claims now settled¹¹⁴. However, there has been less success in the transfer of land for agricultural development. There are probably some 91 000 black commercial farmers in South Africa – about twice that of white farmers but most of these farmers have much smaller farms and therefore own only 5% of the commercial agricultural land area¹¹⁵. In 1994 the government committed itself to redistribute 30% of agricultural land to black owners by 2014¹¹⁶. The Land Reform and Agricultural Development (LRAD) programme is designed to expand the range of support that previously disadvantaged South Africans received in the land reform process. The objective is to initiate support services and capacity training in agriculture so that land can more effectively be taken up for agricultural purposes¹¹⁷.

D.6.2 Land reform and water efficiency

The current concentration of water management expertise within white-dominated commercial agriculture means that an increase in previously disadvantaged community involvement in the agricultural sector may, at least in the short term, lead to reduced water efficiency in the sector. This is illustrated through small scale sugar cane projects in the Nkomazi District. A lack of technical expertise amongst emerging farming meant that many emerging farmers tended to over water in the early stages of cane development¹¹⁸. In addition drip irrigation technology, although 30% more efficient, is costly to install and it is unlikely that emerging farmers will have the financial resources to convert to this form of irrigation¹¹⁹. Land Reform and Agricultural Development (LRAD) programme does have the potential to rectify this problem by providing technical support and capacity building to expand water efficient irrigation schemes. There are significant benefits in linking the activities of LRAD with LandCare so that new entrants in the farming sector are capacitated to understand the long term benefits of sustainable farm management practices.

¹¹⁴ Bernstein, A. 2000. Land reform in South Africa: A 21st Century perspective. Research Report no 14. The Centre for Policy Development and Enterprises, Johannesburg. p. 7

¹¹⁵ Bernstein, A. 2000. Land reform in South Africa: A 21st Century perspective. Research Report no 14. The Centre for Policy Development and Enterprises, Johannesburg. p. 11

¹¹⁶ Bernstein, A. 2000. Land reform in South Africa: A 21st Century perspective. Research Report no 14. The Centre for Policy Development and Enterprises, Johannesburg. p. 7

¹¹⁷ Department of Agriculture. 2001. The strategic plan for South African agriculture. 27 November 2001. p. 9

¹¹⁸ Brown, J. and Woodhouse, P. 2004. Pioneering redistributive regulatory reform: A study of implementation of a Catchment Management Agency for the Inkomati Water Management Area, South Africa. Revised Draft. University of Manchester.

¹¹⁹ Brown, J. and Woodhouse, P. 2004. Pioneering redistributive regulatory reform: A study of implementation of a Catchment Management Agency for the Inkomati Water Management Area, South Africa. Revised Draft. University of Manchester.

The Kaalspruit Farm Project is located 20 km south of Bloemfontein on a 369 ha farm. The former workers on the farm bought the property through the Land Redistribution Programme in 1996 and started a dairy. The broad aim of the Kaalspruit Farm Project is to develop a small dairy enterprise. The Free State Provincial Department of Agriculture (PDA) provided back-up support for the project, and LandCare funding of R158 000 was used to supplement funding from other sources for the development of the project. The LandCare funds were used to relieve pressure on the natural resources on the farm and provided fencing, livestock water and improved pastures.

Project members developed objectives for the farm project with facilitation from PDA officials. The successes of the project include:

- 128 ha of veld grazing paddocks were fenced and water points were set up in each paddock. A grazing system and the fencing allowed the farmers to control grazing of the veld and to implement long-term rest periods to restore the vigour of the grazing grasses.
- 5 ha of community vegetable gardens were established. The profits were invested in a broiler production project.
- Livestock handling facilities were developed so that individual animals could be weighed, inspected and treated for diseases and parasites.
- Farmers were trained in a wide range of agricultural production activities to ensure that they had adequate capacity to manage their commercial dairy system.
- A 32% increase in prices is now being obtained for milk products than when the project first started. There is considerable scope to increase the income generation by adding value to the raw milk. Yoghurt and cheese production is being considered.
- Farmers and the management committee are now empowered to make their own decisions regarding farm, agricultural and financial management.
- The project concept is being spread to other communities through cross visits. Visitors see the successes of the project and get new ideas directly from the farmers, and then take these ideas back to their communities.
- Fruitful relationships have been developed with experienced white commercial farmers.
- Effective mentoring and support from the PDA and commercial farmers has been established.

D.7 Conclusion

Agricultural activities pose significant challenges to the governance of the hydrological cycle. The most important impacts include siltation of freshwater systems through soil erosion, salination through the evaporation of irrigated water, increase in nutrients and biocides from agricultural runoff, increase in invasive plants through the reduction in natural habitat and the use of water for irrigation purposes.

Technically, it is difficult to develop a methodology that can quantify the contribution that Non Point Sources (such as agricultural runoff) have on water resources. This makes it difficult for agriculture practises to be regulated through a Waste Discharge Charge System.

The LandCare programme offers an alternative approach to governing agricultural practices. The programme uses education and awareness to create a land care ethic that assists in making people committed to good management of their natural resources. However, the programme is small in scope and requires additional government leadership, legislation, funding and capacity building to adequately equip staff to implement the LandCare measures. There is a need to advance the policy environment for LandCare through the promulgation of the new Sustainable Utilisation of Agriculture Resources Bill.

The current concentration of water management expertise within white-dominated commercial agriculture means that the current emphasis on increasing previously disadvantaged community involvement in the agricultural sector may, at least in the short term, lead to reduced water efficiency in the sector. However, there are opportunities to link the activities of LRAD with the LandCare programme so that new entrants in the farming sector are capacitated to implement water efficient techniques and sustainable farm practices.

APPENDIX E: Forestry

Forestry can be distinguished into the commercial forestry sector, focusing on cultivation of exotic timber plantations to support the pulp and paper industry, and the conservation and sustainable utilisation of indigenous forests.

E.1 *Indigenous Forestry*

Indigenous forests cover only 0.25% of South Africa's surface area. During the 19 century South Africa limited natural forests saw extensive exploitation; this led to a policy of protection and a recognition in the Constitution that the administration of indigenous forests is a concurrent national and provincial concern. Most forested areas occur mainly in the eastern and southern slopes of mountain ranges from the Cape Peninsula in the Western Cape to the Soutpansberg in the Northern Province.¹²⁰

E.2 *The Commercial Forestry Sector*

The South African commercial forestry estate covers approximately 1.5 million ha or 1.2% of the total land area of the country. In addition to the 1.5 million hectares under commercial plantation, forestry companies manage a further 500 000 ha of unplanted land. These areas include wetlands, indigenous forests, and grasslands. Companies are obliged to manage these areas for their biodiversity, watershed protection and other social and environmental benefits¹²¹.

Commercial forestry supports a large wood processing and manufacturing sector. The South African industry has grown from a base zero in the 1940's, to now producing an estimated 1.63% of the global pulp supply¹²². Production from the plantations contributes about R2 billion per annum to the South African economy. This figure rises to around R13 billion when one includes the products processed from plantations¹²³. Conservative estimates state that the industry employs about 150 000 people¹²⁴, with some sources estimating the number to be as high as 260 000¹²⁵.

The administration of forests and trees falls under national government control and the most relevant piece of legislation is the National Forest Act 84 of 1998, brought in to replace the Forest Act 122 of 1984.¹²⁶

E.3 *National Forest Act 84 of 1998*

The National Forest Act outlines the principles of sustainable forest management and describes the process for restructuring the forestry sector. The Act emerged following an extensive consultative process that resulted in the White Paper on Sustainable Forest Development in 1996. The Act gives effect to the principles contained in the White Paper.

¹²⁰ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban. p. 441

¹²¹ Dloma, M. and Pitcher, M. 2003. Changing ownership and management of state forests plantations: South Africa. Draft. Prepared for the International Institute for Environment and Development. Available: http://www.iied.org/docs/flu/Plant_Priv_docs/South_Africa.sept2003.pdf. Accessed June 2005. p. 2.

¹²² Dloma, M. and Pitcher, M. 2003. Changing ownership and management of state forests plantations: South Africa. Draft. Prepared for the International Institute for Environment and Development. Available: http://www.iied.org/docs/flu/Plant_Priv_docs/South_Africa.sept2003.pdf. Accessed June 2005. p. 2.

¹²³ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban. p. 441

¹²⁴ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban. p. 441

¹²⁵ Department of Water Affairs and Forestry. 1995. Forest policy discussion paper. Available: http://www.polity.org.za/html/govdocs/green_papers/forest1.html. Accessed June 2005.

¹²⁶ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban. P. 441

The Act states that sustainable forest management is to be accomplished by a set of principles that should guide all decisions affecting forests. The principles are that:

- a) Natural forests must be destroyed save in exceptional circumstances where, in the opinion of the Minister, a proposed new land use is preferable in terms of its economic, social or environmental benefits
- b) a minimum area of each woodlot type should be conserved; and
- c) forests must be developed and managed so as to-
 - i) conserve biological diversity, ecosystems and habitats;
 - ii) sustain the potential yield of their economic, social and environmental benefits;
 - iii) promote the fair distribution of their economic, social, health and environmental benefits;
 - iv) Promote their health and vitality;
 - v) conserve natural resources, especially soil and water;
 - vi) conserve heritage resources and promote aesthetic, cultural and spiritual values; and
 - vii) advance persons or categories of persons disadvantaged by unfair discrimination¹²⁷.

The Act requires the Minister to develop criteria, indicators and standards for the sustainable management of all forests. Under this provision the Minister is able to promote certification programs and other incentives for sustainable forest management. Certification against approved standards is now mandatory within two years after the commencement of lease for forestry activities¹²⁸. National standards for sustainable forest management, required under the National Forest Act, are currently being developed.

With respect to community forestry, the Act gives effect to the principles outlined in the White Paper that is the protection, enhancement and sustainable harvesting of natural woodlands and the promotion of planting trees at homestead and in neighbourhoods.

E.4 Transformation of the forest sector

In 1993 DWAF gave up its commercial timber operations, excluding the former TBVC states, to the South African Forestry Company Limited, a statutory body established under the management of State Forests Act 128 of 1992. Closely thereafter DWAF took over the running of the former TBVC state forests and those in the former self-governing territories¹²⁹. Before 2000 the state owned 30% of the 1.5 million ha of area under plantation. Sappi and Mondi owned 47%, smaller private companies owner 22%, and 1% was owned by small growers. The Forest Act outlines the privatization and restructuring process of the forest sector. The process changes Government role's from manager and owner of plantation to regulator and facilitator.¹³⁰ The process of transferring government owned plantations to the private sector was initiated in 2000. As of July 2002, 20% of state plantation had been transferred to the private sector, with a further 18% set aside for conservation and alternative land use, including land reform.¹³¹

¹²⁷ National Forests Act 84 of 1998, Section 3(3).

¹²⁸ Dloma, M. and Pitcher, M. 2003. Changing ownership and management of state forests plantations: South Africa. Draft. Prepared for the International Institute for Environment and Development. Available: http://www.iied.org/docs/flu/Plant_Priv_docs/South_Africa.sept2003.pdf. Accessed June 2005. p. 20.

¹²⁹ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban p. 441

¹³⁰ Dloma, M. and Pitcher, M. 2003. Changing ownership and management of state forests plantations: South Africa. Draft. Prepared for the International Institute for Environment and Development. Available: http://www.iied.org/docs/flu/Plant_Priv_docs/South_Africa.sept2003.pdf. Accessed June 2005 p. 5

¹³¹ Dloma, M. and Pitcher, M. 2003. Changing ownership and management of state forests plantations: South Africa. Draft. Prepared for the International Institute for Environment and Development. Available: http://www.iied.org/docs/flu/Plant_Priv_docs/South_Africa.sept2003.pdf. Accessed June 2005. P. 3

E.5 Impacts of forestry on the hydrological Cycle

Commercial forestry most significantly impacts on the hydrological cycle by utilising more water as compared with the indigenous vegetation that it replaces. Other relatively minor impacts include the acidification of soil. These impacts will be discussed in more detail below.

E.5.1 Stream Flow Reduction Activities

Stands of mature pines and eucalyptus use about 300-600 mm more of equivalent rainfall per year compared with natural vegetation. Mean annual reductions in runoff due to these stands is in the order of 200 mm to 300 mm¹³². In recognition of this impact, commercial forestry is currently identified as the only Stream Flow Reduction activity (SFRA) under the National Water Act (NWA). A SFRA is any activity (including cultivation of any particular crop or other vegetation)... [that] ... is likely to reduce the availability of water in a watercourse to the Reserve, to meet international obligations, or to other water users significantly.”¹³³ The NWA requires all new forestry over 10 ha to obtain a water use licence. Existing plantations do not need to be licensed.

The link between afforestation and the reduction in stream flow first emerged as an issue of debate as early as the 1920s. In response, the government undertook a series of catchment hydrological experiments, starting in 1935. The results indicated a clear link between afforestation and decreased river flow¹³⁴. Legislative control of forest practices to control water resources came into place in 1972, through the Afforestation Permit System (APS)¹³⁵. The APS restricted afforestation in stressed catchments and prohibited planting in sensitive locations such as wetlands and close to water courses. The APS system to control land-base water use, under the old Forest Act (No 122 of 1984), has been replaced by the SFRA licensing process. The water use license is considered to be the “most direct regulatory instrument governing forestry.”¹³⁶ The SFRA licensing process establishes a close governance link between the water and forestry sectors.

