Natural Resource Governance Systems in South Africa

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by

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Executive Summary

South Africa is a water-scarce county, and its water resources are under increasing pressure as the need for both development and socio-economic transformation increases. These pressures are exacerbated by increased climate variability as a result of climate change.

Integrated Water Resource Management (IWRM) has become the internationally accepted paradigm within the water sector and has as such dominated how we think about governance of our natural resources as well as the range of human activities that impact upon our natural resources. In the natural resources management literature and as promoted under IWRM, institutions are considered to be key in sustainable livelihoods adaptation and water resources management where institutions are understood and seen as central to successful policies. However, this contrasts with the complex matrix of institutions in which people live their lives, and in which natural resource management span across different resources and different institutions.

The collective action focus of IWRM tends to shift attention away from the fact that institutions by nature are beset with conflicts, social differences, and diverse interests as much as they can serve to enhance cooperation. Thus policy suggestions, under the rubric of IWRM often result in a focus on 'getting the institutions right' in order to guarantee or stabilise uncertain human behaviour through such action as establishing a formal legal system and coded norms of behaviour.

In South Africa, implementation of IWRM has been difficult, and there have been ongoing debates around the institutional frameworks that would in effect provide a conduit for corporates and communities to engage in water resource management.

Governance as Wicked Problem

There is a bewildering number of definitions for the term governance. Some of the definitions of governance adopted by national and international organizations focus on the exercise of power and authority. Others emphasize processes and decision-making. Other definitions highlight rules or laws and institutions. Others say that governance and management is the same thing. Other sources, instead of defining governance, simply describe what it should be.

Adopting IUCN's global definition, governance is the means by which society defines goals and priorities and advances cooperation. It includes policies, laws, decrees, norms, instruments and institutions. Governance is not the province of government alone, and includes informal institutional arrangements like voluntary codes of conduct for private businesses, professional procedures and partnerships among all sectors. These include numerous and varied arrangements, but an essential element is that they mobilise diverse constituencies to agree on common goals and to help realise them (IUCN, 2013)

Natural resource governance addresses issues where it is often unclear where responsibilities lie and where traditionally no one sphere of government, agency, institution, or group of individuals has sole jurisdictional responsibility, such that problem solving capacity is widely dispersed and few actors or decision-makers can accomplish their mission alone. In a pluralistic society, therefore, natural resource management policy problems are what Rittel and Webber (1973) refer to as

'wicked'; namely, problems that *'defy efforts to delineate their boundaries and to identify their causes, and thus expose their problematic nature'*. The nature of these types of problem are that they:

- cannot be definitively described;
- are persistent, complex, non-linear and irreversible and involve long time scales;
- socially constructed and often disputed;
- have no optimal solutions or solutions with definitive and objective answers; and
- levy enormous costs and have broad social, economic, environmental consequences.

Despite this, we have to govern in terms of the current context (and this includes the important concepts of redress and transformation), as well as providing for the future (by ensuring that use of the resource is sustainable). Towards this end key principles include participation, legitimacy, fairness and equity are particularly important from a transformation perspective, while transparency, accountability, coherency, responsiveness, integration, predictability, direction and performance are important from the perspective of creating well-functioning institutions and processes (systems) for governance of resources.

Water Governance in South Africa

South Africa has a rich and fairly robust governance framework. Through the 1990s and early 2000s the country produced a plethora of revised/ new policies and legislation. Together with these, there came a number of new institutional arrangements that were aimed at supporting and implementing these new policy frameworks.

However, upon reflection, we realise that there has been a significant array of challenges that have served to slow down the implementation of these policies and laws. The institutional changes have also been more drawn out than ever envisaged. The length of time taken, and the iterative nature of the reform processes, has been a source of incredible frustration for many stakeholders.

Our experience, as well as that from other countries, does reveal that in fact these challenging processes are all part of an important process of doing, monitoring and adapting as part of an adaptive management cycle. Authors such as Blomquist, Dinar and Kemper (2005) have reflected on these processes across a number of countries and basins and notes that these institutional process require both the iterations and the time to find the right institutional model.

Key Governance Challenges in South Africa

Through discussion with experts and the literature review three key governance challenges have been surfaced that require attention. Whilst it is understood that there are a whole host of issues that could be tackled to improve how we govern, it appears that by addressing these three key issue there would be a significant turn-around. These issues are:

- the ability to ensure effective regulation,
- the lack of accountability at a variety of levels, and
- the failure to engage the private sector and civil society actors in order to strengthen our management of water resources.

In reflecting on these matters a few steps are required to address these challenges. Some of these are loaded and require significant input, effort and political support. Others are less so. Nonetheless, it is useful to make a list of the steps required to redress the challenges to date.

Regulation	• Finalise the legislative reform • Implement and monitor the NWRS • Finalise the revision of the pricing strategy • Ensure the waste discharge charge system is implemented • Stabilise the institutional environment and reduce uncertainties (includes DWS restructuring, Regional Water Utilities, Catchment Management Agencies, Water User Associations) • Address the role of municipalities and give support to strengthen • Re-instate the Water Tribunal • Improve the licensing system (includes integration with other legislative requirement) • Drive water allocation reform • Further strengthen compliance monitoring and enforcement
Accountability	• Improve alignment between Departments (such as DWS and DEA) • Strengthen and improve the data and information management • Establish the economic regulator • Establish CMAs towards improved vertical accountability
Engagement	• Articulate the rationale for engagement (i.e. the drivers) • Understand who the stakeholders are and the types of engagement • Recognise that there are different mechanisms for engagement • Provide the necessary support to enable them to function effectively

Adapting our Governance Approach

Within 18 years of the promulgation of the NWA, there are questions being asked as to whether the approach to water governance for South Africa was indeed appropriate. However, when one takes cognisance of what is happening across an array of different sectors, one quickly realises that governance challenges exist across many sectors and not just those sectors that have the "wicked problem" of managing natural resources. In fact, the debate and discourse with regards to governance models and the efficacy of these various models is not limited to South Africa or the water sector.

Our governance regimes have adjusted with time and this is linked closely to the socio-economic context at each of these stages.

Polycentricism is social system of many decision centres having limited and autonomous prerogatives and operating under an overarching set of rules (Aligica and Tarko, 2012). Alternatively, monocentric systems are where the rules are determined and enforced by one single hierarchical authority, often government authorities, that often has legally prescribed and mutually exclusive mandates.

The overriding feature that makes polycentric models attractive to managing natural resources in an uncertain future is that they have the ability to self-correct and adapt (Pahl-Wostl, 2009; Aligica and Tarko, 2012). If we note that ultimately no perfect governance system exists (Anderson and Ostrum,

2008) and as such they attempt to address the need to collectively tackle complex resource challenges, then the ability to act swiftly from lessons learned becomes imperative. With the uncertainties of climate change, economic and social stability, as well as political unrest linked to service delivery, it becomes absolutely essential to have a governance model that is adaptive in a way that typical hierarchical centralised government cannot be. Of course, much of this is related to the degree of formality and the importance of state actors within the governance system.

The exchange of information becomes critical to ensuring the success of polycentric systems. This information exchange enables shared learning, which is not only a key part of day to day functioning of the system, due to its complexity, but equally is invaluable in providing the ready knowledge to be able to adapt to changing circumstances.

It is important to note that the adaptability of polycentric systems is based upon the ability of people to both enter and exit the system. This contrasts with conventional thinking where government tries to "lock-in" members and ensure their participation at all meetings. However, it is clear that there is a need for a balance between formal and informal structures. The South African governance model supports this, however, the resources to support informal structures have remained a challenge since the promulgation of the NWA. Sadly, this has ended up hampering livelihoods more than helping them.

Unlocking the Governance Framework

The existing governance framework shows us that actually we have useful balance of formal and informal structures, of governmental and non-governmental engagement, and of hard and soft regulation that provides both structure and encouragement. Across these dimension we see a shift from the more monocentric, centralised government towards a more polycentric and decentralised governance.

This is a model that the country needs to develop over time. There are already distinctive elements of the model in place, it requires of DWS and the CMAs diligent support and guidance to foster and encourage.

In its strictest terms we are only applying the polycentric governance model in certain circumstances, but noting the history of South Africa and the massive governance challenges that are being faced across a range of sectors, this is probably appropriate. There are questions as to whether our society is "mature" enough at this stage to entertain a fully polycentric governance model. The imbalances in power, in socio-economics and in capacity do need to be managed in certain circumstances.

Whilst, this report provides an array of suggestions towards getting our governance framework back on track, it must be noted that most of what is suggested is actually about getting on and implementing the existing policy and legislation. Some shifts are fundamental, and probably the most important is the need to take water beyond the bounds of the government's environmental cluster. In the last year the country has experienced the devastating effects that drought can have upon the economy. This should have indicated that we need to re-think how we govern this scarce resource. If we are to manage our resources sustainably, and support a growing economy, then the discourse needs to include National Treasury, DTI, DMR, COGTA and other sector departments that underpin the economy of the country. This would be aligned with the moves that the many

corporate businesses are making, in establishing partnerships, as they understand the risks associated with water and their own production.

Contents

List of Figures

List of Tables

List of Acronyms

ADB	Asian Development Bank
AFDB	African Development Bank
AMD	Acid Mine Drainage
ARC	Agricultural Research Council
CCWR	Computing Centre for Water Research
CDP	Carbon Disclosure Project
CER	Centre for Environmental Rights
CIDA	Canadian International Development Agency
CMA	Catchment Management Agency
CMC	Catchment Management Committee
CME	Compliance, Monitoring and Enforcement
CMF	Catchment Management Forum
DAFF	Department of Agriculture, Forestry and Fisheries
DBSA	Development Bank of Southern Africa
DCOGTA	Department of Cooperative Governance and Traditional Affairs
DEA	Department of Environmental Affairs
DMR	Department of Mineral Resources
DRDLR	Department of Rural Development and Land Reform
DWA	Department of Water Affairs
DWAF	Department of Water Affairs and Forestry
DWS	Department of Water and Sanitation
EIA	Environmental Impact Assessment
GA	General Authorisation
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GWP	Global Water Partnership
GWS	Government Water Scheme
HDI	Historically Disadvantaged Individual
IB	Irrigation Board
ICMA	Inkomati Catchment Management Agency
IDP	Integrated Development Plan
IPIC	Interdepartmental Project Implementation Committee
IIED	International Institute for Environment and Development
IRMC	Integrated Regional Monitoring Committees
IUCN	International Union for the Conservation of Nature
IWRM	Integrated Water Resource Management
IWUL	Integrated Water Use Licence
LDP	Local Development Plans
LWSP	Local Water and Sanitation Plans
OECD	Organisation for Economic Cooperation and Development
NEMA	National Environmental Management Act
NEMWA	National Environmental Management Waste Act
NGO	Non-governmental Organisation
NPC	National Planning Commission
NWA	National Water Act
NWMC	National Water Monitoring Committee
NWRS	National Water Resources Strategy
PGDS	Provincial Growth and Development Strategy
RWU	Regional Water Utility
SALGA	South African Local Government Association
SAWS	South African Weather Services

SEMA	Specific Environmental Management Act
SWPN	Strategic Water Partners Network
TCTA	Trans Caledon Tunnel Authority
UNDP	United Nations Development Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
WAR	Water Allocation Reform
WCWDM	Water Conservation and Water Demand Management
WDCS	Waste Discharge Charge System
WMA	Water Management Area
WRC	Water Research Commission
WRM	Water Resource Management
WSA	Water Service Authority
WUA	Water User Association
WWF	World Wide Fund for Nature

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1 Introduction

South Africa is a water-scarce county, and its water resources are under increasing pressure as the need for both development and socio-economic transformation increases. These pressures are exacerbated by increased climate variability as a result of climate change. Traditionally, focusing on water resource development, including complicated transfer schemes, has helped to address water challenges. However, with water allocated in almost all catchments in South Africa and an expected increase in episodes of floods and drought, the need for better governance of water resources has come to the fore. Thus, key challenges in key resources areas (such as energy and water) has resulted in the need to make fundamental changes in the way we govern resources.

Integrated Water Resource Management (IWRM) has become the internationally accepted paradigm within the water sector and has as such dominated how we think about governance of our natural resources as well as the range of human activities that impact upon our natural resources. In the natural resources management literature and as promoted under IWRM, institutions are considered to be key in sustainable livelihoods adaptation and water resources management where institutions are understood and seen as central to successful policies. However, this contrasts with the complex matrix of institutions in which people live their lives, and in which natural resource management span across different resources and different institutions.

The collective action focus of IWRM tends to shift attention away from the fact that institutions by nature are beset with conflicts, social difference, and diverse interests as much as they can serve to enhance cooperation. Thus policy suggestions, under the rubric of IWRM often result in a focus on 'getting the institutions right' in order to guarantee or stabilise uncertain human behaviour through such action as establishing a formal legal system, fixed property rights and coded norms of behaviour. This project tries to create robust understanding of and develop a governance framework that takes into cognisance the dynamic and complex matrix of institutions in which people live their lives and in which natural resource management spans across different resources and different institutions.

In South Africa, implementation of IWRM has been difficult, and there have been ongoing debates around the institutional frameworks that would in effect provide a conduit for corporates and communities to engage in water resource management. During the 1990s and early 2000s, policy and legislative reforms occurred across all government departments and sectors in South Africa. Although the policy and legislative reforms were driven at a national level, efforts to implement the reformed policy and legislation stagnated as different government departments pursued its various mandates. This has resulted in government institutions not applying their efforts in a concerted manner to achieve the overarching developmental goals of South Africa. Although various platforms were established to facilitate cooperative governance, these platforms did not achieve the intended outcomes of integrated planning and in particular integrated implementation or consistency of decisions. This has resulted in the different government departments acting in silos with the unintended consequences that those actions of one sphere of government or government department frustrate the mandate or goals of another.

Furthermore, the Department of Water and Sanitation seems uncertain as to the direction it needs to take with institutions and the level of decentralization and participatory approaches it would like to implement. To many this has been frustrating in that well established models and policy have not been implemented to the extent that was originally intended. In all of this, a real concern is that our natural resource governance continues to stall with perverse outcomes for livelihoods, development, growth and water management.

In recent years, South Africa has experienced how the political, administrative and economic dimensions of governance can seriously impact upon the way in which we construct our governance models and how these are, or are not, implemented. This has had societal impacts, and as a result we have seen the emergence of explosive situations with regards to poor service delivery. For an emergent democracy, it can be argued that this is part of our growth; however, it is apparent that many countries around the world are also experiencing similar dilemmas in giving effect to improved governance models. Hence, countries in the European Union are having very real difficulties in implementing the Water Framework Directive and are questioning the approach towards catchment based institutions. Australia, in trying to sustainably manage the Murray-Darling basin, which is facing a looming ecological disaster, has recently seen almost violent resistance to proposed planning regimes. Similarly, countries like Chile and Mexico, which have developing economies such as our own, have had to work through some tough governance issues in order to avoid natural resource catastrophes.

In many ways, this period has been quite sobering to the extent that, now, one can look back and fully unpack this governance model and explore how we can practically give effect to this. Therefore, this project provides an excellent opportunity to re-visit in a pragmatic way these governance systems, to re-engage with key actors as to how we can practically implement these governance models, and most importantly how we can measure and regulate performance.

Our governance frameworks are critically important to not only ensure sustainable societal use of these resources but to also support fair and equitable access to these resources. Clearly, water is not distributed evenly over space and time and between different societal strata and geographic settings. A priority of our governance framework is to account for these disparities and to support mechanisms that work towards the elimination of these disparities. Part of that journey is the provision of mechanisms that enable stakeholders to engage in the management of resources, as well as to have inputs into strategic issues that impact upon their wellbeing. It is envisaged that this project will positively influence how the governance of water resources support these objectives.

The structure of this report is as follows:

- Section 2 describes governance by outlining the definition, describing why water resource governance is considered a “wicked problem” and expanding on the principles and core attributes of governance;
- Section 3 describes the elements (policy, legal and institutional elements) of the governance system in South Africa;
- Section 4 provides a description of the emergent water resource governance challenges in South Africa (regulation, accountability and collaborative governance);

- Section 5 considers how water resource governance in South Africa is occurring through cooperation and engagement by considering six case studies in South Africa;
- Based on the previous section, section 6 outlines a revised governance framework; and
- Section 7 provides some considerations for the way forward.

2 Governance as a Wicked Problem

2.1 How do we Define Governance?[1]

The interpretation of what constitutes natural resources governance is still evolving internationally. Before we explore the concept of natural resource, it is necessary to explore the concept of governance.

In terms of a report by the IUCN titled *"Assessing forest law enforcement and governance: Lessons from the field"* the concept of governance has been around for more than 300 years and has received increasing attention over the last 20 years in the development and conservation fields. Since the 1990s many institutions and organisations have developed their own definitions of governance, and some are tabulated below. Although the concept of governance has evolved over centuries, the central idea remains the same – that governance requires the interaction of the government and the citizens. It is understandable that the theory and practice of governance exists and evolves in all societies in different ways.

Some of the definitions of governance adopted by national and international organizations focus on the exercise of power and authority. Others emphasize processes and decision-making. Other definitions highlight rules or laws and institutions. Others say that governance and management is the same thing. Other sources, instead of defining governance, simply describe what it should be.

[1] Moore, Patricia, Thomas Greiber, and Saima Baig. 2010. Assessing Forest Law Enforcement and Governance: Lessons from the Field. IUCN. As sited in Patti Moore, Xuemei Zhang, Ronnakorn Triraganon. Natural Resources Governance, trainers' manual, IUCN, 2011.

Table 1: Definition of governance by organisation

Definition	Organisation
"Governance refers to the institutional arrangements which shape actors' decisions and behaviour, including the exercise of authority within groups or organizations (such as firms or nations)."	Adaptive governance
Governance is the exercise of political, economic and administrative authority in the management of a country's affairs at all levels.	United Nations Development Programme (UNDP)
Governance means the process of decision-making and the process by which decisions are implemented, or not implemented.	UNESCAP
Governance means rules, processes and behavior that affect the way in which powers are exercised at the European level, particularly with regard to openness, participation, accountability, effectiveness and coherence.	Commission of the European Communities
Governance consists of the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them.	The World Bank
Governance is about the institutional environment in which citizens interact among themselves and with government agencies/officials.	Asian Development Bank (ADB)
Governance encompasses the values, rules, institutions, and processes through which people and organizations attempt to work towards common objectives, make decisions, generate authority and legitimacy, and exercise power.	Canadian International Development Agency (CIDA)
Governance is the process whereby societies or organizations make important decisions, determine whom they involve and how they render account.	Institute on Governance
Governance is the process or method by which society is governed.	International Institute for Environment and Development (IIED)
Governance is the process through which governments, sometimes but not always in association with the private sector and civil society, perform their functions.	WRC (L Jonker)

Some definitions say that governance and government are the same, but this is the opposite of the original concept. Some modern English-language dictionaries unfortunately define both governance and government using the same words. This creates the erroneous impression that they are the same thing. Government alone is not responsible for making and implementing decisions - governance requires the participation of all citizens.

Some definitions say that governance is management. This is not the case. Management is part of governance. Governance is strategic. Management is operational. Governance involves making and implementing decisions. Management is a tool for implementing decisions. Governance is about making the big decisions about what must be done – for example, a decision that irrigation must be managed at the community level. Management determines how those water resources are distributed equitably – when each farmer receives water and what type of mechanisms are used to deliver the water, for example.

Governance is not one-size-fits-all. Because the concept of governance originated in Northern and Western societies, it is often a challenge to translate it and apply it in non-Western societies. Many

of the institutions that have defined governance over the years have pointed out that it is dynamic and evolves differently in different societies and cultures. These definitions may have specific purposes depending on institutional focus. Although many institutions refer to good governance as a global goal, many others recognize that many of the values ascribed to 'good' governance are not necessarily commonly understood and practiced in non-Western societies. Many criteria that are currently put forward to describe good governance were, in fact, the results of development in industrialized countries. Looking at definitions that have been developed over the past 20 years, we see that governance involves the exercise of power, decision-making, and implementation of decisions. The major components of governance are: laws or rules, institutions and processes.

The United Nations Economic and Social Commission for Asia and Pacific (UNESCAP) points out that good governance is an ideal which is difficult to achieve, but towards which societies should strive. This helps to put governance in context. It is more realistic to understand that every country has a range of ways for making governance function. Various definitions of governance are tabulated below.

Thus, governance is a concept which is used loosely and has an elusive definition (Robichau, 2011). It involves the processes of ruling and decision-making by multiple actors, with a range of flexible boundaries between them, from formal to informal (Ferreyra, 2006; Huitema et al., 2009). Governance may occur along a state-centric to society-centric continuum where the state either retains the power as chief actor or becomes decentralised, relying on non-state actors to fulfil responsibilities and specific duties. Even when decentralised, the role of government is to keep ethical values in place (Ward, 2004; Jackson, 2009; Robichau, 2011).

Adopting IUCN's global definition, governance is the means by which society defines goals and priorities and advances cooperation. It includes policies, laws, decrees, norms, instruments and institutions. Governance is not the province of government alone, and includes informal institutional arrangements like voluntary codes of conduct for private businesses, professional procedures and partnerships among all sectors. These include numerous and varied arrangements, but an essential element is that they mobilise diverse constituencies to agree on common goals and to help realise them (IUCN, 2013).

2.2 Natural Governance as a 'Wicked' Problem

Natural resources governance addresses issues where it is often unclear where responsibilities lie and where traditionally no one sphere of government, agency, institution, or group of individuals has sole jurisdictional responsibility, such that problem solving capacity is widely dispersed and few actors or decision-makers can accomplish their mission alone. In a pluralistic society, therefore, natural resource management policy problems are what Rittel and Webber (1973) refer to as 'wicked'; namely, problems that *'defy efforts to delineate their boundaries and to identify their causes, and thus expose their problematic nature'*. The nature of 'wicked' problems is tabulated below:

Table 2: Nature of Wicked Problems

INHERENT PROPERTIES	INVOLVES	REQUIRES COORDINATION AND COOPERATION ACROSS THE HORIZONTAL AND VERTICAL DIMENSIONS OF POLICY AND INSTITUTIONAL SYSTEMS AND STRUCTURES INCL:
cannot be definitively described	large and multifunctional spatial areas	horizontally across administrative boundaries
are persistent, complex, non-linear and irreversible and involve long time scales	substantial institutional and organisational fragmentation	horizontally between agencies and departments within the same level of government when management components of a single natural system is fragmented between them;
socially constructed and often disputed	require enduring and resourced collective responses across interdependent public, private and community sectors	horizontally between government and non-government stakeholders who affect, or are affected by, natural resource management; and
no optimal solutions or solutions with definitive and objective answers.		vertically when responsibility for management of the processes of an ecological or spatial natural unit rests with different levels of government and/or private actors.
levy enormous costs and have broad consequences (social, economic, environmental)		

From local to global scales, the increasing and on-going challenges of wicked natural resource problems are imposing and their continuing emergence as fundamental political problems signifies the need for a new approach to their governance. Specifically, this paper argues these new approaches need to support the development of governance frameworks that encourage and support adaptation as our social and natural systems inevitably continue to evolve and change.

2.3 Principles Underlying Natural Resource Governance and Core Attributes

Having defined natural resource governance and highlighted why it is considered a 'wicked problem', we highlight some principles for governance of natural resources in the table below. In the post-apartheid South African context, the principles of participation, legitimacy, fairness and equity are particularly important from a transformation perspective, while transparency, accountability, coherency, responsiveness, integration, predictability, direction and performance are important from the perspective of creating well-functioning institutions and processes (systems) for governance of resources. The table below elaborates on each of the principles.

Table 3: Principles underlying the governance of natural resources

Principle	Elements of the Principle
Participation	All citizens, both men and women, should have a voice – directly or through intermediate organizations 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. Processes, institutions and information are clear and directly accessible.
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 organizations should be accountable to the public or the interests they are representing.
Coherency	The increasing complexity of natural 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. Needs of all stakeholders are taken into account
Integrative	Natural resources governance should enhance and promote integrated and holistic approaches.
Ethical considerations	Natural Resources governance has to be based on the ethical principles of the society in which it functions, for example by respecting traditional water/land rights and preventing corruption.
Predictability	There should be predictability of the political and administrative governance system, in that all role players know the rules and accept that these will be applied consistently
Legitimacy	**Integrity and commitment:** of all stakeholders. **Authority and representivity**: The governing body and its members have legitimate, democratically mandated authority. **Legitimacy:** The governing body and/or its members have long-standing cultural attachment to the area. The governing body follows its mandate.
Direction	**Strategic vision**: broad and long term perspectives on good governance

Performance	**Effectiveness and efficiency:** Needs are met while making best use if resources **Capacities**: All stakeholders have capacities to engage in governance **Financial sustainability** of processes and results **Subsidiarity**: Power and decisions rest at the lowest level **Resilience**: the governing body can be flexible, learn and adapt
Fairness	**Equity**: Costs and benefits are equitably shared **Rule of law**: legal frameworks are fair and enforced impartially Human Rights and cultural practices are respected **Do no harm**: Local livelihoods are not adversely affected **Effective and appropriate conflict resolution**: There is recourse to impartial judgment in the case of conflict **Access to justice**: Legal assistance is available to all stakeholders

In addition to the principles that set out the underlying philosophy guiding natural resource governance, there are a number of attributes that are required for effective governance, as shown in the figure below. For the purposes of this report we will only focus on the following three attributes as highlighted in a report titled *'Guidelines for assessing the strengths and weaknesses of natural resource governance in landscapes and seascapes*[2]*',* namely legitimacy, capacity, and power.

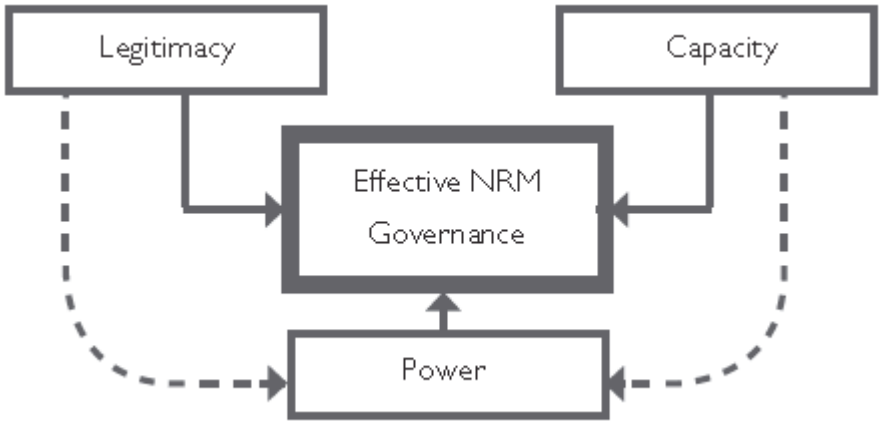


Figure 1: A simple model for effective NRM governance

If a governance group lacks legitimacy to govern (i.e. stakeholders do not trust them to represent and protect their interests), it will fail to be effective over the long term. If a governance group has insufficient capacity to govern (i.e. decide what to do and implement those decisions), then, even if it is perceived to be legitimate in the eyes of key stakeholders, it is unlikely to be able to govern access to and use of natural resources. Lastly, even when a governance group is perceived by stakeholders as being legitimate, and even when it has the capacity to plan and to act, if it does not have the political, economic, or regulatory competence to exert its authority, it will be unable to govern effectively. The model for effective governance recognizes that aspects of legitimacy (i.e. authority) and capacity (i.e. financial resources or technical capacity) have an important role to play in our ability to govern.

[2] See Footnote 8, pg 5.

3 Governance of Natural Resources in South Africa

In looking at how governance of natural resources occurs in the South African context, and particularly governance of water resources, we consider governance from the perspective of the "elements of governance". Using the IUCN definition above, governance includes policies, laws, decrees, norms, instruments and institutions. In considering governance in this paper, we look at policies, laws, and institutions. In the discussion in this section we focus on what the three elements encompass before looking in more detail at challenges with the elements in section 4 below.

3.1 Water Policy and Legislation Background

Policy and legislation form the backbone of any regulatory framework, providing the principles, objectives, and legal approaches that can be used to regulate human impact on water resources.[3] The National Water Policy, the National Water Act (36 of 1998) and the Water Services Act (108 of 1997) were transformational pieces of policy and legislation that were promulgated to address the problems of the past, and help to build a better future in the water sector in South Africa (Karodia and Weston, 2001). The White Paper on National Water Policy (DWAF, 1997) set out integrated policy positions for protection, use, development, conservation, management and control of South Africa's water resources. The National Water Act was often described as an "enabling" piece of legislation; the framework for the integrated management of water resources is provided in the National Water Act via water resources strategies (Karodia and Weston, 2001).

The National Water Act provides a two-tier approach to the development of strategies to facilitate the management of water resources. At the national level, the Act provides for the Minister to progressively develop a National Water Resource Strategy (NWRS). This strategy must set out the objectives, plans, guidelines and procedures of the Minister and institutional arrangements relating to the protection, use, development, conservation, management and control of water resources. The NWRS provides the framework within which water will be managed at regional or catchment levels (19 defined Water Management Areas (WMA) that were established in October 1999) (Karodia and Weston, 2001).

At a regional level, the NWA provides for the progressive development of Catchment Management Strategies. The Catchment Management Strategy (CMS) must be in harmony with the NWRS and in developing the CMS, the co-operation and agreement of stakeholders and interested persons must be sought with regard to water related matters. The CMS must set out the strategies, objectives, plans, guidelines and procedures for the protection, use, development, conservation, management and control of water resources in the WMA. As with the NWRS, the CMS 'also addresses the ecological, social and economic imperatives as well as making provision for integrated approaches (Karodia and Weston, 2001).

Since its adoption, the NWA has been lauded by the international community and praised by the actors of the South African water sector. The Act is indeed considered as one of the most advanced

[3] The development of policy and legislation requires an open and participatory process in which stakeholders can make their views felt and be sure that their views are being taken into account. The challenge is that rules and regulations are usually determined by dominant groups in society. In light of the extreme inequity of South African society, consultative processes must be carefully managed to ensure that the voices of the poor and the marginalised are given fair space and that there is a conscious process to balance power relations amongst stakeholders (Schreiner et al., 2011).

piece of legislation on water in the world, taking fully into account the international recommendations of the time as regards 'good' management. The influence of the integrated water resource management principles (IWRM) is multifaceted: (a) introducing the catchment basin as the new referent in the territorial division of management; (b) introducing the notion of economic efficiency and recognition of water as an economic good; (c) recognising access to water; and finally (d) opening water resource basic human need management to user participation (Orne-Gliemann, 2013).

The National Water Act of 1998 also provided for the decentralisation of water resource management for the first time in the South African national water system. The new legislation established a three-level institutional system of management. In addition to the department for water, the NWA provides for the creation of two new types of management bodies: the Catchment Management Agencies (CMA) established at the level of each of the nineteen Water Management Areas and the Water User Associations (WUA) established at the local level (Orne-Gliemann, 2013).

While the processes of democratisation and decentralisation of water management were clearly defined in the National Water Act of 1998, their implementation was challenging, with the evolution of ideas, the slowness of the establishment processes, users running out of steam or disagreeing, and/or the persistence of inequalities inherited from apartheid transformed the format of decentralised institutions, and the decision-making power kept away from South African users and citizens (Orne-Gliemann, 2013).

3.2 Legislative Framework

3.2.1 Constitution

South Africa has one of the most progressive Constitutions in the world. 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 people. The Constitution also introduced a rights-based approach, underpinned by the core values of accountability and transparency in governance (Urquhart, 2001). The following from the Constitution of South Africa is relevant as far as governance of natural resources is concerned:

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, as indicated below:

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) ……*
- *(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

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. Functional areas in Schedules 4 and 5 of the Constitution with links to the water sector are presented in the table below. Importantly then, governance of natural resources is spread between national, provincial and local government, as per the functions outlined in the Constitution.

Table 4: Functional Areas in Schedule 4 and 5 of the Constitution with links to the Water Sector

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				✓

3.2.2 Intergovernmental Relations Framework Act

The purpose of the Intergovernmental Relations Framework Act (13 of 2005) is to bring structure and form to the Constitutional principles of cooperative government, the basis of which is a multi-sphere system of government within which each sphere exercises distinctive powers and functions operating within principles of interdependence. The Act provides for an institutional framework for the three spheres of government to facilitate coherent government, effective provision of service, monitoring implementation of policy and legislation, and realisation of developmental goals of government as a whole.

3.2.3 National Water Act (NWA) and National Environmental Management Act (1998)

The NWA and National Environmental Management Act (107 of 1998) (NEMA) are the two key pieces of legislation dealing with governance of water resources in the South African context. The NWA is premised on balancing social benefit, economic efficiency and environmental sustainability, and sets out the legal framework for government to protect, use, develop, conserve, manage and control South Africa's water resources (Schreiner, 2013). The NWA thus sets the framework for water governance including policy-making (the National Water Resources Strategy, Catchment Management Strategies); instruments for dealing with protection of water resources (including classification of water resources and water quality objectives, the reserve, pollution prevention); instruments for allocation and use of water (including general authorisations, licences, existing lawful uses); instruments for financial management (including water use charges); and decentralised water management through the creation of Catchment Management Agencies (CMAs) and Water User Associations (WUAs).

The National Environmental Management Act (No. 107 of 1998) (NEMA), as amended, establishes the principles for decision-making on matters affecting the environment. Section 2 sets out the National Environmental Management Principles which apply to the actions of organs of state that may significantly affect the environment. Furthermore, Section 28(1) states *that "every person who causes or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring".* If such pollution cannot be prevented then appropriate measures must be taken to minimise or rectify such pollution. There are also regulations[4] that have been promulgated in April 2006, to facilitate the Environmental Impact Assessment (EIA) process.

Thus, the NWA and the NEMA set out the parameters for regulation, including the institutional arrangements and regulatory instruments. As far as institutional arrangements are concerned, decentralising water resource management is meant to provide a better representation of stakeholder interests in the benefits that are accrued from the sustainable management of resources.

In terms of Section 21 of the National Water Act (No. 36 of 1998) (NWA), the taking of water from a water resource, storing of water, impounding or diverting the flow of water in a water course, and the disposal of water which contains waste or has been heated through a power generation process are all considered water uses, which in general must be licensed, unless permitted as a Schedule 1 activity, or permissible in terms of a General Authorisation (GA) under Section 39 of the Act. Schedule 1 activities relate mostly to small scale domestic usage of water. The disturbance to the bed or banks of a river, which could possibly take place during the construction infrastructure, could also be undertaken in terms of the above-mentioned GA, provided the conditions of the GA are satisfied.