The Forestry sector estimates the potential for a growth in exports to more than 2.7 times 2002 levels, with an overall 1.2 times potential increase in the forest industry’s contribution to GDP. There is also potential for a 1.1 times increase of its afforested area and an employment growth of 1.1 times 2002 levels¹³⁷. Assuming that the economy grows at 4% per annum, the Forest Industries Association estimates that an additional 16 million cubic metres of wood per year will be needed by 2020¹³⁸. An expansion in the forestry sector would create valuable jobs in rural areas. However, competition for limited water resources is seen as one of the most significant factors limiting the expansion of the sector. In addition, the cost and time delays in

¹³² Department of Water Affairs and Forestry. 1995. Forest policy discussion paper. Available: http://www.polity.org.za/html/govdocs/green_papers/forest1.html. Accessed June 2005. Forest policy doc

¹³³ National Water Act. Act 36 of 1998 Section 36

¹³⁴ Department of Water Affairs and Forestry. 1995. Forest policy discussion paper. Available: http://www.polity.org.za/html/govdocs/green_papers/forest1.html. Accessed June 2005. Polic doc

¹³⁵ Department of Water Affairs and Forestry. November 1999. Water-use licensing: The policy and procedure for licensing stream flow reduction activities. Final Draft. Pretoria.

¹³⁶ Dloma, M. and Pitcher, M. 2003. Changing ownership and management of state forests plantations: South Africa. Draft. Prepared for the International Institute for Environment and Development. Available: http://www.iied.org/docs/flu/Plant_Priv_docs/South_Africa.sept2003.pdf. Accessed June 2005. P. 11.

¹³⁷ Forest SA’s 2005 Vision cited in Dloma, M. and Pitcher, M. 2003. Changing ownership and management of state forests plantations: South Africa. Draft. Prepared for the International Institute for Environment and Development. Available: http://www.iied.org/docs/flu/Plant_Priv_docs/South_Africa.sept2003.pdf. Accessed June 2005. P. 11.

¹³⁸ Department of Water Affairs and Forestry. 1995. Forest policy discussion paper. Available: http://www.polity.org.za/html/govdocs/green_papers/forest1.html. Accessed June 2005.

processing new SFRA licenses is identified as a major barrier to forestry development for large and small growers¹³⁹. The SFRA licensing process will need to be streamlined to effectively assess areas where expanded forestry will create additional jobs, without negatively affecting other sector's access to water resources.

The process of declaring a stream flow reduction activity is defined in Section 36(2) of the NWA. The Minister is required to consider –

- (a) the extent to which the activity significantly reduces the water availability in the watercourse;
- (b) the effect of the stream flow reduction on the water resource in terms of its class and the Reserve;
- (c) the probable duration of the activity;
- (d) any national water resource strategy established under section 5; and
- (e) any catchment management strategy established under section 8.

Before the activity can be declared, the Minister is required to consider all comments received by interested parties. Section 36 (4) outlines the process required to obtain input from interested persons.

DWAF has investigated other activities that could be declared as SFRA, such as commercial sugar cane. The sugar cane industry consumes almost double the amount of water that forestry uses to produce an equivalent financial return¹⁴⁰. The sugar cane industry has voiced strong objections to its inclusion as the a SFRA. The process of determining SFRA continues to pose a challenge as it places additional financial burdens on the agricultural sector. However, the current emphasis on forestry as the only SFRA has raised constitutional questions on the *fairness of emphasising one sector while ignoring other agricultural sectors that also contribute to stream flow reduction*. From an administrative perspective, the burden of implementing additional SFRA activities in an equitable manner is likely to be the most limiting factor in implementing what has the potential to be a valuable regulatory tool for protecting water resources.

E.5.2 Acidification of soil

Other less significant impacts of forestry on the hydrological cycle relate to soil fertility. Most commercial forestry plantations in South Africa were established in grassland ecosystems that have naturally acid soils and are therefore more prone to loose mineral nutrients. If mineral nutrients in the forest litter are not effectively recycled, soils will easily loose their fertility and become acid. Acidification and forestry have been found to be comparable to condition created by some of the worst cases of acid rain from industrial pollution. Runoff of these soils can affect hydrological systems. Excessive addition of fertilisers to counteract soil acidification can also have negative environmental impacts.

¹³⁹ in Dloma, M. and Pitcher, M. 2003. Changing ownership and management of state forests plantations: South Africa. Draft. Prepared for the International Institute for Environment and Development. Available: http://www.iied.org/docs/flu/Plant_Priv_docs/South_Africa.sept2003.pdf. Accessed June 2005. P. 11.

¹⁴⁰ epartment of Water Affairs and Forestry. 1995. Forest policy discussion paper. Available: http://www.polity.org.za/html/govdocs/green_papers/forest1.html. Accessed June 2005.Polic doc

APPENDIX F: Mining and Industry

F.1 Nature of the Sector

Over the last decade the South African economy has continued to show structural changes and has notably diversified towards services. In the fourth quarter of 2004, on the basis of annualised gross domestic product, the proportional contribution of mining was 7 per cent while that of manufacturing was 15 per cent¹⁴¹. While these figures are indicative they do not align with the water use sectors that form the basis for the National Water Resources Strategy (NWRS). In the year 2000, the Mining and Bulk Industrial Sector and the Power Generation Sector accounted for 6 per cent and 2 per cent of water requirements respectively¹⁴². These are the sectors that abstract water directly from the resource and therefore exclude the many industries that receive supplies from water services authorities in the urban water sector.

From a governance perspective mining and industrial water use should be considered from two aspects. The first relates to the entitlement to use water as a factor of production and the second and probably more complex aspect, of disposing of effluents. Both of these aspects occur either through a direct interaction with the resource or through urban systems.

F.2 Legislative Framework for Abstraction from the Resource

The entitlement to abstract water directly from a resource is regulated by the National Water Act (NWA) as for any other user. Mining and industrial use do not fall under the special instances in Schedule 1 of the NWA. In terms of section 39, a general authorisation has been issued that includes the use for industrial purposes¹⁴³. The authorisation is limited to certain areas in the country and in the quantity that may be abstracted. Consequently, for most significant industries, a licence is required for any water use as broadly defined in section 22.

Any licence application for abstractive use is evaluated in terms of the considerations listed in section 27. Section 27(1)(i) requires the responsible authority to consider the strategic importance of the use. The NWRS, in Table 2.7, provides priorities for water allocation and strategic importance is ranked after the Reserve, international obligations and social needs. Generally, power generation and the oil-from-coal plants have been unarguably regarded as "strategic" and have been afforded higher levels of assurance but other types of mining and industrial development may also be considered "strategic".

The importance of mining and industry within a catchment eg as a part of employment creation, should be reflected in the catchment management plan when this plan is prepared. Once such importance is established it would be carried through any allocation process in terms of sections 43 to 48 and finally assume due weight in the section 27 considerations.

In the future, catchment management strategies will be prepared by catchment management agencies that are designed to give effect to the widely acknowledged principle of integrated water resources management namely that decision-making should be devolved to the lowest practical level. It is not unreasonable to conclude that in a country where water is a scarce and determining resource that the entitlement of mining and industries to use water will increasingly align with their socio-economic value in society.

¹⁴¹ Statistics South Africa. Web site on 15 Feb 2005

¹⁴² DWAF National Water Resources Strategy. 1st edition, September 2004. Table 2.3

¹⁴³ DWAF. Revision of general authorisations in terms of section 39 of the national water act, 1998. GN 399 of 26 March 2004

Most abstractions would also attract the application of environmental legislation which is described above in this report.

F.3 Legislative framework for use in urban areas

The Water Services Act (WSA) provides the legislative framework for industrial water use in urban areas. The treatment of industrial water in the Act is however tortuous. "Industrial use" as defined in section 1(ix):

"means the use of water for mining, manufacturing, generating electricity, land based transport, construction or any related purpose."

It is however specifically excluded from the definition of "water supply services" in section 1(xxv) and hence also of "water services" by virtue of section 1(xix). This exclusion could be interpreted mischievously to mean for example that the authority, conferred on the Minister by section 10, to "prescribe norms and standards for the provision of **water services**" does not apply to the provision of water for industrial use since the definition excludes this category.

What the WSA does do in section 7, is to prohibit any person from obtaining water for industrial use from any source or disposing of industrial effluent in a manner that is not approved by the water services authority. Section 13 provides that the water services development plan of the water services authority must contain details of industrial water use and of industrial effluent disposal and in section 13(h) sets out more specific requirements in respect such use and disposal in the future. Perhaps the most important provision is in section 21(3) that makes it mandatory for the water services authority to make a set of bylaws for industrial use and effluent disposal. Finally, section 30 provides that with the approval of the water services authority, a water board may undertake direct supply to industrial users or dispose of industrial effluent.

F.4 Legislative framework for discharge of waste water or effluent

Several pieces of **legislation** have provision for the discharge of industrial or mining effluent into a water resource. These include:

- Section 22 of the NWA, administered by DWAF, defines any discharge as a "water use" and consequently subject to the entitlement system of general authorisations and licences and consequently to all of the conditions that the responsible authority is empowered to attach to them;
- The National Environmental Management Act and the Environment Conservation Act, which are administered by the Department of Environment Affairs and Tourism and that together provide environmental safeguards from environmental principles at national level to the application of mitigation measures identified through applying the environmental impact assessment process at project level; and
- The Mining Act and the Minerals and Petroleum Resources Development Act, which are administered by the Department of Mineral and Energy, and that regulate the impact of mining on the environment and which includes substantial provisions related to water resources through the mechanism of environmental management plans (EMP).

Regulations have been promulgated for the discharge of waste water or effluent originating from the use of water for industrial purposes¹⁴⁴. The regulations provide technical standards

¹⁴⁴ DWAF. Requirements for the purification of waste water or effluent. GN 991 of 18 May 1984 (amended by GN 1864 of 15 November 1996). Note that although the regulations were promulgated some time ago and in terms of the Water Act of 1956 they remain applicable under the NWA.

for three classes namely the general standard, the special standard and the special phosphorus standard. Schedules demarcate the areas to which each of the standards must be applied.

General authorisations¹⁴⁵ have been issued for the irrigation of waste water and its discharge into a water resource where it has arisen from an industrial process. The purpose of these regulations is clearly to reduce the administrative burden of approving all relatively minor uses. The structure is to define limits and conditions which, if met, obviate the need to apply for a licence.

Regulations¹⁴⁶ have also been promulgated in terms of the National Water Act to regulate the use of water in **mining**. It is noteworthy that the opening explanatory paragraph states:

The Department subscribes to the principles of co-operative governance and recognises the role of the Department of Minerals and Energy to co-ordinate environmental management within the mining industry and the role of the Department of Environmental Affairs and Tourism as the lead agent on matters affecting the environment.

The regulations introduce a wide definition of what constitutes a mining activity and the associated works that are related to water use. The gist of the regulation is that where activities potentially impact on water resources the responsible person has to take preventative measures. Failure to do so constitutes an offence by the person in control of the mining ie individual responsibility as well as by the corporate body. Conviction can lead to a fine or imprisonment of up to 5 years or both. Notification to the DWAF is required for the commencement or change in any of the defined activities. In addition the Minister is given wide powers to direct that preventative or remedial measures be taken. The Minister may further direct that a monitoring system be established and the information be submitted. In specific circumstances she may order an independent report on any matter relating to the management of water on the mine. Finally, Regulations 10 and 11 have additional specific provisions for winning sand and alluvial minerals from a watercourse or estuary and rehabilitation of coal residue deposits, respectively.

The regulations are supported by several guideline documents¹⁴⁷.

Previous Water Research Commission reports provide a comprehensive review of the legal framework for pollution management¹⁴⁸ and a brief review of legislation relevant to mine closures¹⁴⁹. The Minerals and Petroleum Resources Development Act¹⁵⁰ has a general provision that the environment sustainability principles in the National Environment Management Act applies to all mining and specifically provides in section 43(5) that no closure certificate may be issued unless the DWAF have confirmed in writing that the provisions pertaining to management of potential pollution to water resources have been addressed.

¹⁴⁵ DWAF Revision of General Authorisations In Terms Of Section 39 Of The National Water Act, 1998 (Act No. 36 of 1998) GN No 399 of 26 March 2004.

¹⁴⁶ DWAF. Regulations on use of water for mining and related activities aimed at the protection of water resources. GN 704. 04 June 1999.

¹⁴⁷ Eg Department of Water Affairs and Forestry. Operational Guideline No. M6.1. Guideline document for the implementation of regulations on use of water for mining and related activities aimed at the protection of water resources. Second Edition. 2000.

¹⁴⁸ Sampson I. Introduction to a legal framework to pollution management in South Africa. Water Research Commission Report No TT 149/01 March 2001.

¹⁴⁹ Pulles W, Banister S and van Biljon M. The development of appropriate procedures towards and after closure of underground gold mines from a water management perspective. Water Research Commission Report No 1215/1/05 March 2005

¹⁵⁰ Act 28 of 2002

F.5 *Legislative framework for the disposal of effluent into urban systems*

As noted above, the Water Services Act requires in section 21(3) that every water services authority makes bylaws for the disposal of industrial effluent into the municipal system. A detailed review of the bylaws for each water services authority is beyond the scope of this research. Most municipal waste water treatment works rely on simple technology that is effective in treating domestic waste. In the larger industrial complexes more sophisticated processes are introduced to treat problem substances such as heavy metals. In general bylaws require the removal of problem substances at source.

F.6 *Institutions*

DWAF currently fulfils all of the regulatory functions either through the national office or as is the case with water quality monitoring, through the system of regional offices. As the programme for establishing catchment management agencies is rolled out these institutions will increasingly be delegated the responsibility for many of the regulatory functions. The purpose of these institutions is to devolve IWRM to the most practical level. As these institutions will represent local interests, it can be anticipated that organised industry and mining will need to increase their levels of participation to ensure that their interests are effectively represented. This is already evident in the process currently underway to make CMA's operational.

Organised industrial business is represented by the **Chambers of Commerce and Industry South Africa** (Chamsa). Arising from its historical formation, Chamsa has four constituent organisations each of which in turn have regional constituent organisations. Chamsa and its constituent organisations have not addressed water issues extensively. At the national level, when water related legislation or regulation has been proposed, organised business responds with a business view. It does not however lobby water issues on a structured or ongoing basis and has no formal sector policy. The constituent chambers do deal with local issues particularly around pricing¹⁵¹.

The **Chemical and Allied Industries Association** represents members that use significant quantities of water and from the nature of the industries, effluent discharges are a major issue. The association has an active lobby around national legislation and regulations as they affect their members particularly in the area of effluent discharge¹⁵². Actual decisions are however made in relation to individual members and at local level and often by local authorities. Consequently individual company grievances that perceive the decisions as unfavourable, selective, inconsistent or even unreasonable are difficult to escalate to neutral forums at national level. There is no forum where the Association and DWAF (or any other responsible authority), can deal with the practical issues that arise from the application of the legislation and regulations. The Association is not aware of any member that has used the appeal mechanism provided by the Water Tribunal.

Strategic industries (Eskom, Sasol etc) have liaison structures directly with the DWAF.

Organised mining is represented by the Chamber of Mines.

F.7 *Evaluation*

DWAF is firmly at the centre of water governance relating to industrial and mining uses of water. It fulfils both the strategic and regulatory roles. On the supply side past practices have

¹⁵¹ Personal communication Peggy Drodskie, Director: Policy and Advocacy. 8 June 2005

¹⁵² Personal Communication. Dr Lorraine Lotter. CEO of CAIA. 14 June 2005

meant that many resources are already overexploited from a sustainability point of view yet water should rationally be supplied to new industries or mines mainly because of the socio-economic value of employment. The NWRS envisages several new projects such as on the Olifants River that are largely driven by industrial and mining activity.

Mining and industry along with urban development are of course the dominant source of water resource pollution. The regulatory framework for water quality management has over the past decade been upgraded as part of the national concern with environmental sustainability and the DWAF is partnered with the DEAT and DME on the issue. A number of initiatives directed at public awareness and the role that the public can play as part of the governance system, have been launched. However, the finding in a recent study¹⁵³ that for only 29 per cent of the length of South Africa's rivers, could the biodiversity status be described as "intact", bears testament that there is a long way to go before the regulatory framework is effectively applied.

If "governance" means that all the institutions of society contribute towards attaining the best possible water use, then the South African system has significant shortcomings. While the institutions of business and civil society participate to some extent in formulating the "rules", they have little or no impact on their application or the ongoing management of the resource. There is however optimism that the introduction of CMA's will allow a far greater opportunity for all institutions to participate in integrated water resource management.

¹⁵³ CSIR: Environmentek. South African National Spatial Biodiversity Assessment: 2004. Technical Report Volume 2: River Component DRAFT October 2004. Tables 4 and 5.

APPENDIX G: Protected Areas

Protected areas serve to maintain areas of rich, natural biological diversity. These conditions contribute to the quality of water resources as they serve to rejuvenate water resources and decrease polluted run off into streams and groundwater. These benefits are most pronounced in mountainous terrain as they contribute most significantly to water resource yield. This section will discuss current approaches to the management of protected areas in South Africa. Most relevant is the promulgation of new conservation legislation that recognises integration and cooperation between landscapes and across administrative boundaries. These principles are inherent to the effective governance of the hydrological cycle.

G.1 *Current status of protected areas*

South Africa occupies 2% of the world's surface area, but is home to nearly 10% of the world's plants and 7% of the world's reptiles, birds and mammals. Many of these species are protected within South Africa's well developed system of protected areas, managed by a wide range of institutions at national, provincial and local level. The National Register for protected area of South Africa listed 422 protected areas in the country in 1996¹⁵⁴. The twenty national parks account for 53% of the total protected land area¹⁵⁵. Currently, 6% of the land surface is formally conserved through national and provincial protected areas¹⁵⁶. In the international context it is generally recognized that 10 percent of a countries surface area should be devoted to protected areas¹⁵⁷. There is a target to raise South Africa's protected area to 8% by 2010¹⁵⁸.

Many of South Africa's protected areas were established in an ad hoc manner, sometimes on land marginal to agriculture or other land use. This has lead to a protected area network that does not include a representative sample of all ecosystems. Consequently, the current network is skewed towards savannah biomes, while grasslands are under-conserved. Rivers in particular are poorly conserved and where they do occur in protected areas, they are often on the boundary. Coastal and marine zones, especially on the West coast are poorly protected¹⁵⁹.

G.2 *Legislative Responsibility*

Conservation is a concurrent legislative competence of national and provincial government. The constitution assigns specific areas to national competence, such as marine resources, national parks, and national botanical gardens. National Parks are administered and managed by the South African National Parks, formerly known as the National Parks Board. Exclusive provincial jurisdiction is help over provincial planning, while local government has administrative control over certain functions at the local level such as beaches and municipal parks¹⁶⁰.

G.3 *A new approach to the management of protected areas*

In the apartheid area, protected areas were set aside at the expense of people who were often forcefully removed from the land and denied access to their traditional resources. A new trend in South Africa is emerging that follows the global trend of integrating people into protected areas. The traditional "fenced-off" notation is a thing of the past. These trends are often

¹⁵⁴ Glaz p. 370

¹⁵⁵ Glaz p. 370

¹⁵⁶ Biodiverse atrategy

¹⁵⁷ Glaz p. 370

¹⁵⁸ Biodiverse atrategy

¹⁵⁹ Strategy p. 16

¹⁶⁰ Department of Environmental Affairs and Tourism. 1997. White paper on the conservation and sustainable use of South Africa's Biological diversity. Draft for discussion. Available: <http://www.environment.gov.za>. Accessed: June 2005.

termed "community based conservation" or "people-based conservation"¹⁶¹. In addition, South Africa recognises that the conservation of biological diversity cannot happen effectively by focusing only on protect areas. The recently completed National Biodiversity Strategy and Action Plan aims emphasises that while protected areas are important they are not sufficient on their own to maintain South Africa's rich biodiversity. A conservation ethic needs to be spread across all land uses, with certain areas of particular conservation importance being put aside¹⁶².

G.4 A new legislative Environment

In accordance with its constitutional commitment to protect the environment so as to ensure conservation and sustainable use, South Africa signed the International Convention on Biological Diversity. Under this convention, South Africa is required to develop national strategies, plans or programmes to protect biodiversity and these should be integrated into relevant sectoral and cross sectoral programmes and policies. Two recent pieces of legislation give effect to these provisions, the National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003) and the National Environmental Biodiversity Act, 2004 (Act 10 of 2004).¹⁶³

G.5 National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003)

Protected areas are defined under the National Environmental Management: Protected Areas Act (NEMPAA) as limited to certain types of protected areas, namely special nature reserves, national parks, nature reserves and protected environments¹⁶⁴. NEMPAA calls for the development of protected area management plans for protected areas, especially national parks and provincial and local nature reserves. Although not specified under NEMPAA, the National Biodiversity Strategy also emphasises the importance of developing management plans for protected areas that are not covered under NEMPAA such as marine protected areas (declared under the Marine Living Resources Act) and protected forests areas (declared under the National Forests Act).¹⁶⁵ There is also recognition that management plans need to be linked with activities that occur outside of the protected areas. Communities from the surrounding areas need to support and receive benefits from neighbouring protected areas.

G.6 National Environmental Biodiversity Act, 2004 (Act 10 of 2004)

The National Environmental Biodiversity Act (NEMBA) allows for the development of biodiversity management and species management plans. The plans can be developed by a range of stakeholders and can be in or out of protected areas. The aim is to develop a series of nested management plans at various levels, covering larger bioregions, threatened ecosystems, protected areas and species. The implementation of these plans requires significant coordination between all levels of government.

In September 2004 the Biodiversity Act (NEMBA) transformed the National Botanical Institute into the South African National Biodiversity Institute (SANBI). SANBI will no longer be concerned with just plant biodiversity but will focus on biodiversity in all its forms, including terrestrial, marine and aquatic ecosystems. The Institute will be involved in

¹⁶¹ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban. P. 368

¹⁶² Department of Environmental Affairs and Tourism. 6 May 2005. South Africa's national biodiversity strategy and action plan. Final Draft.

¹⁶³ Department of Environmental Affairs and Tourism. 6 May 2005. South Africa's national biodiversity strategy and action plan. Final Draft. p. 11

¹⁶⁴ Department of Environmental Affairs and Tourism. 6 May 2005. South Africa's national biodiversity strategy and action plan. Final Draft.

¹⁶⁵ Department of Environmental Affairs and Tourism. 6 May 2005. South Africa's national biodiversity strategy and action plan. Final Draft. P. 63

implementing national biodiversity strategies and will have a clear role with regard to bioregional planning and programmes, biodiversity research, monitoring and reporting¹⁶⁶.

G.7 Conclusion

These new approaches to conservation and the management of protected areas align with international trends towards a landscape approach to natural resources management, rather than the traditional segmented, species focused approach. This principle has significance for the governance of the hydrological cycle as it provides a potential vehicle for an integrated approach to water resources management. However, the approach requires significant coordination between department and it is unclear how the new biodiversity management plans, species management plans, and protected area management plans will be coordinated with other planning forums at local, provincial and national level. There is a need to align these new processes with other emerging forums such as the development of integrated coastal zone management plans and catchment management strategies. Institutions involved in conservation and biodiversity in South Africa have considerable capacity and are able to harness international attention and financial support. There are therefore significant benefits of engaging these institutions, especially the newly formed SANBI, into activities that support the integrated management and protection of water resources.

¹⁶⁶ Department of Environmental Affairs and Tourism. 6 May 2005. South Africa's national biodiversity strategy and action plan. Final Draft. P. 13

APPENDIX H: Groundwater

H.1 Nature of the Sector

South African geology is ancient and there is minimal seismic activity. Granitic and sedimentary rock formations dominate most of the country making the potential for significant ground water resources poor. There are only a few primary aquifers.

"The Annual Harvest Potential, derived from an evaluation of the mean annual recharge of groundwater (adjusted for drought period rainfall), gives an indication of the maximum volume of groundwater that may be abstracted without depleting the aquifers, although some natural discharge functions may be impacted. The Harvest Potential for the whole of South Africa was estimated at 19 000 million cubic metres per year (Mm³/a). Of this, approximately 6 000 Mm³/a, stored as general recharge, could be abstracted without impacting on surface water resources. Although a substantial quantity of groundwater therefore appears to be available for use it occurs mainly as a diffuse source in many separate aquifers. Only that part which occurs in suitable quantities at locations where demands exist, and where its use will be economically feasible or socially justifiable will eventually be abstracted".¹⁶⁷

Groundwater's role in overall water abstractions is illustrated by Table G.1.

Natural Resource		Usable return flow			Total local yield
Surface water	Ground water	Irrigation	Urban	Mining and bulk industrial	
10 240	1 088	675	970	254	13 227

Source: National Water Strategy, Table 2.2. Sept 2004

Although there is low potential for groundwater, its importance lies in that 60 percent of rural communities rely on ground water¹⁶⁸. This reliance is increased during drought periods and groundwater is an important element in drought disaster management planning. The DWAF has produced a guideline specifically directed at the role of groundwater in community water supply¹⁶⁹. In general the natural groundwater quality is good but poor quality water does occur naturally in some geological formations.

In a number of areas the abstraction rates from some aquifers, particularly for irrigation purposes, has substantially increased in some areas and exceeded the replenishment rate. This, and to a lesser extent dewatering of mines, has led to localised depletion of groundwater resources and in some cases deterioration of water quality¹⁷⁰. Areas where groundwater resources are under stress are to be prioritised for compulsory licensing¹⁷¹.

The interaction of mining and groundwater is significant. This arises both from surface residue deposits and underground workings. In almost all South African mines, extensive dewatering operations have been needed to make deep underground working possible. The

¹⁶⁷ National Water Resources Strategy Box 2.2 p 27

¹⁶⁸ Braune E, Personal Communication 7th March 2005.

¹⁶⁹ DWAF, Directorate Geohydrology. Minimum standards and guidelines for groundwater resource development for the community water supply and sanitation programme. April 1997.

¹⁷⁰ National Water Resources Strategy p20

¹⁷¹ National Water Resources Strategy p119

result has been widespread occurrence of acid mine water drainage and contamination by heavy metals and toxins. Moreover many mines are hydrologically interconnected. The project "Mining, minerals and sustainable development"¹⁷² provides a description of the impact of mining on groundwater. While current regulations prevent new pollution there is a legacy of old workings that do not meet modern closure requirements.

The lack of effective sanitation in some rural areas where there are denser settlements has meant that the groundwater resource has been polluted and e-coli counts and nitrates have reached levels that are injurious to health.

H.2 The Legislative Framework

In the 1956 Water Act special provisions were made in relation to groundwater. Firstly, groundwater found locally on a property was classified as "private water" and its abstraction was subject to few restrictions. Aligned with the wide extent of South African secondary aquifers, this was the dominant model and consequently there is not a tradition of governance for groundwater. Secondly, to protect the relatively small extent of primary aquifers, provision was made for the declaration of subterranean groundwater control areas that were administered by the state or a board acting on behalf of the state.