An organisation would obtain the requisite licenses, registrations or general authorisation from the Department of Water Affairs and Sanitation (DWS) directly and is separate to an EIA process. Part 3 of the NWA deals with the Reserve, which is divided into the basic human needs, Reserve and the

[4] Government Notice No. R385, R386 and R387 in Government Gazette No 28753 of 21 April 2006. Section 29 of Regulation 385 of NEMA lists the content required in a scoping report.

ecological Reserve. The basic human needs Reserve provides for the essential needs of individuals served by the water resource in question and includes water for drinking, for food preparation and for personal hygiene. The ecological Reserve relates to the water required to protect the aquatic ecosystems of the water resource. The Reserve refers to both the quantity and quality of the water in the resource, and will vary depending on the class of the resource. In terms of Section 16 of the NWA, as soon as reasonably practicable after the class of all or part of a water resource has been determined, the Minister must, by notice in the Gazette, determine the Reserve for all or part of that water resource. The Reserve would have to be determined, before DWS could issue a licence for a new water use, in terms of the NWA.

3.3 Institutional Framework

3.3.1 The National Planning Commission (NPC)

The purpose of the NPC is to develop the countries long term vision and national strategic plan. It has an advisory role.

Diagnostics report (NPC, 2011)

In terms of the diagnostic report, the NPC identified nine main challenges:

- Too few people work
- The standard of education for most black learners is of poor quality
- ***Infrastructure is poorly located, under-maintained and insufficient to foster higher growth***
- ***Spatial patterns exclude the poor from the fruits of development***
- ***The economy is overly and unsustainably resource intensive***
- A widespread disease burden is compounded by failing public health system
- ***Public services are uneven and often of poor quality***
- Corruption is widespread
- South Africa remains a divided society

The report highlights the experience since the democratisation of South Africa as follows:

- When the Reconstruction and development (RDP) was tabled, government had an overly optimistic view of the capacity of the state. The reality was a failure of coordination within government – with different departments working at cross purposes – and a lack of coordination between the public sector, the private sector and civil society.
- Second, South Africa as a whole did not anticipate the impact of external shocks and changing international conditions on its fortunes. In this regard the Asian crisis in 1998, the collapse of the Rand in 2001, the world financial crisis that began in 2008, and the shifting patterns of global trade and investment have had a significant impact on the South African economy.

National Development Plan (NPC, 2011)

The national development plan proposes to expand the economic opportunity through investment in infrastructure, more innovation, private investment and entrepreneurialism. Broadening these opportunities requires faster, more inclusive economic growth and higher levels of investment. The plan seeks to develop peoples capabilities to be able to improve their lives through education and

skills development, health care, better access to public transport, jobs, social protection, rising incomes, housing and basic services, and safe communities.

The plan sets the vision for 2030, which includes:

- Creating jobs and livelihoods
- Expanding infrastructure
- Transitioning to a low carbon economy
- Transforming urban and rural spaces
- Improving education and training
- Providing quality health care
- Building a capable society
- Fighting corruption and enhancing accountability
- Transforming society and uniting the nation

As far as expanding the mining sector is concerned, some of the proposals to boost the sector include:

- securing a reliable electricity supply and/or enabling firms to supply their own plants
- providing focused research to enable improved extraction methods that lengthen mine life, with better energy efficiency and less water intensity

Some of the key proposals under agriculture and agroprocessing are as follows:

- a 50% increase in land under irrigation
- greater investment in providing innovative market linkages for small-scale farmers in communal and land-reform areas
- exploring innovative measures such as procurement from small-scale farmers to create local buffer stocks and community-owned emergency services.

3.3.2 Overview Role-players in the Water Resources Regulatory Chain in South Africa

The figure below maps the key players and the regulatory role of various players for water resource governance in South Africa.

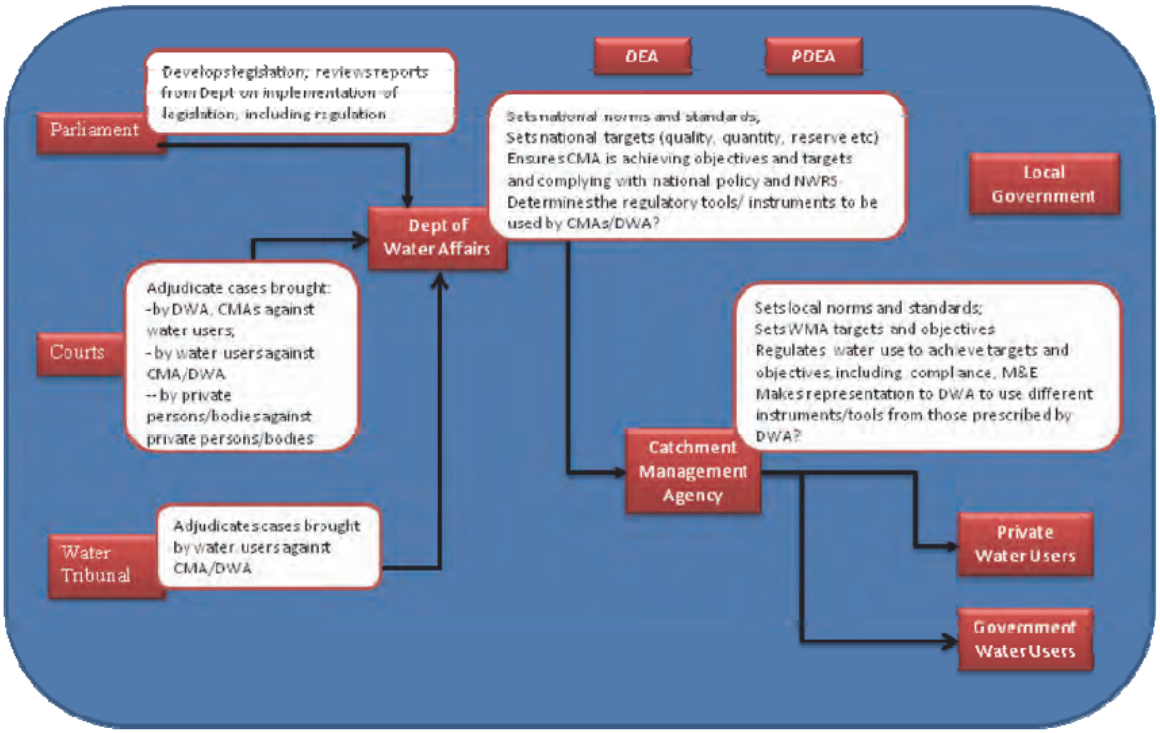


Figure 2: Role-players in the Water Resources Regulatory Chain in South Africa and their functions (Shreiner et al., 2011)

The institutional arrangements for regulation of water resources in South Africa are relatively complex with a long chain of players, including the courts, the Water Tribunal and Parliament. Parliament establishes (and amends) the legislation which provides the mandate to regulate water use and also has an oversight role to ensure effectiveness of the department. The Water Tribunal and courts influence regulation by interpreting the meaning of legislation and regulations as well as the methods to implement regulation (Schreiner et al., 2011).

Water resource management functions currently rest with the Department of Water and Sanitation, except in the two water management areas where CMAs have been established and are functioning, where some management functions rest with the CMAs. Regulatory functions are performed by DWS/CMAs, except for limited functions performed by Irrigation Boards and Water User Associations (ensuring that members use water in accordance with authorisation requirements and scheduling arrangements).

Government has a regulatory relationship with private/non-governmental water users, exercising direct regulatory control over their use of or impact on raw water. In between, a range of governance regulatory relationships complete the chain – in this case, regulation of CMAs by DWS in particular (Schreiner et al., 2011).

In addition to regulating water use by private users, DWS currently (and CMAs and DWS in future) are also responsible for regulating water use by other organs of state, such as local government, other government departments, and conservation bodies. Regulatory action by the state against another organ of state carries different legal and relationship issues than similar action against a private organisation or individual. These issues can be complex. For example, regulation of municipalities (including municipal wastewater) in South Africa is a responsibility of local

government which is regulated by the Department for Cooperative Governance and Traditional Affairs (DCOGTA), while national water resource regulation falls under the Department of Water and Sanitation with concomitant oversight. We dwell on the challenges with this arrangement in further detail in section 4 below.

3.3.3 Department of Water and Sanitation and Related Water Resource Institutions

In line with the National Water Act of 1998, the Department of Water and Sanitation should primarily be responsible for policy, legislation and national strategy formulation; institutional development, coordination and support; monitoring and auditing water resources management; and ensuring appropriate implementation of water resource management by other institutions. DWS's role in the authorisation of water use is significantly reduced with the introduction of CMAs.

Catchment management Agencies

Catchment management agencies (CMAs) are statutory bodies established by and accountable to the Minister of DWS, the under Chapter 7 of the NWA. Although it was originally envisioned that a CMA would be established for each of the 19 Water Management Areas set out in the NWRS, the Institutional Reform and Realignment Process of 2008 resulted in the decision that only 9 CMAs will be established across South Africa. Of the 9 CMAs, only two has been operationalized to date. The CMA is governed by a board that is appointed by the Minister, and the board was initially envisaged to represent 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. In the absence of a CMA having been established, the regional offices of the DWS act as the proto- CMA.

Water User Associations

Chapter 8 of the NWA provides for water user associations. These are "co-operative associations of individual users who wish to undertake water-related activities for their mutual benefit". 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, the water user association can fulfil the ideal of IWRM of managing water resources at the individual user level.

3.3.4 The Department of Cooperative Governance and Traditional Affairs (CoGTA)

The CoGTA's mandate is derived from Chapters 3 and 7 of the Constitution. Its vision is *"An integrated, responsive and highly effective governance system, including communities, to achieve sustainable development and improved service delivery"*. Its mission is to facilitate cooperative governance and support all spheres of government, promote traditional affairs and support associated institutions through:

1. Developing appropriate policies and legislation to promote integration in government's development programmes and service delivery;
2. Providing strategic interventions, support and partnerships to facilitate policy implementation in the provinces and local government; and
3. Creating enabling mechanisms for communities to participate in governance.[5]

As a national department its function is to develop national policies and legislation with regard to provinces and local government.

[5] http://www.cogta.gov.za/

4 Emergent Challenges in Governance in the Water Sector

4.1 Water Resource Challenges in South Africa

In order to understand the arena within which water resources governance takes place it is important to firstly understand what drives the stresses on water resources. South Africa is a water-stressed, semi-arid country with an average rainfall of around 500mm, which is less than 60% of the world's average (Mukhebir and Sparks, 2005).

This water scarcity will – in the future – be compounded by climate change impacts in South Africa. Mean annual temperatures have already increased by 1.5 times the observed global average over the past five decades and extreme rainfall events have increased in frequency. Furthermore, it is expected that warming will continue: "The 2013 South African Long Term Adaptation Scenarios and the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR5) for Representative Concentration Pathway (RCP) 8.5 suggest warming relative to 1986-2005 of 3-6° Celsius by 2081-2100 in the interior, yet less certain precipitation changes in terms of both direction and magnitude" (Ziervogel et al., 2014). Thus, climate change is expected to impact on South Africa's water resources, the ecosystem and biodiversity as well as other spheres of society including, food security, health and infrastructure (Ziervogel et al., 2014).

Water scarcity in South Africa is deepening, and is compounded by illegal water abstraction and use; inadequate compliance, monitoring and enforcement of water use licences; and inadequate maintenance of water resources infrastructure leading to large amounts of water losses. Furthermore, the pricing strategy for water resources (particularly for agricultural water users) has led to a situation of inadequate funding for infrastructure maintenance.

These challenges are compounded by the push for economic growth in sectors such as mining and manufacturing, and demographic change including population growth, migration and improved standards of living (CER, 2011). In addition, changes in land-use including intensification of agriculture and stock intensity, land degradation and desertification impacts on water resources as well. Thus, there are increasingly serious water quality challenges in South Africa, both as far as raw water and drinking water is concerned, with two of the most significant sources of pollution being municipal waste water treatment plants and acid mine drainage from both functioning and abandoned mines. Agricultural pollution and land-use practices also pose a significant problem.

Finally, the South African context requires that water allocation should have a consciously pro-poor and equity-driven focus. However, there has been inadequate reform post-apartheid. Thus, while water service delivery has been expanded rapidly post-1994, access to water for productive purposes for the previously disadvantaged is still problematic.

South Africa's water resource challenges and imperatives for transformation require strong and adequate regulation in the water sector. There are a number of regulatory mechanisms but – for a range of reasons – the current regulatory context does not seem to be dealing adequately with these issues. We take a closer look at challenges in governance below.

4.2 Water Governance Challenges in South Africa

Three main challenges have been identified as far as water governance in South Africa is concerned, and these are i) challenges with the regulatory system; ii) accountability challenges; and iii) cooperative governance challenges.[6]

Regulatory Challenges: South Africa is regarded as a water-stressed country with half of the country's water management areas identified in the first National Water Resource Strategy (NWRS) as experiencing water shortages. The Department of Water and Sanitation (DWS) has been regulating water resources for many decades, through a number of mechanisms including the issuing of discharge permits, the declaration of groundwater control areas, and the control of afforestation, under the 1956 Water Act. This role continued under the National Water Act (36 of 1998) (NWA) in a new and extended form which included regulatory functions such as the licensing of a range of water uses including abstraction and discharge, the determination and protection of the reserve, and so on. Thus the current water resources regulatory role of the department is an extension, with new policy objectives, of a function that has been executed for a long time. We look at specific challenges with the regulatory system in section 4.3 below.

Accountability Challenges: Accountability issues in South Africa stem from both a lack of capacity (something that targeted regulation could help with) as well as an incentive structure that does not promote action. More specifically, there is little sanction for not meeting objectives and targets and there is more risk associated with taking action and getting things wrong, than simply not taking action. The incentive structure thus creates a culture of inaction. There is thus a need to build an incentive structure which promotes action and results in sanction when necessary. Thus, the model of accountability in South Africa (where citizens hold the state accountable through elections, critical citizenship, media, and transparent governmental and political actions) needs to be strengthened to include sanctions and incentives. Furthermore, more direct partnerships between stakeholders, including the private sector, local communities and government may result in improved accountability in South Africa. We look at specific challenges with the accountability system for water resource governance in South Africa in section 4.5 below.

Moving towards cooperative governance[7]: In a water-scarce and capacity-constrained country like South Africa, the challenges with regulation and accountability speak to the opportunity to move from a pure regulation model (typically command and control) towards a more cooperative natural resource governance model (with shared risk and shared accountability as well as oversight). In the discussion below we look at these three areas in more detail, considering how the current set-up within the water resources governance framework of South Africa hinders better governance in terms of regulation and accountability, and the opportunities and challenges regarding cooperative governance. We look at opportunities for cooperative governance for water resources in South Africa in section 4.5 below.

[6] These challenges were identified at a Reference Group Meeting for the project with the WRC.
[7] It is important to note that the manner in which cooperative governance is viewed in this study is different from the way the Constitution treats this concept. We use the term "cooperative governance" here to denote collaboration in governance. See section 5 for a discussion of the term used.

4.3 Challenges with Regulation

4.3.1 Water and Environmental Legislation

The National Water Act (NWA)

The NWA provides the legal framework for Water Resource Management (WRM) with the purpose being to ensure that South Africa's water resources are protected, used, developed, conserved, managed and controlled. The Minister of Water and Sanitation is the public trustee of water resources, and must ensure that water is dealt with in a sustainable and equitable manner, for the benefit of all persons. The Minister must also ensure that water is allocated equitably and used in the public interest. The National Water Resource Strategy (NWRS) and various other instruments are utilised in terms of the NWA.

While the NWA was hailed internationally as an excellent piece of IWRM legislation, implementation of the Act has been complex, and thus quite slow. Challenges include technical and human resource capacity to implement the Act (Schreiner, 2013). For instance, the creation of the Catchment Management Agencies (CMAs) to decentralise water management to the catchment level has not been completed. We dwell on this in further detail below.

More recently, as noted in the NWRS2 and supported by a range of stakeholders, there is a need for revision and amalgamation of the NWA and the Water Services Act[8] in order to address challenges in water resource management throughout the value chain. This was meant to take place once the National Water Policy Review (2013) was finalised. The revision and amalgamation of the NWA and the WSA have however not as yet been finalised, even though the Policy Revie*w* was completed in 2013. The revision of the NWA is expected to also clarify the role of the Water Tribunal and review its governance arrangements, as well as ensure that there is equity in the allocation of water, improve water resource management, and streamline regulatory processes (NWRS2 and APP, 2011/2012-2013/2014). The process regarding revision of the NWA has been seen to be exclusionary.

Revision of the National Environmental Management Act (NEMA)

The NEMA is the framework legislation that governs environmental management. The Department of Environmental Affairs (DEA) is responsible for the implementation of NEMA. There are serious problems as far as the regulation of activities that impact on the environment is concerned, and this is discussed under section 4.3.3 (institutional arrangements) below.

In order to deal with some of the environmental challenges that South Africa is facing, the National Environmental Management Laws Second Amendment Bill was tabled in Parliament during March 2013 (the NEMA Bill). It is meant to deal with a number of issues including empowering the Minister to restrict or prohibit development in specific geographic areas; providing for consideration of adopted environmental management instruments when considering an environmental authorisation application; and inserting provisions to regulate products having detrimental effect on the

[8] The Water Service Act 108 of 1997 provides that Water Service Authorities (WSA) (municipalities) have the responsibility through water service providers to ensure that there is access to water supply and sanitation in South Africa. Provision is also made in the NWA for Water Boards to provide water supply and sanitation services on behalf of municipalities.

environment. There are also expected revisions to the NEMA – discussed below – relating to mining licences. The National Environmental Management Laws Amendment Bill 2015[9] has been published for comment. Among other things, it amends the NEMA of 1998 to:

- Provide clarity on the definition of "financial provision" (an applicant or holder of an environmental authorisation relating to mining activities must set aside financial provision for progressive mitigation, mine closure and the management of post closure environmental impacts);
- Provide for simultaneous submission of NEMA and Specific Environmental Management Act (SEMA) applications in order to enable integrated environmental authorisation;
- Provide clarity that the Minister responsible for mineral resources is responsible for listed or specified activities that is or is directly related to prospecting, exploration, extraction or primary processing of a mineral or petroleum resource;
- Provide for a trigger for the simultaneous submission of a NEMA or SEMA applications after acceptance of mining right

It also amends the National Environmental Management Amendment Act, 2008, so as to (among others):

- clarify that an environmental management programme or plan approved under the Mineral and Petroleum Resources Development Act (2002) is valid under NEMA;
- provide clarity that an appeal against an environmental management programme or plan lodged under the MPRDA must be finalised under that Act;

It also amends the National Environmental Management Laws Amendment Act, 2014, so as to (among others):

- clarify that an environmental management programme or plan approved under the MPRDA is valid under National Environmental Management Waste Act (NEMWA) (2008);
- provide clarity regarding an appeal against environmental management programme or plan on residue deposit or residue stockpile lodged under the MPRDA to be finalised under that Act;

4.3.2 Policy

There have been challenges with the implementation of the NWA/NWRS as well as with holding the department accountable for failure to revise key instruments such as the National Water Resources Strategy and the Raw Water Pricing Strategy. We highlight some of the challenges below.

Implementation of the NWA/National Water Resources Strategy

The NWRS is the legal instrument for implementing or operationalising the NWA. It is the primary mechanism to manage water across all sectors towards achieving national government's development objectives. The first edition of the National Water Resource Strategy (NWRS) was published in 2004, with the second edition (called NWRS2 in the rest of this document) published in 2013. Since the NWA requires that the strategy is reviewed every 5 years, the second edition of the

[9] http://www.gov.za/sites/www.gov.za/files/39287_gen986s.pdf

NWRS was delayed. The 2004 NWRS is referred to as setting out the 'the blueprint' for water resources management in South Africa. The second edition NWRS sets out the strategic direction for the water resources management in South Africa over the next 20 years. The NWRS2 has a strong focus on transformation, economic growth, and sustainable development. The objectives of the NWRS2 are to ensure that:

1) Water supports development and the elimination of poverty and inequality
2) Water contributes to the economy and job creation
3) Water is protected, used, developed, conserved, managed and controlled sustainably and equitably

The NWRS2 recognises that implementation has been slow and that key areas where the 2004 NWRS has not been achieved are water conservation and water demand management targets; water allocation reform to address racial and gender imbalances in access to water for productive uses and to address poverty and inequality; environmental flow monitoring; establishment of water management institutions and the decentralisation of water resource management (CMAs); strengthening the regulation of water resources and water quality; improvement of technical and management skills to implement water management; improvement in monitoring and information management; and reduction in the backlog of infrastructure maintenance (NWRS2). The NWRS2 details a number a policy changes that need to be implemented.

Revision of the Raw Water Pricing Strategy

The NWA makes provision for a Pricing Strategy for Water Use Charges (called the Pricing Strategy) to promote financial sustainability and economic efficiency in water use. The Pricing Strategy includes charges for abstracting and storing water and for stream flow reduction activities. The first Pricing Strategy was published in 1999 with a revised strategy published in 2007. The 2007 Pricing Strategy was revised, and gazetted for comment on the 13th of November 2015.[10]

The new Pricing Strategy should give due consideration to the following in the 2007 Pricing Strategy:

- The water resource management charge does not reflect the full management cost because of the capping of the charge for certain sectors;
- The infrastructure charge does not provide sufficient funding for covering the lifecycle costs of infrastructure maintenance and refurbishment because of the capping of charge increases for irrigation;
- The price of water does not send the signal that water is a scarce resource;
- The price of water varies considerably from place to place, sometimes to the detriment of low-income communities.

The revisions to the Pricing Strategy should seek to ensure that the full costs of water resources infrastructure and management are covered in the charges, with targeted subsidies replacing the current broad brush caps that are in place. There should be a move towards linking charges to actual direct costs, with subsidies provided where necessary. In addition, income from water use should be allocated for water use management and not used for other purposes.

[10] http://www.gov.za/sites/www.gov.za/files/39411_gen1154.pdf

Finalisation of the Waste Discharge Charge Strategy

The Waste Discharge Charge System (WDCS) is based on the polluter-pay principle and aims to:

- promote the sustainable development and efficient use of water resources
- internalise the environmental costs of using water and create financial incentives for water users to reduce waste and use water resources more optimally, and
- recover costs associated with impacts of waste discharge

It consists of two charges: a Waste Discharge Levy and a Waste Mitigation Charge. The Waste Mitigation Charge, provided for by the NWA, is intended to cover the quantifiable administrative costs of implementing measures to mitigate the negative impacts of waste related discharges. In turn, the Waste Discharge Levy is a disincentive or deterrent to the discharge of wastewater and will be based on rate of water utilisation as a means of disposing of waste. In order for the Waste Discharge Levy to be introduced, it will be necessary to introduce legislation in parliament in the form of the Money Bill. DWS is currently piloting the Waste Discharge Charge System in three priority catchments with the intention to progressively implement the WDCS across a range of impacted and threatened catchments (NWRS2). The Waste Discharge Charge Strategy has however not yet been finalised.

4.3.3 Institutions

Restructuring of National Government Departments creating flux

President Jacob Zuma's cabinet was announced on 10 May 2009 and necessitated the establishment, reorganization, and renaming of some of the national departments to support Ministers in the execution of their mandates. The Department of Water Affairs and Forestry was reorganised to become the Department Water and Environmental Affairs, with the Forestry portfolio moved to the Department of Agriculture, Forestry and Fisheries. Subsequently, following the 2013 election, the Department of Water Affairs, became the Department of Water and Sanitation, with the sanitation function moving from the Department of Human Settlements back to the water department. The frequent shuffling of national government departments relating to water has led to a state of flux in water governance.

There is a lack of certainty regarding WRM institutions and their mandates

Water users like to know that water use conditions and the institutional arrangements supporting water resources regulation will be sufficiently stable to justify investment in the infrastructure required for improved management in the long-term. Lack of such stability may reduce investment in water infrastructure and improved technology for water use. In the South African context, there have been a number of changes around the roles of various water institutions, thus creating a level of uncertainty. These are as follows:

Establishment of Catchment Management Agencies: The NWA provides for the establishment of Catchment Management Agencies (CMAs) in order to decentralise water management to the catchment level. There has been delay in the creation of Catchment Management Agencies (CMAs) since the promulgation of the NWA in 1998. While the first NWRS envisaged 19 WMAs and CMAs, the Department experienced immense difficulty in setting up these institutions due to, amongst other issues, human resource, financial and technical capacity constraints. A smaller number of

CMAs was seen as enabling better economies of scale with regard to utilising scarce technical skills, and reducing the regulatory and oversight requirements on the Minister and Department. Thus, the realignment process resulted in the proposed 19 CMAs reduced to 9 CMAs. The DWS has thus far managed to operationalise two CMAs, and had indicated that it planned to establish all nine CMAs by 2015 and the establishment of the CMAs would be prioritised based on the progress towards establishment, the state of readiness of the proto-CMAs, the water resources management challenges, and financial viability.[11] The remaining seven CMAs have however, to date, not been established. Furthermore, there are concerns about what the transfer of functions will mean for existing DWS structures. The delays have caused inertia in terms of getting the process going.

Transformation of Irrigation Boards into WUAs, and the fate of WUAs: WUAs could be established through three main pathways each with a differing array of obligations and challenges:

- A group of water users could come together to cooperate for the purposes of managing local water use, and establishes a new water user association. Approximately 40 new water user associations have been formed in this way since 1998.
- A water user association could be established to assume the operation and maintenance functions of a Government Water Scheme. There are currently 10 water user associations (WUAs) that have been established for this purpose.
- An irrigation board (or group of irrigation boards) could be transformed in a Water User Association. This process may involve the amalgamation of a number of irrigation boards and/or the inclusion of new members. Approximately 92 irrigation boards have been transformed into 42 water user associations. Approximately 129 Boards still need to be transformed to become WUAs.

The transformation of irrigation boards through the creation of Water User Associations was supposed to have been completed six months following the commencement of the NWA. However, this process was still not complete in 2013, when the National Water Policy Review was gazetted. It is widely seen as extremely problematic that we still have irrigation boards continuing to function whilst the previous legislation has been repealed, since the existing irrigation boards are currently not regulated in terms of the NWA. The lack of transformation of irrigation boards was due to difficulties in achieving representivity targets, unresolved concerns regarding the transfer of private assets and liabilities to a wider grouping, and a lack of financial and technical resources to support new 'developmental' WUAs.[12]

The new WUAs typically found themselves facing a range of internal operational and institutional challenges that can be linked to a shift from government and its various systems, to a public institution that operates under a differing suite of systems. Labour related challenges have been prevalent and there are uncertainties regarding infrastructure ownership and responsibilities.

Furthermore, the Minister of Water and Sanitation in 2013, as part of the National Water Policy Review of 2013, suggested the disestablishment of both WUAs and Irrigation Boards (IBs) and that

[11] http://www.pmg.org.za/print/report/20120919-department-water-affairs-national-water-resources-strategy-2012

[12] http://www.pmg.org.za/print/report/20120919-department-water-affairs-national-water-resources-strategy-2012

the appropriate functions related to state-owned water schemes will be delegated to a CMA or Regional Water Utility. This has, however, to date not been operationalised, and there appears to be policy uncertainty regarding the disestablishment of Water User Associations

Water Boards and Regional Water Utilities: Water boards operate dams, bulk water supply infrastructure, some retail infrastructure and some wastewater systems. Some also provide technical assistance to municipalities. Through their role in the operation of dams they also play an important role in water resources management. The Water Boards report to the Department of Water and Sanitation. The NWRS2 notes that there are a few challenges including governance and performance-related challenges within some of the existing water boards, weak performance in the management of water supply and sanitation by municipalities, and unclear responsibilities for water resources development at the regional and local level. These problems are compounded by the fact that Water Boards report to DWS, while the municipalities report to the DCOGTA.

There have been problems, most notably with lack of accountable and efficient management of regional water infrastructure. In this regard, there are two specific problems: Firstly, there is a lack of clarity regarding roles and responsibilities for water resources development at the local and regional level, and for regional bulk services outside of the existing Water Board service areas. Secondly, there are some governance and performance-related problems within some of the Water Boards. The NWRS2 notes that the DWS is giving consideration to the consolidation of existing Water Boards into Regional Water Utilities to manage regional water resources and regional bulk water and wastewater infrastructure in terms of a mandate from the DWS.

The NWRS2 proposes that the 12 existing water boards will be consolidated into nine viable regional water utilities (RWU) to strengthen the development, financing, management, operation, and maintenance of regional bulk water and wastewater infrastructure. It is envisaged that the main functions of RWUs will be:

- Manage bulk water services infrastructure and supply bulk water to Water Services Authorities and their Water Services Providers, and to bulk water consumers
- Manage bulk sanitation infrastructure for wastewater treatment
- Operate existing regional water resources infrastructure
- Develop new regional water resources infrastructure
- Provide support to Water Services Authorities where appropriate
- Provide support to CMAs to undertake water resources management functions

While the NWA provides for the establishment and transformation of institutions to help the DWS give effect to its core mandate, there is a need to re-examine the roles and responsibilities of water institutions for coherence as well as complementarity in how they work together.

The Role of Municipalities in IWRM

In South Africa, local governments are responsible for the following related to water (Haigh et al., 2008):

- Development planning (sector plans and integrated development planning): including integration of local development planning with water availability and water conservation

and demand management. Recreation facilities including municipal parks and recreation, and beaches and amusement facilities, and recreational water use.

- Local environmental management: including water pollution control (through control of industrial effluent disposal to sewer systems, appropriate disposal of hazardous materials, management of grey water), and air pollution control.
- Service delivery: including water supply (sufficient and of good quality), waste discharge, stormwater management, disaster management, refuse removal plus control of litter (particularly as it relates to protection of urban rivers).

In addition to providing water services, some municipalities operate local water resources infrastructure (such as dams and boreholes) and bulk water supply schemes. Water Service Authorities (WSA) are responsible for securing licences from DWS (or CMAs in future, where the function is delegated to them) to abstract water resources, and they are responsible for the provision of water services within their local areas through bylaws, or they may contract water service provision out to another entity (NWRS2).

Municipalities, as water users, have responsibilities that fall within the ambit of IWRM including the following (Haigh et al., 2008):

- effective operation and maintenance of Waste Water Treatment Works (WWTW) and ensuring compliance with licence conditions for discharge;
- effective operation and maintenance of refurbishment of infrastructure such as pipes, reservoirs, pumps and meters to minimise real losses;
- control of water weeds on municipal dams;
- control of alien invasive plants on the commonage and municipal dams that impact on water use;
- formulation of bylaws and regulations to facilitate the management of water, waste and related functions

South Africa has increased water service provision rapidly in the post-1994 era. However, in its determination to improve services and honour its commitments to eradicate water and sanitation backlogs by 2010, government focused attention on new infrastructure development rather than on the institutional arrangements required to operate and sustain the new infrastructure. This focus on extending coverage impacted on the maintenance of existing infrastructure. There has thus been a steady erosion of the existing asset base of municipal water services, with the constraint on sustainability being the depth of managerial and technical expertise required to plan and manage vastly expanded service provision.

There are a number of ways that municipalities could be capacitated to help with good governance and management, and these could include the following:

- Planning and Forecasting:
    - There needs to be more collaborative management between various directorates within municipalities.

  - The Integrated Development Plan (IDP) process requires greater integration in planning and management, with input from provincial, sector and district departments;
  - Implementation plans in the IDP should include Environmental Management Plans, including management of rivers and wetlands;
  - Local governments, in the spirit of transformation and equity, should also plan for multiple use systems, that is, developmental and domestic needs of peri-urban and rural communities;
  - Water services development plans (and related business plans) must inform, and be informed by Catchment Management Strategies, the NWRS and water infrastructure plans;
  - There must be good monitoring to inform planning;
  - Water Conservation and Demand Management must be considered as part of the water services planning process
- An environmental manager should be appointed and given a strategic role to play, including better integration of departmental functions that impact the environment;
- Improved public participation, community awareness and education;
- Consideration of activities around waste generation, waste management, storm water management and waste-water management (pollution control monitoring and environmental quality monitoring)

DWS urgently needs to provide both support and guidance to municipalities, including:

- Together with the Department of Cooperative Governance and Traditional Affairs (DCOGTA), providing support to water sector institutions to fulfil their obligations in the spirit of co-operative governance. CMFs may become an appropriate vehicle to foster cooperation between the CMA, local government and other stakeholder interest groups (NWRS2)
- There is a need to develop institutional capacity within DWS to manage and regulate Water Conservation and Water Demand Management (WCWDM) effectively. The NWRS2 notes that DWs, DCOGTA, and the South African Local Government Association need to provide the necessary guidance and leadership to municipalities.
- Providing support on financial and revenue management of water services. In particular, there is a need for guidance to municipalities on issues like revenue management as it relates to demand management and planning for adequate funding for service provision, including provision for depreciation, refurbishment, renewal and upgrades (Haigh et al., 2008).

For example, non-revenue water losses are high and rising in most towns, due to leaks, losses and administrative weaknesses, and because of a lack of funds to invest in network rehabilitation or renewal. But non-revenue water deprives municipalities of the revenue required to maintain and upgrade their networks. Revenue gains make a decisive contribution to funding asset management, and network repairs are critical to postponing and minimise supply augmentation requirements. In the context of growing water scarcity, municipal demand management and reduction of non-revenue water will become increasingly significant tools for averting water deficits. (Eales and Schreiner, 2008).

The Water Tribunal

As a key regulatory tool within the water resource environment in South Africa, it is important to reflect on how the Water Tribunal has performed. Unfortunately, there have been a myriad of problems including the following (CER, 2011):

- Non-lawyers have, in the past, been appointed to determine questions of law;
- The NWA gives the responsible authority a discretion to invite written comments from any organ of state or person with an interest in an Integrated Water Use Licence Application (IWUL), and to require the applicant to invite objections to the IWULA. The Tribunal has repeatedly found that written contributions or objections have no force, unless they have been invited in terms of the NWA, and that a third party cannot approach the Tribunal for relief unless it has made comments in response to an invitation. This means that DWS can effectively exclude the right of access to the Tribunal simply by not requiring a public participation process in an IWULA. This impinges on the Constitutional right of access to courts;
- The Tribunal rules do not provide timeframes for procedural aspects, resulting in unacceptably long delays in appeals. There is also no provision for interim relief, cost orders, regulating evidences, or the style and format of documents;
- The Tribunal appears to be confused about its jurisdiction and mandate. The Tribunal has held that it is not established to review administrative action, but tends to focus on issues of regularity and to avoid the merits of decisions.

The operations of the Water Tribunal were suspended in 2013 due to the fact that its chairperson resigned, and it was thus not properly constituted in terms of the NWA. This is seen as very problematic. There were indications that the Minister favoured the disestablishing of the Water Tribunal. However, an alternate view was that the mandate of the Water Tribunal should be expanded to include civil adjudication (like the Competition Commission), and that the Water Tribunal needs to be capacitated to function more effectively.

The role of the Water Tribunal and its governance is being reviewed as part of the review of the NWA. The National Water Policy Review of 2013 states that the Minister may appoint an independent panel, based on the conditions that he/she deems necessary, to advise on dispute(s), and where mediation does not resolve the matter, parties may refer the matter for arbitration.