The National Water Act has removed the concept of private water and any distinction between the manner in which surface and ground water is to be managed. Aquifers are included in the definition of a "water resource"¹⁷³. It follows that abstraction from an aquifer constitutes a "water use" in terms of section 21 and is then subject to all the management measures invoked by the NWA such as compulsory licensing and source- and resource-directed measures of water quality management. Noteworthy is that the provisions around the "reserve" apply equally to aquifers. Most groundwater abstractions are at low flow rates and hence fall under the general authorisations¹⁷⁴ that vary from zero in some of the driest to substantial in the wetter areas. The recharge of aquifers with effluent is a controlled activity under section 37 of the NWA.

The legislative framework for mine closures is dealt with elsewhere in this report in the section on Industry and Mining. In addition to the NWA and the regulations in terms of that Act, it includes elements from the National Environmental Management Act, the Environment Conservation Act and the Minerals and Petroleum Resources Development Act.

H.3 Data and Information

The National Groundwater Database (NGDB) is populated with in excess 225 000 borehole records from across the country that is in the process of being moved to a web-enabled "National Groundwater Archive". "Groundwater levels and water quality are currently recorded on a continuous basis at 150 points and at regular intervals at about another 1 000 points. Continuous monitoring at an estimated 460 points is required for an effective national network"¹⁷⁵. Groundwater resources have also been depicted on a series of hydro-geological

¹⁷² Ashton, P.J., D. Love, H. Mahachi, P.H.G.M. Dirks (2001). An Overview of the Impact of Mining and Mineral Processing Operations on Water Resources and Water Quality in the Zambezi, Limpopo and Olifants Catchments in Southern Africa. Contract Report to the Mining, Minerals and Sustainable Development (Southern Africa) Project, by CSIR-Environmentek, Pretoria, South Africa and Geology Department, University of Zimbabwe, Harare, Zimbabwe. Report No. ENV-P-C 2001-042. xvi + 336 pp.

¹⁷³ Section 1(1)(xxvii) National Water Act, 1998

¹⁷⁴ DWAF. Revision of general authorisations in terms of section 39 of the national water act, 1998. GN 399 of 26 March 2004

¹⁷⁵ National Water Resource Strategy p106.

maps that are being progressively developed to cover the full country at a scale of 1:500000. In addition the DWAF annually publishes a survey of water table levels.

H.4 Special Considerations

The science of groundwater is less developed than that for surface waters. Intractable aspects are:

- The nature and extent of resources;
- The institutional complications inherent in resource management where the resource extends across catchment, administrative and international boundaries;
- Replenishment rates;
- The ecological systems; and
- The impact of well or borehole abstractions on springs.

The NWA defines the environmental element of the Reserve as¹⁷⁶:

"the quantity and quality of water required -

(a); and

(b) to protect aquatic ecosystems in order to secure ecologically sustainable development and use of the relevant water resource".

The ecological systems in aquifers and particularly the interflow between surface and groundwater is not nearly as well understood as that for surface waters. These and other factors present major challenges in establishing classification systems, setting resource quality objectives and determining the groundwater / aquifer reserve in a manner that satisfies the NWA requirement of ecologically sustainable development. This issue also has the overlay of the Constitutional right to have the environment protected and the legislation on biodiversity.

The DWAF has nevertheless developed a preliminary ground water resource allocation (GRA) model¹⁷⁷. GRA is designed to model a distinct geohydrological or hydrological unit (such as a groundwater flow basin) and to provide a rough, desk-top estimate of the groundwater that can be abstracted without damaging local surface aquatic ecosystems over the long-term. The GRA model produces spatial groundwater level and water balance data from input geohydrological characteristics.

Decant water, leachate and other types of pollution from closed mining operations are a serious problem at the interface of surface and groundwater. Historically there was little control over mine closures. Mines abandoned before 1956 have become the responsibility of the state. In the case of mines closed from that time until recently, the mine owner can be held responsible for mitigating the environmental effects of mining but in some instances the owning company has ceased to exist and consequently the state bears the burden. Current mine closure proceedings, requiring as they do an environmental management plan, require the owner closing a mine to make arrangements and provide financial resources that allow the long term effects to be managed. Several mine closure certificates have been denied because the DWAF has not been satisfied with the measures to ensure water quality. The Water Research Commission has financed research into the closure of mines from a water management perspective¹⁷⁸.

¹⁷⁶ Section 1(1) (xviii)

¹⁷⁷ Wright KA and Xu Y Groundwater Resource Allocation (GRA) Model version 1.0 – DWAF Technical Document GH3934 December 1999

¹⁷⁸ Pulles W, Banister S and van Biljon M, The development of appropriate procedures towards and after closure of underground gold mines from a water management perspective. WRC report No 1215/1/05. March 2005.

H.5 Institutions

The DWAF has a Working Group on Mining where the state interacts with the industry on the impact of mining on the environment. The Department has developed several water quality management instruments of a general¹⁷⁹ and sector specific nature¹⁸⁰.

Water user associations, the successors to the irrigation boards, are active in some areas of intensive irrigation use of groundwater. The Institute for groundwater studies at the University of the Orange Free State is a specialised groundwater teaching and research unit. The groundwater industry is organised as the Borehole Water Association of Southern Africa.

H.6 Conclusion

There was little systematic approach to the governance of groundwater in the past due to its "private water" nature but it now takes place within the same framework as surface waters. It is made more difficult because of the scientific unknowns in reserve determination, the extent of the resource and the groundwater / surface water interflow. Mining has a significant impact on groundwater quality complicated by the legacy of closed mines without an owner responsible for the mitigation of environmental impacts.

¹⁷⁹ Department of Water Affairs and Forestry 2002. Water Quality Management Series, Sub-Series No. MS7, National Water Quality Management Framework Policy, Draft 2 Pretoria.

¹⁸⁰ Department of Water Affairs and Forestry M5.0 1998. Operational Guideline for the DWAF to assist the DME with environmental programmes in terms of the Minerals Act.

APPENDIX I: Wetlands

1.1 Nature of wetlands

Wetlands are an interface between the aquatic and terrestrial environments, the surface and groundwater systems, and the natural and the social worlds. It is commonly acknowledged that wetlands are key systems in the regulation and maintenance of water quality and quantity, and are characterised by diverse biological, ecological and biophysical processes: indeed, the International Union for the Conservation of Nature (IUCN) has identified wetlands as the third most vital life support systems on earth (Hughes and Hughes 1992)¹⁸¹. For communities throughout the Africa, wetlands provide an important contribution to peoples' livelihoods and welfare through provision of food and water, raw materials, medicines and income (Roggeri 1995)¹⁸². As such, the wetland is a complex natural, social, political and economic good and is characterised by a multiplicity of resources, functions and attributes (summarised in the table below). These characteristics of wetlands underpins the complex and yet interrelated nature of the system, and highlights the need to view the system as an entity, rather than as a collect of physical and social attributes.

Good or service	Description
Resources	
Water	Source of water for domestic and economic use
Agriculture	Access to water and fertile soils is exploited in dry-season recession agriculture, small-scale gardening on wetland verges and the commercial cultivation of wetlands (e.g. commercial sugar enterprises)
Fish and aquaculture	Fish are an important source of protein and small-scale aquaculture in wetlands is widely practiced
Stock farming	Good grazing potential, especially in the dry season
Wildlife cropping	Birds and other wildlife are harvested from wetlands and can be an important source of protein
Natural products	Reeds and clay bricks for house building, and the harvesting of medicinal products
Energy production	Plant biomass is harvested for fuel
Functions	
Pollution attenuation	Pollutant dilution and retention
Nutrient retention and export	organic filtration, deposition and decomposition, and the slow release of stored nutrients
Groundwater recharge	Recharge of local or regional aquifer
Groundwater discharge	Stabilizing stream flow
Flood control and flow regulation	
Sediment retention and erosion control	
Maintenance of ecosystem stability and biodiversity	
Attributes	
Cultural heritage, social processes, economic significance, and biological diversity	

1.2 Wetlands as an agricultural -, an environmental - and a water resource

Interrogation of the table above shows that wetland goods and services can be broadly categorised into three sectors: the agricultural sector, the environmental (conservation) sector and the water sector. As a result, wetlands have frequently been managed by one or other of these sectors as a resource specific to that sector. The location of the wetland within the natural and social environment have often determined which resources were preferentially managed: wetlands on farmers lands are often drained and cultivated (e.g. McCartney and van

¹⁸¹ Hughes, R. H., and J. S. Hughes. *A Directory of African Wetlands*. IUCN, UNEP and WCMC, Cambridge, 1992.

¹⁸² Roggeri, H. *Tropical Freshwater Wetlands: A Guide to Current Knowledge and Sustainable Management*. Kluwer Academic Publishers, Dordrecht, 1995.

Koppen 2004)¹⁸³, wetlands in protected areas, or large wetland ecosystems (e.g. the Okavango Delta) are management to conserve biodiversity whilst wetlands in upland catchments are managed as a water resource or dammed¹⁸⁴.

1.3 *The Legislative Framework for wetland governance in South Africa*

The principles underpinning policy and legislation capture the values of society and articulates rights, roles and responsibilities of individuals, societies and institutions. Legislation, policy and regulation can be used both proactively, i.e. what should be done by actors in society, and can make provisions for enforcement and reactive interventions where compliance is not achieved.

The South African Constitution (Act 108 of 1996), as the embodiment of the overarching principles of governance and as the supreme law of South Africa, calls for, *inter alia*, sustainable development, the protection and sustainable utilisation of natural resources and the prevention of pollution and ecological degradation. The Bill of Rights provides for the right to adequate clean water and the right to an environment that is not harmful to the health of the well being of the people.

The South African Constitution, therefore, sets the tone for the National Water Act (Act 36 of 1998). This Act specifically defines wetlands, according to a specific set of physical parameters, as a type of "watercourse" and provides for the protection, use, development, conservation, management and control of the wetland water resources. The clarity provided in the Act has assisted the governance of wetlands, by enabling a clear understanding of what constitutes a wetland and by highlighting the multiplicity of the systems.

The NWA legislates for the development and implementation of a Classification system that serves to capture the social, environmental, political and economic complexity of a given resource and its setting, and to manage the resource within the context of these drivers for use, conservation and development. Through the Classification process, wetland resources are viewed in an integrate manner, taking cognisance of the bio-physical, the socio-economic and the political complexity in the protection, use, development, conservation, management and control of the resource.

Catchment Management Agencies, as the responsible authority, are delegated a number of powers and duties pertaining to the management of a water resource (including wetlands), through the processes of establishing a strategy for resource utilisation, conservation and management (Catchment Management Strategy - CMS). The CMA is required to engage and advise interested persons on the water resource, including wetlands: although the CMA is not required to get involved in the operational aspects of wetland management, it should provide appropriate support to the relevant responsible agencies. Accordingly, where agencies or stakeholder are engaging in wetland-related activities (e.g. rehabilitation and awareness-creation – Working for Wetlands programme), the CMA has an oversight, support and advisory responsibility.

The constitutional right to a healthy and protected environment, and the constitutional principle of sustainable development form the legal basis to the National Environmental Management Act (NEMA – Act 107 of 1998). NEMA provides for, *inter alia*, the integration

¹⁸³ McCartney, M.P. and B. van Koppen, *Sustainable development and management of wetlands: wetland contributions to livelihoods in Zambia and the United Republic of Tanzania*. FAO-Netherlands Partnership Programme, Food and Agricultural Organisation of the United Nations, Rome, 2004.

¹⁸⁴ Damming of headwater wetlands is a common practice on commercial farms in Zimbabwe and Zambia, where the resulting stored water is used for commercial irrigation schemes.

of sustainable environmental management into all development activities and places a statutory onus on every person in South Africa to demonstrate a public duty of care towards the environment (necessarily including wetlands). NEMA, in association with the Environmental Conservation Act (ECA – Act 117 of 1998), which requires that the environmental effects of developments and activities are taken into consideration before development decisions are taken, provides a broad framework for the engagement with activities that influence or interact with wetlands. The Biodiversity Act (2004) operates within the framework provided by NEMA. The Act is important to wetland governance as it creates a mechanism for protecting threatened or important ecosystems: wetlands are often described as either threatened or in need of protection owing to biodiversity and other ecosystem good and services. In addition, the Act deals with alien fauna and flora, which has significant for the management of wetlands invaded by such aliens (e.g. water hyacinth).

The Conservation and Agricultural Resources Act (CARA – Act 43 of 1983) includes measures related to the utilisation and protection of wetlands. CARA defines wetlands loosely according to the proximity of the water table to the land surface: the Act prohibits the mechanical cultivation of wetlands and prescribes other control measures that have relevance to wetlands, such as burning of biomass, the prevention of pollution and erosion, and the control of weeds.

South Africa signed the RAMSAR Convention on Wetlands in 1975. As a signatory, the international convention is binding on all organs and agents of the South African State. The RAMSAR Convention provides for, *inter alia*, the conservation of wetlands deemed of national or international importance and the widespread application of wise-use principles in wetland utilisation and development.

1.4 Legislative harmonisation

From the above, it is clear that wetlands feature in various legislation, and are prominent in numerous principle. However, owing to the nature of wetlands, their inclusion in the three key acts – NWA, NEMA and CARA – have historically been informed by the particular Act's perspective of wetlands.

By way of example, owing to the abundance of water and the fertile soils, wetlands are viewed as an agricultural resource in CARA, which contains a loose definition of wetlands and weak management instruments¹⁸⁵. Accordingly, some of the principles of sustainability, biodiversity maintenance and protection of water resources are undermined by some agricultural activities that are not adequately confined with CARA. Similarly, wetlands are viewed from a biodiversity perspective in NEMA, requiring conservation and protection. This does not recognise their role in livelihoods and as a key socio-economic resource and may inadvertently undermine some of the fundamental principles of the South Africa Constitution, whilst protecting others. Wetlands are viewed as a water resource in NWA. The Act provides measures to count pollution and degradation of the resource. However, owing to the nuanced land-water interface of wetlands, these systems are often contaminated through agricultural run-off (or irrigation return-flow). However, the Act does not, at present, regard agricultural return-flow or agricultural run-off as a water use and, therefore, cannot regulate this non-authorised non-point source of pollution.

This lack of harmonisation results in a failure at a planning level (e.g. the development of Integrated Development Plans by Local Government) to take adequate cognisance of the varying principles of wetland use and protection enshrined in the Acts, leading to the granting

¹⁸⁵ e.g. the Act prevents "mechanical cultivation", which can be defined in a range of ways.

of activities that conflict with one or other Act. Similarly, it enables ongoing activities that are in breach of Act principles (e.g. agricultural cultivation of wetlands) to continue.

The issues outlined here are, perhaps, symptomatic of the policy-institutional nexus, where the policy and legislative environment is adequately developed to deal with the complexity of issues in the governance of the wetland resource, but significant gaps exist in integrating and implementing policy at an institutional level. As a result of various developments over the past few years, the management of South African wetlands, in some senses, represent a unique example of the bridging of the policy – institutional disequilibrium through the advocacy and activism of an engaged civil society, the role of champions within this society and the establishment of fora for cooperative governance.

1.5 Civil society and the role of Working for Wetlands

The recognition of wetlands as a complex, interrelated water-land system, rather than as a collection of distinct, independent physical characteristics, came out of the scientific community and the increasing focus on wetland science as an integrated discipline at an academic level in the late 1980s. This led the academic community and civil society¹⁸⁶ to embark on an extensive advocacy and awareness creation process during the 1990s to raise the profile of wetlands as a critical resource that requires management as an integrated unit. This process has largely been successful, as verified by the increasing acknowledgement of wetlands as a separate entity in water resource planning and management process (e.g. inclusion of wetlands as a sub-section in this report). Accordingly, civil society engagement in wetland utilisation and management has moved from awareness creation to include implementation of wise-use principles and support for wetland management and rehabilitation, in addition to the historical advocacy and education functions.

The Working for Wetlands (WfWet) programme was launched in 2000 as a national wetland rehabilitation initiative. WfWet was initiated under the banner of the multi-departmental Working for Water programme, which focussed on poverty alleviation, job creation and resource protection. WfWet provides a wide forum for debate and discussion on wetland issues, with representation from the three ministries engaged in wetland use and protection (Water Affairs and Forestry, Lands and Agriculture, and Environment and Tourism) and civil society (e.g. Mondi Wetlands Project). In addition to its role in wetland rehabilitation, WfWet has become a forum for the increasing recognition of the integrated nature of wetlands, and the incorporation of interdisciplinary principles in wetland management and utilisation. As a result, harmonisation of practice and activities relating to wetlands is being witnessed, in an atmosphere of consultation and cooperative governance.

Academic and research institutions have been, and continue to be, a powerful force in the paradigm shift in wetland conceptualisation and management. Research and knowledge emanating from these processes have led to the transfer of tools, skills and capacity to local and national public and social institutions engaging in wetland use, conservation and management.

¹⁸⁶ e.g. World Wide Fund for Nature (WWF), Endangered Wildlife Trust and Mondi Wetlands Project

J.1 Introduction

In 1995 a legislative review process was initiated for water resources management (WRM) in South Africa, culminating in the 1997 *White Paper on a National Water Policy for South Africa* and the National Water Act (Act 36 of 1998). The policy and legislative requirements of these have been thoroughly described in Section 4.2 of the document, so are not revisited here. This appendix focuses more on the specific governance implications, the progress with implementation and some of the potential conflict areas of water governance.

J.2 Water Resources Management at a Catchment Level

The main objective of the National Water Act is to provide for the management of the nation's water resources so as to enable the achievement of sustainable and equitable use of water for the benefit of all water users. This section provides a brief summary of the manner in which this is proposed under the new water policy and legislation.

J.2.1 Imperatives of the National Water Policy and Legislation

The following three inter-related principles underlie the policy and Act, and may be rephrased as the main purpose of WRM.

- *Sustainable utilisation and protection of water resources*

This requires a balance between the protection of water resources and their development and utilisation for social and economic purposes. In a developing country context, such as South Africa, this implies basic protection of the water resource to ensure continued use of its services. However, the value of any additional ecological protection must be weighed against the economic and social benefits of utilisation.

- *Equitable allocation of water*

The allocation of water between sectors and users should be equitable, just and transparent. However, South Africa's history requires redress of past gender and racial discrimination, as well as meeting international obligations.

- *Efficient use of water (in the public interest)*

As a water scarce country, there is an obligation for efficiency of use by all water users in South Africa. Similarly, there is an obligation on those responsible for allocating water to ensure this (effectively/optimally) supports social and economic development.

The policy and legislation also implies a number of governance requirements for performing WRM. The following imperatives may be viewed as the means (or tools) for giving effect to the above objectives.

- *Integration of WRM functions*

Underlying the new approach to water resource management is the recognition that water should be managed in an integrated manner. *Integrated water resource management* is simultaneously a philosophy, a process and an implementation strategy to achieve equitable access to and sustainable use of water resources by all stakeholders at catchment, regional, national and international levels, while maintaining the characteristics and integrity of water resources at catchment scales within agreed limits. Integrated water resources management (IWRM) may be viewed as the principal policy requirement for WRM in South Africa.

○ *Participation of stakeholders*

Involvement of stakeholders and water users in WRM decisions represents a key policy requirement of WRM in South Africa. The challenge is to ensure that people want to, can and will continue to participate in WRM, either through statutory bodies or informal consultative bodies. Stakeholder participation has two key components, namely to:

- facilitate effective local decision making (based on local knowledge and priorities), which is required for equitable allocation and efficient use; and
- foster stakeholder support (buy-in and ownership) of WRM decisions, which is particularly important for the effective delegation of WRM functions and acceptance of financial responsibility for WRM.

○ *Subsidiarity*

An important component of fostering participation is to delegate (or assign) decision making power (and associated WRM functions) to the lowest appropriate level. This highlights a policy imperative for outsourcing of functions to water management institutions (WMI) to ensure local participation in decision making (which is different from outsourcing to achieve efficiency in performing non-core functions). However, this imposes greater requirements for institutional coordination and capacity building.

○ *Cooperation*

Institutional decentralisation and stakeholder participation, within the context of fragmented mandates over air, land and water, impose significantly greater requirements for cooperation between institutions and user groups at a catchment level. For organs of state, cooperative government is Constitutionally required (albeit difficult to implement), but the need for cooperation should go into the activities of all water users and institutions involved in the utilisation, development or management of water resources.

○ *Viable water organisations*

Participation of stakeholders and delegation of responsibility to a local level is provided for in the NWA through the establishment of various WMIs, particularly catchment management agencies (CMA) and water user associations (WUA). These organisations must be technically, administratively and financially viable, otherwise the potential of the NWA is unlikely to be achieved. The viability of all these WMIs must be considered in the context of the parallel establishment of water services institutions (particularly water boards), in particularly given the current technical (human resource) capacity constraints of the water sector in South Africa.

○ *Financial responsibility*

The financial viability of organisations is crucial to their sustainability and effectiveness. This imposes a stringent requirement for collection of user charges to pay for the implementation water resources management functions at a local and regional level, supported to a limited extent by fiscal transfers. It should be noted that WMIs are public enterprises and must therefore operate according to the strict controls and requirements of Chapter 6 of the Public Finance Management Act.

These imperatives provide an important context for water governance in South Africa.

J.2.2 Water Resources Management Approach for South Africa

In addition to the above imperatives, the National Water Act (NWA) outlines the approaches that must be adopted, which are briefly described in the following sections.

o *Water Resources Management Strategies*

The *national water resource strategy* (NWRS) gives effect to the need for integrated water resources management at a national level, by providing a framework for water resources management between water management areas (WMAs); there are currently 19 WMA in South Africa, representing the main boundaries for delegated WRM. The NWRS outlines the institutional arrangements, specifies the principles and strategic requirements, outlines the pricing strategy, and provides national objectives, guidelines and procedures, for water resources management in each WMA.

The NWRS must reconcile the requirement and availability of water within each WMA, and indicate the allocatable water within the WMA, after the requirements of the Reserve (see below), international obligations, inter-basin transfers, strategic use and a contingency have been met.

The recognition that water resource management should be performed at a catchment scale, with input from all stakeholders, led to the requirement for *catchment management strategies* (CMS) to be formulated and established in law. This CMS must outline a framework for water resource protection, use, development, conservation, management and control within a WMA and the principles for allocating water to existing and prospective water users, which is consistent with the NWRS and resource directed measures (see below). The CMS should reflect the water resource management priorities in different parts of a WMA.

The CMS also must set out the water management institutions to be established in the WMA and guides these organisations in performing their functions in terms of the Act. Effective implementation of water resources management in a WMA requires the CMS to inform the catchment management functions that must be performed, and therefore the capacity and resources that are required, by the different water management institutions that already exist or are to be established in the WMA. As such the CMS provides the linkage between priority water resource management issues and organisations responsible for their management, and is therefore the framework for water governance at a WMA scale.

o *Resource Protection*

The NWA is also grounded in a resource protection approach, based upon resource directed measures specified in Chapter 3 of the NWA. *Resource directed measures* aim to provide an appropriate level of protection for different water resources. This will be done within a water resources classification system, which is given effect through the determination of the Reserve and resource quality objectives (RQOs). The Reserve is that quantity and quality of water required for basic human needs and to maintain the sustainability of the aquatic ecosystem, while RQOs specify numeric and narrative objectives for different water bodies in terms of the protection requirements of the Reserve and the needs of other users.

In this context the concept of *resource quality* is utilised to encompass the full set of characteristics that describe the condition of a water resource, namely quantity, quality, habitat and biota. This definition extends the conventional interpretation of water resources, to represent the entire aquatic ecosystem, rather than mere water quantity and quality. Accordingly, the *interrelationships* between the four elements of resource quality are as important as the elements themselves. The focus on the aquatic ecosystem introduces an important link between water resources management and biodiversity, which is an environmental competency. As such, the concept of resource quality is a keystone of integrated water resource management and implies a number of linkages with broader environmental and conservation governance system.

In addition to the statement of objectives to be achieved in the water resources, **Section 13(3)(g)** of the NWA also enables ROQs to relate to *the regulation or prohibition of instream or land-based activities which may affect the quantity of water in or quality of the water resource*. The interpretation and implementation of this clause requires further investigation, because the governance implications for land and environmental management need to be considered.

The procedural requirements for determination of a class, the RQOs and the Reserve for a water resource are separate from the NWRS (although the results may be reflected in the NWRS), and are not part of the CMS (although the CMS must give effect to them).

The purpose of water resources classification and the RQO is to seek a balance *“between the need to protect and sustain water resources on the one hand, and the need to develop and use them on the other”*. This inherently requires an understanding of the social, economic and political drivers for development and utilisation of a specific water resource. The White Paper further indicates that classification must be *“through a process of consensus seeking amongst water users and other stakeholders”*, and that *“the public trust places the responsibility on Government to make sure that environmental interests are represented”*. Together these create an important component of the governance system for managing aquatic resources within the context of the associated catchment and its development.

○ *Water Use*

The definition of water use in **Section 21** of the NWA has been expanded to include all activities that have an impact on the quantity, quality and/or aquatic ecosystem (habitat and biota) of a water resource, following the principle of integrated water resource management. These can be grouped into those that are primarily related to water quantity, water quality and instream & riparian zone (albeit with some overlap).

Water quantity related activities:

- taking water from a resource [s21(a)];
- storing water [s21(b)]; and
- engaging in a streamflow reduction activity [s21(d)].

Water quality related activities:

- engaging in a controlled activity [s21(e)] – where this relates to waste disposal;
- discharging waste into a water resource through a conduit [s21(f)];
- disposing of waste in a manner which may impact on a water resource [s21(g)];
- disposing waste water from any industrial or power generation process [s21(h)]; and
- removing, discharging or disposing of water found underground [s21(j)].

Instream and riparian related activities:

- impeding or diverting the flow of water in a water course [s21(c)];
- engaging in a controlled activity [s21(e)] – where this relates to instream activity;
- altering the bed, banks, course or characteristics of a watercourse [s21(i)]; and
- using water for recreational activities [s21(k)].

There are four basic categories of entitlement to use water under the NWA, namely:

- *Schedule 1*, which provides for limited use of water resources without authorisation, including for domestic and household agricultural purposes, emergency use, recreational access and discharge of runoff.
- *General authorisations* [Section 39], which permits the use of water without a license (usually at lower levels of use), under specified conditions.

- *Water use licenses* [Section 41], which have to be applied for on an individual basis or in response to compulsory licensing [Section 43] in a catchment.
- *Existing lawful water use* [Section 33], which recognises use of water that took place two years before the commencement of the NWA, until a water use licence is required.