4.3.4 Implementation of Regulatory Instruments

The NWA provides for tools for the protection and use of water. In South Africa, implementation of regulatory instruments has been weak for a number of reasons, including:

- The absence of coordination between key departments such as DWS, DEA, and Department of Mineral Resources (DMR). For example, DMR continues to issue coal prospecting licences in high conservation and critical water-yield areas
- There is a lack of clear direction on a number of issues including transformational approaches in water allocation and licencing
- Many of the tools and implementation strategies are too complicated and resource-intensive to implement

- There is a lack of technical skills, experience, leadership and stability within DWS resulting in poor low morale and severely depleted institutional memory
- There is poor financial management together with inadequate financing
- There is a lack of effective monitoring and evaluation of the implementation of statutory tools, and publication of the results

Water Use Licencing and Targeted Regulation

One of the main issues has been the licencing and registration of water users. Problems have included the following:

- Compulsory licencing is not implemented
- There are challenges in the water registration process
- The procedures for licencing are slow[13]
- The number of applications far outstrip DWS's processing capacity
- The quality of licence applications are sometimes very poor – not all applicable water uses are applied for, incorrect water uses are applied for, there is inadequate public participation in the process, applications are technically incomplete and incorrect, and there is poor impact assessment which does not comply with the DWS Guidelines.
- There is a lack of integration between DWS, DEA and DMR regarding decision-making
- There are companies who do not have water use authorisations and continue to illegally abstract water
- Integrated Water Use Licences are complicated and there is a lack of experienced and qualified people to adjudicate these applications, resulting in compromised decision-making and significant delays. Furthermore, licences are also issued without the inclusion of important recommendations made in the evaluation process. There is also some confusion regarding decision-making with DWS head office overriding regional recommendations

There are also challenges in terms of compliance monitoring of licences, given the capacity and systems of the department. Thus, in the context of limited resources, it is important to focus on necessary and beneficial regulation, and to keep regulation simple, transparent and accessible in order to increase enforcement (Schreiner et al., 2013).

Targeted regulation may be a preferred option for a country like South Africa for a number of reasons: Firstly, limited financial and human resources on the part of government is a strong incentive for targeted regulation. Secondly, the legacy of apartheid in South Africa requires that the state should be protecting and supporting the water use of small users, for example, through infrastructure provision, subsidies, technology transfer, and market support. In turn, strict regulation of large users is required to ensure that they do not impact on small users through either high levels of pollution or over-abstraction.

For example, if one examines the registered abstraction in the Inkomati water management area, about 140 water users (some of which are water user associations) use over 80% of the water.

[13] The costs to the economy arising from delays in issuing licences or because of weaknesses in institutional arrangements are much higher than the immediate costs to the water user of applying for a licence (Schreiner et al., 2011).

Effective targeted regulation of this limited number of users will, therefore, result in the regulation of over 80% of water use in the water management area. In due course, regulation can shift to include a focus on lower impact users. A similar pattern can be seen in water use throughout the country. A similar approach can be applied to regulation of discharge, regulating most strictly those dischargers with the most significant potential impact in the catchment (Schreiner et al., 2011). Efforts to prepare for the implementation of the Waste Discharge Charge System, during 2014, indicated that the most significant source of pollution into Hartbeespoort Dam is in fact non-point source pollution from leaking sewers in Johannesburg and Pretoria. More difficult to resolve, and requiring cooperative government action, the threat of non-point source pollution will require attention, but targeted action to improve pumping and prevent blockages could reap far greater benefits to the catchment (and the Dam) than spending money on infrastructure upgrades at Wastewater Treatment Works that are already performing according to standards.

Transformation and Access to Water

There are also challenges with transformation in the water sector, and this is linked to challenges with land reform. 60% of the water is used in irrigation and is still mainly in the hands of white commercial farmers. The rural poor, particularly in the ex-homelands, have extremely limited access to water (for domestic or productive purposes) or to the benefits derived from water. It is very important that the cost of accessing services, such as a licence to use water, does not discriminate unfairly against the poor. This is often the case where the same regulatory requirements are placed on small users and on large users.

The NWRS2 also notes that there is inequitable allocation of water and there has been little substantive progress on the NWA pillar of equity. The parts of the Water Allocation Reform Programme of DWS that should be implemented include the following:

- General authorisations could be gazetted for specific catchments for the allocation of water resources to black and women users;
- Targeted beneficiaries of Water Allocation Reform (WAR) could receive support in the form of subsidies, grants, funding of infrastructure, voluntary donations and technical inputs;
- Compulsory licencing – all the water users in an area could be reviewed and water reallocated according to specific imperatives. Compulsory licencing will be prioritised in areas that are water stressed. It is noted in the NWRS2 though that compulsory licencing is a legally and technically complex process.

It is important to note though that challenges in water allocation reform are inextricably linked to other challenges such as land reform, skills, infrastructure, and access to markets and capital. Thus, water allocation reform needs to be envisaged together with social wellbeing and holistic business development.

In implementing its mandate for water-related equity, it is suggested that DWS should focus its regulatory activities on the relatively small number of large water users, in terms of both abstraction and discharge and other regulatory requirements such as dam safety. At the other end of the scale, DWS (and/or CMAs in future) could focus its energies on providing support to small users more effectively to improve their livelihoods through, for example, the creation of appropriate local infrastructure (perhaps through a state supported public works programme), the development of

larger infrastructure as and where appropriate, the effective use of limited water supplies, including through in-field water harvesting, and the provision of rain water tanks. DWS should ensure that both the domestic and productive water needs of households are met – through the multiple use services approach (MUS). Such support to small water users requires a collaborative effort from DWS, local government, departments of agriculture and the Department of Rural Development and Land Reform (DRDLR), and should form a critical part of DWS's delivery on its equity mandate (DWA Mandate, 2012). Water services for multiple uses will however have to be given further thought and research.

Reserve Determination

Desktop Reserves have been determined for the main-stems of all the rivers in South Africa[14], however, there is still some backlog in terms of Comprehensive Reserve determinations. It is important to note that there are different levels of confidence with regards to these determinations and one should not assume that a Desktop Reserve determination is low confidence and a Comprehensive Reserve determination is high confidence. The real challenge exists in having these reserves implemented, monitored or enforced. The challenges in this regard vary considerably and range from resource over-allocation, to the need for operating rules for infrastructure, some physical infrastructural challenges, as well as systemic and management challenges. To remedy the situation, tools are being developed for implementing and assessing such reserves (Van der Merwe, 2009). There is also a need to simplify and prioritize regulations as far as the Reserve Determination, classification and verification is concerned. Certainly as resources become increasingly stressed there will need to be a re-consideration of what we aim to achieve through the setting of the Reserve. In these instances one would possibly have to consider some form of environmental off-setting or that we are prepared to accept some levels of environmental sacrifice. This does place an emphasis on fully understanding the implications of over abstraction and environmental degradation.

4.3.5 Infrastructure

South Africa has extensive water resources infrastructure representing over a century worth of investment, most of which is managed directly by the DWS. In 2008, "an illustrative figure of R131-billion (US$17-billion) has been calculated as the… estimated replacement cost of its water resource infrastructure, with a further R185-billion (US$23-billion) for water services infrastructure" (DWAF, 2008b, SAICE, 2007 in Eales and Schreiner, 2008). In addition, South Africa has a complex network of surface water infrastructure in order to make optimal use of available water systems, including storage systems and inter-basin transfer schemes. Most catchments in South Africa are now linked to a degree that is unusual elsewhere in the world (Eales and Schreiner, 2008).

About 2,500 staff in the DWS regional offices are responsible for the direct operation and maintenance of government's water resources infrastructure, with about 60% of staff associated with national infrastructure. In some specific cases, the national water resource infrastructure is being operated by water boards or local government on an agency / contract basis (these figures are not included). There are a large number of vacancies for operation and maintenance of the water infrastructure (DWAF, 2005).

[14] Personal communication with Derek Weston of Pegasys.

In addition to developing new infrastructure, DWS also has to maintain its current infrastructure. Inadequate maintenance of government's infrastructure has led to a significant deterioration in the quality of the infrastructure. This poses both public safety and operational risks. The inadequate maintenance of water infrastructure is due to constraints on strategic and budget planning, reallocation of funds to other perceived priorities, the inability of DWS to carry charges collected for depreciation and return on assets (ROA) over between years, thus resulting in inadequate human and financial resources being allocated to the refurbishment and maintenance of infrastructure (DWAF, 2005).

DWAF (2005) notes that it is estimated that in addition to the ongoing routine refurbishment associated with depreciation of the asset, about R1.25 billion of capital investment is required to refurbish the backlog deterioration of the national water resource infrastructure and a further R750 million is required for the non-national WR infrastructure, to achieve adequate safety and operational levels (DWAF, 2005).

As far as funding for water resource infrastructure is concerned, the financing and development of large scale multi-purpose national water resources infrastructure is primarily driven by the requirements for economic use. It has become standard practice to finance economic water resources infrastructure off-budget, with the Lesotho Highlands Water Project (LHWP), Berg River Project (MWP) and Vaal River Eastern sub-system Augmentation Project (VRESAP) all funded from commercial sources through the Trans Caledon Tunnel Authority (TCTA) as a Schedule 2 public entity (DWAF, 2005).

Though there has been water resource development, including dam building and a growing emphasis on resource management, water is increasingly scarce due to both climate change and growing demand for water. Demand for water has grown due to economic growth and a growing middle class. While building new dams may alleviate some of the pressure, the country "cannot continue to rely on developing new dams as its default response, as the costs are high and the number of suitable remaining sites is limited" (Eales and Schreiner, 2008). In this context, there is a growing emphasis on better environmental management to protect the existing water resources as well as improving water use efficiency (Eales and Schreiner, 2008).

Eales and Schreiner (2008) note that the type of institutional arrangements required to equip South Africa to manage growing scarcity rather than concentrating on significant infrastructure development are vastly different, as shown in the table below.

Table 5: Different institutional arrangements for managing abundance and scarcity (ref)

	MODE A INSTITUTIONAL ARRANGEMENTS	MODE B INSTITUTIONAL ARRANGEMENTS
Capacities, organisations, policies, processes, rules and agreements	**Premised on potential for significant infrastructure development. Focused on managing and augmenting supply**	**Premised on managing water in a context of growing scarcity and deteriorating water quality. More focused on demand- and environmental management and sector accountability;**
	Policy guides development and management of supply	Policy is directed towards -Making the most equitable, productive and sustainable use of available water - Safe-guarding the quality of available water. -Environmental protection -Good governance of resource management institutions.
	Regulation focuses on managing supply	Regulation focuses on managing use Strong requirements for compliance enforcement

Thus, the growing evidence of constraints on increasing South Africa's water yield requires a shift from an assumption that there is infinite scope for further infrastructure development to recognition of the need to optimise management of finite resources. Though DWS has begun to make this transition, there have been some challenges, including (Schreiner and Eales, 2008):

- The scope of institutional arrangements required to support this transition has been under-estimated
    - Poor municipal wastewater treatment and high water losses through decaying infrastructure highlight the grey areas in institutional arrangements governing water services and water resource management
- New competencies and instruments are needed to manage the transition and regulate the necessary shifts

Importantly, water resources cannot be managed separately from water services, since growth in demand for potable water is the fastest growing component of water utilisation, and the water services sector is a prime target for utilisation efficiency interventions. Part of the challenge in the sector is that the scale of capital investment in extending water services to all South Africans is outpacing institutional capacity to manage the infrastructure. This impacts on asset management and water quality management, both of which impact on security (Eales and Schreiner, 2008).

More recently, there has been a shift towards reconsidering major infrastructure projects, for instance, the raising of dams including the Clanwilliam Dam in the Western Cape (expected to provide an additional 10 million cubic metres of water a year) and the Tzaneen and Namitwa Dams

for the Greater Letaba river development project (to supplement the supply of water in Limpopo) (Creamer Media, 2012). The NWRS2 also reflects on the planning and assessment of options for the Mzimvubu Dam. Further, the NWRS2 notes that implementation of the following nine major infrastructure projects are in progress and near completion:

- De Hoop Dam on the Steelpoort River, an important tributary of the Olifants River, Mpumalanga, as Phase 2A of the Olifants River Water Resource Development Project (ORWRDP)
- Major pipelines for delivering water from de Hoop Dam (a) for domestic use on the Sekhukhune Plateau (b) to platinum mines in the Eastern Belt near Steelpoort (c) to augment supplies for mining and domestic use at Mokopane, and (d) for later augmentation of supplies for domestic and industrial use at Polokwane. These components are Phases 2B, 2C and 2D, to be followed by planned phases 2E to 2H, of the ORWRDP
- Major pipelines in Phase 1 of the Mokolo- Crocodile Water Augmentation Project to supply Lephalale, North West Province
- Raising of Hazelmere Dam in the Mdloti River, north of Durban, KwaZulu-Natal
- The Vaal River Eastern Sub-System Augmentation Project, comprising major pumping stations and pipelines from the Vaal River to Secunda to augment supplies to Eskom, Sasol and other strategic users on the Mpumalanga Highveld

4.4 Accountability

4.4.1 Data and Information Management[15]

Reliable and accurate data is very important in terms of monitoring and feeds directly into planning. The department needs to improve the levels of understanding with regards to the current status of water resources and what the future may look like under climate change conditions and increased socio-economic development.

There have been challenges for DWS as far as data and information management is concerned, with inadequate data on a number of important measures, including rainfall. The South African Weather Service is responsible for our national rain gauge network which has been rationalised for the purpose of meteorology, but is inadequate to understand hydrology. This is problematic in the context of increasing scarcity due to climate change. Thus, there is a need to expand the rainfall monitoring networks around the country.

There is also a need for key role players to start looking beyond mandates. In an effort to facilitate coordination and collaboration amongst the range of stakeholders involved in various aspects of water monitoring as well as to enhance synergies, the department initiated a process of dialogue which culminated in establishment of a National Water Monitoring Committee (NWMC) (encompassing) both Water Services and Water Resources monitoring needs. It was envisaged that the NWMC would be a multi-stakeholder body whose membership will include representatives from government departments and other organizations involved with water quantity and quality-related data acquisition, storage and management, use as well as dissemination.

[15] This section is drawn from the WRC (2014) report called *Towards Citizen Support in the Monitoring of Rainfall in South Africa*

The establishment of the NWMC was approved at a meeting of the Water Resources Functional Management Committee held on 13 April 2006, and the decision to establish Integrated Regional Water Monitoring Committees (IRWMCs) was confirmed at the first meeting of the NWMC held on 10 July 2009.

The IRWMCs are established in each of the DWS Regional Office with the purpose to "provide guidance and to ensure coordination and collaboration in the implementation and operation of water monitoring programs in the region and to improve effectiveness and efficiency through integration of the respective programs". Whilst the project team did not look into the success of the committees in each region, it must be noted that the feedback from the Western Cape Regional Office was positive and noted that the attendance and commitment of other sector partners (such as the South African Weather Service (SAWS) and Agricultural Research Council (ARC)) have been invaluable.

The establishment of the various committees and working groups highlighted above is a step in the right direction, but without well-defined terms of reference and budgetary support, the structures will continue to struggle and could even become dysfunctional. This is further exacerbated by the fact that these various role players now report to different Ministers and Departmental line functions. To address these challenges the Minsters of Water Affairs and Sanitation, Environment Affairs and Agriculture, Forestry and Fisheries need to work collectively to develop a centralised hub for data management. The Minister's support and advocacy in this regard will be a critical success factor.

Just like other aspects of water resource management, the support of the private sector in aspects of monitoring would be valuable and needs to be explored, particularly since future progress will be hindered for the foreseeable future by skilled personnel. This raises the question of what role citizens can play and how they can be mobilised in support of water resource management. The establishment of Catchment Management Agencies will be useful in this regard as the institution responsible for coordination of water sector activities within the water management area. Central to this will be a closer relationship with stakeholders via catchment management forums and or catchment management committees, and we reflect on this further in section 4.4.5 below.

4.4.2 Development and Water Resources: Where does the buck stop?

In order for regulations to be effective and efficient, it is important for there to be an alignment of functions between different institutions within the water sector as well as between the direct water resources regulatory institutions and other relevant regulatory institutions such as those regulating land use, environmental regulation, and natural resource regulation.

The Department of Environmental Affairs and the provincial departments of environment have the policy and legislative mandate for the protection of the environment and the conservation of biodiversity while the Department of Water and Sanitation has the policy and legislative mandate for the protection of water resources and aquatic ecosystems. There is thus an overlap between the areas of jurisdiction between these institutions and opportunities for synergy (DWA Mandate, 2012). However, the departments do not work together effectively enough.

The primary instrument to ensure that resources are taken into account as far as new projects in South Africa are concerned is the Environmental Impact Assessment (EIA) (Brownlie, Coetzee, Morris, 2013[16]). In April 2006, old EIA regulations in South Africa were replaced by new ones in terms of the NEMA, and these were further amended in 2010. The regulations set out a list of activities that require a Basic Assessment Report (BAR) and EIA, and the processes that have to be followed in order to obtain an Environmental Authorisation.

Brownlie, Coetzee and Morris (2013) note that although project-level EIA does contribute to some extent to providing assurance of sustainable development, it is currently flawed in many respects. Among the concerns they express are that:

- Many projects are authorised although they may result in poor environmental outcomes, and, in many instances, rely on employment creation during the construction phase of a project as the reason for being 'socially justifiable'. This points to the challenge of sustainable development within a context of high unemployment.
- The current procedures and organisation structures for environmental impact management are failing to achieve integrated decision-making and co-operative governance. In particular, the status and influence of environmental authorities in decision-making is low compared to departments driving economic and infrastructure development (mining, industry, energy, transport and public works). Furthermore, assessing impacts through EIAs may not give sufficient emphasis to managing the impacts of developments.
- There has been discussion about transferring the responsibility of environmental regulation away from the environmental authority into departments which are key impacting sectors (for example, Department of Mineral Resources). Whilst we need sector development Ministries to understand the nature of their environmental impact, here are concerns that such a transfer will result in a conflict of interest (as player/referee).
- Despite the obligations of certain departments and provincial departments to prepare Environmental Implementation Plans and Environmental Management Plans to give effect to the principle of cooperative government, there is a very low level of coordination and collaboration by key authorities regarding environmental management at a strategic level. Capacity is clearly a challenge, as are the levels of accountability. Environmental assessment in South Africa is predominantly at a project level through the EIA, while environmental assessment of policies, plans and programmes (that is, at a strategic level) does not occur.
- EIA practice is largely dictated by procedural and reporting requirements in the NEMA EIA Regulations and does not really engage with key sustainability issues.

As far as mining in particular is concerned, mining activities currently require a mining permit, including an Environmental Management Programme Report (from DMR), a water use licence (from DWS) and – for listed activities occurring in a mining area – an environmental authorisation and/or waste management licence and/or air emissions licence (from DEA). It has been recognised that there is a need to align the processes for requiring a mining licence, and there has been participation in the Interdepartmental Project Implementation Committee (IPIC) on integrating licencing. To ensure that the authorisation processes associated with mining are aligned, all four acts (NWA,

[16] http://pmg-assets.s3-website-eu-west-1.amazonaws.com/130731ladies.pdf

NEMA/NEMWA (National Environmental Management Waste Act) and Mining and Petroleum Resources Development Act (MPRDA)) need to amended and aligned, and an integral part of performance assessments. Existing environmental impact assessment regulations and listing notices require amendments to the timeframes as agreed to by the three departments.

4.4.3 The need for a strategic Compliance, Monitoring and Enforcement (CME) Programme

Being able to respond in an adaptive and innovative manner will require improved monitoring and enforcement. Effective monitoring of the state of the country's water resources, water use, water infrastructure and institutional performance will inform policies and actions going forward. Furthermore, enforcement of compliance with water use policies to a far greater degree than has been necessary in a context of abundance is critical.

Importantly, the enforcement of regulatory instruments is required, and failure to conform must result in sanctions. There is a hierarchy of sanctions that could be imposed, which could include persuasion, issuing directives, civil penalties, criminal penalties, licence suspension and finally licence revocation. In South Africa, enforcement is a burning issue, with the biggest challenges being capacity and political will. Where capacity is limited, it is important to target regulation carefully as well as to engage with the capacity requirements of specific instruments (Schreiner et al., 2011).

DWS itself has acknowledged the weaknesses as far as performance, monitoring and enforcement is concerned. It has pointed out problems with the information used to monitor performance, problems with the data in the National Register of Water Use, and lack of capacity (staff, skills, funding and equipment) for monitoring and enforcement.[17] In reflecting on compliance and enforcement, the NWRS2 notes that the DWS needs to strengthen its compliance monitoring and enforcement capacity in the areas of water use, discharge and water conservation and water demand management.

There is limited publicly available information about the compliance and enforcement capacity and results within the DWS. The most regular information is obtained through questions posed to the Minister of Water and Sanitation or DWS in Parliament. It appears that DWSs Compliance, Monitoring and Enforcement Unit is severely understaffed, with for example, in 2011 only the Mpumalanga regional office having a fully functional CME with eight posts (though performance is poor here too) while all other regional offices use other staff to carry out CME activities (CER, 2011).

4.4.4 The need for an Economic Regulator

It is generally argued that it is very difficult to regulate in-house activities, largely because it is difficult, if not impossible, for one part of an organisation to impose real sanctions on another part of the same organisation. While an independent regulator might be more important for water services than water resources, it is important to look at whether and how regulation of the different water resources institutions occurs. While Water Boards and CMAs are regulated by DWS, there is very little regulation of the Trans-Caledon Transport Authority (TCTA) and WUAs. In this context, it might be necessary for there to be a dedicated regulatory function within DWS which monitors and acts on the performance of the various water resource institutions.

[17] http://www.pmg.org.za/print/report/20120919-department-water-affairs-national-water-resources-strategy-2012

A competent regulator is important for a developmental state since it provides certainty to investors and allows government to intervene when needed, for example, to improve welfare. However, for a competent regulator to function effectively, there is a need for de facto independence. Furthermore, the issue of capacity is critical in developing states (Regulation and Equity, 2011). It is envisaged that the functions of a regulator should be as follows (Regulation and Equity, 2011):

- Regulate and make recommendations to municipalities on raw water tariffs and WB tariffs (cannot regulate the actual tariffs charged by municipalities but only how their tariffs are structured)
- Regulate tariffs to ensure equity
- Regulate progressive subsidies for entire value chain
- Arbitrate on water tariffs where disputes arise between municipalities and communities, municipalities and WBs, and DWS and users
- Provide input on pricing strategy for entire water value chain
- Develop reporting requirements
- Collect information to perform economic regulation
- Regulate and measure targeting performance (consumptive, capital and connection) of subsidies
- Publish regular reports for Minister, Parliament and public

In a developmental state like South Africa, it is important to ensure that there are some measures in place in order to give effect to the functions of the regulator. These include the following (Regulation and Equity, 2011):

- Ensure entities are aligned to support and drive growth and development in key sectors
- Strong state leadership in defining economic development path
- Mobilisation of financial resources
- Capable and motivated civil servants to ensure implementation in line with development objectives
- Partnership with private sector to support development strategy
- Roll out of key infrastructure to enable economic development, that is, the regulation of agreements and standards in the development of infrastructure

4.4.5 Accountability and the Role of the CMAs

There are a number of issues as far as accountability in the water sector is concerned. Probably the most burning issue is the lack of sanction for targets not being met. Thus, while the outcomes approach adopted by government above may be useful in ensuring a move towards a more reflective and results-orientated way of planning, monitoring and evaluating the performance of government departments, the lack of sanction poses a real problem as far as accountability is concerned.

The creation of decentralised CMAs may be a step in the right direction as far as accountability is concerned, since it forces ‘short route accountability’, and we reflect on this in the discussion below. The World Bank (2012) conceptualizes accountability in services as a triangle between citizens, the state and service provider organizations. While water resource management is not a ‘service’ in the

traditional sense of the word (like provision of potable water or electricity), this model might be interesting to consider here, with DWS/CMAs being the service provider and water users being the citizens.

In the triangle, the relations in both directions are defined as accountable if there is: i) a delegation or request of an expected service (water resource management); ii) there are financial or other rewards for delivering that service; and iii) the service is actually delivered; and iv) the ability exists to enforce the expectation, which supposes; v) that there is sufficient information about the service performance.

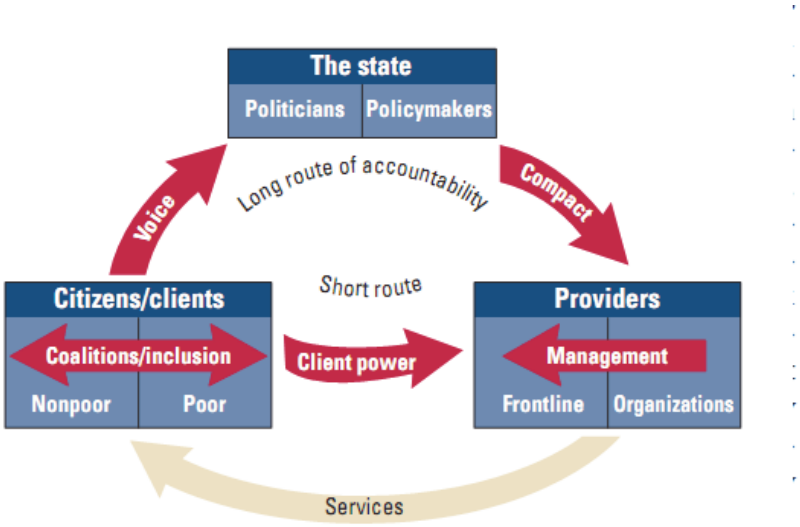


Figure 3: Triangle of service delivery and key relationships of power and accountability (World Bank, 2012)

Here, a long and a short route to accountability are distinguished, with the two sides of the triangle representing the long route to accountability, and the base is the short route. Citizens/water users delegate the responsibility for water resource management to government since they pay water use charges, waste discharge charges and pay for licences. In the long route to accountability, water-users/citizens hold politicians to account, primarily through elections at local, regional and national levels, but also by lobbying, protests, and other forms of civil action. Water users/citizens can enforce their expectation of delivery in the next round of elections, provided they have sufficient information and reasonable promises of improvement in that next round. The establishment of sector engagement platforms, such as the Water Sector Leadership Group can become important platforms for stakeholders to raise their concerns to senior DWS officials.

In the second long route to accountability, policy makers set the rules and shape the organizational set up that determines how those services are provided, engage with service provider organizations (DWS or CMAs) and draw up a compact with the service provider organisations which clarify performance agreements and rewards. Politicians and policy makers can enforce these contracts by maintaining or changing the service provider depending on its performance, if information on performance is available. In this relationship the front-line staff (staff at DWS or CMAs) are accountable to their superiors (government).

The short route to accountability is where water users/citizens hold service providers/DWS/CMAs directly accountable. While centralised water resource management with little stakeholder participation enforces long-route accountability, decentralised water resource management, such as the CMAs may help with short route accountability, mainly due to direct engagement. More specifically, DWS reports to national government and national government is accountable to citizens, thus forcing long-route accountability. In contrast, in the CMA structures, the CMA is accountable to its board of directors, to national government and to the stakeholders within the WMA. There is thus a 'short route accountability' since citizens and governing board members can directly interact with the CMA, thus pressurising the CMA to deliver on its mandate. The decentralisation of water resources to the catchment level together with stakeholder participation may thus be a step in the right direction as far as accountability is concerned.

4.5 Societal Engagement

4.5.1 What is the Rationale for Societal Engagement in Water Resource Governance

Water governance is about the process through which water management decisions are made. Early thinking about water governance was based on highly centralized systems that emphasized the role of governments in water management. Jonker et al. (2010) highlights three forms of governance, and early thinking of water resource management fell into the first type, as shown below:

- *Bureaucratic governance* where a government department performs all the functions mandated to it
- *Delegated governance* where the government department delegates its functions to private services providers or quasi-independent providers, for example, CMAs in the South African context
- *Cooperative governance* where a government department performs its functions in close collaboration with other government departments and organisations, including stakeholders and individual citizens

When there is enough water in a particular basin or catchment, water development efforts are not generally a huge concern, with the main challenges being the financial and institutional capacity of the managers of the water resource to reliably and equitably maintain water supply and treat wastewater discharge. However, in many countries around the world including South Africa, the water outlook in terms of water availability is not optimistic, and future climate, economic, social, urban and technological trends point to further water stress, thus highlighting the role of and capacity of governments to address these challenges. According to the World Economic Forum's Global Risk Report 2015, water crises are the single most impactful risk facing the world today[18], while the Carbon Disclosure Project's (CDP) Global Water Report 2014 notes that two thirds of the world's largest companies are reporting exposure to water risks, some of which have potential to limit growth.

Thus, in water-stressed countries/catchments where there are inadequate financial resources, a lack of institutional capacity, inadequate governance mechanisms, or other such challenges in the public

[18] http://reports.weforum.org/global-risks-2015/executive-summary/

sector management of water resources, the water-related challenges to companies increases requiring alternative solutions in order to deal with the risks. As can be seen from the discussion on regulation and accountability above, South Africa is one such country. Dealing with water management in these contexts requires collaboration among diverse stakeholders to mobilize human, technological and financial capital. Thus, the challenges with water management in the context of scarcity, inadequate capacity, and inadequate governance mechanisms highlights the role of cooperative governance or "stakeholder engagement" across the public, private and non-profit sectors (OECD, 2015).

The evolution in terminology from speaking about "government" to speaking about "governance" is instructive. Government is no longer seen as the single decision-making authority exerting control over people and groups in society. Rather, governance is now being imagined with many different actors in different institutional settings and groupings contributing to policy development and implementation. The traditional role of "government" as the single decision-making authority is gradually being replaced by multi-level, polycentric governance, thus demonstrating that a range of stakeholders can contribute to and better guide decision making (OECD, 2015). Non-state and private corporate actors are increasingly participating in the formulation and implementation of policy through various multi-level platforms and networks (Pahl-Wostl, 2009).

The Global Water Partnership (GWP) defines water governance as "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 society" (WWF, 2011). Thus, water governance refers to both the *formal* and *informal* processes that allow for the determination and negotiation of objectives, setting of standards, and resolution of disputes among disparate voices in order to address challenges and meet objectives at local, sub-national, and national levels (Roy 2011) in Cooley et al. (2013). The OECD defines multi-level governance as the explicit or implicit sharing of policymaking authority, responsibility, development and implementation at different administrative and territorial levels, i.e. i) across different ministries and/or public agencies at central government level (upper horizontally); ii) between different layers of government at local, regional, provincial/state, national and supranational levels (vertically); and iii) across different actors at the sub-national level (lower horizontally) (WWF, 2011).

Cooperative governance and stakeholder engagement in governance holds specific importance in water because this is a highly decentralised and fragmented sector, with multiple, interdependent players at different levels. The idea behind engagement is to involve stakeholders in order to gain 'local' knowledge, reduce conflicts, and improve outcomes. In return, water users or stakeholders must accept shared responsibility for inventing ways to meet the conflicting interests of multiple groups at the same time, given legal, financial and other constraints (Susskind, 2013). Stakeholder engagement is a way of handling what are often called 'complex' or 'wicked' problems; that is, those that defy straightforward scientific efforts to maximize efficiency (Susskind, 2013).

In many water-stressed catchments around the world, companies, governments, civil society organisations and NGOs are increasingly seeing the benefits of working together in order to share information, collaborate and manage water resources. This is a new form of public-private

partnership since it involves collaboration and, in some cases, integrated decision-making and implementation.

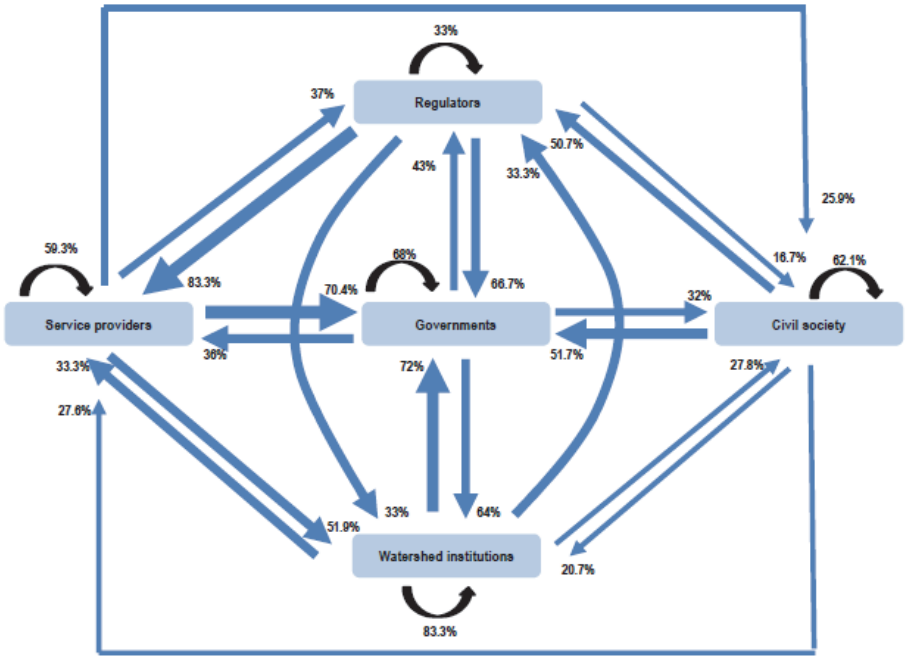
"Stakeholder engagement" in governance broadly refers to citizens and communities, individuals, groups, and private organizations (non-governmental organisations) having the opportunity to engage in a process or decision-making. Thus, public participation can be recognised as a practice of stakeholder engagement (Yee, 2010). Public participation encompasses a range of procedures and methods designed to consult, involve, and inform the public to allow those that would be potentially affected by a decision or policy to have input into the process (Yee, 2010).

Cooperative governance, in turn, is a process where multiple actors from government and different parts of civil society work together to manage, respond to, and coordinate in relation to a specific issue of mutual interest (Meissner et al., 2013). These processes can be complex and time consuming but are made easier through the establishment of small, and possibly overlapping, forums and working groups. Cloete et al. (2003) notes that cooperative governance is based on four main assumptions, that is, that no single actor can effect change; that complementary and competing interests must be recognised; that new structures should be established to promote cooperative behaviour amongst various stakeholders; and that responsibilities of different stakeholders involved in an issue need to be clarified (Meissner et al., 2013).

These issues allude to the fact that there is a continuum of "stakeholder engagement" in governance, of which cooperative governance is, in a sense, the most collaborative form of governance. In this report, we refer to both stakeholder engagement and cooperative governance, noting that there are challenges with the capacity of some stakeholders to participate in cooperative governance in developing countries like South Africa. Furthermore, engagements occur are at various levels, with various different actors, and are dependent on a variety of factors within the specific environment. The International Association of Public Participation (IAP2) regard "empowerment" as their most engaged level of participation where stakeholders are empowered and delegated the authority to make decisions. This does support the notion of polycentric governance. Experience in the South African context is that whilst this is not always appropriate there is also an inherent fear or lack of trust to delegate this authority.[19] Clearly, this depends on context and the requisite capacity and governance maturity.