Management required to implement resource directed measures, must focus on the management of water use, through what are referred to as *source directed controls*. Water use management occurs through regulatory, economic, cooperative governance and/or persuasive approaches, measures and instruments. The national water resources strategy and catchment management strategies should outline, at the appropriate scales, how these are intended to achieve the levels of protection specified by the resource directed measures.

The need to water allocation reform to redress past inequalities in access to water has been recognised in the Policy and NWA, and has been translated into a Framework for Water Allocation Planning. The underlying concept is to use allocation planning and compulsory licencing to achieve social development (including redress) and environmental sustainability, while promoting economic development at a catchment and regional level. Once again, these measures must be based in cooperative and participatory approaches, to ensure appropriate local decision making and buy-in, albeit recognising the responsibilities of national government and its agents.

○ *Water Pricing*

Chapter 5 of the National Water Act deals *enables measures to finance the provision of water resource management services as well as financial and economic measures to support the implementation of strategies aimed at water resource protection, conservation of water and the beneficial use of water*. The *Pricing Strategy* was established in 1999¹⁸⁷ and is currently being revised, based on the principles of social equity, ecological sustainability, financial sustainability and economic efficiency.

The principle of social equity is deemed important because it seeks to address the imbalances of the past, both with respect to adequate access to water supply services and with respect to direct access to first tier water. Ecological sustainability is important because South Africa is committed to following a path of development that is environmentally sustainable. Financial sustainability is interpreted to mean that the full financial cost of supplying water should be recovered directly or indirectly from water users, including the cost of capital. Economic efficiency is interpreted to mean pricing water so as to reflect its scarcity value and the opportunity cost of alternative uses. The pricing strategy asserts that each of these principles is of equal importance and they are therefore of relevant to the water governance system.

Section 56(2) of the NWA provides for setting of water use charges for: *funding water resource management, funding water resource development and operation, and achieving the equitable and efficient allocation of water*. The existing Pricing Strategy has focused on cost recovery from "consumptive water users" through the first two charges, but no economic charge to influence water demand. The revised Pricing Strategy refines these charges will introduce a Waste Discharge Charge System from April 2007. Water use pricing will consist of the following charges.

- WRM charges (for the recovery of the costs of water resources management in a WMA, particularly CMA costs), distinguishing charges on
 - Consumptive use (abstraction, streamflow reduction and storage)

¹⁸⁷ DWAF. *A Pricing Strategy for Raw Water Use Charges*. Government Gazette No. 20619. 1999

- Waste discharge related use (registered point and non-point)
- Infrastructure charges (for the recovery of WR scheme development and operation), distinguishing charges on:
 - Operation and maintenance costs
 - Depreciation, reflecting the need for ongoing refurbishment
 - Return on Assets, set at 4% of the depreciated value on the asset (not paid by agricultural irrigation)
 - Capital unit charge, for repayment of finance from off-budget sources (only paid by commercial users to TCTA under the current arrangements)
- Waste discharge charges (intended to assist in the achievement of RQO within a catchment), distinguishing charges for:
 - Incentive (reflecting the charge required to influence discharge load at source)
 - Mitigation in the resources (where this is economically efficient)
- Water Research Commission levy

Together these charges underlie and support the changing governance arrangements in the water sector, and specifically align charging of abstraction with waste discharge. This should enable a more integrated approach to water resources management at a catchment level.

J.3 Institutional Arrangements

Water sector policy and legislation envisages a process of fundamental institutional change in the water sector over the next 10 years, with significant decentralisation of powers and functions to local institutions in a framework of cooperative governance.

Figure J.1 highlights the institutional relationships between the key water sector institutions, differentiating between accountability-oversight, contractual, representative and cooperative-consultation relationships. Although most of these institutions have some relationship with all the others and these are not simply one-dimensional, only the primary relationships are indicated. The roles of these institutions are indicated in this section.

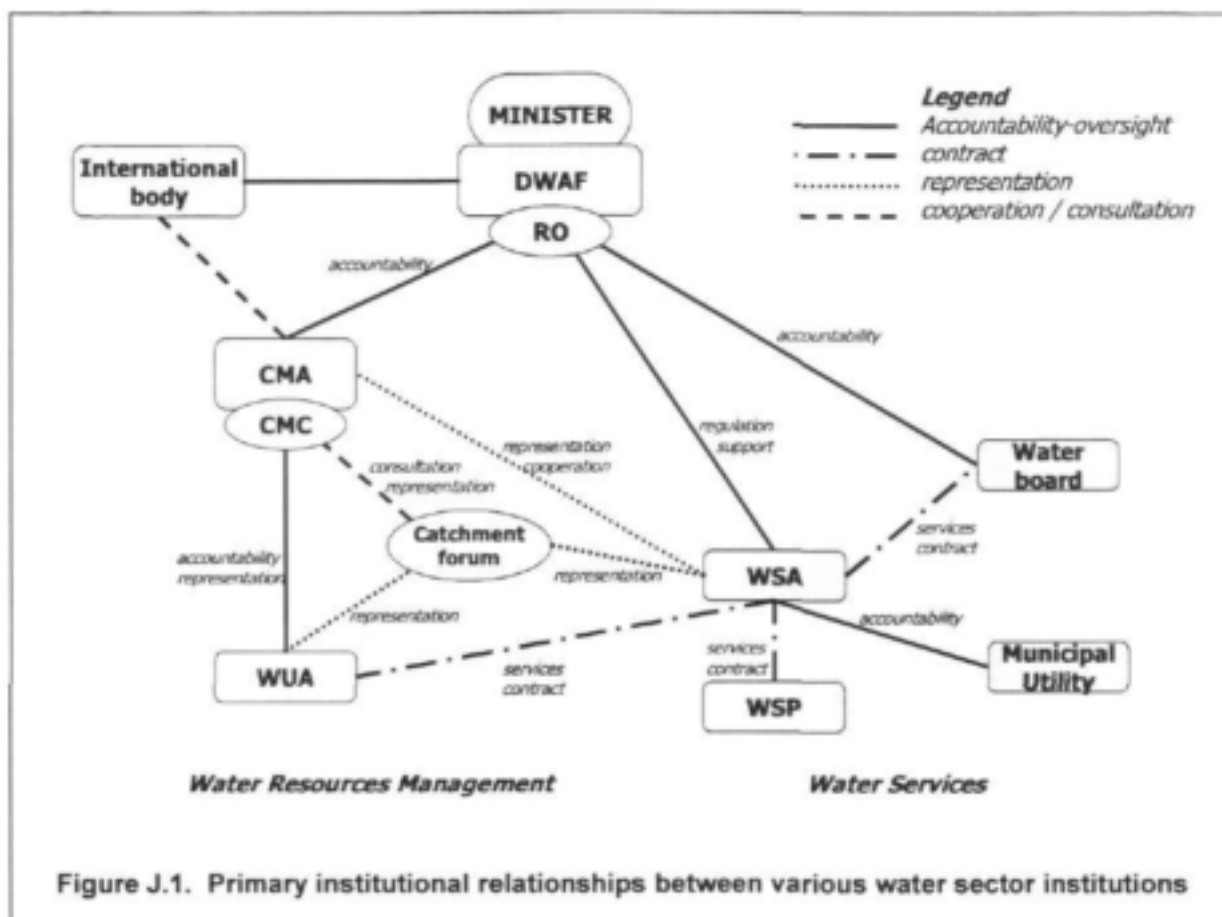
J.3.1 Department of Water Affairs and Forestry

DWAF has recently undergone a significant institutional and organisational restructuring process, in order to bring it in line with the requirements of the NWA (amongst other legislation and policies). In the future, DWAF will be primarily responsible for policy, legislation and national strategy formulation; institutional development, coordination and support; monitoring and auditing water resources management; and ensuring appropriate implementation of WRM by other institutions.

DWAF's role in the authorisation of water use will be significantly reduced, as CMAs become functional and take on responsible authority functions. DWAF is also unlikely to be directly involved in the financing, development and operation of water resources infrastructure, which should be done by other appropriate organisations, such as WUAs, water boards, WSAs, and a possible national water agency¹⁸⁸.

¹⁸⁸ Issues around DWAF raising capital to finance the development and maintenance of large water resources infrastructure, as well as a potential conflict between the regulatory and developer functions, have led to the possibility of establishing a national water agency for managing large-scale infrastructure in the national interest. Alternatively, DWAF or special purpose vehicles will take this responsibility.

On the other hand, the South African Constitution and Division of Revenue Act require the responsibility that local government (in their capacity as WSA) takes financial and management responsibility for the development and operation of water services, and therefore existing water services infrastructure will be transferred to local government.



J.3.2 Catchment Management Agency

Catchment management agencies (CMAs) are statutory bodies established by and accountable to the Minister of DWAF, the under **Chapter 7** of the NWA. It is expected that over the next five to ten years, one CMA will be established in each of the 19 water management areas (WMAs) that have been defined as part of the progressive development of the national water resources strategy (NWRS). The CMA is governed by a board that is appointed by the Minister, representing the interests of water users, stakeholders and government (and should include WUA representation where appropriate).

Each CMA is responsible for those water resources management functions that have been assigned or delegated to it within a WMA, as well as coordinating the management of other local water management institutions. Once a CMA is fully functional, it should be responsible for all regional (intra-WMA) water resources management (WRM) implementation functions, including the authorisation of water use. The CMA must develop and give effect to a catchment management strategy (CMS), which provides the framework for management of water resources in a WMA and that is consistent with the NWRS. The CMS should also indicate the institutions that are to be established for WRM within the WMA. WRM activities by any water management institution within a WMA must also be in accordance with this strategy.

The process of CMA establishment can be viewed as having the following four generic phases, from the current situation to fully functional CMAs:

- ↓ *Phase 1 - Current Situation / Status Quo:* DWAF maintains control over authorisation decision making, as well as the initial implementation of new processes, such as RDM (Reserve and classification), regional strategy (ISP) and compulsory licensing. Proto-CMAs would be established in the DWAF Regions, distinct from the ongoing WRM Regulation and Support components. The intensive period of policy and methodology development may be expected to continue for the next 3 years.
- ↓ *Phase 2 - Decentralisation to the Clusters:* As systems and approaches become stable, implementation and decision making responsibility will be decentralised to the Regional Clusters at the lowest level possible. This would include RDM, compulsory licensing and water use authorisation (responsible authority) to be established in the DWAF Regions, not necessarily the proto-CMAs. DWAF Head Office will retain the overall planning and regulatory functions. This process should take place over the next 2 to 5 years for most WRM functions in all Clusters.
- ↓ *Phase 3 - Establishment of CMAs:* A CMA (with an appointed Governing Board) will be established in each of the 19 water management areas (WMA), to which the proto-CMA functions (and staff) would be transferred within the first 2 years. The DWAF Regions would continue to perform WRM implementation functions that have not been delegated to the CMA. At least 5 CMA will be established in the next 12 months, but the last CMAs are only expected to be established in about 5 years, implying an uneven process of decentralisation and institutional development.
- ↓ *Phase 4 - Fully functional CMAs:* Over the 5 to 10 years following establishment, the remaining WRM implementation functions will be transferred to the CMA, culminating with the CMA becoming the responsible authority. Certain WRM implementation functions will remain with DWAF, including the classification and compulsory licensing of catchments/water resources of national importance. Following the uneven establishment process, the development to full functionality will also be very uneven, with CMAs in capacitated WMA accelerating their development and CMAs in less capacitated WMA lagging in their development.

While the phases imply a sequential process, the decentralisation process may occur once the CMA has already been established, which would indicate a fast-tracking from Phase 1 to 3.

With the emergency of CMAs, there is a real opportunity for the coordinated and cooperative management of the hydrological cycle at a catchment level. This opportunity needs to be further explored and leveraged in CMA development over the next few years.

J.3.3 Catchment Management Committee

The NWA provides for the formal establishment of committees by the CMA, in order to advise it or to perform any of its functions within a specified area. Catchment management committees (CMCs) should have representation from the CMA governing board and/or employees, but may include other specialists and/or stakeholders. Although a CMC is part of the CMA institution, it is a statutory body and as such is different to a sub-committee of the CMA governing board.

A geographically based CMC would focus on key WRM issues within a specified sub-catchment area of the WMA. Stakeholder representatives (including WUA) from that area may be included on the committee, which may be either advisory or perform delegated functions. Area-based CMCs provide a mechanism for communication, cooperation and decision making between stakeholders and the CMA governing board, while the CMA executive performs the associated functions or implements any required actions.

J.3.4 Catchment Forum

Catchment forums are voluntary (and generally open) associations of stakeholders, with an interest in a particular water resource-related concern and/or a particular sub-catchment area. They provide an important mechanism for stakeholder communication, participation and consultation with DWAF and/or a CMA. Like WUA they generally operate at a local level and should have representation on the CMA governing board (or at least a CMC). However catchment forums are not formally established under the NWA, do not primarily represent only water users, and are not typically designed to perform significant WRM functions.

J.3.5 Water Services Authority

Local government is constitutionally responsible for ensuring access to water supply and sanitation services to people within its area of jurisdiction, and is therefore defined as the water services authority (WSA) under the Water Services Act. The WSA may contract another organisation to provide bulk and/or household (reticulated) water services on its behalf.

The local government demarcation process (given effect through the Municipal Structures and Municipal Systems Acts) has changed the boundaries of local authorities and has incorporated rural areas with traditionally urban areas. Throughout the country, either District Councils or Local Councils have been authorised as the WSA, but in many cases the WSA has contracted the other level as its water service provider (particularly where the function has been performed at that level and the capacity exists). However, a more fundamental governance issue is local government's role in bulk water services (which is often taken to include water resources infrastructure). This has become a significant issue between the larger capacitated councils and water boards, with local government requesting management of local water resources infrastructure, and is even beginning to become an issue with the development of national infrastructure.

J.3.6 Water Services Provider

A water service provider (WSP) is the organisation responsible for providing water services to the consumer. This may be the local authority itself, or another organisation established or contracted by the WSA. In rural areas, water services intermediaries may be responsible for providing water services to communities or farm labourers.

J.3.7 Bulk Water Services Providers

Water boards are established under the Water Services Act, with a board appointed by the Minister, primarily for the provision of bulk water services in a specified area. They may be involved in the financing, development and/or management of water resources infrastructure, as well as the provision of water services to communities, on behalf of local government in its capacity as the water services authority. Although water boards may perform water resources related functions, they are primarily bulk WSP and as such are intended to operate in the water services sector.

The Municipal Structures Act enables one or more local authorities to establish a (multi-jurisdictional) municipal utility to provide services within their area of jurisdiction. This then provides a vehicle for local government to create water services providers that are entirely accountable to themselves (unlike a water board). In the other hand, a municipality may appoint or partner with a private sector company to provide water services within their jurisdiction.

A key emerging debate (that is being addressed through an "institutional reform process") in the water services sector is the possible regionalisation of water service provision, particularly

where schemes cross WSA boundaries and effective delivery of water services requires integrated management of these schemes with water resources in different areas (remote from the WSA jurisdiction). There is a real need for alignment in the governance arrangements between bulk water services providers and WR infrastructure management institutions.

J.3.8 International water management bodies

The Minister may establish bodies to implement international agreements for water resources management [s102]. These bodies may be involved in managing, monitoring, protecting or facilitating international cooperation on water resources, developing infrastructure and/or allocation, use and supply of water. As such they may include international river basin organisations¹⁸⁹, as well as international water user associations, and should give effect to the principles outlined in the *SADC Protocol on Shared Watercourses*.

It is emerging that Section 102 is used for "authorities" involved in the development and operation of international WR infrastructure (LHDA, KOBWA and Vioolsdrit WUA), while commissions established for the coordinated planning and management of shared watercourses (such as ORASECOM once it establishes a permanent secretariat) should be recognised as "international organisations" by the host country. In the South African context this requires recognition of the commission by the Minister of Foreign Affairs under the *Diplomatic Immunities and Privileges Act*¹⁹⁰, which provides specific privileges to the organisation and its staff.

A key issue is the governance of these institutions in the national context of decentralised water resources management through CMAs. Issues of representation on governing bodies / councils, as well as interaction and cooperation between institutions, need to be clarified in the context of international relations being managed through national government and specifically Foreign Affairs.

J.4 Progress with Implementation

The preceding sections have outlined the main governance framework for surface water resources management, focusing on policy and legislation. This section will provide a brief review of the state of implementation in certain key areas which will fundamentally affect water governance in South Africa, specifically noting that there have been considerable delays in developing and implementing the operational policies, regulatory tools, systems, methodologies and procedures required to give effect to the enabling framework legislation. It is critical to note that the national policy and legislation specify what is possible and what is to be achieved, but are generally silent on how to achieve it. The development of this detail in the context of inequalities resulting from South Africa's past and capacity limitations has contributed to this slower implementation.

□ CMA establishment

The establishment of CMAs has been slow, with the first (Inkomati) CMA having been recently established and the Governing Board having its inaugural meeting in mid-2005 (7 years after the promulgation of the NWA). A further 4 to 8 CMAs are expected to be established over the next 2 years. The stakeholder participation process has been extensive on all these processes, but the delays between proposal and establishment will have to be addressed through stakeholder remobilisation by the CMA. From a governance perspective, the delayed establishment has been important, given South Africa's history,

¹⁸⁹ The river basin organisations would include the international river basin commissions and technical committees, such as ORASECOM, the LHDA and KOBWA represent bodies for managing international infrastructure, and Vioolsdriif Noordoeper Joint Irrigation Board is an international WUA.

¹⁹⁰ Act No 37 of 2001

because there was a need to ensure the involvement and empowerment of marginalised groups (without access / entitlement to water), as well as the implementation of other key processes for the management of water resources (described below). Although there is currently no experience (practice) with CMAs, they fundamentally change the governance arrangements at WMA level and provide an important governance opportunity to focus / coordinate management attention for the entire hydrological cycle.

□ *WUA transformation from Irrigation Boards*

The transformation of Irrigation Boards into more broadly representative management bodies in a coherent geographical area has been slow, despite the NWA indicating a deadline for this to have happened. This largely represents the slow process of transformation in South African society and the slow progress with water allocation reform and redress of inequitable water entitlements.

□ *Water allocation reform (and compulsory licensing)*

The policy and programme for fundamental water allocation reform was only launched in early 2005. Water use entitlement underlies all aspects of the governance system, because it determines the relationships between water users and the interest of different groups over water. Those without access / entitlement to water are less interested in the management of water resources and therefore do not actively participate in the institutional change process, unless they perceive the institutional process as a means of gaining access to water. In the absence of CMAs, there is no demonstrable practice to mobilise marginalised groups around, while DWAF itself has had limited success with redress of water entitlements in the absence of the water allocation reform policy. Once again, the water allocation reform policy will fundamentally change the way that water is governed, but thus far there is little experience (practice) with the way in which this will be implemented. Compulsory licensing is expected to be driven primarily by DWAF to ensure a "level playing field" for CMA operation, but as yet not compulsory licensing process has been initiated.

□ *Water resources classification and resource quality objectives (RQO)*

While the Minister is required to establish a water resources classification system, this process is only in its inception with the system expected in 2006. Classification provides a fundamental building block for water resources management and implies a participative consensus-seeking governance process to determine the nature of a water resource. In the absence of classification, the Reserve determination process has been implicitly used as a management tool, but this is inherently a more technical less participatory process and has not adequately met the governance objectives of water resources management. The classification process is expected to be primarily a DWAF responsibility as custodian, but the way in which this will be implemented in a cooperative manner at WMA level is as yet unclear.

□ *Catchment management strategies*

A decision was made by DWAF not to embark on any catchment management strategy processes in the absence of a CMA, but rather to develop technically driven Internal Strategic Perspectives (ISP). While this was principally sound, it has meant that the participative governance approach to decentralised water resources management has not yet been tested or broadly implemented (except through isolated project related processes). As CMAs are established, they will need to focus on the development of strategies (linked to their own business planning process), so there is an opportunity and

expectation for fundamental change in water resources management governance at a local level. These strategies would guide the activities of the CMA and other institutions and water uses involved in water resources management.

□ *Water use authorisation*

The requirements for registration and authorisation under the NWA have been unevenly adopted. Nationally applicable general authorisations have been specified, while licensing is done in terms of the NWA, taking nominal consideration of the Reserve. However, in many DWAF regions authorisation continues to be applied as in the past (pre-1998) and the in many cases there is a massive licensing backlog. This can partly be attributed to lack of progress on many of the underlying processes described above, as well as significant turnover, inadequate capacity building and limited change processes for the DWAF personnel responsible for water use control and enforcement.

□ *Water use pricing and recovery of costs*

While the pricing strategy was implemented in 1999, there has been uneven success with the recovery of charges. Those that were already paying for water from infrastructure have tended to have higher cost recovery, while cost recovery on WRM charges from those that do not attract infrastructure charges has been far lower. WRM charging introduces a different governance paradigm by implying that WRM is a service for which users pay, but for which they then have a right to demand adequate service delivery. Unfortunately there has not been a concurrent improvement in WRM service delivery, due to the slow institutional change process. The introduction of the WDCS also implies a fundamental change in the economic governance of water, because it represents a significant environmental tax on waste discharge, but it is too early to indicate the governance practice that will emerge.

J.5 Key governance issues

In summary, the fundamental governance changes foreseen by the water policy and legislation, have only been partially implemented. However, a number of management and institutional processes are converging over the next couple of years that will change the way in which water resources are managed at a local level.

At the same time, there are governance tensions between the requirement for participative management and the public trust role of national government around water resources. This will manifest itself in some key areas, namely:

- The resources protection : water allocation process that will be driven by DWAF through classification and compulsory licensing, as well as by the CMA through catchment management strategy and allocation planning.
- Water resources management : infrastructure development process, with different institutions being involved in separate responsibilities, introducing an important regulatory tension to water resources protection, development and utilisation.
- Waste discharge : water availability and the integrated management of water resources to achieve reliable supply of good quality water.
- Water use : water pricing in all of its dimensions, imply that with entitlement to use comes a financial responsibility on the user side, but at the same time with cost recovery comes a service delivery responsibility on the managers side.

Many of these issues will be apparent in the changing institutional responsibilities of DWAF and CMAs over the next 10 years, and with is a different governance paradigm for water.

APPENDIX K: Estuaries

Estuaries represent the interface between land and sea. In South Africa an estuary is defined as "that portion of a river system which has, or can from time to time have contact with the sea. Hence during floods an estuary can become a river mouth with no seawater entering the formerly estuarine area. Conversely, when there is little or no fluvial input an estuary can be isolated from the sea by a sandbar and become a lagoon which may become fresh, or hypersaline, or even completely dry¹⁹¹." Estuarine environments support a large number of diverse species that are uniquely adapted to the changing fluctuation of the tide, consequently many organisms are found only in estuarine environments. An altering of freshwater flows into an estuary, either in terms of quantity or quality, can significantly affect the type of organisms that can be supported.

K.1 The value of estuaries

South Africa's 3 000 km of coastline has 259 estuaries, ranging from small coastal streams to large permanently open tidal estuaries¹⁹². The classification of estuaries results in 13 estuarine groups. Of these groups, 3 are critically endangered and 5 are endangered. Only 2 estuarine groups are considered well protected¹⁹³. Estuaries provide significant direct (e.g. food production, recreation and aesthetic value) and indirect (waste treatment, nutrient cycling, genetic resources) value. Many of these values can be quantified economically for example, estuarine fisheries in South Africa is estimated to be worth approximately R433 million (1997 Rands) annually.¹⁹⁴ Due to their economic, social and environmental value, the management of estuaries deserves special mention.

K.2 The challenges of managing estuaries

There are still currently over 40 National Acts with reference to estuarine related activities. The responsibility for managing estuaries has fluctuated between national and provincial government and continues to be a complex area to define jurisdictional control. From 1940 until 1992, regulation of fisheries in estuaries was, depending on provincial arrangements, either the responsibility of provincial or national governments. In the Cape Province, certain provisions were in place that made estuaries a provincial concern. In 1995 an amendment to the Sea Fishery Act of 1995, changed the definition of the 'sea' to include tidal rivers and lagoons, thereby making estuaries of national concern. In Natal and Cape Province administrative responsibility for estuaries was transferred from national to provincial authority in 1992 and back to national government in 1995. The effect of this administrative wrangling had a detrimental effect on estuarine management. For example, before the transfer back to national authority the Cape Department of Nature was engaging fishers in co-management arrangement of their fisheries in the Olifants River. The process was suddenly brought to a stop when the responsibility was transferred back to national government. The new government personnel were unable to continue the co-management project¹⁹⁵.

¹⁹¹ The C.A.P.E estuarine task team. 2005. Outline for marine and coastal management. Cape floral region, Regional estuarine management programme. p 2.

¹⁹² South Africa's national biodiversity strategy and action plan. Final Draft. 6 May 2005. website p. 16

¹⁹³ South Africa's national biodiversity strategy and action plan. Final Draft. 6 May 2005. website p. 16

¹⁹⁴ The C.A.P.E estuarine task team. 2005. Outline for marine and coastal management. Cape floral region, Regional estuarine management programme.

¹⁹⁵ Hauck, M. and Sowman, M. 2003. Waves of Change: Coastal and fisheries co-management in Southern Africa. UCT Press, Cape Town. p.45

Box 2. Innovate Governance Model for Estuaries

In response to the threat that inadequate institutional and management structures pose to estuaries, a Regional Estuarine Management Programme has been proposed. The programme will be developed according to the guidelines of the proposed National Estuarine Management Protocol under the new national Environmental Management: Coastal Zone Bill. The proposed approach will be launched in the estuaries of the Cape Floristic Region and will be the first of its kind in South Africa. Within 4 - 6 selected pilot study estuaries, the programme will draft a generic outline for Estuarine Management Plans, evaluate the present ecological health of each pilot estuary, determine local vision and objectives, draft a management strategy for inclusion into individual Estuarine Management Plans, as defined in the proposed National Estuarine Management Protocol. The management plans will be evaluated and revised based on stakeholder input. The plans will be implemented after considerable capacity building and training of local authorities. Successful implementation will also require considerable coordination with other departments. The effectiveness of the plans will be monitored through a monitoring and assessment programme. The Programme also plans to consider the establishment of Estuarine Protected Areas. The programme currently includes cooperation between CSIR, UPE, SAIAB, MCM, WCNCB, DWAF, Municipalities and UCT. The budget between 2005 - 2007 is anticipated at 5.3 million, with contribution from GEF, MCM and DWAF. The programme is coordinated by the C.A.P.E Estuarine Task Team¹⁹⁶.

The oceans play a vital part in absorbing and emitting atmospheric gases, dissipating energy into the northern and southern latitudes, regulating biochemical cycles, and providing vast reservoirs of life in complex food chains. They are more important for regulating the biosphere than many may realise.¹⁹⁷

¹⁹⁶ The C.A.P.E estuarine task team. 2005. Outline for marine and coastal management. Cape floral region, Regional estuarine management programme.