An OECD report on Stakeholder Engagement for Inclusive Water Governance (OECD, 2015) shows the frequency with which different stakeholder groups interact with other stakeholders in the water sector differs. Analysing interactions helps to identify collaboration opportunities and pathways. The figure shows that the most frequent interactions occurring between regulators and service providers, service providers and government, watershed institutions and government, regulators and government and civil society and government. Stakeholder groups such as civil society, watershed institutions and service providers also frequently interact with each other. Importantly, regulators engagement with civil society, and civil society's engagement with watershed institutions is particularly low

[19] Personal communication with Derek Weston of Pegasys.



Note: The figure shows the interactions across governments (national, regional, local), service providers, watershed institutions, regulators and civil society considered as "very frequent." The blue arrows represent interactions between the categories of stakeholders and the black arrows represent interactions within each category of stakeholders.

Source: OECD Survey on Stakeholder Engagement for Effective Water Governance (2014).

Figure 4: Most frequent interactions across stakeholders in the water sector (OECD, 2015)

Effective collaboration or collective action in the context of the types of water challenges being experienced in South Africa and other parts of the world requires establishing non-conventional relationships with non-traditional partners, and involves a commitment of shared goals. Managing use of a shared resource requires collective action which, in turn, requires that stakeholders develop a collective identity. This includes better engagement with local communities since local people are directly affected and their indigenous knowledge is important in building lasting solutions. Furthermore, in post-apartheid South Africa, engagement with communities is paramount given the general mandate of government to ensure better outcomes in all sectors for previously disadvantaged communities.

One of the challenges with collaborative action or stakeholder engagement is in creating structures which allow for and enable it at relevant levels (Bouman-Dentener & Davos, 2015), as well as creating a collective identity to foster collective action/collaboration. As far as formal structures are concerned, participation platforms are ways for stakeholders to give input into governance processes that influence water resource management decision-making and implementation (Bouman-Dentener & Davos, 2015). However, it is important to note that collaborative action can also occur outside of formal structures, and therefore it is important to understand how and when this does/can occur too. We dwell on this in further detail in section 5 below.

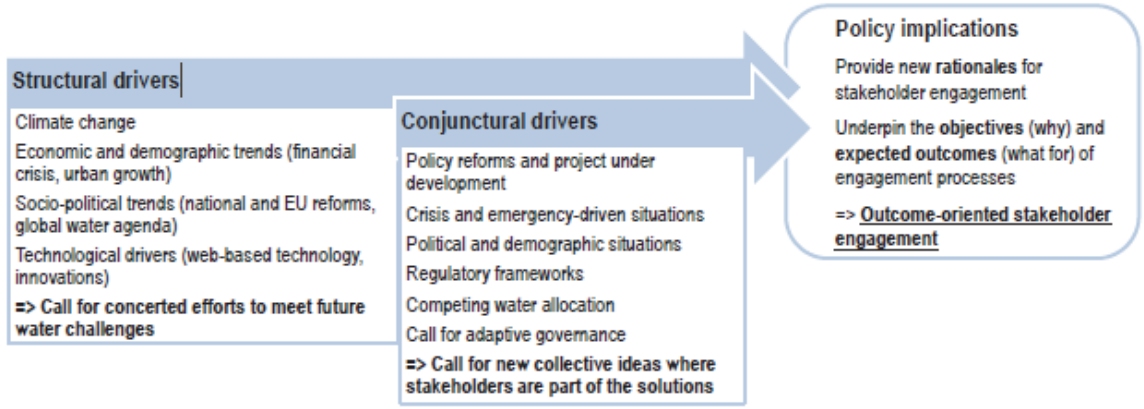
There are a range of benefits to collaboration in governance, and they include the following:

- It meets the growing demand for public participation, that is, there is a growing public desire to be involved in decisions that will affect them and has influenced the need for greater openness of decision-making processes. In this sense, public participation can counter public mistrust of government and expert-led decision-making processes, since it results in an understanding of problems by varied stakeholder who can negotiate trade-offs, make more informed decisions, seek consensus and take shared ownership of solutions, set common priorities for all parties involved in an issue, and have clarity of purpose (Yee, 2010);
- It results in participatory democracy (e.g. community empowerment and providing the opportunity to develop knowledge for making informed choices). It also results in community empowerment and support;
- It brings an expanded pool of expertise, capacity, or financial resources focused on managing water to the table;
- It results in the establishment and maintenance of credibility, resulting in improved legal and social license to operate;
- In some cases, it meets legal and policy requirements (Yee, 2010);
- It leads to more durable outcomes, since support from engaged and affected parties ultimately leads to stronger and more sustainable water governance.
- It leads to transparency in decision-making processes;
- It leads to reduced conflict over decisions between decision-makers and public groups, and between the groups (Yee, 2010) (the feeling of belonging to a collective and thus understanding and empathy in decision-making).

While there are benefits to effective cooperative governance or stakeholder engagement for governance, this must be balanced with the potential challenges with regard to sharing information, consulting varied stakeholders, making joint commitments, and sharing responsibility for implementation. In addition, there are also risks to collective action, since priorities of different stakeholders are different, and the power of different stakeholders are also different. We reflect on some of this further below.

Drivers of Societal Engagement in Governance

The discussion above touches on some of the drivers for collective action or stakeholder engagement as far water governance is concerned. More formally, the OECD (2015) report notes long-term structural drivers as well as conjunctural drivers, as shown in the figure below. Conjunctural drivers are a combination of circumstances or crises.



Source: OECD elaboration.

Figure 5: Drivers of Stakeholder Engagement in Governance (OECD, 2015)

The structural drivers for stakeholder engagement in governance include climate change, economic and demographic trends, socio-political trends and technological drivers, all of which call for concerted efforts in order to meet future water challenges. In turn, the conjunctural drivers include policy reforms, crises and emergencies in the water sector, political and demographic situations, regulatory frameworks, competing water allocations and calls for adaptive governance, all of which call for new collective ideas so the various stakeholders can be part of the solution (OECD, 2015). Together the drivers provide a rationale for outcome-oriented stakeholder engagement as far as governance is concerned. Importantly, solutions inevitably involve trade-offs, and creating a common understanding of the implications and appreciating the consequences leads to greater empathy and willingness to compromise.

In the South African context, the NWRS2 notes that one of the principles underpinning the NWRS2 is *Partnerships with Private and Water Use Sectors*. Here the NWRS2 recognizes that stakeholder management and partnerships with all stakeholders within the water value chain is imperative since neither government nor business alone can solve water issues such as climate change and water scarcity. It notes that the private sector in South Africa is taking some steps to manage water risk effectively through initiatives like the UN-driven CEO Water Mandate and the experience of several large corporations in managing water risk. Furthermore, the Strategic Water Partnership Network (SWPN) is an innovative partnership between the South African government and the private sector, launched by the previous Minister of Water Affairs Mrs Edna Molewa, to enhance coordination efforts in managing water resources. However, the slow establishment of catchment management agencies and the transformation of irrigation boards into water use associations have impacted on stakeholder engagement in governance. Furthermore, it should be noted that the decentralisation of water resource management does not automatically imply effective stakeholder engagement

Another principle underlying the NWRS2 is a *Participatory Approach*, that is, it is recognized in the strategy that for effective and integrated management of water resources, top-down consultation should be replaced by citizen's participation which will be facilitated through community forums and civil society organisation structures. The NWRS2 notes that Catchment Management Forums (CMFs)

will be established and utilised to strengthen the participation of communities and other stakeholders within a catchment. CMFs are voluntary bodies which are not specifically mentioned in the NWA, but are promulgated through the NWRS. They are meant to address local water management issues, and provide a platform for public consultation.

As mentioned, the drivers and motivations for stakeholder engagement in governance differ among different groups. For example, the CEO Water Mandate – which mobilises business leaders to advance water stewardship[20], sanitation, and the Sustainable Development Goals in partnership with governments, peers, civil society and others[21] – notes that collective action (from the perspective of the private sector) is driven by catchment-level outcomes, since the risks to the company will be at the catchment level. From a company perspective, there are a number of drivers and motivations for collective action. These could include the following (CEO Water Mandate, 2013):

- To ensure the viability of the business by preventing operational crises related to inadequate quality, availability, supply of water or water-dependent inputs in a specific location;
- To retain their legal or social licence to operate, or gain competitive advantage, by showing interested parties that they use and share precious natural resources responsibly, with minimal impacts on communities or ecosystems;
- To assure investors, financiers and other stakeholders that water risks, particularly those occurring beyond the factory are adequately addressed; and
- To uphold corporate values and commitments related to sustainable development by contributing to the well-being of communities and the health of ecosystems and catchments in which they operate.

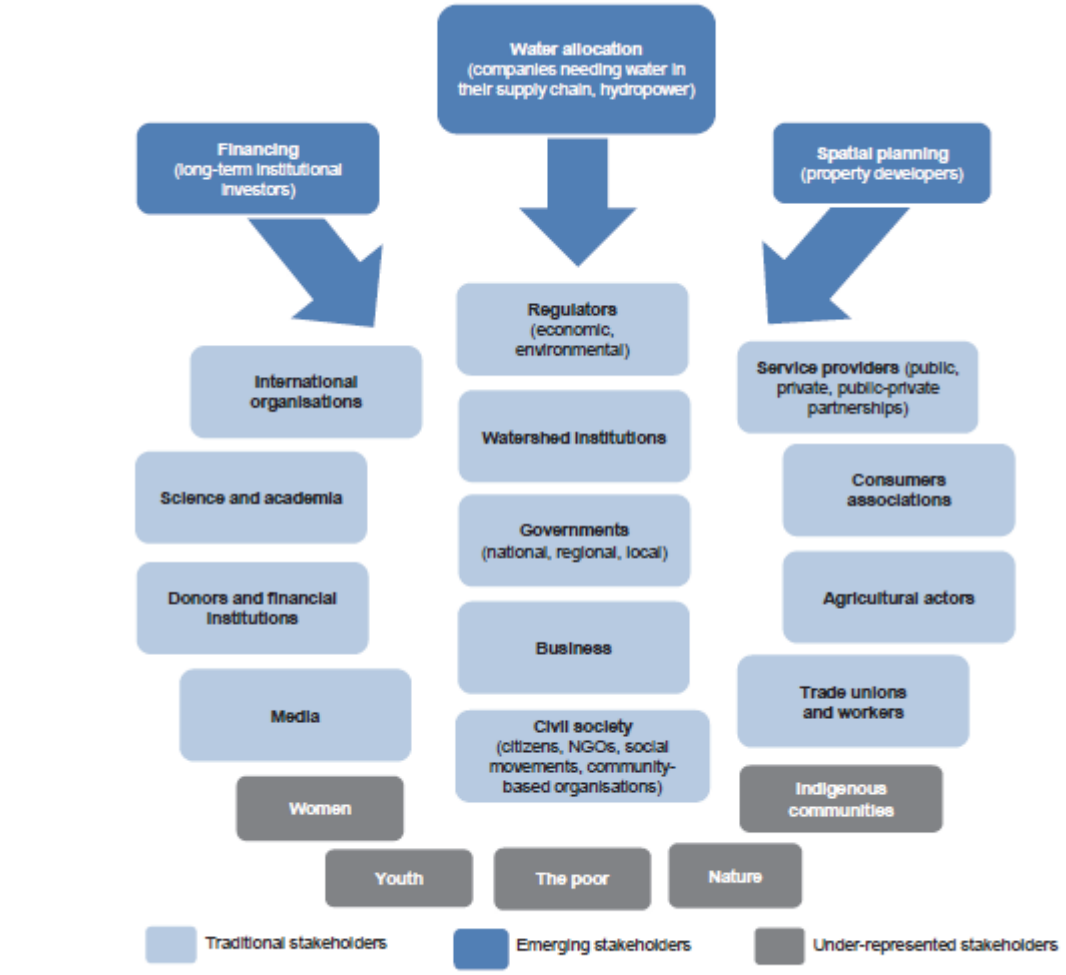
In the same way, the drivers for communities to engage in governance of water resources will be different. The motivation for engagement though is that engagement between different parties with differing interests will lead to better outcomes for all. This is however dependent on the manner in which engagement occurs and the power vested within different interest groups.

4.5.2 Who are the "Stakeholders" within a more collaborative form of governance?

There are a number of "stakeholders" which can be involved in more cooperative governance models. The OECD (2015) report makes a distinction between core stakeholders (governments, service providers, river basin organisations, business, civil society, farmers, legislators, and trade unions); "newcomers" in the water sector such as property developers and long-term institutional investors; and under-represented groups (women, youth, poor, indigenous, nature and non-consumptive users) (OECD, 2015). These various stakeholders are shown in the figure below.

[20] Water stewardship is the use of water in ways that are socially equitable, environmentally sustainable, and economically beneficial. It can be adopted by businesses, through corporate water stewardship, as well as by growers, communities, and others. Ultimately, stewardship is a tool to address these critical water challenges and drive sustainable water management (http://ceowatermandate.org/why-stewardship/water-stewardship-in-60-seconds/)

[21] http://ceowatermandate.org/what-we-do/mission-governance/



Source: OECD elaboration.

Figure 6: Traditional, new and under-represented stakeholders in the water sector (OECD, 2015)

According to the UNCED Agenda 2122, there are nine major groups with common but differentiated responsibilities in implementing the water and sustainable development agenda. These are as follows: 1) women, 2) children and youth, 3) indigenous people and their communities, 4) NGOs, 5) local authorities, 6) workers and their trade unions, 7) business and industry, 8) the scientific and technological community, and 9) farmers (Bouman-Dentener & Davos, 2015). While these are groups in theory, they are commonly not organised as such and are thus not sufficiently strongly nested to have an effective voice in governance.

Yee (2010) thinks of stakeholders as including "...persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively. Stakeholders may include locally affected communities or individuals and their formal and informal representatives, national or local

[22] Agenda 21 is a comprehensive plan of action to be taken globally, nationally and locally by organizations of the United Nations System, Governments, and Major Groups in every area in which human impacts on the environment (https://sustainabledevelopment.un.org/milestones/unced/agenda21)

government authorities, politicians, religious leaders, civil society organizations and groups with special interests, the academic community, or other businesses" (IFC, 2007 in Yee, 2010).

In general, the type of governance issue being addressed will impact on the stakeholders to be involved, and these two issues will influence the method and type of engagement. However, regardless of the stakeholder categories identified for involvement, the fundamental rationale for engaging stakeholders is creating ownership or 'buy-in' to the process and thus to its outcomes. It is important that the design of a stakeholder engagement process identifies what each stakeholder category might be able to contribute to the process or how the process (or stakeholder) might generally benefit from being involved (Yee, 2010).

Motivations for Stakeholders to Participate in Governance

It is important to note that stakeholders have different motivations, needs and interests, and that they aspire to different goals when it comes to water governance, which in turn affects what they expect to obtain from engagement processes and how they engage in different processes. Furthermore, the stakeholders involved in a particular issue and the manner of engagement is also dependent on the type of intervention, for example, a project related to the development of infrastructure (for example, building a dam) will result in a different type of engagement than a discussion around water quality in a particular area. Finally, the way stakeholders contribute to water governance can influence their expectations of the engagement process and their willingness to engage.

As far as motivations to engage in governance is concerned, we note the potential motivations of a few groups below:

- The private sector (businesses) has begun to pay increasing attention to water governance in growth strategies in order to cope with insecure water allocation and risks related to the regulatory environment (OECD, 2015). Furthermore, there is a growing trend of corporate water disclosure, that is, investors requiring companies to disclose information relating to water. This includes, for example, the provision of water quality data that reflects the quality of water used for irrigation and other productive purposes. There is also a shift towards board oversight and target setting as well as corporate stewardship with regard to water resources (CDP, 2014).
- Citizens and users' associations are concerned with equity considerations in the context of water scarcity, and particularly regarding water allocation, use and quality. It is important to note that some categories of stakeholders are frequently excluded from processes, and these include, for example, women (as the primary users of water in many parts of the world, for domestic consumption, subsistence agriculture and health), youth (as the future generation that will need to solve issues related to water), the rural and urban poor (as the main consumers in informal urban and rural areas) and indigenous communities. Furthermore, non-consumptive users are also often absent from engagement processes (OECD, 2015). In situations where more cooperative governance is occurring, it is important to ensure that the various groups of individuals, including minorities and less vocal stakeholders are given a voice. The challenge is to find ways to provide the necessary

support to assist such groups to better organise and structure themselves so that they can indeed engage.

- As the risk of floods intensify, property developers are concerned with considerations around compensation for the loss of nature, "green areas" and development of water amenities (OECD, 2015)
- Institutional investors (e.g. pension funds, insurance companies, mutual funds) have begun to factor environmental, social and governance issues into their decision-making process, and they are investing more and more in water infrastructure and utilities (OECD, 2015)

4.5.3 "Stakeholder Engagement" and "Collective Action" in Water Governance is more than "Public Participation"

The process of involving stakeholders has changed and is progressively moving away from "participation" to the concept of "engagement". It is no longer restricted to "civil society" and project-based approaches, but attempts to address a broader range of actors in a more systematic way (OECD, 2015). Participation typically refers to the involvement of individuals and groups in the design, implementation and evaluation of a project or plan. Engagement is an "umbrella" term that broadly refers to an organisation's efforts to ensure that individuals, groups and organisations have the opportunity to take part in the decision-making processes and policy/project implementation that will affect them, or in which they have an interest (OECD, 2015). Thus, the latter opens a broader perspective to different groups of actors, including levels of governments, the private sector, regulators, service providers, donor agencies, investors and other relevant constituencies, in addition to civil society in its different forms (e.g. non-governmental organisations, citizen movements, etc.) (OECD, 2015).

Types of Engagement

The OECD (2015) report notes the spectrum of types of engagement (see Figure 7).

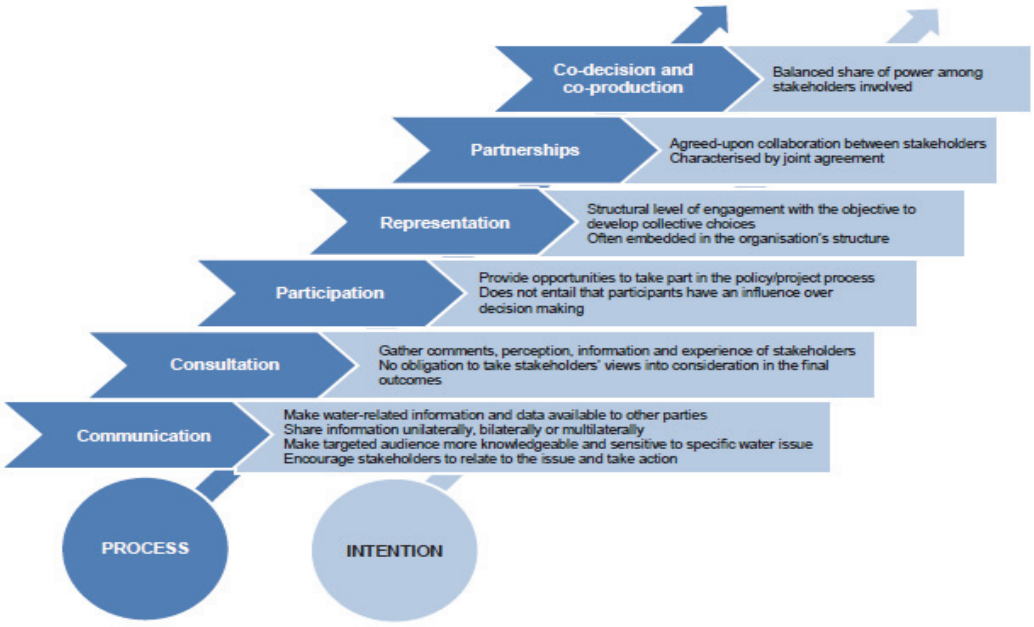


Figure 7: Types of Stakeholder Engagement (OECD, 2015)

Engagement can range from information-sharing (communication) to gathering perceptions, information and experiences (consultation), to providing opportunity for input (participation), to developing collective choices (representation), to joint agreements between stakeholders (partnerships), and finally to creating joint solutions between stakeholders (co-decision and co-production).

Similar to the OECD (2015) depiction above, below we elaborate on the types of engagement that can occur as follow:

Sharing information (informative): This kind of engagement focuses on coordinating the sharing of information in the interest of expanding knowledge and increasing transparency, familiarity and trust among parties and stakeholders. Stakeholders together determine the information that is most relevant for exchange and the manner and frequency with which information is shared. Shared information may include general organisational plans, privately collected data or analyses, or specific monitoring, operational or management practices. This type of collective action typically has low resource commitments, and may not require convening the stakeholders. Furthermore, there is a clear maintenance of independent decision-making beyond the agreed-upon information sharing.

Seeking advice (consultative): This type of engagement focuses on getting interested stakeholders together to exchange ideas and expertise in order to create a shared understanding of the needs, interests and challenges faced by the parties to enable independent decision-making by the parties. The resource commitments to this type of collection action can be kept low, and joint expectations do not need to be established. There is usually some expectation for responsiveness to the information provided by interested parties.

Pursuing common objectives (collaborative): This type of engagement arises when there is a belief that finding common ground, establishing common objectives and sharing implementation responsibilities holds the potential to increase both individual and collective effectiveness. In these types of engagements, decision-making outside of collaboration is independent for the participants, aside from established joint activities among participants in the engagement. Formal accountability mechanisms are not usually put in place for these types of collaborations. The resource commitments among parties are usually higher than for informative and consultative collective actions.

Integrating decisions, resources and actions (integrative): This type of engagement arises when there is a need for alignment of interests, resources, decision-making and coordinated actions in order to meet water-related challenges or opportunities. In these types of engagements, there is generally a formal agreement detailing how collective action is to take place, the roles and responsibilities of various stakeholders and the accountability mechanisms. The resource commitments related to this type of collective action are usually quite high. When we talk about stakeholder engagement/collaboration as far as natural resource governance is concerned, we are talking about any of these types of collaborations.

As far as private businesses are concerned, three factors influence companies' decisions in terms of which engagement type is best to pursue, and these are as follows:

- The degree to which addressing challenges (or dealing with a moral or ethical issue) is dependent on the actions of external parties;
- The interest and capacity of those external parties to engage; and
- The interest and capacity within the company to support engagement.

Thus, the type of stakeholder engagement is dependent on the context, shareholders concerned, policy goals targeted and local needs. For example, while consultations and fora are used to identify expectations or needs in the design phase of a particular project, partnerships such as water stewardships can bring the private and public sector together to work jointly on water resources conservation (OCED, 2015). Importantly, the rationale behind engagement also determines how and when engagement occurs. For instance, engagement can be a goal in itself (normative-democratic approach); a means to more efficient water-related decision-making where there is a particular challenge; or an instrument to fulfil objectives that go beyond the water sector (e.g. inclusion of marginalised groups (OECD, 2015).

The type of engagement and stakeholders being engaged is also dependent on the governance functions (see figure alongside). For instance, the stakeholders involved in engagement over allocation of water resources may be different from the stakeholders involved in planning and policy-making processes, and the types of engagements may also differ for these two governance functions.

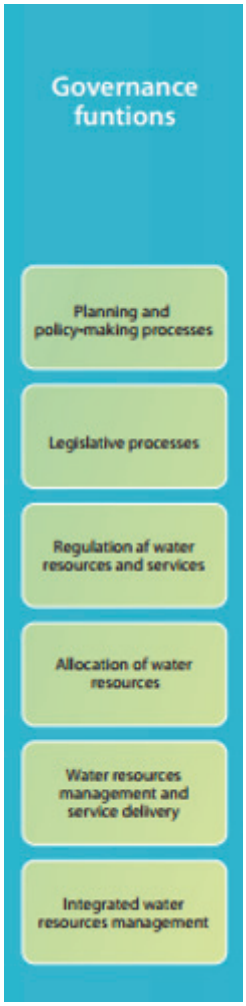


Figure 8: Governance Functions

Susskind (2013) notes that different forms of engagement have emerged, including citizen participation, deliberative democracy, and problem-solving forums. There are more formal types of processes where professional mediators are hired, and formal processes, including identification and capacitation of stakeholders occurs prior to engagement. Unlike traditional forms of public participation which assume that people know what they want and are able to express their views, in this view stakeholders must learn more about the scientific and technical issues at stake, as well as how they might reconcile their views with those of others (Susskind, 2013). The idea around this kind of stakeholder engagement is for different parties with an understanding of the issues to negotiate and reach a consensus regarding issues.

While the outcome of this kind of process is not a binding decision, Susskind (2013) finds that officials are usually happy to receive carefully crafted proposals that, if adopted, will satisfy most, if not all, of the contending political interests and conform to legal and regulatory requirements. Even though officials make final decisions, there is an incentive for them to adopt the proposals since the proposals have resulted from transparent and facilitated collaborative efforts (Susskind, 2013). Susskind's (2013) more formal negotiation process can be costly, particularly if a professional mediator is hired and deliberations stretch over months.

Stakeholder Engagement Mechanisms

The OCED (2015) notes that mechanisms for stakeholder engagement and divides these into formal and informal mechanisms. Formal mechanisms refer to tools that have an institutional or legal ground, and often emanate from an official agreement or contract between parties, or charters with clear operating rules and priorities. On the other hand, informal mechanisms are not institutionalised and can be implemented for a wide variety of issues.

When considering the informal and formal mechanisms, it is important to note that we need to reflect on both the *platforms* through which engagements occur, and the engagement *instruments/activities.* We define platforms as the spaces within which stakeholder engagement occurs, while instruments/activities are the manner in which stakeholder engagement occurs.

The OECD survey on Stakeholder Engagement for Effective Water Governance has inventoried the mechanisms for stakeholder engagement as far as water governance is concerned (OECD, 2015). The table below gives an elaboration of what was identified as formal and informal mechanisms in the OCED (2015) report, and we have disaggregated the OECD elaboration into platforms and activities/instruments. This is not an exhaustive list of platforms or activities/instruments but gives an indication of the type of platforms/instruments that are in use.

Table 6: Formal and Informal Engagement Mechanisms (OECD, 2015 – adapted)

Formal Mechanisms	
Platforms	
Citizen Committees	Group of representatives from a particular community or set of interests appointed to provide comments and advice on an issue
Decentralised Assemblies	Group of representatives from local authorities and civil society with discretionary powers in the management of affairs
River basin organisations/ councils	Specialised organisations set up by political authorities, or in response to stakeholder demands to deal with water resources management issues in a river basin, a lake or across an important aquifer
Water Associations	Member-based groups of stakeholders invested in similar activities (e.g. Association of water utilities, network of water researchers, associations or regulators)
Activities/Instruments	
Consensus Conference	Public meeting, which allows ordinary citizens to be involved in assessing an issue or proposal. The conference is a dialogue between experts and citizens
Stakeholder democracies	Stakeholders are elected by their peers to represent their interests in boards of water institutions
Innovative Contracts and Partnerships	Formal agreements between different parties to produce agreed-upon outcomes
Interest-pay-say-principle	Principle according to which the beneficiaries pay for water management and have a say in the local water authority
Polls/survey	Methods used to collect information from a specific population. Surveys and polls are used to gauge the level of public information about an issue and provide a "snapshot" of attitudes and ideas at a particular time. They can be used to determine community attitudes or target a particular group
Referendum	Direct vote in which an entire electorate is asked to vote on a particular proposal
Shareholding	Shareholders or stockholders are individuals or institutions that legally own a share of stock in a public or private corporation
Informal Mechanisms	
Platforms	
Meetings/Workshops/Fora	Coming together of people for a specific purpose/structured forum where people are invited to work together in a group (or groups) on a common problem or task
Expert Panel	Engaged when highly specialised input and opinion is required for a project. Generally, a variety of experts are engaged on various fields of expertise to debate and discuss various courses of action and make recommendations
Activities/Instruments	
Focus groups	Used for exploratory studies. The issues that emerge from focus groups may be developed into a questionnaire or other form of survey to verify the findings

5 Governance through Cooperation and Engagement

The National Water Act has been important for establishing what cooperative governance implies in a water resource management context and is seen as a pioneer in promulgating participatory and devolutionary approaches. This lies at the heart of the promulgation of the creation of Catchment Management Agencies (CMAs) (Meissner et al., 2013). The focus on decentralised water management means that cooperative governance is a cross-cutting theme in all water resource management institutions.

The establishment of CMAs to facilitate cooperative governance in catchments is seen as crucial for decentralising water resource governance. CMAs are believed to be important for fostering cooperative governance between themselves, local government and other actors in a catchment, such as Water User Associations (WUAs), Irrigation Boards (IBs) and non-governmental organisations (NGOs) (Colvin et al., 2008; Mazibuko and Pegram, 2008). It is, however, important to note that although there is general acceptance and support for the idea of cooperative governance, the water sector has not been particularly effective at pragmatically implementing these sentiments or making them operational (Mazibuko and Pegram, 2008; Pollard and Cousins, 2008). Thus, while stakeholder engagement and cooperative governance is, in law, a cornerstone of the water resources governance environment in South Africa, operationalising cooperative governance has been difficult.

The case studies below reflect on the various ways in which cooperative governance occurs in the South African context. We have chosen an institutional lens to consider cooperative governance since decentralised water resource management, cooperation and stakeholder engagement are written into law through the creation of both CMAs as well as WUAs and a range of supporting committees.[23] Thus, the case studies below consider cooperative governance:

- through legislated Catchment Management Agencies (formal/statutory)
- through legislated Water User Associations (formal/statutory)
- through non-Legislated Catchment Management Forums (informal/non-statutory)
- driven by private sector companies (informal/non-statutory)
- driven by NGOs (informal/non-statutory)
- driven by “societies” (informal), that is, how end-users of raw and potable water influence governance through means other than more formalised channels and NGOs.

The study has looked for the lessons that can be generated locally rather than from international case studies and lessons that emerge from different policy, legal and societal systems. There is indeed much that can be learned locally and it has been these “bright-spots” that the team has sought, and which are potentially more easily transferred or up-scaled.

In this paper, since CMAs and WUAs are legislated, they reflect “formal” or legislated platforms for cooperative governance, while the rest of the case studies (CMFs, NGOs, private sector, society) reflect “informal” or non-legislated cooperative governance. We make this distinction, since the mechanisms, platforms, delineation of responsibility, and funding for cooperative governance through formal institutions such CMAs and WUAs is arguably clearer, while cooperative governance

[23] The NWA allows for the establishment of Advisory Committees (s99) as well as catchment management committees (s82(5))

in more informal settings (through private sector companies, NGOs and by societal pressure) occurs more organically, with much less clarity in terms of stakeholders, platforms, delineation of responsibility and funding. Pahl-Wostl (2009) note that formal and informal institutions refer to the nature and processes of development, codification, communication and enforcement. "Formal institutions are linked to the official channels of governmental bureaucracies. They are codified in regulatory frameworks or any kind of legally binding documents. Correspondingly they can be enforced by legal procedures. Informal institutions refer to socially shared rules such as social or cultural norms. In most cases they are not codified or written down. They are enforced outside of legally sanctioned channels."

Nevertheless, it must be noted that that formalisation of stakeholder engagement and cooperative governance does not by itself guarantee better outcomes for all – particularly in poorer communities – without addressing issues, for instance, of power and capacity imbalances. Thus, the impact of cooperative governance through both formal and less formalised platforms is different, but not necessarily "better".

In the discussions below, we use the terms "cooperative governance" as well as "collaborative governance". Importantly, there are distinctions between collaboration and cooperation. For instance, O'Flynn (2008) notes that Mattessich and Monsey (1992:39) "make clear distinctions between cooperation, coordination and collaboration" where "cooperation is described as an informal relationship without a common mission in which information is shared on an as-needed basis, authority remains with each organisation, there is little (or no) risk and resources and rewards are kept separate", while "coordination is seen as more formal and there are compatible missions that require some common planning and more formal communication channels. While each organisation retains authority, risk enters the equation". In turn, "collaboration is a more 'durable and pervasive relationship' which involves creating new structures within which to embed authority, (building capacity, delegating), developing a common mission, engaging in comprehensive and shared planning, and in which formal communication across multiple levels occurs. Collaboration includes pooling and jointly acquiring resources, sharing rewards, but also reducing risk".

Collaborative governance is used by Zadek (2006) to refer to "institutional arrangements that involve a deliberative multi-stakeholder collaboration in establishing rules of behaviour governing some or all of those involved in their development and potentially a broader community of actors". Importantly, power is a critical issue (O' Flynn, 2008), with genuine collaboration requiring voluntary and mutual engagement, autonomy, trust, mutual goal setting.

In practice collaboration is often difficult with coordination and cooperation being more common. Thus, while collaborative governance is often spoken about, collaborative governance is, in many instances, an aspirational ideal (O' Flynn, 2008). In the discussion below, we use the term cooperative governance, and acknowledge that there is a continuum of "cooperation" with information-sharing, cooperation, networking and collaboration all housed under the umbrella term. In turn, stakeholder engagement refers to the process of engaging stakeholders, noting that this

does includes a spectrum of ways in which engagement can take place, with a range of differing objectives[24].

Equally important to consider, is the meaning of the concept of "society". In thinking about the emergent governance framework, this has largely focused upon the shifts in how society is engaging in governance. In order to avoid the complex debates of what actually constitutes "society", for the purposes of this work, we possibly need to consider the role that "civil society" plays in governance and how this has started to shape new governance paradigms. The World Bank definition of "civil society" is:

"…the wide array of non-governmental and not-for-profit organizations that have a presence in public life, expressing the interests and values of their members or others, based on ethical, cultural, political, scientific, religious or philanthropic considerations.".[25]

This can be slightly problematic in that this definition implies some form of formality through organisations, and negates the efforts of interested and affected individuals who engage in matters for the betterment of broader society. In this regard the World Health Organisations definition of civil society is:

"**Civil society is seen as a social sphere separate from both the state and the market. The increasingly accepted understanding of the term civil society organizations (CSOs) is that of non-state, not-for-profit, voluntary organizations formed by people in that social sphere. This term is used to describe a wide range of organizations, networks, associations, groups and movements that are independent from government and that sometimes come together to advance their common interests through collective action.".**

This definition seems more appropriate for our understanding of societal engagement in water resource management, and the inclusion of the terms "network" and "movement" provide space for individuals that may support matters such as citizen science projects or all submit comments on policy changes that impact upon specific sectors or communities. In many instances, it will emerge, society does engage in its most constructive ways through organisations, associations, groups, etc., but we should not discount those interested and affected individuals who come to the table to provide inputs.

The case studies below are all local (South African) case studies; local case studies (at a country scale) are rich with local context, and therefore more transferrable. In turn, while international case studies are useful in terms of innovation and new thinking, the contexts in different counties are often quite different, including power disparities among stakeholders, and lessons are therefore less transferrable.

In each of the case studies, we analyse the following for the type of cooperative governance and/or the particular case study of cooperative governance being looked at:

- The motivation for engagement, that is, what drives engagement;

[24] See International Association of Public Participation (http://www.iap2.org)
[25] http://web.worldbank.org/Topics/Civil Society/Overview

- The stakeholders involved;
- The mechanisms through which engagement occurs; and
- Some key lessons on cooperative governance that can be drawn from the case study.

5.1 Case Studies in Societal Engagement through Legislated Mechanisms

5.1.1 Catchment Management Agencies

The NWA provided for a dramatic shift in the management of water in South Africa. In particular, the Act promulgated the decentralisation of water resource management for the first time in the South African national water system. The new legislation establishes a three-level institutional system of management. In addition to the department responsible for water, the NWA provides for the creation of two new types of management bodies: the CMAs established at the level Water Management Areas (WMAs) and WUAs established at the local level (Orne-Gliemann, 2013).

The Inkomati WMA has been a key site nationally for institutional reform and decentralisation through the establishment of the Inkomati Catchment Management Agency (ICMA) – the first CMA in the country. This case study provides analysis of cooperative governance through CMAs generally, as well as specifically through the ICMA.

Motivation for Collaboration

Principle 23 of the Water Policy White Paper states that the "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" (Malzbender et al., 2005). The imperative for cooperative governance is thus enshrined within the water policy and law and South Africa, with the CMAs operating at the catchment level.

CMAs have a regulatory function, with powers mandated by DWS to manage water resources, but CMAs are governed by Governing Boards constructed from local stakeholders, including municipalities, mining, industrial and agricultural water users, as well as marginalised groups as part of the potential or future water users. Although never explicit, there was possibly the understanding that engagement through the Governing Board would provide the opportunity for stakeholders to have a stronger influence on issues such as water allocation, licensing and other matters that were of importance to these groups. This was exacerbated by the interpretation of the NWA under section 81(14) which states that "A member nominated for appointment to the board by an organ of state or body is accountable to that organ of state or body". The nature of the accountability was a matter of some debate and was recognised as being an amendment required in order to improve the corporate governance of CMAs.

Nonetheless, CMAs are the interface between national legislation, policy and regulation, and local participation and implementation. The NWA signalled a change from a centralized management approach based on command and control from the nation's capital to a decentralized participatory model based on cooperative governance and coordination through CMAs.

Stakeholders

In looking at stakeholders' involvement in cooperative governance, we first consider policy, legislative and departmental guides around how stakeholders are to be involved as well as some

challenges around these, before looking at stakeholder engagement processes through the ICMA in particular.

Importantly, although Principle 23 of the Water Policy White Paper recognises public participation, it leaves a number of questions unanswered: Firstly, the Act makes allowances by noting that the principle should be implemented "where possible and appropriate" giving latitude for discretion as to whether and how public participation is implemented in practice. Principle 23 also speaks of enabling "interested parties" to participate in decision-making, but how such interest is defined remains vague. It is unclear whether and in what ways the state (represented by the statutory CMAs) would be expected to bring aboard stakeholders that are unable to participate. Neither is there any definition of how that process of participation will happen and practical mechanisms for a process of integration are absent. Thus, while participation is enshrined within policy, notions of participation in the policy space remain vague (Malzbender et al., 2005). In order to address these challenges the Department of Water and Sanitation (then Water Affairs and Forestry) produced a successive number of guideline documents to assist in these processes (see below). However, there are still challenges that exist, although these are possibly less about the modalities and more to do with structuring and financing.

The NWA clearly recognises that stakeholder participation is a prerequisite in the process of development of the CMS, and that particular attention should be given to ensure the participation and representation of those who have been previously disadvantaged. In Section 80 (e) of the NWA it is stipulated that one of the functions of a CMA is "to promote community participation in the protection, use, development, conservation, management and control of the water resources…". In an effort to clarify participation and to ensure representivity, the department has produced a number of guides, including *Guidelines for Stakeholder Participation in IWRM* (DWAF, 2004), *A Toolkit for Planning, Designing, Implementing, Monitoring and Evaluating Public Participation Processes related to the Implementation of Integrated Water Resources Management with particular emphasis upon the inclusion of Marginalised Groups* (DWAF, 2004), and *Public Participation for Catchment Management Agencies and Water User Associations* (Guide 4 in the CMA/WUA Guide Series). Despite these though – and the general acceptance and support for the idea of cooperative governance – the water sector has not been particularly effective at pragmatically implementing these sentiments or making them operational (Mazibuko and Pegram, 2008; Pollard and Cousins, 2008 in Meissner et al., 2013).

There have also been shifts in the thinking around the mechanisms through which representivity is achieved within CMAs, and particularly regarding governing boards. In the early 2000s, the role of governing boards of CMAs was seen to be an important part of the discussion on participation and inclusion[26], but there has been a shift in thinking, with the governing boards of CMAs now more focused on governance issues (professional and skills-based boards) and the notion of a "stakeholder board" being seen as flawed. However, in shifting how governing boards of CMAs are viewed, there has been a failure to look at how we continue to ensure the inclusion of society and stakeholders.

[26] Section 81 (1) of the NWA notes that the governing board of a CMA must be appointed "with the object of achieving a balance among the interests of water users, potential water users, local and provincial government and environmental interest groups". Additional members may be appointed to "achieve representation of disadvantaged persons or communities which have been prejudiced by past racial and gender discrimination in relation to access to water;…" (Section 81 (10) (e)) (Malzbender et al., 2005).

ICMA – This section reflects on the ICMA's experience regarding stakeholder engagement. The establishment of the ICMA together with a growing emphasis on IWRM for the catchment as a whole has required that stakeholders look beyond their own individual needs to the wider context (Pollard and du Toit 2008; Mazibuko and Pegram, 2008). Part of this context emanated from the need to ensure equitable water-sharing arrangements with sectors of the population that were denied access during the apartheid era. Two additional obligations also driving transformation are the increased focus on compliance with the finalised Reserve as well as with the international obligations for water-sharing (ibid).[27] The leadership role of ensuring participation, co-ordinating stakeholders and ensuring a reasonable flow of information has been assumed by the ICMA. Despite some progress in terms of stakeholder representation and participation as intended, it was observed that from the time the ICMA was established in 2004 stretching to 2008 and beyond, board members focused almost exclusively on defending their sectoral needs. This was often very subtle in nature. In addition to this, the Board was large due to the manner in which the Advisory Committee had conceived the manner in getting representivity across present and future water users as well as the differing spheres of government. At times the Board found it hard to make decisions and gain consensus. It was realised through the various challenges experienced that the nature of the Governing Boards needed to change. This shift recognised the importance of having governance focused skills based Boards. This goes back to early Advisory Committee processes where it was debated as to whether the "Rural Development" seat should be represented by someone from that sector, or by someone is well versed in the challenges and needs of that sector and can articulate and champion that sectors needs in strategic planning in a way that maybe someone from that sector may find it hard to do. The new Board, appointed for its governance abilities and skill sets, have driven a renewed focus and shift towards more adaptive and responsive resources management within the ICMA.

In a study in 2008, Pollard and Du Toit (2008) note that the ICMA continued to experience water stress and noncompliance with the Ecological Reserve requirements and most feedbacks were weak or absent (Pollard and du Toit, 2008). For example, it was noted that agriculture, as the major water user in the catchment, only recently considered catchment-wide issues rather than sectoral interests alone. Moreover without the transformation of the irrigation boards to WUAs and the associated increases in the availability of skills and resources, bringing other users such as the municipalities, mining and industry on board has been difficult and regulation has been extremely weak within the ICMA. There has been little clarity and support from DWS who themselves are attempting to establish new systems for oversight (ibid). For example, a key aspect of IWRM is that of regulation (especially monitoring and enforcement) and this has been very weak with only a handful of staff nationally until very recently. Attempts to strengthen feedbacks in this regard have been constrained by lack of clarity on which organisation is to assume such responsibilities.

Colvin et al. (2008:686-687) observed that a great many stakeholder workshops took place across the Inkomati catchment over a period of 12 months including workshops on water allocation reform, stakeholder empowerment, vision development and CMS development, but there was little overall sense of coordination or common narrative. They further observed that there was considerable

[27] Although cross-border international flows have been in place for nearly a decade, this is likely to change under the new transboundary comprehensive agreement.

variation in the style of these workshops, some being done 'to' stakeholders, some 'with' stakeholders (and some 'to' the ICMA, some 'with' the ICMA). The conclusion from these observations was that such processes, although deemed essential, placed considerable stress on the ICMA institutional development team with responsibility to coordinate these activities, as well creating a high potential for 'stakeholder fatigue' and confusion (Anderson, 2002). These observations have far reaching implications regarding cooperative water governance under the rubric of CMAs and allied agencies.

More recently, recognizing that if the vision – 'water for all in Inkomati' is to be realised, the themes equity and participation have always and continue to occupy dominant space in the ICMA stakeholders' empowerment agenda (ICMA, 2013). It is against this backdrop that the ICMA has worked in collaboration with other role players including the Department of Water and Sanitation (DWS), Department of Agriculture, Rural Development and Land Administration (DARDLA) as well as Wits Centre for Environment in capacity building among stakeholders. The beneficiaries include Sabie River Farmers Association, Komati Farmers Union, Suid Kaap Farmers Association, Carolina Farmers and New Forest Irrigation Scheme (ibid). Across the six empowerment workshops facilitated in 2011/12 the central subjects include water use licences, water conservation and demand management as well as potential sources of funding. The ICMA has done a lot of communication and stakeholder engagement work in the Inkomati WMA. However to facilitate successful implementation of the WMA reconfiguration, the roll-out plan requires that communication and stakeholder participation is implemented within the Inkomati and Usuthu areas. This implementation plan will pay special attention to this element of the Inkomati-Usuthu CMA roll-out process (ICMA, 2013).

The ICMA – for the purposes of cooperative governance – is also required to work with government policies, departments and structures. Thus, in order to give effect to the obligation to ensure integrated water resource management, the ICMA must also rely on various plans and strategies of government (ICMA, 2013). In this regard, it must interact with national government around policies and strategies, in particular DWS, provincial government, especially around the Provincial Growth and Development Strategies (PGDS), the Provincial Water Sector Plans, and local government in its capacity as the sphere of government responsible for ensuring water services delivery to communities having Water Services Development Plans (WSDP) as part of their Integrated Development Plans (IDPs). Moreover, there are other government bodies directly impacting on the mandate of the ICMA, such as the Department of Agriculture, Forestry and Fisheries (DAFF) and the Department of Rural Development and Land Reform (DRDLR). The activities under these departments will directly impact the transformation objectives that the ICMA has set for itself (ibid).

The ICMA various stakeholder groups are as shown below:

Table 7: ICMA's CMS Stakeholder Database[28]

Irrigation Boards
Emerging farmer groups
Municipalities
Industry
Water User Associations
Water Service Authorities
Traditional Leader Groups
Community Based Organisations
Mining Companies
Forestry Companies
NGOs
Government Environmental Agencies
Tourism Agencies
Government Departments
Cross-border organisations
IWRM Reference
Communal Property Associations

While there has been engagement with stakeholders in the ICMA, there have also been challenges: i) without transformation of irrigation boards into WUAs and increases in skills and resources, bringing stakeholders on board has been challenging; ii) the lack of enforcement of regulation means that large users continue to use water resources to their benefit, rather than cooperatively; iii) early stakeholder engagement processes, although deemed essential, placed considerable stress on the ICMA institutional development team; and iv) the instability in the institutional policy space has created uncertainty in the catchment. One cannot however underestimate the scale of the transformation challenge and the considerable effort required to build capacity among stakeholders. Van Koppen et al. (2002) has noted for instance that that development of truly participative water management institutions would require "unprecedented dialogues among parties disparate in terms of wealth and power, on issues directly and indirectly related to water".

Mechanisms for engagement

The main functions of the CMAs are: (a) to gather information and advise users; (b) to elaborate a management strategy for the WMA for which it is responsible; (c) to co-ordinate users and other water management organisations in the management area; and finally, (d) to promote community participation in water resource management in the WMA (Article 80 of NWA) (Orne-Gliemann, 2013).

The second National Water Resources Strategy (called NWRS2 for the rest of this report) notes that stakeholder groups and communities should be empowered by CMAs by being involved in structures such as catchment committees, catchment forums and water user associations (NWRS2, 2013: 65). Thus, the key platforms through which CMA issues are re-presented, articulated and deliberated by within ICMA by various stakeholder groups include:

[28] Accessed off ICMA website. Document marked 1st February 2010

- Catchment management committees (CMCs) that deal with WRM issues in specific local areas, or based upon specific functional or operational aspects. The DWS/CMAs has largely not used these vehicles, and it remains an unexplored option;
- Catchment Management Forums (CMFs) that provide external expertise and support on WRM-related issues;
- Water User Associations (WUAs) that bring together local water users, and possibly manage local distribution and/or irrigation schemes; and
- International bodies that manage, monitor and facilitate international cooperation on water resource issues.

We look at WUAs and CMFs in detail further below in the report.

There has been a major policy shift in the institutional policy space regarding CMAs, with the policy review of 2013 resulting in the number of Water Management Areas (WMAs)/CMAs to be established being reduced from 19 to 9[29]. Importantly too, the creation of CMAs has been notoriously delayed with only 2 CMAs having been established since the promulgation of the NWA in 1998. Furthermore, although the delegations have now been promulgated, it took considerable time for the Department to hand over power and duties that were key to the CMAs functioning. All of these factors have created uncertainty as far as the role of the CMAs is concerned, and thus impacted on cooperative governance through these institutions.

While the ICMA was the first CMA to be established in the country and has had a number of positive outcomes, the roles and responsibilities for WRM provided a real challenge for the CMA in its water management area, including for cooperative governance. Roles and responsibilities, particularly regarding allocation, monitoring and enforcement (regulation) have been unclear for a significant period. In effect, these functions have largely fallen 'between two stools' (Pollard and du Toit, 2011). Thus whilst the nascent ICMA attempted to improve WRM this was under a cloud of institutional confusion and occurred largely without any assigned functions and associated resources from the national minister. The regional DWS office on the other hand was of the view that WRM was the responsibility of the ICMA, citing lack of senior staff and resources for their inaction (ibid).

Part of the challenge with cooperative governance within CMAs has also been the challenges with establishment of Water User Associations. While the establishment of all-inclusive Water Users Associations was part of the ICMA powers and functions as delegated by the Minister, progress in this regard has been impacted by the inherent limitations contained in the delegations. This relates to a clause indicating that the newly established Water Users Associations could not appoint staff for their day-to-day administrative requirements. The ICMA wrote a letter to the Minister requesting for amendment in the delegations to allow for the Water Users Associations to appoint their staff, and an approval of the requested amendment of the delegated powers and functions is still being awaited.

In the interim, the ICMA continues to play a constructive role by way of supporting the service provider appointed by DWS to facilitate the establishment of Water Users Associations in the

[29] This means that the two CMAs that have already been established need to be expanded in order to include the additional area in terms of WMAs.

Inkomati Catchment Management Area. Considerable progress has been recorded with regard to supporting Elands River Catchment Water Users Association in business plan development (ICMA, 2012:31[30]). In terms of establishing Water Users Associations and transformed Irrigation Boards, the ICMA established 2 WUAs as of 2012 and supported the 4 existing WUAs (ICMA, 2012).

However, the approval of the proposed amendments to the NWA and delegated powers and functions of the CMAs by the Minister is still pending and needs to be finalised before further WUA's can be established (ICMA, 2012). Priority is also being given to the establishment of the Sabie River WUA and to resuscitate the Elands River WUA, as well as to transform irrigation boards. The ICMA also noted the recommendations on the amendment of the NWA in respect of voluntary membership (ICMA, 2014). Importantly, there has been a policy shift towards the dis-establishment of WUAs and there is uncertainty on what happens next, further stalling the already on-going processes. The mooted dis-establishment of the WUAs does not necessarily wash away the nascent challenges associated with localised institutions.

In terms of cooperative governance, the ICMA has been active in departmental initiatives, including the programme on the protection of wetlands, the environment and water resources with DARDLR as the lead agent, and the ICMA continues to partake in Mpumalanga Wetlands Forum. During 2011/12 financial year, a total of twenty awareness campaigns targeting historically disadvantaged individuals were conducted focusing on a range of topical areas including converting agricultural water to tourism, water resources management and funding, water conservation and demand management, and water resources protection. The ICMA provided inputs on and contributions to the Integrated Development Plans, Water and Sanitation Development Plans, Provincial Growth and Development Strategies, Spatial Development Plans and other relevant planning Documents (ICMA, 2012[31]). Notably, IDPs and SDPs were collected but due to shortage of staff inputs could not be made to the documents. The ICMA has been a partner in the development of the Mbombela Municipality Bulk Water Strategy and is collaborating with DWS in the Mbombela Water Resources Reconciliation Strategy (ICMA, 2012).

One of the challenges observed by the ICMA though, is that of poor cooperation between various spheres of government and the ICMA, where inadequate legislation to facilitate cooperation between public entities and government leads to business processes not being aligned with governmental policies and thus inability to perform IWRM (ICMA, 2013). This is coupled with uncertainty about roles and responsibility of DWS Regional Office (institutional transformation).

Cooperation and collaboration between CMAs and direct water users is also critical. For example, municipalities and other large water users need to prioritise interaction with CMAs. Although CMAs do not provide water services, they play an essential role in ensuring the availability of sufficient water resources (and their quality) for municipalities and other direct users such as mining, industrial and agricultural users among others (ICMA, 2013).

[30] Please note, the DWS stated policy is that WUAs will be discontinued. It is not clear where or who will take over their functions.
[31] ICMA, 2012 Annual Report 2011-2012. No Turning Back.

Key Lessons on Cooperative Governance

There are a few key lessons from the case study of stakeholder engagement/cooperative governance through the ICMA:

- Cooperative governance is mandated in the South African context through the creation of decentralised water management institutions which are required to engage with both government and non-governmental stakeholders as far as management of water is concerned
- The focus of the Governing Board should be towards the governance of the CMA and not on engagement and representivity on behalf of a sectors which should take place through established committees or forums. These platforms are needed and will require support in order to function (see later chapters).
- While the creation of CMAs is lauded, the process has been fraught with delays and uncertainty, including the reduction in the number of CMAs to be established, the apparent reluctance of national government to delegate powers to the CMAs, and lack of clarity regarding stakeholder engagements as well as the mechanisms through which marginalised stakeholders will be given a voice. The policy movements in the water resources space have created a great deal of uncertainty for stakeholders. Furthermore, since these changes have come about with little engagement with CMAs, the legitimacy of the CMAs has been questioned, for example, CMAs cannot explain to their stakeholders why WUAs are being disestablished. This undermines the credibility of the CMAs, and may impact on cooperative governance in the catchments.
- The reduction of the planned number of CMAs from 19 to 9 is envisaged to have several advantages, including reducing the management, technical and administrative demands of CMA establishment (as well as associated costs) (DWA, 2013), but there is a concern that local issues may be missed. This therefore places greater emphasis on the need for better articulation of the IUCMA approach to engagement with stakeholders.
- As far as marginalised stakeholders are concerned, Mirumachi and Van Wyk (2010), for instance, argue that the challenges faced within the context of multi-stakeholder institutions relate to power disparity, the interdependence of actors and the perceptions about risks associated with inclusive decision-making. While the case study of the ICMA reinforces the commitment to decentralised water management, more needs to be done with regard to capacity building for implementation. Some for instance recommend that more attention should be placed on prioritising and designing processes for learning about how to do adaptive IWRM at the CMA, WUA and community levels (see Colvin, 2007b).
- Better engagement also needs to occur between different government departments. Mazibuko and Pegram (2006) write about the need for CMAs, as the future managers of water resources, to cooperate effectively with local government in order to realise IWRM (see also Meissner et al., 2013).
- There are concerns around the finances required by CMAs to undertake studies as well as to ensure sufficient engagement, and finding this balance will probably prove to be difficult.

5.1.2 Water User Associations

Motivation for Collaboration

Water reform in South Africa, with the promulgation of the National Water Act in 1998, attempted to democratise water management by creating decentralised water management institutions and calling for the participation of individual water users (Orne-Gliemann, 2013). WUAs operate at a restricted localized level, and are co-operative associations of individual water users who wish to undertake water related activities for their mutual benefit (Orne-Gliemann, 2008). Subsidiarity implies that WUA should be responsible for those functions that are most effectively and/or efficiently performed at a localised level by an association of water users (Pegram and Mazibuko, 2003). WUAs may be established for a single purpose, representing similar users (such as irrigation), or may be multi-sectoral.

According to the department, the constitution of a WUA can provide for the following functions to be performed by the WUA[32]:

- To prevent water from any water resources being wasted
- To protect water resources
- To prevent any unlawful water use
- To remove or arrange to remove any obstruction unlawfully placed in a watercourse
- To prevent any unlawful act likely to reduce the quality of water in any water resources
- To exercise general supervision over water resources
- To regulate the flow of any watercourse by: clearing its channel; reducing the risk of damage to the land in the event of floods; and changing a watercourse back to its previous course where it has been altered through natural causes
- To investigate and record: the quantity of water at different levels of flow in a watercourse; the times when and the places where water may be used by any person entitled to use water from a water resources
- To construct, purchase or otherwise acquire, control, operate and maintain waterworks considered to be necessary for: draining land; and supplying water to land for irrigation or other purposes.
- To supervise and regulate the distribution and use of water from a water resources according to the relevant water use entitlements, by erecting and maintaining devices for: measuring and dividing; or controlling the diversion of the flow of water

Integrated water resources management requires that WUA need to address the needs of all water users from all water resources (surface and ground water) within the area of jurisdiction. This is a fundamental change between Irrigation Boards and Water User Associations (Pegram and Mazibuko, 2003), and representation “in appropriate ways” on the WUA is required. Interestingly, while the redress of past inequities is primarily the responsibility of DWS and the CMA, WUAs have a responsibility to include and build capacity of disadvantaged communities that are using water within their area (Pegram and Mazibuko, 2003).

[32] https://www.dwa.gov.za/documents/publications/WMIoverview.pdf

Orne-Gliemann (2008) notes that along with the traditional functions of the WUAs that are mentioned in the NWA, a strong political agenda has also been entrusted to these local WM institutions, with democracy, equity, representivity and empowerment of historically disadvantaged individuals (HDIs) added as requirements for the establishment of WUAs. She notes though that there are questions regarding the achievement of these numerous objectives (IWRM, community participation, political agenda) within these local institutions who already struggle with historical legacies. In fact, various accounts of moribund or inactive WUAs suggest that the model that has been used for the creation of WUAs does not respond fully to local people's expectations and needs in terms of water management (WM) institutions (Faysse, 2004) (Orne-Gliemann, 2008). This has been exacerbated by the fact that these institutions have received little to no support from government in what is an important social issue.

It is estimated though that only 25% of agricultural water is supplied by institutions, implying that many agricultural water users are not represented on water user associations, which in turns implies that theft and wastage of water is occurring. To help remedy the situation, the department needs to invest in establishing institutions in those areas where none exist, and strengthen the current ones. Furthermore, the department needs to motivate for all relevant stakeholders within a localised area to participate in the relevant WUA, rather than the current voluntary membership model that is being implemented (Vermeulen et al., 2015).

While departmental/CMA support is required in the creation and management of Water User Associations, including in making transformation aspects a reality; technical/managerial/financial support to WUAs; and oversight and support from the department/CMAs in establishment of WUAs, in practice, there has been little to no support in assisting institutions with regard to transformational or management aspects.

Stakeholders

WUAs are meant to ensure the representation and consultation of local users of water. The membership of a WUA is defined in its constitution, and is based on entitlement to water use. Importantly, while all water users in the WUAs area of jurisdiction should be represented, membership of a WUA is actually voluntary.

WUAs are meant to bring together former irrigation boards (IB), former government scheme irrigators, smallholding and emergent farmers, municipalities, industries, recreational bodies, forestry representatives, and all other potential users of water (Orne-Gliemann, 2008). Since most towns are solely supplied raw water by WUAs/IBs who are responsible for ensuring sustainable water service provision to WSAs, WSAs should thus be sitting members of WUAs and IBs, and also financially contribute to WRM, planning and development (Pegram and Mazibuko, 2003).

Transforming irrigation boards into WUAs was always seen as something that was going to be challenging. While these boards previously tended to focus on the management of an irrigation scheme (canal system and possibly associated WR infrastructure), the major challenges lies in expanding their representation to include other groups of users (possibly emerging farmers and community interest), which requires a redefinition of the area of jurisdiction. This implies the need for a change in the WUA structure (particularly the management committee), management systems

and institutional relationships, with the move from a relatively homogeneous association to a potentially less socially cohesive membership group (Pegram and Mazibuko, 2003).

Orne-Gliemann (2008) notes that while the department has come to a good understanding of setting up of WUAs and transformation of irrigation boards for large commercial activities including farming, adaptations are needed for WUA to become meaningful and efficient institutions for smallholder irrigators.

There has been a shift in the types of WUAs – while early on the focus was on getting irrigation boards transformed and representing emergent farmers, later on there was a drive to amalgamate irrigation boards into larger WUAs to reduce the number of institutions as well as to provide the opportunity for better representation. This also tried to solve the problem of an increasing number of institutions under the control of the department and the associated challenges of financial and personnel capacity, as well as challenges with governance and possible co-operation between a large number of institutional organisations (Orne-Gliemann, 2013). Orne-Gliemann (2013) feels that this evolution of WUAs has meant that WUAs have progressively lost their 'local' character and moved away from the concerns of small-scale irrigation scheme farmers, impacting on participation capacity of small-scale irrigation farmers (Orne-Gliemann, 2013).

There have been challenges regarding representivity on WUAs, and particularly around the scale of WUAs and how to represent future water users. In the Limpopo province, for instance, the chairperson of the Thabina irrigation scheme in the Limpopo province, when asked about the inclusion of the outside settlement in the WUA, expressed disagreement with outside settlement participating in the WUA, noting that as they are not eligible to access to land within the scheme there would be no interest for them in attending meetings of the management committee (Orne-Gliemann, 2008). While this may be correct in terms of the fact that water user associations represent users of water in a specific geographical area, this presents a challenge in terms of how to include previously disadvantaged people in the area who may potentially want to be future users of water. The lack of support from the department has not helped the situation, and created uncertainty regarding roles and responsibilities in terms of who is responsible for getting new actors to participate in institutions like WUAs and how they can meaningfully participate.

Since WUA function at a restricted localised level and are there to allow for better management of water among localised water users, there is a question around whether and how customary water management structures can be integrated into the WUA space. Malzbender et al., (2005) notes that the Act does not explicitly recognise (or mention) customary water management structures, but that they could be integrated into the water management structures through the formation of WUAs, with appropriate guidance from the department. One challenge is that the establishment of a WUA is subject to highly formalised procedures and these procedures are incompatible to traditional systems whose modus operandi is more fluid. In fact, the very success of the "traditional systems is that they remain flexible and responsive, allowing for cost-effective dispute resolution" (Malzbender et al., 2005). In addition, the establishment of these institutions is highly bureaucratic and costly, and many rural communities do not have the financial and institutional capacity to run a WUA. This is compounded by the fact that the department has been unclear regarding the availability of funds to support the establishment of WUAs, and there are disparities in approach between provincial offices thus creating further uncertainty. In effect then, WUAs may not a suitable vehicle for the

integration of customary arrangements into the overall water management framework (Malzbender et al., 2005).

It is important to remember that while the management of a WUA requires a host of water use stakeholders to work together, the association also has to work cooperatively with a range of institutions in order to function effectively as part of the larger water resource management architecture in South Africa. Pegram and Mazibuko (2003) note the institutional partners and primary relationships, as in the figure below:

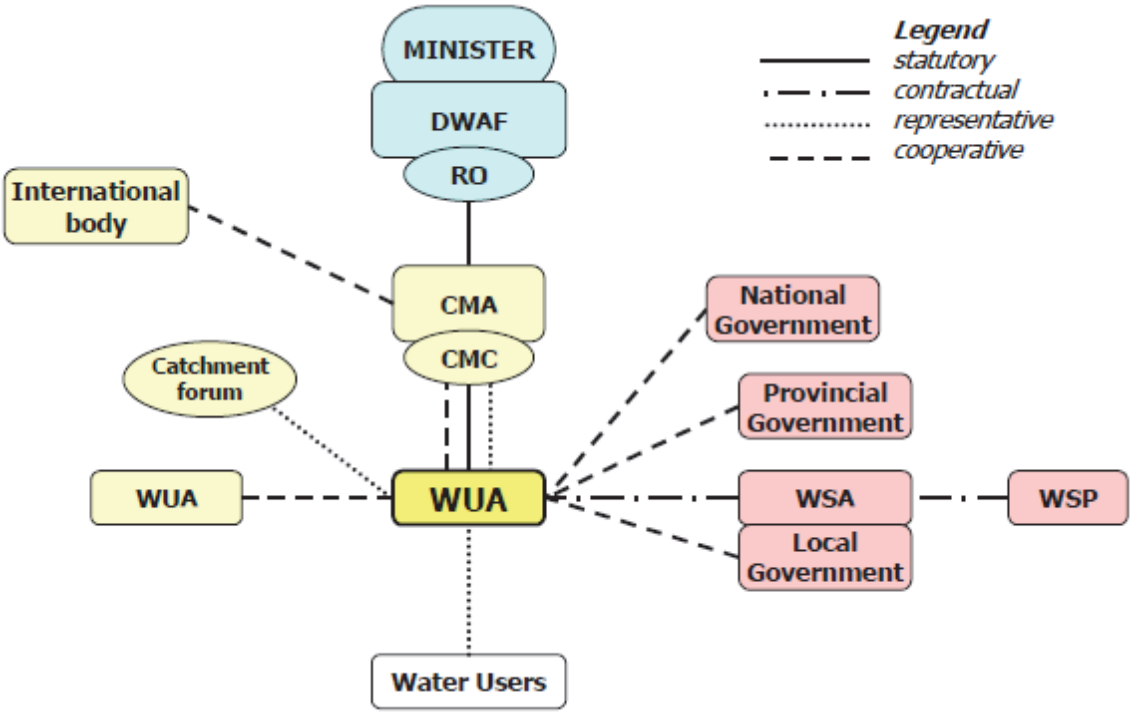


Figure 9: Primary Institutional relationships between a WUA and other groups (Pegram and Mazibuko, 2003)

Mechanisms for Engagement

The NWA defines WUAs as "co-operative associations of individual water users" operating at the local level. As representatives of local water users, these institutions are key instruments in transformation. There are three generic ways in which a WUA can be established (Pegram and Mazibuko, 2003):

- Firstly, existing irrigation boards are required to transform into WUAs, and to expand their membership to include all water users within the area of jurisdiction;
- Secondly, the Minister through the department can initiate the process of establishing a new WUA; and
- Thirdly, a group of users may propose the establishment of a new WUA to conduct activities collaboratively, and this may range from irrigators developing a scheme, through waste dischargers cooperating for regional treatment, to groups managing a water resource for recreation.

In all cases, consultation processes are required to ensure that all users and stakeholders with an interest have the opportunity to provide input and/or become involved in the WUA. In practice, the types of WUAs are quite different. Many WUA are specifically established to take responsibility for waterworks, ranging from irrigation canals to small dams. Some manage large infrastructure schemes privately, and others managing infrastructure schemes which are owned by government. In addition, some WUAs are the primary or only provider of bulk water to municipalities.

There has been some contention on what WUAs are in practice, and the WUA space has been dynamic and changing in South Africa. Importantly the WUA space is a socially diverse landscape still strongly marked by segregation, thus leading to the "establishment of a disparate corpus of associations with modes of existence and operation strongly marked by their location and year of creation" (Orne-Gliemann, 2013).

Orne-Gliemann (2013) notes that the department distinguishes between three types of WUAs according to the identity of the main users involved:

- WUAs stemming from the transformation of one or several former Irrigation Boards (IB) made up essentially of large commercial farmers;
- WUAs stemming from the transfer of Government Water Schemes (GWS) to farmers; and finally
- WUAs bringing together historically disadvantaged individuals (HDI) such as small-scale irrigation schemes' farmers (DWAF, 2002a; DWAF, 2007)

Orne-Gliemann (2013) notes that this disaggregation does not take into account the different scales of WUAs, the diversity of WUAs within a category of associations, omits new WUAs which bring together middle size commercial farmers (and not just disadvantaged populations), and does not account for the evolution of the policy and practice of WUA establishment which has increasingly since 2004 favoured multi-sectorial associations established at a scale which is becoming increasingly larger.

Commentators have noted that the implementation of water reform, particularly as far as governance and management of water is concerned, has been problematic especially as far as user participation is concerned. Orne-Gliemann (2013) notes that the case of small-scale irrigation schemes in the former Bantustans is particularly problematic. It was expected that with the mooting of WUAs, smallholder irrigation scheme development would be assisted but this has largely not materialised. Commentators like Van Averbeke et al. (2011) note that the impact of smallholder irrigation scheme development appears to very limited: "For example, of 45 smallholder irrigation schemes sampled in Limpopo province, 28 claimed to be part of a WUA but only one effectively participated in its activities. Payment for water on these 28 schemes, which was linked to WUA membership, was taken care of by the Department of Agriculture on behalf of farmers. The results of several studies have indicated that smallholders would face financial difficulties if they had to pay for the water themselves".

One pilot study was done at the Thabina irrigation scheme in the Mopani district of Limpopo Province,[33] which represents 233ha and 123 farmers. Ten years after the WUA was established, only 20% of the 233ha scheme was cultivated, three out of the five pumps supplying water to the scheme had been stolen or vandalized, the main canal from the Thabina River was obstructed in most parts, and the WUA has very little activity. Regarding cooperation and collective action, while cooperation seems to be strongly valued and undertaken for simple tasks such as water allocation or canal clearing, it does not come out as an automatic or preferred strategy to deal with substantial problems (water scarcity for example) with farmers reverting to individual actions. One reason for this might be the vandalising of the pumps: "individuals are less likely to contribute if they do not expect (or are not sufficiently assured) that others will reciprocate" (Orne-Gliemann, 2008).

Orne-Gliemann (2008) further notes that financial sustainability, participation and institutional autonomy are some of the most common characteristics pointed at as lacking in small-holder irrigation scheme WUAs in South Africa. To tackle these difficulties and ensure that WUAs embrace the political agenda they were entrusted with, the government has developed an approach using clusters of irrigation schemes – it is thought that increasing the scale of WUA would allow greater pooling of resources and lower organizational costs, thus facilitating the financial sustainability of the institutions. However, expanding WUAs' boundaries also means defining them according to heavier hydrological bases and strengthening the institutions' water management functions. Recent accounts of implementation and operation of such cluster WUA have however pointed at a continuous lack of participation and interest from the farmers themselves, jeopardizing the institutional autonomy and effectiveness. Findings suggest that large WUAs might lack meaning and utility for small irrigators (Orne-Gliemann, 2008).