¹⁹⁷ O'Riordan, T. 1995. Environmental science for environmental managers. Prentice Hall, Norwich p. 376

APPENDIX L: Coastal Marine Environment

L.1 Value of the coastal environment

The coastal environment is a node of development and economic activity, encompassing a spectrum of human activity from mineral abstraction to eco-tourism. 30% of South Africa's population lives within 60 km of the country's 3 200 km long coastline¹⁹⁸. Coastal products account for 35% of the Gross Domestic Product and the future development of the coastal zone offers significant economic potential.¹⁹⁹

L.2 The definition of the coastal and marine environments

The coastal environment is an awkward zone to manage. Even its definition presents challenges that are often resolved with the drawing of arbitrary administrative boundaries that delineate ecologically integrated systems. Debates around the correct placing of these boundaries can be either too all encompassing to be practically realised, or too limited to include the factors that really threaten the coastal zone. For the purpose of this report, the coastal environment can be delimited so as to extend inland far enough to include all lands which affect the coastal waters and can extend seawards far enough to include all waters which uses can affect the shore-land²⁰⁰. While the seaward boundary of this definition is not overly problematic as one can follow legally adopted boundaries such as the 12 nautical mile zone. The land ward boundary present significant challenges as coastal managers may need to consider land-based pollution effects that happen 100's of miles inland. In practical terms, the landward boundary is seldom able to be determined based on the ecological links that land based activities have on the coastal environment. Most countries simply select an arbitrary administrative line, landward of the high water mark.²⁰¹

The marine environment is defined as the area seaward of the 12 nautical mile zone.

L.3 Legal Status of the Sea

The legal principle under pinning the Sea Shore Act of 1935 is that the sea-shore is open to and accessible for the use and enjoyment of the public at large. This does not include unlimited harvest of the resources as this is controlled under the Marine Living Resource Act (107 of 1998). The Sea Shore Act vests ownership of the sea and sea-shore in the State President. The area may not be alienated or let except in conformity with the Act, although there are a number of activities that are stipulated for which the Minister may let the area, these are activities that are considered to be in the general interest of the public. Recently, the provisions of the Sea-Shore Act have been assigned to the coastal provinces.²⁰² Due to apartheid planning, access to the sea shore has in reality become restricted as much of the land adjacent to the sea shore is private or state land²⁰³. There have also been recent initiatives to privatise sections of the sea shore and attempts to restrict public access. The white paper for sustainable coastal development in South Africa, entrenches the important principle of the coast as a national asset that "with public rights to the access and benefit from the many

¹⁹⁸ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban. p. 329

¹⁹⁹ Department of Environmental Affairs and Tourism. 2000. Key elements of the white paper for coastal sustainable development in South Africa, April 2000.

²⁰⁰ Cicin-Sain and Knecht p. 163, cited in Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban. p. 355 from Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban. p. 329

²⁰¹ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban.

²⁰² Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban.

²⁰³ Hauck, M. and Sowman, M. 2003. Waves of Change: Coastal and fisheries co-management in Southern Africa. UCT Press, Cape Town. p. 40

opportunities provided by coastal resources²⁰⁴. If passed into law, through the National Environmental Management: Coastal Zone Bill, this principle will ensure that the sea shore remains clearly within the public realm for the benefit of all.

L.4 Threats to the coastal zone

A spatial assessment of marine environments showed that 65% of South Africa's 34 marine biozones are threatened, with 12% being Critically Endangered, 15% vulnerable, 38% Vulnerable and 35% Least threatened²⁰⁵. The coastal and marine environments are threatened by several factors, these include pollution from land-based activities; pollution from marine based pollution; exploitation of marine resources; and uncontrolled development within the coastal zone. These are discussed in more detail below

L.4.1 Pollution from land based activities

Pollution of coastal waters from land based activities includes seepage from storm water run off in urban and rural areas, marine outfall pipes, waste carried down rivers, the deliberate pumping of waste generated on the land, and transporting waste out to sea.²⁰⁶ The National Water Act (NWA) is primarily responsible for regulating pollution from land-based activities. The NWA defines water resources as a "watercourse, surface water, estuary, or aquifer." The definition does not include sea water but the licensing control section of the Act includes "discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit"²⁰⁷. DWAF is the administrative body responsible for licensing pollution into the coastal environment from a sea outfall. Although this function is usually performed in cooperation with MCM in DEAT²⁰⁸.

The control of non-point solution which enters the sea naturally through seepage or river flows is considerably more difficult to control. Section 19 of the NWA outlines a wide range of pollution prevention measures which could require land owners to take responsibility for pollution that affects water resources. Section 19 states that,

An owner of land, a person in control of land or a person who occupies or uses the land on which- a) an activity or process is or was performed or undertaken; or b) any other activity exists, which causes, has caused, or is likely to cause pollution of a water resource, must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring.

The Act goes on to give Catchment Management Agencies a responsibility to ensure that these provisions are adhered to.

L.4.2 Marine based pollution

Pollution from marine sources includes pollution from shipping, navigation and offshore prospective and mining activities²⁰⁹. Most significant of these is the accidental discharge of fuel or hazardous material due to navigational accidents. The following legislation is concerned with the control of this form of pollution:

- Merchant Shipping Act 57 of 1951

²⁰⁴ Department of Environmental Affairs and Tourism. 2000. Key elements of the white paper for coastal sustainable development in South Africa, April 2000.

²⁰⁵ South Africa's national biodiversity strategy and action plan. Final Draft. 6 May 2005. website p. 16

²⁰⁶ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban.

²⁰⁷ Republic of South Africa. National Water Act. 36 of 1998. Section 21

²⁰⁸ Alan Boyd MCM DEAT, 2005. Personal Communication.

²⁰⁹ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban. p.

- The Marine Traffic Act 2 of 1981 is
- Marine Pollution Act 2 of 1986
- Marine Pollution Act 6 of 1981
- Marine Pollution Intervention Act 64 of 1987

South Africa's legislation follows most of the relevant international conventions such as the Law of the Sea Convention, International Convention for the Prevention of Pollution by Oil, (1954) and The international Convention for the Prevention of Pollution from Ships (1973)²¹⁰.

L.4.3 Development in the coastal zone

One of the most significant threats to the coastal zone is the development pressure placed on the land through the increased migration of people to the coastal regions of the country. An increase in population requires additional land for housing, transport infrastructure and services, placing increasing pressure on the coastal environment.

Traditionally planning law was centred on the provincial Township Ordinances of the four old provinces and not of national concern. The old ordinances have in most instances been replaced by new Provincial Planning and Development acts²¹¹. These new provincial provinces must be cognisant of new national planning legislation such as the Development Facilitation Act 67 of 1995, the Local Government Transition Act 209 of 1993, and the Local Government Municipal Structures Act, and the Local Government Municipal Systems Act 32 of 2000. Under the Local Government Municipal Systems Act 32 of 2000 all local authorities are required to develop Interacted Development Plans (IDP) which are now the decisive planning tool in South Africa and should guide development planning in all local authorities. The integration of coastal principles into these IDPs presents a significant challenge for local authorities²¹².

In the former "homeland" areas, management of the coastal zone was complicated by the fact that much of the land was held in communal tenure and the allocation of user rights was the responsibility of traditional authorities²¹³. Many traditional authorities were cooped into furthering the aims of the apartheid government, leading to ad hoc and often corrupt system of land allocation, and consequently inappropriate coastal development. The vestiges of the system have lead to a complex regulatory framework, where traditional and informal rules apply in conjunction with rules and regulation held in South Africa's national and provincial legislation²¹⁴.

The South African coastal environment, much like coastal zones across the globe, is subject to a plethora of planning laws. There is a growing recognition that the zone can most effectively be managed through Integrated Coastal Zone Management (ICZM). ICZM is defined as a continuous and dynamic process by which decisions are made for the sustainable use, development and protection of coastal and marine areas and resources²¹⁵. The approach should overcome the fragmentation inherent in sectoral management approaches²¹⁶. Stakeholders in the coastal zone are given tools whereby their concerns and opinions are

²¹⁰ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban. p

²¹¹ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban. p

²¹² Hauck, M. and Sowman, M. 2003. Waves of Change: Coastal and fisheries co-management in Southern Africa. UCT Press, Cape Town.

²¹³ Hauck, M. and Sowman, M. 2003. Waves of Change: Coastal and fisheries co-management in Southern Africa. UCT Press, Cape Town. p. 40

²¹⁴ Hauck, M. and Sowman, M. 2003. Waves of Change: Coastal and fisheries co-management in Southern Africa. UCT Press, Cape Town. p. 40

²¹⁵ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban. p. 359

²¹⁶ Glazweski J. 2000. Environmental law in South Africa. Butterworth, Durban. p. 359

included in the decision making process²¹⁷. The White Paper for Sustainable Development introduces a major shift in South African coastal planning toward the principles of ICZM. A key goal of the paper is to foster co-operative governance that facilitated "partnerships between government, the private sector and civil society in order to ensure co-responsibility for coastal management to empower stakeholders to participate effectively²¹⁸." These principles will ultimately be given legal status in the National Environmental Management Coastal Zone Bill, lead by the Department of Environmental Affairs and Tourism.

L.4.4 Exploitation of Marine Resources

The South African fishing industry is worth about R4.1 billion annually (or one percent of gross domestic product). The industry provides 29 000 direct jobs and an additional 100 000 casual jobs²¹⁹. Although the sector contributes significantly to the country's economy, the fishing industry was skewed under apartheid law, to favour white large-scale operators away from black small scale operators. In 1994, only 0.75% of the sum of commercial TAC was allocated to black ethnic groups²²⁰. Equitable access to natural resources and sustainable use of natural resources are key principles embraced in the 1996 Constitution. These principles were carried through in the Marine Living Resource Act which is founded on the principles of sustainability, equity and stability. The Act gives attention to the management of inshore and coastal resources, as opposed to traditional emphasis on the offshore industrial fisheries²²¹.

The Marine Living Resource Act (MLRA) applies to South African waters which are defined as the seashore, internal waters, territorial waters, the exclusive economic zone, the continental shelf and also includes "tidal lagoons and tidal rivers in which a rise and fall of the water level takes place as a result of the tides." The Act considers the management of "marine living resources of the sea and seashore, including any aquatic plant or animal whether pristine or not, and any mollusc, crustacean, coral, sponge, holothurian or other echinoderm, reptile and marine mammal, and includes their eggs, larvae and all juvenile stages, but does not include sea birds and seals."²²² Sea birds and Seals are protected under the Sea Birds ad Protection Act 46 of 1973. The MLRA is administered by the Chief Directorate: Marine and Coastal Management, within the Department of Environmental Affairs and Tourism.²²³

Table L.1: Summary of legislation applicable to the management of activities in the coastal and marine environment.

Acts	Objectives	Administrative responsibility
Marine Living Resources Act 18 of 1998	Regulates fishing activities in coastal and marine waters	DEAT
National Environmental	Generally applicable legislation	DEAT

²¹⁷ Fisheries and Oceans Canada, 2002. Integrated management for everyone: Methodology for the coastal communities of the marine portion of the St Lawrence

²¹⁸ Department of Environmental Affairs and Tourism. 2000. Key elements of the white paper for coastal sustainable development in South Africa. April 2000.

²¹⁹ Department of Environmental Affairs and Tourism. South African position statement: 28th Session of UN:FAO COFI Meeting, Rome, Italy, 7-11 March 2005 website. Accessed June 2005

²²⁰ Hauck, M. and Sowman, M. 2003. Waves of Change: Coastal and fisheries co-management in Southern Africa. UCT Press, Cape Town. p. 41

²²¹ Hauck, M. and Sowman, M. 2003. Waves of Change: Coastal and fisheries co-management in Southern Africa. UCT Press, Cape Town. p. 50

²²² MLRA definition s 1

²²³ Glazweski p. 494

Management Act 107 of 1998	specific reference to coastal environment in section 2.4	
Development Facilitation Act 67 of 1995	Overall framework for land planning and development control. Act developed as an interim measure to facilitate land development replacing the different land development legislation.	Land Affairs
Sea-shore Act 21 of 1935	Declares the state president to be owner of the sea and sea-shore	DEAT
Maritime Zone Act 15 of 1994	Claims various South African maritime zones in conformity with international law	DEAT
EIA regulations of the Environmental Conservation Act 73 of 1989 as well as regulations on sensitive control areas.		Land Affairs
Local Government Municipal Systems Act 32 of 2000	Act sets out planning and development procedures and systems for local government to achieve its mandate as well as cooperation with other spheres of government.	Provincial and local Government
Minerals Act 50 of 1991	Regulates the granting of mining rights and title	Minerals and energy affairs
National Park Act 57 of 1976	Protection of declared protected areas, such as the Tsitsikama Forest and Coastal National Park	
National Environmental Management: Coastal Zone Bill	Management and control of development in the coastal zone	DWAF / DEAT

Other related WRC reports available:

Evaluation of the opportunities for cooperative governance between catchment management agencies and local government.

Pegram GC; Mazibuko G

The recent demarcation process and the ongoing specification of the powers and functions between the district, local and metro councils have further clarified the roles and functions of local government. Local government is constitutionally responsible for the implementation and control of a range of activities that affect water resources.

This research will, amongst others, provide recommendations on the requirements for co-operative governance and the most appropriate approaches and mechanisms to foster co-operative governance between CMAs and local government, to achieve a range of objectives under differing circumstances

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