In another study, Kemerink et al. (2014) analyse the impact on the access to and control over water resources for the various groups involved in a catchment located in the Thukela River Basin situated in the KwaZulu-Natal province of South Africa. The catchment is primarily inhabited by two distinct groups: white commercial farmers residing in the lower parts of the catchment and Zulu communities in the upstream parts of the catchment. Almost two decades after the end of apartheid, the legacy of apartheid is still clearly visible in the study catchment with its large white-owned commercial farms, relatively crowded former homelands and impoverished urban townships.[34]

As far as the establishment of WUAs is concerned, four irrigation boards (commercial farmers) proposed to the department that they form one WUA instead of four separate WUAs because the four irrigation boards are located along interconnected tributaries in one tertiary catchment and therefore represent an integrated hydrological unit which share hydraulic infrastructure and associated complex administrative and financial systems. After several discussions with the commercial farmers, the department allowed the establishment of a single WUA for the catchment.

[33] Thabina is one of the three government smallholder irrigation schemes chosen for the pilot revitalization program administered by the Limpopo Province Department of Agriculture after 1998 (Veldwisch & Perret, 2004).

[34] The current land holdings of the commercial farmers in the catchment range between 30 to 1,500 hectares with private dams and sophisticated hydraulic infrastructure for irrigation as well as pastures for livestock (Méndez, 2010). The residents of the former homelands have access to plots with sizes between 0.5 and 4 hectares that mainly depend on rainfall with which to cultivate maize and beans (Méndez, 2010; Kemerink *et al*., 2011).

The four chairmen of the irrigation boards became de facto members of the management committee of the WUA (Kemerink et al., 2014).

There were several challenges with the manner in which the WUA was formed: Firstly, transforming the existing irrigation boards into WUAs has meant that the commercial farmers in the area remain in command of the process. Secondly, by establishing one WUA instead of four, the irrigation boards did not have to include historically disadvantaged individuals within the boards and did not have to change their governing rules. Thirdly, by defining the area under the control of the WUA based on the hydrological boundaries of the tertiary catchment and simultaneously stating in the constitution that the objective was to control development in the area gave a powerful tool to protect current water users in the water-stressed catchment and basically meant that initiatives of new water users such as emerging farmers need to be discussed and agreed upon in the WUA before permit applications can be submitted.

Fourthly, historically disadvantaged water users were only included once the scene had been set, and once there were included, issues such as language barriers, understanding of role of the WUA and membership levies were not adequately explained/dealt with. Fifthly, commercial farmers were asked to register their water use which gave them the opportunity to register additional water use in anticipation of future use and/or reallocations, thus reinforcing inequities.

Thus, in setting up the WUA in the manner in which it was done, the existing power structures remain while the WUA has been "captured" by commercial farmers, thus reinforcing previous inequities. In this regard, the role of government in overseeing the process of establishment of WUAs needs more reflection. Furthermore, government should assist as far as providing an understanding to stakeholders regarding the inclusion of future users of water (users who are currently not using water in 'relevant' quantities), and furthermore in seeing that inequity in access to land does not legitimize inequity in access to water, and to decision-making platforms.

Finally, it is clear that commercial farmers have experience in managing water within similar organisations and have a strong collective identity, and were thus able to easily "take up the reigns" in forming the WUA. In contrast, the WUA set-up is out of sync with systems in former homelands, thus making it difficult for them to be effectively represented in the current set-up of WUAs. Importantly, the challenges highlighted above mean that the inclusion and representation challenges stem not just from the content of water management issues, but the process of setting up and governance of institutions that are meant to oversee collaboration (Kemerink et al., 2014).

Key Lessons on Cooperative Governance

While the NWA mandates stakeholder engagement/cooperative governance at the local level through the creation of WUAs, there have been numerous challenges with effecting this:

- The National Water Act introduced the concept of transformation of irrigation boards into WUAs in order to improve the access of HDIs to water resources and enable participation in water resource management activities. However, the pace of transformation has been very slow, including for the following reasons (Vermeulen et al., 2015):
    - Delays from DWS in processing applications for institutions to transform Irrigation Boards to WUAs

  - Lack of financial resources and other support to support the establishment of new 'developmental' WUAs. As a result, the impact of smallholder irrigation scheme WUAs appears to have been very limited, with these WUAs facing severe sustainability challenges and having very little activity. In addition, the evolution of the WUA environment has meant that associations have become larger thus moving away from the concerns of small-scale irrigation scheme users. While including customary water management structures within WUAs is an option, the practical functioning of WUAs and customary management structures appears to be quite different, thus creating challenges for meaningful participation of previously disadvantaged groups that are currently governed through traditional systems
  - Lack of capacity from government to provide support on a large scale.
  - Oversight of WUAs has been poor due to the delay in the creation of CMAs.
  - There have been challenges with transforming of previous irrigation boards into WUAs. For instance, one case study showed four irrigation boards consisting of commercial farmers formed a single WUA which essentially resulted in consolidation of power structures as well as water allocations, while effectively excluding both previously marginalised water users as well as future water users. Importantly then, inclusion and representation challenges seem to stem not just from the content of water management issues, but the process of setting up and governance of institutions that are meant to oversee collaboration.
- Fundamentally, water allocation reform is a core government policy and the DWS has failed to see the importance of WUAs in supporting transformation in the sector. To leave the responsibility of this transformation in the unguided and unsupported hands of current irrigation farmers or untrained officials was in effect irresponsible. This required a significantly supported drive by experts against a well-resourced project.
- In addition, both government officials and WUAs do not appear to be pushing for future users of water to be represented adequately on WUAs. This is compounded by land reform challenges, with land issues constraining transformation initiatives in irrigation boards and water user associations. An integrated strategy and plan is required to achieve better synergy regarding this (Vermeulen et al., 2015).
- While there have been challenges with operationalising cooperative governance through WUAs, the operational functions of these localised institutions cannot be transferred to CMAs and therefore there is a need for this type of institution to bring stakeholders together at a local level. This could be through localised institutions with adequate powers sitting below CMAs. The functions of local institutions that cannot be transferred include the following (Vermeulen et al., 2015):
  - Local compliance monitoring of water resource abstraction and quality
  - Implementation of local conservation measures to ensure continued access and sharing of the shared resource
  - Protection of the resource from over-use and pollution
  - Day-to-day operation of infrastructure and abstraction works, where applicable
  - Provision of raw water to agriculture, mining
  - Supporting access to municipalities that do not have the capacity to source their own bulk water supply or are not connected to a regional bulk water supplier

  In addition, the remaining 75% of agricultural water that is not overseen currently by any institution, should come under a localised institution.

There needs to be an alignment between local government and WRM institutions in order to sustain developmental and integrated water resource management at a local level through participation and engagement of local government in WRM, payment of WRM charges, clarity of roles and responsibilities, stewardship of water resources (Vermeulen et al., 2015). Local government as the champion for local economic development does have a key role to play in supporting the use of water productively/ economically within municipal areas, and as such can act as a catalyst for change and upliftment.

5.2 Case Studies in Societal Engagement through non-legislated Mechanisms

5.2.1 Private Sector

The Global Risks report, published by the World Economic Forum (WEF), highlights the most significant risks worldwide, by drawing on the perspectives of experts and global decision-makers. In its 2015 edition, "water crises"[35] is cited as number 8 in the top 10 global risks in terms of "likelihood", and number 1 in the top 10 global risks in terms of "impact". Large corporate businesses are thinking much more carefully about the risk of water crises to the business environment, and are seeing the need to consider governance partnerships in order to reduce the risk to business.

Motivation for Collaboration

The increasing pressure on water resources has forced the private sector to both look more closely at its water use practices, and to engage with other stakeholders to mitigate risks. The case for private sector engagement in water resource governance is premised on the fact that water-related risks are shared between different stakeholders, including governments, businesses, communities and the environment. Thus, one of the basic assumptions for water-related collective action is that challenges translate into risks and also opportunities for stewardship. Collaboration offers the opportunity for affected parties to come together to mitigate risks or pursue improvement in order to deal with challenges. Thus, benefits emerge from a "shared risk, shared responsibility, and shared benefit" framework, where problems that pose a risk to businesses, society, governments, and ecosystems can best be addressed through joint efforts that generate common understanding, strategies, and solutions. Private companies are usually willing to pursue collective action when internal strategies cannot be used to effectively manage the physical, regulatory or reputational risks associated with water-related challenges (Global Compact, 2013).

The key benefits of collective action are thought to be as follows (Global Compact, 2013):

- Clear articulation of problems, shared ownership of solutions, and clarity of joint purpose
- More informed decision-making by the business initiator and other parties to the engagement
- Broader scope and depth of motivation and momentum in support of water-related improvements
- An expanded pool of expertise, capacity, or financial resources focused on fostering change

[35] "Water Crises" is defined as a significant decline in the available quality and quantity of fresh water, resulting in harmful effects on human health and/or economic activity.

- More durable outcomes with strong support from the engaged parties
- Establishment and maintenance of credibility and legitimacy with key interested parties, resulting in improved legal and social license to operate
- Stronger, more sustainable water governance by engaging multiple stakeholders, including water users

SWPN-SA: The South African government has recognized that reducing the gap between water supply and demand requires the commitment of the public and private sectors, as well as citizens. The DWS is thus leading the Strategic Water Partners Network-SA (SWPN-SA) with pioneer partners including the Water Resources Group (supported by the World Bank and the International Finance Corporation), World Economic Forum, South African Breweries, Coca-Cola, Anglo-American, Sasol, Nestle, Eskom and the NEPAD Business Foundation. By exploring partnerships between industry and municipalities, the SWPN-SA aims to upgrade and rehabilitate inadequate infrastructure that is central to securing water supply around the country. The broader goal is to build a leadership group that will seek innovative joint solutions that support government's strategy and overall security. The SWPN-SA held its inaugural meeting in November 2011.

Importantly, the formation of the SWPN-SA marks a shift in the relationship between private sector companies and government, signalling a more trusting relationship between the two. Nandha Govender of Eskom Holdings, for instance, notes that "the SWPN-SA provides a mandated vehicle for public and private sector collaboration that focuses on solutions. The traditional 'we and them attitude' is being addressed and we find great value in honest and committed deliberations" (SWPN, 2013).

Since its formation in 2011, the SWPN-SA has organised itself into working groups which are mapping, charting and implementing policies that strengthen and support water management strategy and practice. The SWPN-SA is divided into three working groups: effluent and wastewater management; water efficiency and leakage reduction; and agriculture and supply chain. Among the projects are those that aim to conserve water, reduce leakages, expand the capacity of local municipalities, and provide the private sector with incentives to further expand effluent treatment and re-use initiatives that are already being undertaken. The partnership is built on consolidating leadership, resources and technical capacity.

One of the projects that falls under the SWPN-SA is the Anglo American's eMalahleni Water Reclamation project, which we consider in further detail below.

Anglo Coals eMalahleni Water Reclamation Project: The city of eMalahleni lies in the Olifants River Catchment. Too little water on the surface is a problem for communities, while too much water underground is a problem for the mines in the region. More than a century of open-cast and underground mining in the eMalahleni areas has led to significant effects on the hydrological cycle, with surface water making its way underground and becoming polluted as it comes into contact with sulphur-bearing pyrite. Accumulation of water in mines has already increased to the extent that it hampers mining activities and poses a potential safety risk (Holtzhausen, 2006).

In 2007, Anglo American recognized water as a core business risk, for both long-term strategy and current operations. The risk concern was threefold: 1) The mines, situated at a geological low in the

catchment, are at risk of flooding, which could sterilize coal reserves, terminating further mining opportunities; 2) new regulatory requirements curtailed the release of mine water into the catchment without prior treatment; and 3) the rapid development of the city of eMalahleni resulted in the demand for potable drinking water exceeding supply, endangering the ecological reserve and users downstream of the city. The exploration of alternative water sources to supplement demand thus began (Global Water Compact, 2013).

Given the water risks to the company, it recognised that it needed to work beyond itself and in the catchment in order to reduce the risks to the company. To this end, Anglo American's Thermal Coal invested a decade of research and development into mine water treatment technology, and this was aligned to the central government's mine closure and rehabilitation strategy, and the employment, development and environmental requirements of local authorities. The research involved a partnership with South Africa's power utility, Eskom, and all of the major mining houses in the Highveld coalfields.

In 2010, Anglo developed a high-level strategic plan for water that includes working beyond the "factory fence" and focuses on resilient business, stewardship, and catchment management. Each particular business region (e.g. Southern Africa) has an engagement strategy tailored to the regional perspective and to the operational and water concerns there (Global Compact, 2013). Anglo notes that water security is one of its key commitments and that it will achieve this – as shown in the figure below – through operational excellence, exploiting technology and partnerships and engagement (Naidu, 2012).

Figure 10: Mechanisms to Achieve Water Security for Anglo (Naidu, 2012)

In response to the need for water security in the region, Anglo American established the eMalahleni Water Reclamation Scheme to treat the water from its local operations, and that from a nearby, disused mine owned by another mining company. The scheme was commissioned in 2007, and Anglo put in place the infrastructure needed to deliver the treated water directly into the municipality's system. The scheme treats mine water from current active mining operations but intends to remain in operation well beyond the conclusion of active mining, to sustainably manage environmental needs and make drinking water available to the local community into the future.

It was envisaged that the sale of the water will allow Anglo Coal to offset some of the costs of treating the water. In addition, the option for the municipality of buying much-needed water from Anglo Coal was much cheaper than buying bulk water from the Vaal River Eastern Sub-System Augmentation Project (VRESAP) (Holtzhausen, 2006). Thus, in eMalahleni, collective action through

Anglo's eMalahleni Water Reclamation Project was used to mitigate the water quality and quantity concerns of the region (Global Compact, 2013).

The second phase has been designed to manage water from five coal mines, some of which have already reached the end of their life, and includes mines owned by a competitor mining company. Anglo is thus moving beyond seeking solutions purely for its own mines, and is looking at a holistic way of dealing with the water problems of the entire region. The project is replicable and is being examined by six of Anglo's ten Thermal Coal operations. It has already been replicated by a private mining company, Optimum Coal Holdings, who commissioned a plant in June 2010 to the east of eMalahleni. Four other projects in the Witbank Coalfields are in various stages of project development based on the same model as the eMalahleni plant. Mines other than coal are also looking to replicate this model. Considerable know-how has been developed as a result of this project with Anglo American recently asked to provide input to government on a national desalination strategy.

Stakeholders

The Guide to Water-Related Collective Action of the CEO Water Mandate which guides private sector companies with regard to the stakeholders to be involved in collaborative engagements notes that once the water-related challenges that require engagement have been identified, companies should then determine the stakeholders to be engaged with in order to achieve the desired outcomes. The Guide (Global Compact, 2013) identifies the following categories of potentially interested parties:

- Parties dependent on the shared water resource
- Governmental organizations charged with setting and implementing the system of governance for the management of the shared water resource
- NGOs with missions associated with good management of the resource
- Donors and aid agencies
- Private or public entities with direct operational responsibility for controlling the quality or quantity of the water resource and providing treatment, distribution, or collection services
- Research institutions that provide data or analyses on water resource status
- Equipment and consulting service vendors with expertise in water resource management
- Community-based organizations with a general interest in the equitable allocation and overall health and sustainability of the resource

The list above of potentially interested parties is quite large. The Guide notes that there is a need to identify the most critical, legitimate, and relevant parties to engage given the company's specific water-related challenges and intended action areas. Among the questions that can be addressed in doing this exercise are the following:

- Who has what type of interest in the identified challenges and planned action areas?
- Who can best help address the identified challenges as a partner?
- Who needs to be part of the solutions that will address the identified challenges?

The Guide recognizes that some stakeholders may be more capacitated than others, and that some may be more willing to collaborate. It notes that while it is often enticing to exclude dissenting parties, this can lead to challenges such as parties going out of their way to block progress.

Furthermore, some stakeholders may be less interested in collaboration to a lack of recognition of shared risks, responsibilities and benefits, and this may require a joint exploration of the available information in order to generate understanding and position the water-related challenges. Thus, more engaged forms of collective action (collaborative and integrative) tend to begin with information-sharing to create a common understanding of the challenges and the potential responses.

Capacity challenges typically result from a lack of technical expertise or financial resources to engage as an equal and effective participant in collective action, and that this in turn will lead to an inequitable process with asymmetrical participant influence in which some parties are unable to represent their needs and interests and thus push for solutions that meet these needs and interests. The Guide notes that capacity building is require in most rural or developing communities.

SWPN-SA: The SWPN has brought together a diverse set of private companies, including banks, mining companies, municipalities, beverage companies, national government departments, environmental agencies, donor agencies, WSPs, local government, and other institutions together in order to collaboratively find solutions to water resource challenges in South Africa.

The members of SWPN-SA include Absa, Anglo-American, BHP Billiton, the City of Johannesburg, the City of Tshwane, Coca-Cola, Development Bank of Southern Africa, the Department of Water and Sanitation, Endangered Wildlife Trust, Eskom, Exxaro, GIZ, Johannesburg Water, Nestle, South African Breweries, South African Irrigation Institute, South African Local Government Association, Sasol, TCTA, the Water Research Commission, WWF and Xstrata Coal.

Anglo Coals eMalahleni Water Reclamation Project: Anglo Coal, Ingwe Collieries and the municipalities are among the stakeholders in Anglo's eMalahleni Water Reclamation Scheme (Holtzhausen, 2006). With Anglo American taking the lead, a joint body was established as the vehicle through which integrative collective action could take place (Global Compact, 2013). Anglo's presentation to the EWISA conference of 2012 shows the identified stakeholders in the figure alongside (Naidu, 2012). These include national government departments, municipalities, mining companies, research institutions, water user associations, banks and others.

Figure 11: Stakeholder Engagement in the Anglo's eMalahleni Water Reclamation Project (Naidu, 2012)

Ingwe project engineer Wendy Mey says the fact that competing mining companies have cooperated to find a solution that will not only benefit the environment, but also surrounding communities, is a milestone in itself (Holtzhausen, 2006). Anglo Coal senior project manager Peter Gunther notes that

throughout the project regular consultation has ensured that the local authority's interests have been recognised. The municipality notes that it has been part of the process from the start, and has praised the mining companies' efforts in establishing a good relationship with its prospective client. Furthermore, a series of community meetings have been held to appease fears the people of eMalahleni might have with regard to drinking treated mine-water. The municipality has noted that communities have been well informed, and a regular newsletter, in which people can comment on the project and where queries can be answered, has been suggested to allay any future concerns (Holtzhausen, 2006).

Although collective action is lauded as a potential way in which corporates can mitigate larger scale water-related concerns, there are also risks associated with shifting power in new forms of collaborative governance. A major concern is the risk of corporate capture, as areas where water is a risk, may be where legislation is not implemented adequately. There is also a risk that stewardship interventions, although meant in a positive light, have perverse outcomes which are not supportive of sustainable water management.[36]

In addition to risks for the private sector, there are risks for government too. Perceptions of corporate capture may reduce the legitimacy of government processes for impacted stakeholders. A dependence on private groups for information, capacity or resources may also be a risk. Another risk may be the long-term financial risks on government through partnership interventions, particularly once private sector exits through planned or unforeseen conditions. These additional considerations, regarding the associated challenges of water stewardship initiatives need further investigation to ensure water stewardship initiatives promote sustainable water management for all.[37]

Mechanisms for Engagement

The mechanisms for engagement in water governance for the private sector are varied, diverse and well-established. A corporate player could engage in water risk at various levels ranging from addressing risks associated with their operations to engaging in the global debate on water risk. Corporates generally view water risk as a journey by initially implementing operational solutions followed by strategic and policy solutions, as shown in the figure below (WWF, 2011).

[36] http://pegasysinstitute.org/water-stewardship-initiatives-risk-reduction-risky-business/
[37] http://pegasysinstitute.org/water-stewardship-initiatives-risk-reduction-risky-business/

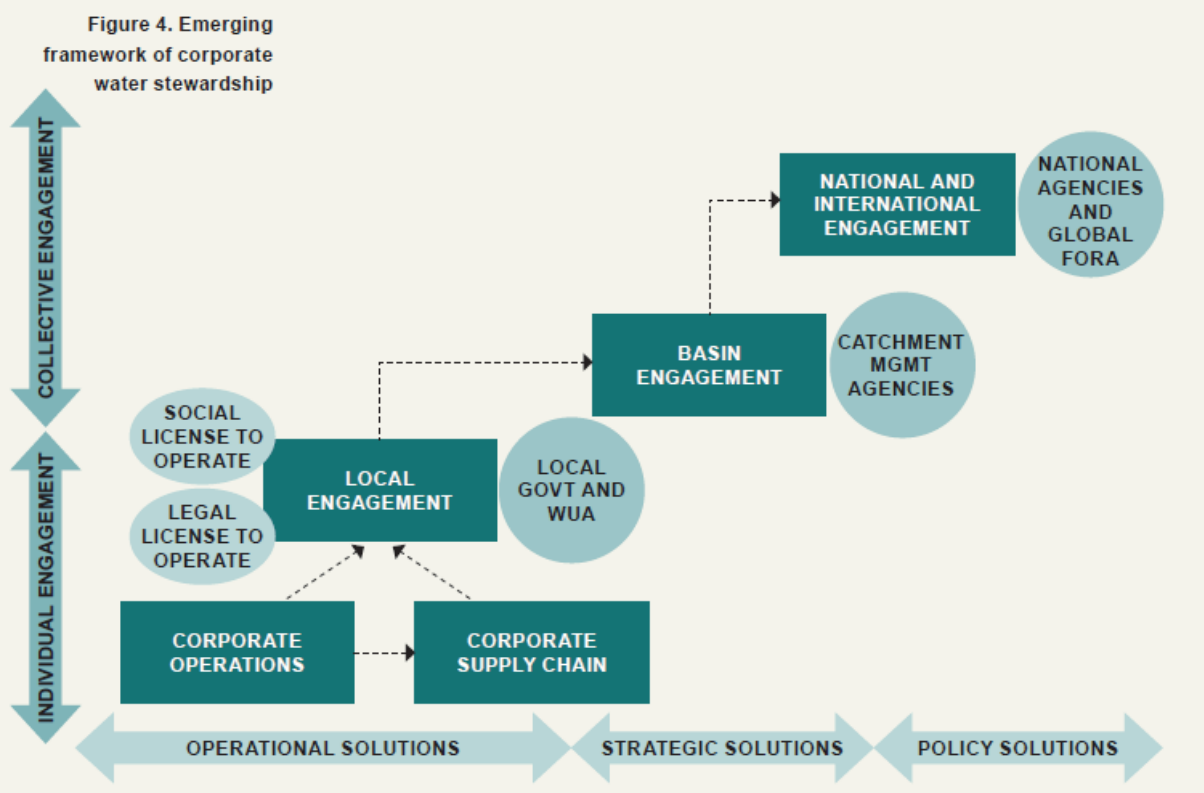


Figure 12: Emerging Framework of Corporate Water Stewardship (WWF, 2011)

Companies thus typically begin with developing an understanding of their relationship with water by measuring how much water they are using and discharging from their operations and supply chains. This provides a base line for companies to measure water risks, prioritise efforts, and measure progress. Once a company has recognised its water risks may lie out of its own operations, they begin to engage with other stakeholders with whom they share water resources. To this end, it has been suggested that companies need to actively participate in local water forums such as WUAs to provide leadership and contribute to protection of water resources, thus jointly addressing shared water risk with relevant stakeholders. As CMAs are established, companies should support these institutions and work with them to provide better solutions for all water users within a catchment. From this, companies can move onto national and international engagements, where they impact on policy direction at the national and global levels. We dwell on the various types of mechanisms in further detail below:

Mechanisms at the Operational Level – Water Footprints and Water Disclosure Requirements: Businesses are increasingly becoming aware that understanding the water challenges they face allows them to make better decisions and provides a platform to engage with a broader set of stakeholders to address issues outside of their direct influence. Water footprinting is a way of understanding the total water input to consumer products such as beverages, food and clothes, thus creating awareness of how and where water is used. The WWF and SABMiller are pioneers in the use of water footprints to understand ecological and business risks. The result of the SAB Ltd water footprint assessment in South Africa showed that more than 80% of SAB's water risks lay in supply chains, which was quite insightful for their water strategy and risk management (WWF, 2011).

In addition to pressure on private sector companies from governments/consumers to reduce the negative impacts of water resource use on the environment and local communities, businesses are also facing disclosure requirements from investors, since investors have found that water-related risks are increasingly significant for long-term viability of businesses. 70% of businesses responding to the CDP Water Disclosure Questionnaire identified water as a "substantive business risk", and in response to these anticipated risks, companies are setting concrete targets and goals for operations, including water use efficiency, water reuse and recycling.

Mechanisms at the Catchment Level – Anglo Coal in the Olifants River Catchment: As mentioned above, in the eMalahleni catchment of South Africa, Anglo Coal is working with various stakeholders to deal with challenges of water security in the catchment by increasing water supply through treating mine water from its local operations and selling this water to the municipality. Unlike collaborative engagements such as those through legislated platforms like CMAs which encourage stakeholders to work together, Anglo Coal was required to build a platform in order to drive its vision, including determining where funding will emanate from.

The company notes that getting all the regulatory requirements for the project in place had been quite a challenge. For example, a water supply licence had never previously been issued for treated mine-water in South Africa (Holtzhausen, 2006), and this therefore required engagement with a range of stakeholders. As far as the actual project is concerned, the coal mines in the region (three Anglo American mines and one BHP Billiton mine) put forward the capital expenditure and running costs of treating the mine water to a quality suitable for discharge into the environment. The municipality is responsible for the costs of treating the water to potable standards and conveying it to their reservoirs. All parties were encouraged to come to the fore with their perspectives. Besides securing the required quality and quantity of water, the collective action has opened up future opportunities for Anglo American, the government, nongovernmental organizations, and other businesses to engage and problem solve on an ongoing basis (Global Compact, 2013). The ability of the private sector to apply resources to water resource challenges and convene stakeholders in order to work through challenges is integral to partnerships such as these working.

National – SWPN-SA: It is recognised that in South Africa, no actor alone can solve the challenges regarding the gap between water demand and supply, but that if water users work together, they can identify shared solutions and implement strategies, policies, plans and programs. At the national level, the SWPN-SA is a multi-stakeholder platform which is participatory, engaging, transparent, accessible and provides knowledge, and is helping to address South Africa's pressing water issues. The SWPN-SA is chaired by the Department of Water and Sanitation and co-chaired by South African Breweries on behalf of business, with senior representatives of Nestle, Eskom, and Coca-Cola leading projects. The funding comes from corporate supporters alongside global partners such as the 2030 Water Resources Group. An early success of the SWPN-SA was the "No Drop Scorecard and Strategy" to assess each municipality's water usage and incentivize action to reduce municipal leakages. Impact and scale is important for the network and central to the concept of scale is mainstreaming dialogue between business and government.

International – CEO Water Mandate: The UN Global Compact's CEO Water Mandate is a private-public initiative launched by the UN Secretary-General in July 2007, and is designed to assist companies in the development, implementation and disclosure of water sustainability policies and

practices. The CEO Water Mandate's Guide to Water-Related Collective Action notes four steps for designing collective action, that is, i) scoping water challenges and action areas (motivation for collaboration below); ii) identifying and characterizing prospective participants (stakeholders below); iii) selecting the level of engagement (mechanisms below); and iv) designing collective action engagement (mechanisms below).

In designing a collective action, the Guide notes that companies should:

- Formulate preliminary desired outcomes, clarify collective action intentions, refine identified action areas to be more specific, and explore geographic scope and scale of the effort;
- Assign initial core team responsibilities and address general participation requirements; and
- Make initial plans for addressing any interest or capacity deficiencies that may have been identified that constrain companies' ability to act.

According to the Guide, once the challenges have been identified as well as the stakeholders that need to collaborate, one should then determine the level of engagement, that is, the type of engagement (from information to collective governance). The Guide notes that key considerations when determining the level of engagement include the extent of common ground sought among participants; the degree of independent decision-making maintained among participants; the expectations for joint action and responsiveness; and the experience and resources needed for collective action. In selecting the level of engagement to pursue, companies consider the nature of water challenges facing the company as well as the landscape of stakeholders with whom engagement must happen. The level of engagement can change over time, as the interest and capacity of different parties evolve.

The Guide points to a few issues that need to be engaged with in order to structure engagements, and these are as follows:

- **The degree of formality** – The type of process generally determines the degree of formality, with processes involving seeking common ground or consensus decision-making requiring some formal backing. Furthermore, partnership arrangements which include joint decision-making or the sharing of resources generally require a formal structure backed by some form of contractual mechanism.
- **Decision-making approach –** This refers to the approach taken to reach a decision in the given type of engagement. The decision-making approach is guided to an extent by the level of engagement and the objectives of the process. An example of a decision making approach is as follows: If a consensus-building engagement is planned, will consensus be reached through a voting system, or by an advisory committee informed by input, or through other means? However, there may be instances where decisions are made not utilising consensus based approaches.
- **Commitments and responsibility boundaries** – Stakeholders should determine commitments for participation as well as the responsibilities of various stakeholders, and these will be guided by the objectives and the degree of formality. Stakeholder should strategize and agree on how roles will be structured.
- **Process time-frame** – establishing a timeframe is important both for setting internal company expectations and external expectations, as well as for understanding the nature of

resource needs. Typically, more engaged forms of collective action will be associated with longer time frames in order to establish a common understanding of needs and objectives, explore and agree upon a course of action, guide implementation, and review performance and adjust interventions accordingly.

- **Legal, regulatory and policy factors** – It is important to understand the legal, regulatory, and policy context within which collaboration is occurring in order to understand potential procedural requirements, as well as the motivations and expectations of collective action participants.

Key Lessons on Cooperative Governance

- Engagement of the private sector in cooperative governance usually occurs when companies cannot manage risks internally any longer, and therefore need to engage with other stakeholders in order to deal with water-related risks to the company
- In the South African context, there has been a shift from an environment of mistrust between the private sector and government to one where both stakeholders recognise that they will need to work together in order to deal with water resource challenges in South Africa. As a result, collaborations such as the SWPN-SA are gaining in momentum.
- The mechanisms for private sector cooperative engagement in South Africa are quite well-developed, from operational interventions (for example water footprinting) to catchment-level engagements (finding solutions with stakeholders at the catchment level) and then national and international engagements (SWPN-SA and CEO Water Mandate)
- It is important to note that companies seek to maximise the benefits to themselves first. The case study we looked at did not make much mention of communities that are affected by the collaboration. This may perhaps be because the company in the case study needed, in the main, to engage with the municipality rather than communities. In general though, government has an oversight role in determining that cooperative engagements benefit all parties including communities, and that all relevant/affected stakeholders have the capacity to represent their interests adequately at cooperative engagements.
- It is important to note that within any polycentric governance framework that there is a need for a range of formal and informal structures that enable engagement on specific dimensions of water resource management. We have seen that the private sector are engaging through various platforms such Public-Private Partnerships (PPPs) and forums (see below). These all have their place within a polycentric governance model. This will be explore further on in this report.

5.2.2 Catchment Management Forums

Catchment Management Forums (CMF) are non-statutory bodies that may be established to democratise participation in water resource management and to support Catchment Management Agencies. They provide a potentially efficient and effective way to facilitate the coherent participation of stakeholders with diverse interests in decision making about water resources management. In this way, buy-in to water management strategies and their implementation, particularly Catchment Management Strategies (CMS), can be created (DWS, 2013:66).

Motivation for Collaboration

The DWS has said that CMFs are important structures for facilitating stakeholder representation in the establishment of CMAs and are envisaged to play an active role in assisting CMAs in carrying out their functions. CMAs thus have an obligation to support the creation and maintenance of CMFs and to ensure their participation in the formulation of the CMS. In this way, the intention in the National Water Act of ensuring responsible public participation in water resource management can be realised (ibid).

The DWS has noted that it will support the establishment and functioning of CMFs until CMAs are established. Once CMAs are established, they will take the responsibility of providing support to the CMFs. This support will include financial support as appropriate, capacity building support, and access to knowledge and information to ensure effective participation and informed decision making (ibid).

In practice, the functionality of forums has varied considerably and has included:

- Supporting institutional change: Supporting DWS to establish CMAs
- Supporting catchment management: Some CMAs are engaged in specific technical issues or geographic areas, and thus provide operational support in the ongoing management of the catchment
- Advocacy for change: Some CMFs provide thought leadership on specific issues, either technical or geographic, towards improved approaches

A recent project run by the Water Research Commission (WRC) on revitalising Catchment Management Forums notes that it is important for the policy on Catchment Management Forums to be finalised, articulating why forums are important in the governance framework, what functions they are expected to perform and their expected outcomes and impacts. This should include providing clarity on the role of forum viz a viz water user associations, catchment management committees, and advisory committees. The four functional areas that forums should support include i) institutional development (input and guidance on processes); ii) water resource management consultation; iii) support to water resource management activities; iv) supporting integrated planning and development (CMFs use as a platform to engage).

As far as the last one is concerned (integrated planning and development), there should be clarity from the department regarding how forums can/should engage in the various planning instruments, including Integrated Development Plans, Environmental Impact Assessments, Disaster Management Plans, Climate Change Adaptation Plans, Provincial Infrastructure Plans, etc. In addition, forums should also be utilised to hold institutions accountable, provide evidence, share information and advocacy (Weston et al., 2015).

Furthermore, there should be a clearer recognition of forums in the legislation, which will strengthen their position in the institutional framework. In doing so too, the legislation should also address the development of a business case for establishment of a forum, a forum charter/constitution, the functions of a forum, and representivity (inclusion of marginalised groups). In saying this though, there should not be a one-size-fits-all approach, that is, there should be

recognition that forums are created for different functions and in different geographic contexts, but certain key requirements could be legislated (Weston et al., 2015).

Importantly, once policy on forums has been finalised, it would be imperative to also develop an updated suite of guides around institutional, functional and organisational dimensions of forums, so as to provide clear guidance. We do however recognize the importance of CMFs arising organically, despite the existence of guides. Furthermore, DWS/CMAs should provide support to forums through the lifecycle of the forum, including administrative, technical and financial support, as well as support to improve representivity and inclusiveness where required (Weston et al., 2015).

Stakeholders

Catchment Management Fora usually consist of stakeholder representatives for specific catchments or sub-catchments. They meet to discuss issues of mutual concern and seek ways of addressing them (DWAF, 2006:26). CMFs can become Catchment Management Committees when they get to a certain point as far as their functions are concerned, so that they eventually have implementation functions as well. To maintain the interest of their participants, fora will need to be given some meaningful ongoing involvement in water management. Given the large size of a Water Management Area, it seems unlikely that many fora will obtain direct representation on the CMA governing board, hence, CMFs could be effectively linked with the governing board through the Catchment Management Committee (CMC) structure. Each geographical CMC could contain membership from local fora and the governing board. Such Committees would then provide a mechanism for information to flow from the fora to the board and vice versa.

CMFs derive their strength and mandate from the stakeholders they represent. In order to build and maintain this strength, the primary focus of a forum should be on extending its stakeholder representation and building the capacity of stakeholders for meaningful participation, rather than attempting to gain authority through statutory means (that is, becoming formally established and receiving delegated functions). This is to say that forums cannot perform some important functions, however, the role of a statutory organisation is different from a representative forum in that it becomes an agent of government, rather than a representative of key stakeholders (ibid). CMFs may become an appropriate vehicle to foster cooperative governance between the CMA, local government and other stakeholder interest groups, in the interests of integrated management to support WRM. However, this implies that the organisations that are represented by the forum are both committed to the aims of the forum and support (and implement) the recommendations that the forum makes (NWRS2, 2013:66).

Mechanisms for engagement

Forums have had a relatively long history in terms of engagement in water issues in South Africa and have played an invaluable role in supporting IWRM. They have supported IWRM through engaging on a wide range of issues and have been present across the breadth of the country (Munnik, Barnes, Burt, Ashe and Motloung, 2015). Forums have been initiated for a variety of reasons and Munnik et al. (2015) explore this in some detail. It is clear that these forums have been most successful where:

- There are significant water related challenges that require engagement;
- The CMA establishment processes have been fact-tracked; and

- There are local actors (individuals or organizations) that actively guide and support the forum and the engagement process.

Whilst it is acceptable to establish a forum with a limited life span, for the purpose of specific study or planning process, the view has generally been that they should be established with a longer term vision of supporting the management of water resources (i.e. monitor activities, provide insights and guidance, act as a sounding board for planning, etc.). As such they do then need to be understood as part of the institutional framework. Yet in many instances they have struggled to function. Typically the challenges faced by forums include:

- **Legal status:** Forums are recognized as valuable and in some instances essential, yet they do not have a statutory basis. Whilst this actually should not be a problem, it does in effect influence the relationship with the DWS and can impact upon the degree of influence that the forum can exercise.
- **Consistency of approach:** The nature and format of forums has varied widely and in effect should be supported, however, this can be difficult for DWS or CMA staff that possibly would prefer some form of consistency. Certainly there are some basic requirements for forum functioning that need to be formalized.
- **Functional clarity:** Forums are intended to be advisory in nature, but there does appear to be an increased call for forums to play a more active role in implementation. There has been for some time lack of clarity as to the roles that forums should and should not play, and this needs to be carefully considered against the more operational roles that Water User Associations (WUAs) and Catchment Management Committees (CMCs) should undertake.
- **Issue driven:** Forums are very active whilst there are burning issues at hand, but without these issues and clarity of function, forums can become dysfunctional.
- **Lead agent:** There may not be only one lead agent and in fact can be a number, but without an individual or organisations to take a lead, forums can lose focus and become dysfunctional.
- **Timing of meetings:** Whilst seemingly a non-issue at face value, this is indeed a critical issue in that meetings during the day require that community members can be taken from daily livelihood ensuring activities and are not compensated for attendance.
- **Ensuring balance:** There are very distinct information and power imbalances within society that need to be carefully considered and as such the forum needs to ensure that these disparities are catered for so that all members have a fair opportunity to input into proceedings. However, this requires skilled facilitation and support and this is not always available.
- **Administration:** The administrative tasks associated with managing and operating a forum can be onerous and is often a difficult issue to resolve in that it requires time and dedication.
- **Role of DWS:** Various staff members of DWS have been stalwart supporters of forums and have as a result often chaired these forums. There are questions as to the role of DWS staff (and later the same may be asked of CMA staff) and how they should engage with forums. This has historically been inconsistent and sometimes inappropriate.
- **Ongoing capacitation:** There is a need for ongoing capacitation at the forum to ensure that members are abreast of the various policies, strategies, procedures and projects. There

does need to be a more continual stream of information that is shared with forums and should be rolled-out in a structured manner.

- **Funding:** Forums do in fact cost money to run and challenges in this regard can stifle the functioning of the forum.

Despite the various challenges forums have found ways to operate and provide meaningful inputs. Whilst there is some uncertainty in the institutional frameworks, the revised National Water Resource Strategy has made it clear that forums have a continued role to play in managing water resources.

There is on-going discussion regarding the merging of the Water Services Act (Act 108 of 1997) and the NWA through the law review process, with the idea of making CMFs statutory bodies. This may find the need to include a more formalised approach to forums. Weston et al. (2015) contend that this not necessary and the existing legal instruments regarding forums are indeed sufficient, where section 90(1)(b) of the NWA enables the development of regulations ''requiring the establishment of consultative forums and determining their composition and functions''. The statutory nature would come with a more detailed range of governance and reporting requirements that may be onerous. Possibly most important is that whilst being non-statutory in nature there is more scope for ''independent'' discussion and input, and whilst not always what the DWS and CMAs will want to hear, this supports a more robust and rich discussion on issues. This means that in some ways forums can hold the DWS and the CMAs to account on key issues, but by trying to formalise this does come with a range of undesirable consequences.

Weston et al. (2015) noted that there has been a fundamental shift in the way that we understand governing boards and this has direct impact upon the CMAs, their governing boards and the need for stakeholder engagement (through for instance CMFs). This then means that without the stakeholder representation at the board level, there will be an even stronger drive to establish forums for their engagement on key issues.

The CMF Revitalisation Project was initiated in early 2014 and Munnik et al. (2015) reflect upon this process to date. What is important from this process to date is that the renewed energy will place a useful spotlight on forums and the challenges that they face. The DWS requires this process of revisiting the challenges and issues in order to develop support for these institutions.

The operating environment of CMFs is currently unclear. For example:

- The new vision for CMFs says that forums will be included in the legislative review to provide a more formal framework for forums.

- The NWRS2 recognises the important role of CMFs but does note that they are non-statutory in nature and that they ''may'' be established.

- The emerging policy statements in the NWRS2, the draft revised policy statements (August 2013) and the final revised policy statements (December 2013) make no mention of the formalisation of CMFs through law. In fact they make no mention of CMFs at all.

- The NWRS2 notes that ''A CMF may be established in one of the following forms: Non-statutory structure, with or without a Charter or a Statutory body established in terms of the NWA, such as a Catchment Management Committee or an Advisory Committee". This actually serves to confuse because neither a Catchment Management Committee nor an Advisory Committee are CMFs following the definitions as we traditionally understand them or as it is described in the preceding paragraphs and, in fact, it is important to distinguish the difference between these different bodies.

In the interim, there is an ever growing backlog of issues and threats that require the attention of DWS and the CMAs, and hence there is actually a very urgent and strategic imperative to resolve the future of CMFs (Munnik et al., 2015). Forums and PPPs can play a key role in assisting DWS to address such matters.

There is a need for prioritised activity in order to address the issues and recommendations that emerge, and DWS will need to lead this in conjunction with the CMAs. An action plan towards creating an improved framework for forums is shown below:

Table 8: Action plan towards creating an improved framework for forums

Issue	Response	Time frames
Position of Forums in new Water Bill	• DWS to engage forums in a constructive manner and as a key partner in new bill and policy. Probably at provincial level.	Short
Finalisation of new policy on forums	• Finalisation of the new policy on forums. • Senior management sign off and support essential noting potential support requirements. • Consider the role of a Forum of Forums.	Short
Develop communications materials	• Communications materials to be developed that articulate the roles and responsibilities of forums and the importance of stakeholder engagement. Language issues need to be considered. • Communications materials to be developed regarding institutional processes and the progress to date.	Short
Develop regulations for the forums	• Use the regulations to formalise key institutional, functional and organisational aspects of forums. Consider issues such as representation, language and power inequities.	Medium
Development of guidelines to support the institutional, functional and organisational dimensions of forums	• Development of a suite of pragmatic guidelines that have senior management approval. • . Guidelines to explore functional aspects and the development of forums as cooperative communities and networks of practice. • Provide guidance on functioning of forums between meetings. • Guidelines should reflect clearly on how forums are to be supported by DWS, CMAs and others. • Access to information to be well articulated. • Guidelines will specifically have to consider institutional progression for forums and their connectivity to Intergovernmental forums and cooperative government. • Guidelines need to articulate the channels through which forums can progressively hold DWS and CMAs to account. Need to clarify how DWS and CMAs respond on issues raised. • Provide guidance on Forum of Forums and its roles and responsibilities.	Medium
Business planning for DWS/CMA Participation	• DWS and CMA need to participate in forums on a regular basis through more senior staff that can meaningfully engage in debates. This reflects the importance of these platforms. This needs to be reflected in business plans and requires appropriate budget support.	Medium
Capacity building for forums	• Develop a capacity building strategy for forums that included support by DWS, CMAs, other forums and institutions, the use of learning journeys and platforms such as indabas. The strategy needs to note the varying levels of support required from forums and forum members.	Medium

Key Lessons on Cooperative Governance

- CMFs are non-statutory bodies that may be established to democratise participation in water resource management and support the set-up of CMAs. The fact that they do not have legal status impacts on the degree of influence that the forums can exercise. On the other hand, formalising these institutions would come with a range of governance and reporting requirements that may become too onerous. Furthermore, being non-statutory in nature may support "independent" discussion and input and a more robust discussion on issues.
- The operating environment for CMFs has been unclear, even though they appear to be important for CMA set-up processes, particularly as far as stakeholder representation is concerned. In general, the functions of forums have been unclear, and these need to be considered more carefully against WUAs and CMCs so as not to result in duplication. Importantly though, with a move towards governing boards of CMAs being more focused on governance and fiduciary issues, there is a greater impetus to establish forums for stakeholder engagement purposes. The CMF revitalisation project provides a process to revive CMFs which is useful and structured.
- There is a need for capacitation of forums both to keep abreast of developments in policy and projects, as well as the ensure representation of various stakeholders. Once initiated and supported with readily available materials, this could be self-sustaining.
- Forums have continued to exist and function in a difficult environment, thus showing the desire of stakeholders to engage. The suggested number of forums in existence is in excess of 70[38]. With better guidance from DWS/CMAs and a clearer understanding of support (including technical and financial), forums could be much more effective. Power and capacity imbalances require redress and the support of CMAs and DWS in managing these imbalances is critical.

5.2.3 NGOs

The Centre for Environmental Rights (CER) is a non-profit law clinic established in 2009 by eight non-governmental organisations (NGOs) in the environmental and environmental justice sectors to provide legal expertise and support to communities, community and civil society organisations (CSOs). Its mission is to advance environmental rights, and to promote civil society participation in environmental governance that is stronger, more streamlined, and better legally and scientifically equipped (CER, 2011:2). The CER uses legal advocacy, representation and litigation both in specific cases, as well as at a national strategic level, to promote the realisation of environmental rights.

In an attempt to make a positive impact on water governance, the Centre for Environmental Rights report (CER, 2011:2) recommends:

- civil society coordination, empowerment and strategy development around water governance; and
- strong civil society participation in reviews and amendment of key strategies and legislation

[38] Jay, J. 2015, Personal communications. DWS

Around 2010, the partners and stakeholders asked the CER to expand its work to include emphasis on water governance. In November 2011, the CER hosted a gathering of key experts in water governance, whose inputs were the primary source of a water governance report. Working collaboratively with key partners, and with support from funders, the CER hopes to use the shared knowledge recorded in the governance document, legal tools and advocacy to empower more organised civil society participation, and to catalyse positive change in water governance in South Africa.

The experts and civil society representatives consulted in the drafting of the water governance report recommended implementation of the interventions identified by DWS (then DWA) in the *Enhanced Local Government Support Approach, 2011*, plus a number of other interventions by civil society both to support and increase pressure on local authorities and DWS for improved compliance with obligations on water quality and water service delivery (CER, 2011).

Motivation for Collaboration

Non-governmental organisations with water-related interests can play a valuable role in developing water management understanding and capacity at a community level such as through running community education programmes. Such organisations often develop close links with communities through involvement in the delivery of services such as water supply and sanitation. A report by Munnik et al. (2002), found that community-based organisations (CBOs), who manage projects closest to the community, should seriously be considered by municipalities as water services providers in facilitating sustainable development in rural areas.

To date, the CER has worked primarily in the mining sector – promoting environmental compliance, transparency and accountability in mining; and on improving transparency and access to information in environmental governance. With a new revised National Water Resource Strategy (NWRS) published and a legislative review underway by the DWS, this is an opportune time to plan participative interventions by civil society and community organisations in getting water governance back on track (ibid:3).

There is growing support for the establishment of an inclusive civil society alliance on water governance for networking and information-sharing, access to information and access to expertise, and training to understand technical aspects of WRM like waste water treatment works. This requires coordination of civil society strategies and interventions while developing an appropriate, effective and efficient civil society toolkit to implement interventions. One of the strategies includes building better communication channels between civil society and key role-players like the Minister of Water and Sanitation and the DWS, the Parliamentary Portfolio Committee on Water and Environmental Affairs (PPC), National Treasury and National Planning Commission, the Public Service Commission, labour unions and the Chamber of Mines. This also entails submission of requests for information, including through use of the Promotion of Access to Information Act, 2000 (PAIA).

It is imperative for civil society to participate in reviews and amendment of key strategies and legislation. The CER (2011) argues that might be best achieved (among other interventions) through:

- Ensuring effective opportunities for civil society participation in the revision and implementation of the NWRS;

- Ensuring effective civil society and expert input into the current review and proposed amendment of the NWA, the WSA, the Water Research Commission Act, 1997, and the Minerals and Petroleum Resources Development Act, 2002;
- Ensuring coordination between civil society work on water governance and the Mining, Environment and Community Alliance's Civil Society Legal Strategy to Promote Environmental Compliance, Transparency and Accountability in Mining; and
- Ensuring increased awareness of and participation by civil society in water governance issues in Integrated Development Plans and Water Services Development Plans.

Stakeholders

In the 1990s, policies began to emphasize the importance of civil society involvement and projects incorporated it in their design; however, the resources, time and commitment needed to achieve meaningful community participation was often underestimated and success and sustainability were spotty (AFDB, 2009). It was therefore not until the past decade, which brought with it clear evidence of failing systems, that governments and donors came to recognize how essential community involvement is to project and programme design and to support implementation. This does clearly come with responsibilities to build capacity and provide guidance. In a similar time frame, IWRM became recognized as the best, if not only, way by which water resources could be properly managed. At the heart of IWRM is civil society participation in basin planning, resource allocation, environmental protection consensus building and conflict resolution.

In many respects, civil society "participation in water resources management and water supply and sanitation is the key to successful sector governance, encompassing management, quality service provision and sustainability" (AFDB, 2009:52). This has been recognized in the Dublin-Rio principles, which are clear in their statements that water development and management should be based on a participatory approach, involving users, planners, policy-makers at all levels and that women play a central part in the provision, management and safeguarding of water. This calls for a sharing and balance between stakeholders (both top down and bottom up) in their planning and management. It has also been recognized that service provision functions should be delegated to the "lowest appropriate level" at which stakeholders involved in management need to be identified, resourced and mobilized (ibid).

Mechanisms for Engagement

While analysing and assessing civil society participation in practice, AFDB (2009) noted that Burkina Faso, Senegal and South Africa use similar approaches to allow for enhanced participation of target communities in programme design and implementation and come closest to what could be defined as best practice. It was further noted that such success is mainly attributed to benefits from decentralization and democratic systems that avail responsive representation and local governments. Importantly, these approaches centre on participatory planning in the development of Local Development Plans (LDPs, i.e. IDPs in South Africa) and, commensurate with them, Local Water and Sanitation Plans (LWSPs). The LWSPs are a platform for the identification of specific projects that are prepared in concept and budget estimates for approval by local or municipal councils and forwarded to regional and national levels. The LDPs and LWSPs constitute a useful framework for sector planning that is based on community and community organization participation. They

successfully integrate community involvement and local government ratification with regional and national planning and budgeting processes.

Arguably, there is a wide variety of roles to be played by NGOs, communities and user groups in the participatory management of surface water and groundwater resources. It is emphasized, however, that such organizations should only be created and mandated in response to stakeholder demand. In addition, reliable, timely and relevant information needs to be made available for the participatory process to be effective.

5.2.4 Key Lessons on Cooperative Governance

There a few important considerations on cooperative governance through NGOs, and these are as follows:

- The AFDB and others note that civil society participation in water issues is the key to successful governance, and this has been recognised the in the Dublin-Rio principles.
- NGOs with water-related interests could play a valuable role in developing water management understanding and capacity at the community level. In effect then, NGOs could be the vehicle for building both the knowledge and capacity of communities to engage effectively for their needs, and could also serve as a vehicle for mobilisation of communities.
- The current changes in water sector governance (policy, legislation) provides an opportunity for participative interventions by civil society and community organisations to influence water governance. It is imperative for civil society's voice to be heard on key strategic and legislative changes that are currently underway.
- The informal engagement of stakeholders through NGOs is a critical part of a polycentric governance framework that enables civil society to hold the formal institutions to account.
- Finding the most appropriate time and place for engagement is important as this can in effect thwart development. It is important that the focus of engagement is supporting a beneficial outcome. In this regard capacity building is imperative.
- "Societal" Engagement

Societal engagement as far as water is concerned usually revolves around access to potable or raw water.

Motivation for Collaboration

Water Services

Rapid urbanisation in post-apartheid South Africa has given rise to the mushrooming of informal settlements and prevalence of informal tenancy in low and middle income residential areas. This is stressing infrastructural and institutional capacity for effective water services delivery. Municipalities face several challenges in meeting statutory requirements for the provision of water services. This raises the question as to whether the current level of decentralisation in water services provision and in local levels of regulation is appropriate, especially given the enduring municipal capacity constraints (Smith, 2009).

Observation suggest that violent and non-violent social protests tend to occur in urban and rural working-class localities characterised by disjuncture between water services development planning at municipal and national levels and water use at local household and community levels, irrespective of political party affiliation of the local authority and protesters (Tapela, 2012). The majority of

violent protest action tends to occur in urban and peri-urban neighbourhoods characterised by high levels of poverty, unemployment and marginalization. Salient features of such localities also include perceptions of 'relative deprivation', injustice, corruption, 'tenderprenuership' and lack of downward accountability by council officials (ibid). Tapela further observed that violent protests have spread into rural areas hitherto perceived to be the 'silent backdrops of South African society' from 2011 onwards. While this development dispels certain long-held romanticist notions and picture-postcard constructs of rural areas as bucolic idylls, it marks a critical turning point in rural people's engagement with authorities regarding service delivery expectations.

Water service delivery issues have been (and still are) a part of a range of conflated grievances that masquerade under the general rubric of 'service delivery' issues and underpin many rallying calls for social protest action. Although such conflation reflects the inter-relatedness of social services, it also masks the precise nature of the specific water service delivery issues in question. While protests highlight the prevalence of water services delivery issues in diverse and dynamic local contexts, the crafting of protest narratives and repertoires and the journalistic reporting of most protest events has often obscured the finer details of perceived grievance issues and how these transform into protest action.

The study also revealed that violent protests, in particular, often take place in urban and peri-urban formal housing areas and informal settlements in which dynamics around poverty, unemployment, population growth, inequality, relative deprivation, marginalization, injustice, indignity, identity and histories of struggle activism by predominantly black residents coalesce with unmet expectations for water and related services as well as uncertainties due to drivers of change, such as mining-based economic decline, shifts in agricultural and industrial production systems, multi-scale political trajectories and rising food prices. Coupled with perceptions that there seem to be no effective measures to deal with municipal councillors and officials who are perceived to be corrupt, incompetent and not downwardly accountable, such ferment easily develops into anger and possibly protest action.

The growing visibility of water 'service delivery' issues has not yielded clear understandings of the political, economic, social, institutional, historical and cultural environment within which social protests tend to occur, the exact nature of grievances over water service delivery and how grievance issues permutated into violent protest action. One of the driving forces behind escalating protests across the country is the increasing levels of public frustration at the disconnection between the state and the citizenry when it comes to service delivery. Since 2004, South African urban areas have been hit by high volumes of social protests, by 2012 the frequency, geographical spread and violence of service delivery-related social protests reached unprecedented levels (Smith, 2009; Tapela, 2013). These protests are also a manifestation of shifting water demand patterns where urban water supply is the fastest growing sector of national water use (ibid). These factors have implications both for water supply and for wastewater management. Given the foregoing, and from the perspective of governance and governability, questions are raised about the requisite institutional frameworks for ensuring effective linkages between municipal levels and plot levels of water and sanitation services delivery and access.

Water Resources

As far as water resources are concerned, the principles of "subsidiarity and self-regulation" from the NWA means the department should promote the devolution of responsibilities to the lowest level consistent with effective functioning of the system. The lowest level is not specified and could be the village-level where water management is based on customary system, if this system is effective and in line with the principles of integrated water resources management. In Tshikombani of the Limpopo province of South Africa, one such effective and well-functioning customary system exists (Malzbender et al., 2005). Thus, societal engagement in cooperative governance could occur through customary systems.

Malzbender et al. (2005) notes that there is a challenge in achieving a balance between the NWA and the customary water management practices. There is an informal system of exchange in the village, and without this informal system consumers would not benefit from adequate water. This is however not formally acknowledged by the department; Malzbender et al. (2005) notes that with the failure of the state to effectively supply water to local residents, private and informal systems of exchange (money) ensure the supply of water.

The department is often not able to fulfil its mandate of managing water resources, and some commentators are thus of the opinion that because of the limited capacity challenge, it is unlikely that the department and local municipalities will be able to control abstractions and ensure compliance. In this context, it is beneficial for the department to recognize the capacity of local residents to manage and supply water as is the case in Tshikombani (Malzbender et al., 2005). Thus, the recognition of local water regimes offers a solution to scarcity of second level resources and provides a bridge between traditional and state institutions, thus incorporating traditional systems as 'legitimate' organs of water supply and management, and ensuring that they become part of the solution to protect, use, conserve, manage and supply water (Malzbender et al., 2005).

Over and above supporting in ensuring compliance, which is in effect a monitoring function, citizens (as collectives or as individuals) can contribute to the management of resources by supporting resource monitoring and scientific studies. The concept of citizen science has gained ground in recent years and a few examples in South Africa reflect this.

Mini Stream Assessment Scoring System (miniSASS)

The use of biological indicators of water quality and ecosystem health has developed over the years to be an increasingly important part of our scientific toolkit for supporting water resource management. In South Africa, the South African Scoring System (SASS) developed by Chutter (1998) became the benchmark tool for biomonitoring, and as a result is now widely used. However, the level of detail required by the SASS system means that the practitioner does require a considerable degree of training to be able to identify numerous aquatic invertebrate families. There is a significant mismatch between the need for increased levels of biomonitoring to support water resource management, and the capacity (both skills and financial resources) available to support this need.

Graham, Dickens and Taylor (2004) saw the opportunity to not only bring citizen scientists into the regime of biomonitoring, not only as a support for water resource management by enabling citizens

to raise awareness of water quality and ecosystem health within their environs, but also to enable citizens to develop a deeper understanding of the impacts of human activities upon the environment. Graham *et al*. (2004) make a compelling argument for the need to not just communicate these impacts, but to provide the tools to enable citizen scientists to learn through their own enquiry. It is important that the importance of this data is understood and acknowledged.

Graham *et al*.(2004) simplified the complex SASS system into a more simplistic Mini Stream Assessment Scoring System (miniSASS) that would be accessible to citizen scientists. Their initial results reflected significant correlation to the more complex SASS, and as such has been recognised as highly useful tool for citizens to bring to the attention of authorities concerns regarding environmental health.

This system has now in recent years been further expanded, with the support of the Water Research Commission, through the development of a website that supports the development of a spatial database[39] as well as a downloadable smartphone APP that enables easier and on the spot data submission and access. The database not only provides an opportunity for citizen scientists to spatially see the results of their efforts in collecting data, but also supports the deeper enquiry into environmental science by enabling scientists to compare results and connect with each other. The way in which the data is being used needs to be communicated (which articulates the value), and the data needs to also be available.

The interest has been solid and is supported by NGOs (the Dusi Umgeni Conservation Trust (DUCT) has used miniSASS to collect samples along the entire length of the Umgeni River) and schools (many schools operating through the eco-schools programme have adopted miniSASS as a tool) (Graham, 2013).

Rainfall monitoring

As part of a Water Research Commission funded project that looked to undertake a revision of the temporal and spatial distribution of precipitation statistics in Southern Africa, the Computing Centre for Water Research (CCWR) provided support to this project which was led by the Department of Agricultural Engineering, at the then University of Natal. The CCWR acted as a data hub for water research programmes and for this project obtained the necessary rainfall datasets.

For a project of this nature, the most comprehensive rainfall dataset available was required. Despite the collation of data from a wide range of institutions a call was made for privately collected datasets. These datasets were obtained after communication through radio and the press, as well as by engaging the support of organised agriculture, and a range of organisations and institutions. In total data was received from some 9500 rainfall stations (Dent, Lynch and Schulze, 1987).

The datasets collected from private citizens included 1174 new stations with some of these stations having datasets as long as 70 years and also included rainfall stations where stations have typically been sparse. Whilst, the additional work that was required to process and check this data was significant, the value added to the project was equally significant (Dent *et al*., 1987). The development of a number of data processing routines was essential in dealing with the data of this

[39] http://www.minisass.org

magnitude and in order to have some form of data quality analysis. The CCWR was well positioned to provide the necessary computational support. Some of the datasets proved to be of a very high standard and were important in terms of our understanding of hydrology.

Stakeholders

Water Services

Among a complexity of reasons for protests, research findings suggest that there are strong linkages between land tenure, tenancy and water and sanitation services delivery. In their attempt to respond to growing pressure from national government to meet targets, municipalities have increasingly become authoritarian in their approach to delivery. They have failed to understand the implications for the sustainability of service delivery when it is extended to users, often first-time users, who do not understand the complexity of the service delivery environment.

The blurring of lines between the water services authorities (WSAs) and water services providers (WSPs) at the local level has overlooked the importance of WSPs that are unable to explore external options to improve their performance. The ineffectual interpretation and implementation of the Section 78 process has contributed to municipalities primarily keeping the provision function in-house, even when the capacity to do so adequately is lacking. Key issues revolve around municipal and plot-level governance, 'informality' and 'formalisation' of tenure and tenancy, capital investment in infrastructure and cost recovery mechanisms. What is not clear is the efficacy of the platforms through which stakeholders are represented apart from ward councillors, traditional leaders and remotely, community forums.

According to the Constitution, local government is responsible for water and sanitation services, including the potable water supply. This is reiterated in the WSA which places a duty on water services authorities to supply water services in a sustainable manner. This would include ensuring that the water is not only conserved but is also suitable for use by consumers. As such, the provision of water of an acceptable quality is an important function of local government, and it will have to consider and address the impacts of AMD on its water services and sources and water infrastructure when fulfilling its tasks in this respect.

In South Africa, the ecological impacts of AMD creates a struggle for municipalities to provide people with water of an acceptable quality, and it is not clear that local government is able to adequately fulfil its statutory and constitutional duties with respect to water provision. This was recently illustrated in Federation for Sustainable Environment v Minister of Water Affairs 37 (more popularly known as the Carolina Case) in which it was common cause that the water supply of the town of Carolina and the township Sibolela was contaminated by AMD, and it was not appropriately treated, either by the mines that caused the AMD, or by the municipality which is responsible for the treatment of water for potable supply, causing the water supplied to the community to be unfit for consumption (Feris and Kotze, 2014).

The residents approached the Court to compel both national and local government to supply water of safe drinking quality. Interestingly, the Court recognized that while the duty of the end provider lies with local government, the Court acknowledged that national government has an overarching duty to provide regulatory control and support to local government (Feris and Kotze, 2014). This

includes both funding but also ensuring that capacity exists within local government to comply with its constitutional duties. The duty to safeguard water supply thus lies with government as a whole, with specific functions and tasks afforded to different line functions situated at different levels of government (Feris and Kotze, 2014).

Water resources

The stakeholders engaged can range from the more organised groups such as customary groups, collectives or networks that have a shared interest, to schools who are helping through learning through to individuals who have a desire to do something. In the instance of supporting compliance monitoring this would require a more formalised group that could take on the routine tasks whereas citizen science may be a once off event by some through to something more regular by others. The United States of America have increasingly utilised crowd sourcing which really embodies the once off reading by people as they pass some form of gauge that requires a once off reading and submission via a mobile telephone (for example, a river gauging plate to assess flow over time). Yet they are increasingly setting up "informal" rainfall monitoring networks to better understand storm events, which requires of citizens a more longer term commitment, and working as a network.

The stakeholders are thus many, but what is important in all these examples is that the stakeholders all need to be aware of the need and to have some grasp of the importance of their actions. This requires some careful thought as the mechanisms that are utilised to bring these stakeholders on board.

Mechanisms for Engagement

Water Services

Societal engagement as far as water service delivery in South Africa is concerned is usually in the form of service delivery protest, and these have been increasing in post-apartheid South Africa. Whilst these are difficult to manage and requires cooperative government action to pacify and normalise, such events are typified by community unity. This passion needs to be structured and channelled to provide innovative and creative solutions as opposed to destructive solutions.

Water Resources

As far as water resources are concerned, Malzbender et al. (2005) note that existing water policy does not have to be changed for traditional governance systems to work within the current governance framework, since the legislature makes provision for traditional leaders to play a role in integrated water resource management. However, they note that the way in which 'informal' systems fit into 'formal' statutory bodies, such as the WUA needs to be designed on a case-to-case basis and one size does not fit all. In some areas, such as Tshikombani, organised water management systems are already in place and these systems address scarcity of first order resources and show remarkable evidence of social adaptivity. In other cases, there are no such systems in place and departments needs to be step in and fill the gap where local knowledge systems fail to respond to water scarcity (Malzbender et al., 2005).

This does however provide a challenge since government officials often do not understand the informal norms and values that operate under customary structures. Clearly, where there are

coherent responses to water scarcity, these need to be nurtured. Malzbender et al. (2005) suggest an audit in specific regions to establish strengths and weaknesses in local knowledge systems in order for more cooperative governance of water to respond to water scarcity. The integration of traditional structures, on a case by case basis, can serve as a long-term solution to service delivery in places where municipal structure are unable by themselves to offer clean drinking water to all that fall under its jurisdiction as well as for sustainable and integrated water resource management at the catchment level (Malzbender et al., 2005).

The mechanisms for engagement of citizen scientists would require some outreach supported by materials to build the awareness and understanding of the importance of the support required. Accessibility to information is important and increasingly people have access to this via smartphone. Platforms such forums can be important pre-cursors to the establishment of these citizen science networks. So for example, the initial support of DUCT for the mini-SASS was quite valuable in getting the process moving.

Key Lessons on Cooperative Governance

- "Direct" societal engagement in water service issues often occurs through "service delivery protests", and South Africa has witnessed an increasing number of these in the post-apartheid period. Whilst violence is not supported, these routes are taken when stakeholders feel that there is no other route available. As such this is a breakdown, and requires urgent redress. All too often this is followed up by trying to solve the problem and little effort is spent in how a breakdown was precipitated.
- The courts are also used as a mechanism to compel government to supply water of safe drinking quality, as is evidenced by the "Carolina case" (the water supply of the town of Carolina and the township Sibolela was contaminated by AMD, and it was not appropriately treated, either by the mines that caused the AMD, or by the municipality which is responsible for the treatment of water for potable supply, causing the water supplied to the community to be unfit for consumption). Interestingly, in this case, the court recognised that while the duty of the end provider lies with local government, it acknowledged that national government has an overarching duty to provide regulatory control and support local government. Thus, the duty to safeguard water supply lies with government as a whole.

  This brings to the fore the tension and interface between water service and water resource governance, and highlights that government should see its role through the value chain. There is a dire need to bring the key departments mandated with various aspects of service delivery into a much tighter degree of alignment and coordination in overseeing municipal compliance with the social objectives of providing water and sanitation infrastructure, as well as in shifting from regulating outputs to ensuring outcomes. Importantly, there is need to explore the possible aggregation of WSA functions to the district municipal level, where appropriate, and the strengthening of governance mechanisms for citizens.
- Societal engagement in water resource governance occurs in some cases in South Africa through customary water management systems. However, customary water management practices may not always be aligned to the NWA. Nevertheless, with government's capacity challenges, it is important to recognise the value of customary water management practices. Malzbender et al. (2005) suggest an audit in specific regions to establish strengths and

weaknesses in local knowledge systems in order for more cooperative governance of water to respond to water scarcity.

- Societal engagement requires access to information and without this it can become confrontational as opposed to supportive in the case of citizen science. The use of appropriate technology is really important in considering this.
- Feedback loops are essential when engaging with society such that they are kept abreast of progress in addressing issues or get to see the value of their inputs in improving management of the resource.

5.3 Key Lessons

South Africa's NWA as well as its policy on WRM, mandates cooperative governance in water resource management through institutions such as CMAs and WUAs and does allow for the establishment of committees and forums although they would not be statutory. The engagement of stakeholders in water resource management is understood as a cornerstone of the policy and Act. In essence then, the mechanisms for different stakeholders to partake in cooperative governance are well-defined. Societal actors have utilised an array of institutional mechanisms that can be understood to be "formal" or "informal". Whilst there are a number of challenges with achieving cooperative governance through these and other channels, when one looks across the water sector, society, and other key stakeholders are finding ways to provide input on issues and to raise the alarms where there are matters of concern.

It is clear that the water resource management framework is complex and that this complexity has placed strain upon the DWS to give effect to the Act. The connectivity between water resources management and water services delivery has been described in the NWRS2 through a water value chain.

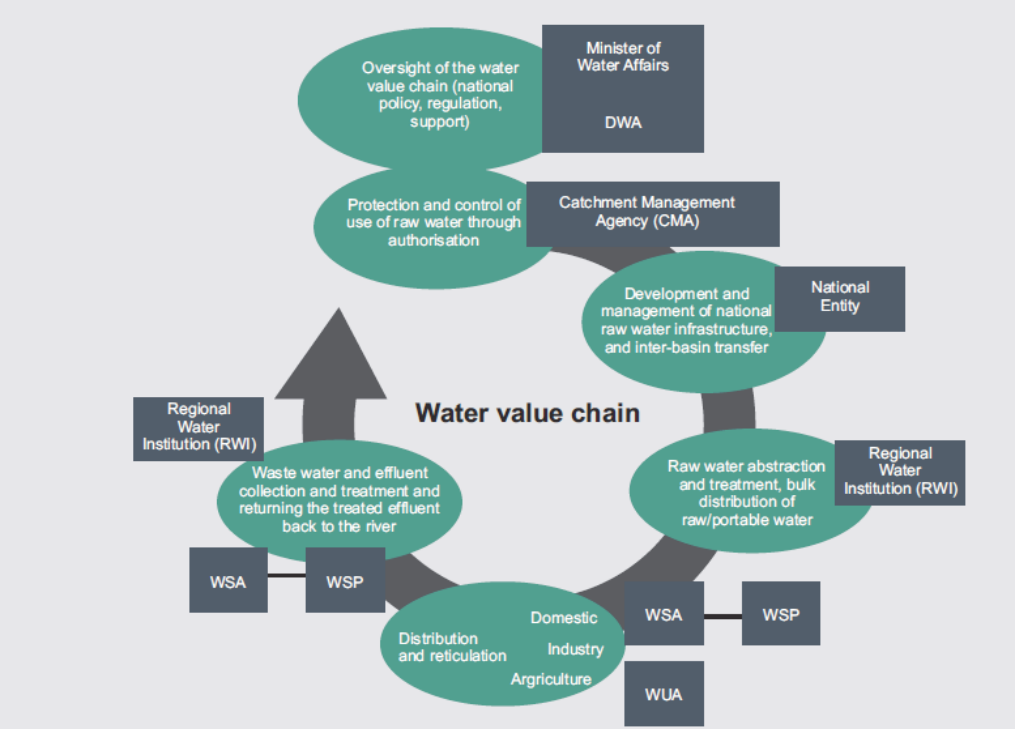


Figure 13: The Water Value Chain (DWA, 2013)

Through this value chain ones starts to see the institutional roles and relationships with some clarity, although there are many nuances still to resolve. If we start to look at the value chain and how society starts to engage in this then a number of aspects emerge where this engagement becomes very important.

- Inputs into the setting of policy, legislation and regulatory instruments.
- Inputs into various institutional establishment processes.
- Inputs into the setting of the levels of protection and control through the classification, setting of the reserve and resource quality objectives.
- Inputs into resource management and development planning instruments, be it at various scales (national, water management area, sub-catchment, municipal, etc.).
- Oversight into provision of raw water or services to assess performance in terms of delivery.
- Monitoring of the water resource after waste water is discharged.

Engagement through this cycle varies considerably, but is an important part of each element, both through formal structures and more informal structure. What the value chain starts to indicate, and was described in the NWRS was the separation of policy development and regulation from resource development and use. The cases studies start to show us a suite of key lessons that can support an improved engagement.

Firstly, the extensive delays in setting up of CMAs after the promulgation of the NWA in 1998 means that the opportunity for cooperative governance of water resources in South Africa has been limited. The Department of Water and Sanitation needs to prioritize the creation of CMAs, together with the delegation of all necessary functions to the CMAs. There should be a clearer understanding of the roles of the national and regional departments in relation to CMAs and other institutions in the water sector. The CMA is a key stepping stone towards improved governance.

Secondly, the policy position regarding localised water resource management, and the role of institutions such as WUAs and CMFs in cooperative governance needs to be clarified. Since these institutions are particularly important for community participation in water resource governance, it is imperative that the department plays a role in strengthening these organisations to work adequately in representing the previously marginalised. This includes support in areas such as, funding, capacitation and administration. The NGO/CBO sector could also play a much stronger role in ensuring that community interests are better represented in decentralised water management institutions. Furthermore, in light of the fact that around 75% of farmers are not represented on institutions (thus potentially implying a large amount of illegal abstractions), the role and reach of localised water management regarding representation needs to be clarified in order to ensure that oversight of water use licences is achieved.

Thirdly, mechanisms for cooperative governance led by the private sector are fairly well developed in South Africa, with – for example – the SWPN-SA playing a key role in water governance in some areas/catchments of the country. The private sector is able to mobilise resources, and has technical expertise to develop its own mechanisms for cooperative governance, and does this fairly effectively. While this is laudable, there is a role for government to play in ensuring that mechanisms created by the private sector account for the interests of all stakeholders, including marginalised communities in the areas/catchments within which they are working. Government

could, for instance, consider replicating the SWPN-SA's initiatives with municipalities in other municipalities. Whilst Government is understanding the success of such approaches it is not clear as to how government is building from these useful examples, to inform institutional reform, to extend the model across the country and understand the limitations of this model that may restrict it use in other contexts?

Fourthly, access to adequate information is an essential dimension of ensuring that society is able to engage meaningfully. Lack of information can result in explosive circumstances or that society takes matters into its own hands. Feedback loops in this regard are equally important and sometimes requires translation so that it can be understood. For example, the collection and delivery of millions of litres to the North West by various charitable institutions in the last few weeks is an example where society took a stance on what they perceived as inadequate action by government. DWS and CoGTA are indeed involved in a myriad of interventions but few understand what and why, and this information is not readily accessible. The continued engagement of a range of societal actors will be dependent upon regular communication so that they can see the value-add that they have brought to processes and can see the reasons as to why their continued engagement is important.

6 Conceptualising New Governance Arrangements

Within 18 years of the promulgation of the NWA, there are questions being asked as to whether the approach to water governance for South Africa was indeed appropriate. However, when one takes cognisance of what is happening across an array of different sectors, one quickly realises that governance challenges exist across many sectors and not just those sectors that have the "wicked problem" of managing natural resources. In fact, the debate and discourse with regards to governance models and the efficacy of these various models is not limited to South Africa or the water sector.

Over the last two decades, there has been a plethora of studies and research papers that have started to question our governance norms and start to look towards the next paradigm shift in the way that we understand governance and that can manage the various complexities that face a country such as South Africa. The sentiment being that our existing governance frameworks will not be sufficient to manage natural resources sustainably into the future (Tollefson, Zito and Gale, 2012; Ostrum, 2010; Pahl-Wostl, 2009; Anderson and Ostrum, 2008).

6.1 Changing frameworks

In reflecting upon how governance frameworks could or should adjust, it is useful to reflect upon the changes in governance frameworks that have taken place to date and why these were perceived to be effective models at the time.

Up to the 1970s governance regimes were dominated by hierarchical, "top-down" models that were possibly appropriate noting the need to guide the reconstruction of the world economy after successive and devastating world wars and the economic depression experienced in the early 20th Century. These centralised governance models supported large commercial agriculture and industrialised development. Although, with respect to the management of water resources, there were progressive developments in our understanding of hydrology, this period was typified as being the golden age of dam construction. In this, South Africa was no different to Europe and North America. Governance approaches were strongly focused on command and control approaches based around permits or licenses. As noted by Holling and Meffe (1996) such command and control approaches assume that we can manage against well-defined limits that are understood and linear in nature. However, as Holling and Meffe (1996) and Tollefson et al., (2012) rightly note our world and our natural resources are indeed complex, non-linear and often poorly understood and so the outcomes are often problematic on a socio-economic or environmental scale.

In the 1990s there was realisation that changes were needed in our governance models to address the deepening environmental problems and, in some instances, natural resource crashes. In order to give effect to the principles of IWRM as laid out in the Dublin Principles (1992) and as later defined by the Global Water Partnership (2000) as "…a process which promotes the co-ordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems", there was a recognised need for a more engaged and participative governance model. In response, there were numerous policy and legislative revisions to support more integrated approaches, and which most significantly resulted in adjusted

governance models towards decentralisation (Anderson and Ostrum, 2008). This was supported by the seminal work of Rhodes (1997) which questioned centralised government models when governments were in effect increasingly managing through an array of networks that were beyond typical state actors.

The South African National Water Policy (DWAF, 1997) and the NWA are aimed at giving effect to IWRM. Therefore, the policy and act call for the establishment of CMAs and WUAs, for a range of planning instruments that are focused upon joint and integrated planning, for sustainable development of the resource, for a range of approaches to support and give effect to societal redress, and uses public participation as a cornerstone to all processes. However, the implementation of this policy and law has been slow and extremely problematic. Anderson and Ostrum (2008) provide a range of other examples that equally reflect mixed outcomes from the drive to decentralise.

It has been argued, earlier in this report, that the challenges faced with the existing governance model in South Africa is that there is limited accountability, that regulatory frameworks are ineffective and that there is still insufficient engagement with society (civil and corporate) in the governance of water resources. These find resonance with the findings of other studies such as Neef (2009), Lankford and Hepworth (2010), Pahl-Wostl, Lebel, Knieper and Nikitina (2012) and Tollefson *et al*., (2012).

Lebel, Anderies, Campbell, Folke, Hatfield-Dodds, Hughes and Wilson (2006) note that all too often the challenge with decentralisation is that whilst local institutions are accountable to a central authority (and so provide information), the accountability back down to the local institutions is not reciprocated. The resultant lack of information at local levels is problematic. In terms of regulation, Anderson and Ostrum (2008) indicate that often not enough control is handed over to local institutions and users to enable improved resource management. It was also noted that often stakeholder engagement does not move into the realm of inclusive decision making, with stakeholders often just being informed (ibid).

In South Africa, as discussed earlier, the drive towards more a decentralised model has taken place slowly. After, the promulgation of the NWA, the Department of Water Affairs and Forestry spent a number of years clarify policy and process, prior to embarking on a process of engagement and initiation of institutional establishment. After, a number of years the Department undertook an Institutional Reforms and Realignment process and during this process placed all institutional processes on hold. The subsequent loss of momentum and poor communication with stakeholders, during that process, was harmful to the relationships with stakeholders and to the overall decentralisation initiative. Whilst there are lessons to be learned from the various 'bright-spots', the shifts in policy, the slow pace of reform and redress, the increasing complexities related to managing a scarce resource under increased demands and climate uncertainties, as well as internal uncertainties within the Department, leaves the South African water sector in a state of flux and some disarray.

A paradigm shift in how we consider governance would now be timeous.

6.2 Polycentric governance

Polycentricism is social system of many decision centres having limited and autonomous prerogatives and operating under an overarching set of rules (Aligica and Tarko, 2012). This system of governance was brought to the fore by Polanyi (1951) and thereafter a range of comprehensive studies have explored polycentricity and its relevance to governance in a variety of sectors and applications. Notable works include Ostrom, Tiebout and Warren (1961), Ostrum and Ostrum (1965), and McGinnis (1995), as well as many others.

Pahl-Wostl (2009) provides an array of attributes that characterise polycentric systems. These include:

- complexity,
- modular,
- varying sized governance units,
- variable purpose,
- differing organisation,
- varying spatial distribution,
- multiple levels of governance,
- many degrees of freedom at different levels, and
- decision making authority is in a nested hierarchy, and not at one single level.

Alternatively, monocentric systems are where the rules are determined and enforced by one single hierarchical authority, often government authorities, that often has legally prescribed and mutually exclusive mandates.

Parallels can be drawn with the works of Hooghe and Marks (2003) that describe two types of governance model, namely:

- **Type I**: Authority is allocated to a relatively small number of stable, multi-functional bodies with geographic and policy jurisdictions, which are mutually exclusive.
- **Type II**: A fluid array of multi-tiered bodies that have overlapping and cross-cutting jurisdictions, which are typically organised around specific functional task, that often are Type I institutions have proved ill-equipped to manage (due to a variety of reasons).

The overriding feature that makes polycentric models attractive to managing natural resources in an uncertain future is that they have the ability to self-correct and adapt (Pahl-Wostl, 2009; Aligica and Tarko, 2012). If we note that ultimately no perfect governance system exists (Anderson and Ostrum, 2008) and as such they attempt to address the need to collectively tackle complex resource challenges, then the ability to act swiftly from lessons learned becomes imperative. With the uncertainties of climate change, economic and social stability, as well as political unrest linked to service delivery, it becomes absolutely essential to have a governance model that is adaptive in a way that typical hierarchical centralised government cannot be. Of course, much of this is related to the degree of formality and the importance of state actors within the governance system (see Figure 9).

This is not to say that local actors will always manage resources more effectively, and in fact many assumptions are made in this regard. Within the South African context we have seen how some WUAs, forums and even local government structures have been:

- poorly organised and without a lead agent have failed to maintain their functional direction;
- in various financial difficulties;
- unable to innovate and adapt to circumstances;
- victim to localised power imbalances that have upset the institutional working; and
- embroiled in conflict.

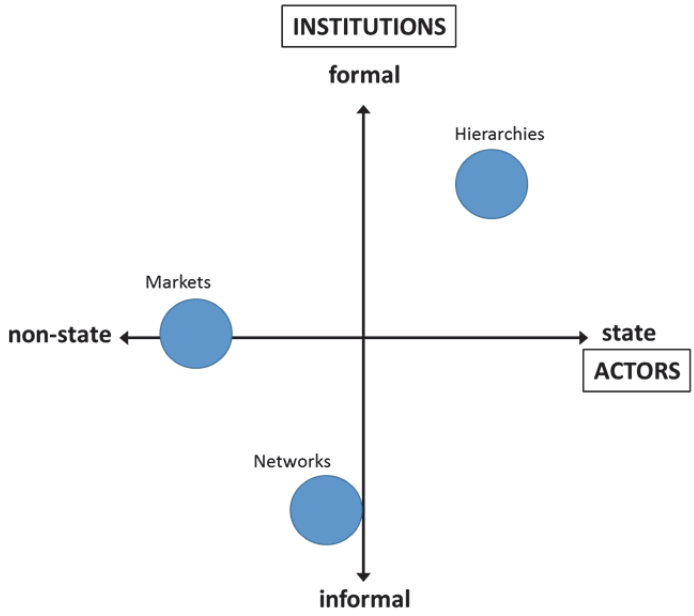


Figure 14: The importance of formal/informal institutions and state/non-state actors within various governance models (Pahl-Wostl, 2009)

The multi-layered setting of local institutions also comes with an array of difficulties. The Water Management Areas, within which a CMA has jurisdiction (when established), are based upon hydrological boundaries, WUAs have areas of operation that do not always match catchment boundaries, and catchment forums may or may not have areas that are aligned to the hydrological boundaries. These boundaries are not aligned to the administrative boundaries of local or provincial government. This does create challenges in undertaking planning exercises, such as the development of the Catchment Management Strategy, in undertaking integrated management actions and can result in overly complex institutional issues.

The exchange of information becomes critical to ensuring the success of polycentric systems. This information exchange enables shared learning, which is not only a key part of day to day functioning of the system, due to its complexity, but equally is invaluable in providing the ready knowledge to be able to adapt to changing circumstances.

It is important to note that the adaptability of polycentric systems is based upon the ability of people to both enter and exit the system. This flies in the face of some of the more recent thinking with regards to participation where some would like to see membership, on WUAs for example, within a specific geographic area, as being compulsory in order to prevent the challenge of some users not

being participative and creating management challenges. As result, all new water use licenses are issued with the clause that if they are situated within an area of operation of a WUA, then the user is compelled to become a member of the WUA. Ostrum (1972) notes that this freedom of entry and exit supports the spontaneous development of the system.

In addition, the functioning of polycentric systems is premised upon a suite of rules of conduct, and without which the system could become anarchic. It is important that as the system requires adaptation that these rules are adjusted and amended. Procedure is therefore important as is the ability to learn from experience and then adapt. The engagement of actors across levels becomes important for exchange of information and knowledge and assists with breaking down barriers (such as misalignment in areas of jurisdiction, for example) (Pahl-Wostl, 2009).

6.3 Polycentricity and Water Resource Management in South African Water

In examining the polycentricity theory, it is clear that the governance frameworks as outlined in the National Water Policy (DWAF, 1997) had the potential to take us towards a more polycentric model. South Africa has embarked on a process of decentralisation through the establishment of CMAs and WUAs, but the process has been lengthy. The time taken to undergo the various institutional establishment processes and the subsequent delegation of functions has in effect created the opportunity for senior officials to question the validity of the process and the benefits that this would bring.

Interestingly, in the early years of policy development in preparation for the roll-out of CMAs, there was recognition that CMAs could indeed function in a variety of ways (see Figure 10).

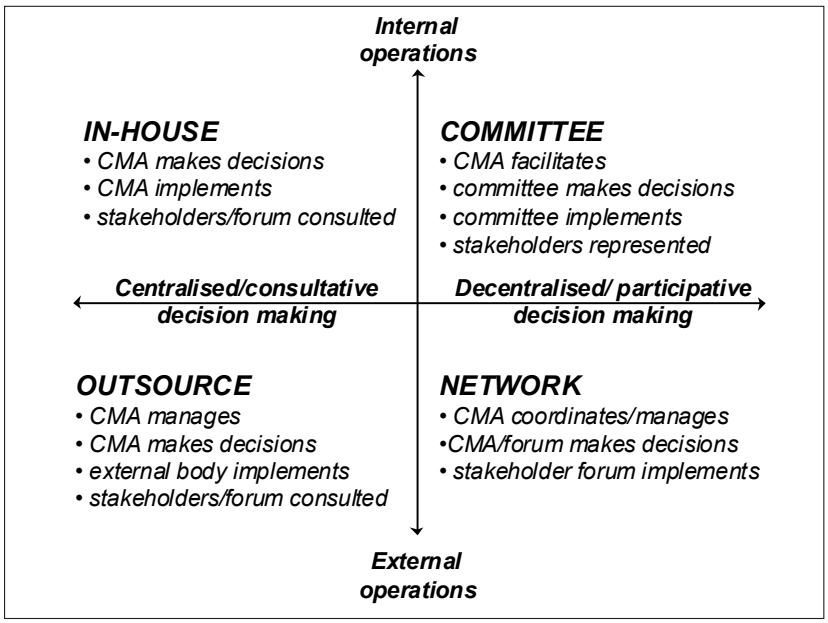


Figure 15: Institutional options for CMAs

Of course these options were critical to consider as they have organisational implications (and by implication staff transfer implications), but as importantly they would have implications for stakeholders and how they would interface with water resource management. At the time, it was

recognised that the "In-House" model would probably be the pragmatic first step, with some "Outsourcing". The notion of utilising a "Network" model felt as if the Department was abdicating its responsibilities and was clearly seen as a bridge too far. There was uncertainty about the capacity of stakeholders to take up such responsibilities, and that would then require capacity development.

Over a decade later, and with slow progress there is increasing recognition of the need for more participative approaches. Since then, the notion of networks has fundamentally changed and the manner in which these more informal and flexible networks function provide interesting governance opportunities. The expansion of citizen science and crowd sourcing initiatives to support water resource management are examples of how these networks can support.

Key water sector reforms have been drawn out which has led to further frustration both within the DWS as well as with stakeholders. The most recent policy revisions, which includes amongst others the disestablishment of WUAs and the removal of the ability to make temporary water transfers, can be seen to regress our efforts to deepen our engagement with stakeholders.

6.3.1 Analysis of Governance in South Africa

Tollefson *et al*. (2012) provide a useful metric to help understand the status of governance and the possible implications of certain adjustments in the governance framework. This tool was developed, based upon the work of Trieb, Bahr and Falkner (2007) that reflects that one can analyse governance by assessing three focus areas, namely, politics, policy and polity. Within these Trieb *et al*. (2007) propose a number of metrics as follows:

- **Politics:** Identity and influence of key actors and policy networks
- **Policy:** Legal bindingness, modes of implementation, the presence or absence of sanctions and whether regulations are procedural or substantive.
- **Polity:** Nature of the institutional architecture utilised, whether institutions are organised on a hierarchical or market basis and where the locus of authority lies (Tollefson *et al.*, 2012).

Trieb *et al.* (2007) note that after firstly undertaking this initial assessment, one can then look to the interactions across these focus areas, and how these can support institutional change.

This method is by no-means rigorous and Tollefson *et al.* (2012) provide useful discussion around the shortcomings of such an approach, however, for the purposes of this study it provides a useful basis for a narrative regarding current status and potential future trends. Interestingly, Howlett, Rayner and Tollefson (2009) note the nested and inter-relational dimensions of these three metrics and find that this does actually provide a useful basis for understanding the complexities of governance.

Following the approach of Tollefson *et al.* (2012) the analysis looked at governance as a function of institutions, political power and regulation and involves plotting the governance arrangements against a set of axes. In all three analyses, the horizontal axis represents a continuum from mononcentric systems through to polycentric systems, with the vertical axis representing the governance aspect being considered. The idea is not for this to be an accurate assessment but to be indicative and appropriate in relation to the other governance arrangements.

In considering the locations of each governance arrangement, a suite of metrics (provided by Tollefson *et al*., 2012) were used as given in Table 8.

In considering the locus of each governance arrangement, the interconnectivities between these arrangements were also considered together with existing policy trajectories. This provided for a richer deliberation on potential governance outcomes. These are captured in Figures 16-18.

Table 9: Conceptual metrics for measuring the governance dimensions (Tollefson *et al.*, 2012)

	Institutional dimension (formal-informal)	Political dimension (state-non-state actors)	Regulatory dimension (hard law-soft law)
Horizontal	Quantity and diversity of actors engaged in the institutionalized process in question	Quantity and diversity of actors with some degree of power or influence over decision/output	Quantity and diversity of actors engaged in the regulatory arrangement
Vertical	• Origin and nature of mandate • Nature and extent of consultation with affected interests • Outcome: formal decision or 'rolling' supervisory power • Monitoring and implementation	• Actual formal decision-making power • Actual not formal ability to influence decisions and outcomes	• *Precision* (how closely does the output prescribe and constrain private action?) • *Obligation* (how legally binding is the obligation?) • *Delegation* (is the duty of adjudicating and enforcing the obligation vested in an independent third party or retained by the regulator?)

Institutional Dimensions

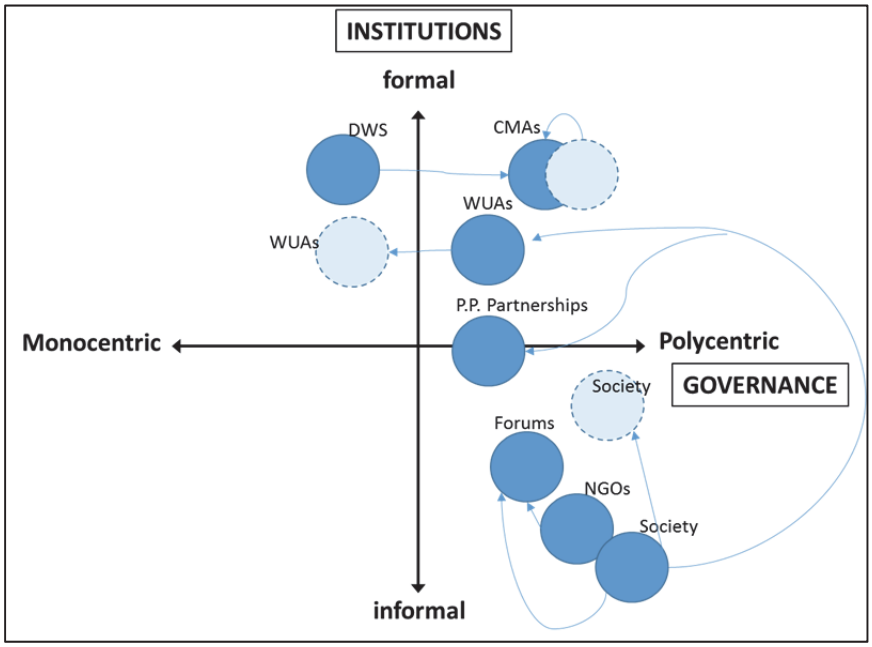


Figure 16: Institutional dimensions

The DWS still functions with some degree of monocentricity, although recent changes to ring-fence staff for transfer to the CMAs will ultimately mean that the Department remains fairly monocentric with a strong regulatory role. As noted in this report both CMAs and WUAs are formalised institutions via the NWA. The use of Public Private Partnerships has seen an opportunity to involve multiple actors in addressing a specific issue. As such, these are established in a formal manner. More informal institutions include forums, NGOs and other civil society groups, as well general societal engagement. These tend to be more participatory with a diversity of stakeholders engaged.

Shifts have and may continue to occur. Certainly there have been shifts in how we understand the corporate governance arrangements for CMAs, and this has changed from being more stakeholder based to being more strongly focused on sound corporate governance skills. The recent National Water Policy Review has called for the disestablishment of WUAs. This could have the effect of driving these groups into isolation and even possibly less formalised systems. Whilst some societal representation exists on WUA Management Committees, at present, the disestablishment of WUAs will probably break that connectivity.

Interestingly, there has been renewed interest in citizen science and as such these initiatives provide opportunities for society to have more formalised impacts on governance.

Generally, it is noted that there is in fact a healthy spread of institutional forms ranging from more formal to informal, and across the spectrum of monocentric to polycentric.

Political Dimensions

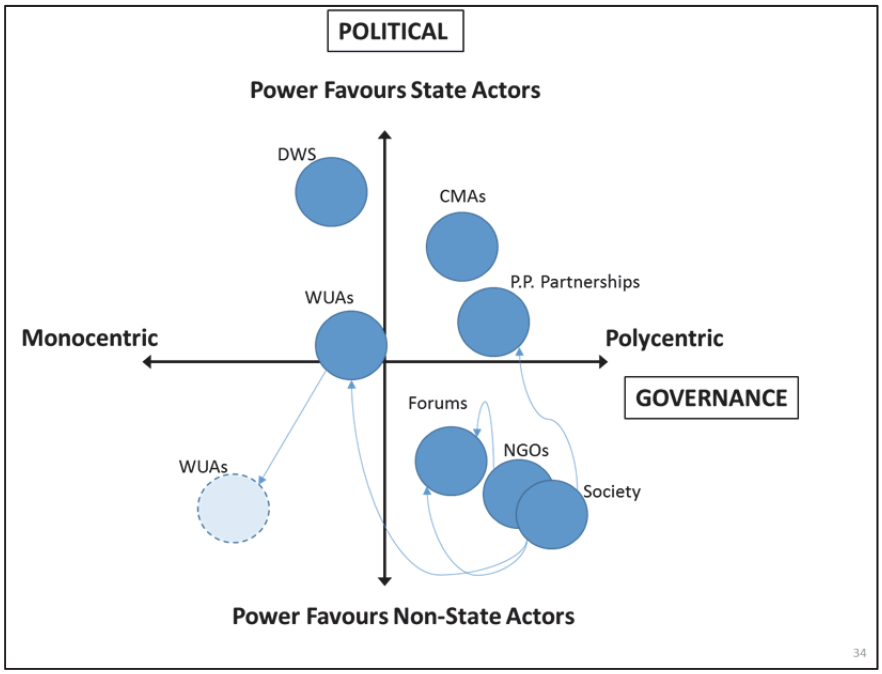


Figure 17: Political dimensions

The shift from DWS to the establishment of CMAs clearly sees a broader diversity of actors engaged in water resource management, potentially with slightly less formalised power. The WUAs do engage state actors as well as non-state actors, but the possibility of dis-establishment potentially pushes these water users towards monocentricity and even less engagement with state actors. This is not a desirable outcome.

The engagement of non-state actors through forums, NGOs and other forms of societal engagements remains important and provides a potential platform for more formalised engagements through PPPs.

As with institutions, the spread of political power from state to non-state actors and from more monocentric to more polycentric appears healthy.

Regulation Dimensions

As above, the shift from DWS to CMAs brings a broader diversity of actors into regulatory domains with the possibility of more self-regulation than hard regulatory mechanisms. WUAs whilst clearly having an important compliance role also do have less formalised regulatory tools at their fingertips. The potential removal (via the policy reform) of the ability to temporarily transfer water rights could potentially have the wrong impact in creating harder regulation, which clearly comes with more administrative burden. This could push water users further towards monocentric approaches rather than more polycentric approaches. So the connectivity with societal actors is potentially lost.

The platforms used for more societal engagements do not have hard regulatory roles, but potentially have considerable influence. These can become more formalised through PPPs and have the possibility to engage on a diversity of actors.

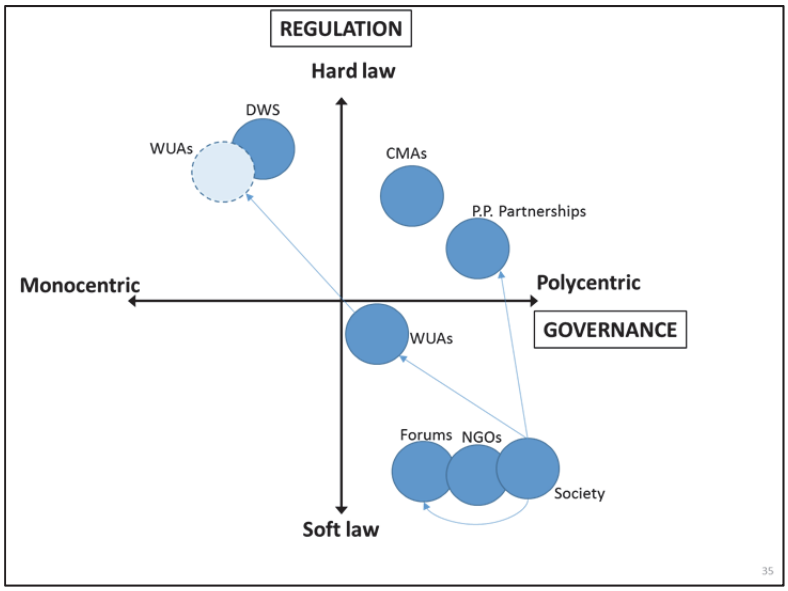


Figure 18: Regulation dimensions

Across Dimension Analysis

Firstly, looking across the institutional dimensions one finds that the governance arrangements will see a shift from more monocentric approaches to polycentric approaches. Whilst CMAs (and possibly WUAs) must foster this shift its does seem that the more polycentric approaches will be less formalised and will have more regulatory influence than a hard law approach. DWS will remain to play a sector wide oversight and regulatory role.

Secondly, the various institutions and structures have clearly nested and interactive relationship which is critically important to the sector. The less formalised structures are key to enabling engagement with non-state actors and as such will need ongoing support. The potential shift in WUAs regulatory role is extremely concerning to the sector and leaves the CMA with a responsibility at that more local level which may stretch staff.

Thirdly, whilst the establishment of formalised institutions (i.e. CMAs and WUAs) are an important step towards a more polycentric governance model, the results above show the importance of the

informal structures in supporting this governance model. It can be argued that by bringing structures such as forums into the formalised arena, that the ability to support a more diverse engagement of actors may in fact be hampered. It is clear that there is a need for some form of balance between governance platforms that are formal and informal.

7 Unlocking the Governance Framework

Our review of the existing governance framework shows us that actually we have useful balance of formal and informal structures, of governmental and non-governmental engagement, and of hard and soft regulation that provides both structure and encouragement. Across these dimension we see a shift from the more monocentric, centralised government towards a more polycentric and decentralised governance.

In its strictest terms we are only applying the polycentric governance model in certain circumstances, but noting the history of South Africa and the massive governance challenges that are being faced across a range of sectors, this is probably appropriate. There are questions as to whether our society is "mature" enough at this stage to entertain a fully polycentric governance model. The imbalances in power, in economics and in capacity do need to be managed in certain circumstances, and this country has already seen these imbalances abused within the water sector.

The feeling of this project team was that this is a model that the country needs to try and develop over time. There are already distinctive elements of the model in place, it requires of DWS and the CMAs diligent support and guidance to foster and encourage.

Whilst, there is an array of suggestions provided here towards getting our governance framework back on track.it must be noted that most of what is suggested is actually about getting on and implementing the existing policy and legislation. Some shifts are fundamental, and probably the most important is the need to take water beyond the bounds of the environmental government cluster. If we are to manage our resources sustainably, it means that discussions with National Treasury, DTI, DMR, COGTA and others becomes critical.

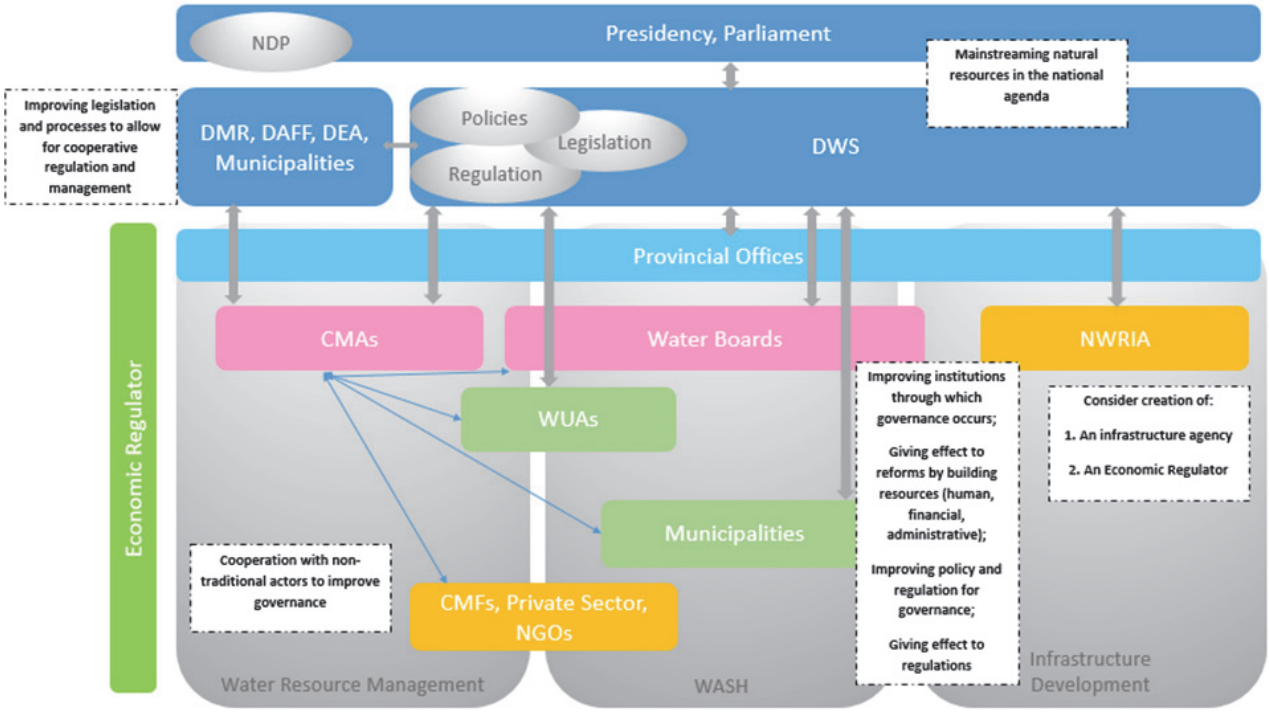


Figure 19: Towards a revised governance framework

7.1 Mainstreaming Natural Resources in the National Agenda

Since water is a critical input into industrial and economic development activities, specifically agriculture, mining and manufacturing in South Africa, there needs to be engagement with water scarcity issues in defining the economic development path. Put differently, in giving effect to the National Development Plan that was developed by the National Planning Commission, it is necessary for the opportunities and constraints of the water sector to be taken into account, and for environmental protection to be seriously engaged with. This means that the various departments (DMR, DAFF, DOE, Department of Rural Development and Land Reform (DRDLR), Department of Trade and Industry (DTI)) should work much more closely with DWS and DEA in determining South Africa's development agenda. Furthermore, the nature of discourse should begin to shift ("what do our natural resources enable us to do" versus "what can we do with our natural resources") so that there is a notion of environmental primacy.

In the short-term, in practical terms, this means that issuing of water use licences for big businesses (mines, industry, etc.) cannot be considered a formality, but should be engaged with appropriately.

Furthermore, overarching issues that impact on the water allocation reform process (such as land reform) must be dealt with at a national level in order to be able to develop some solutions.

7.2 Improving Legislation and Processes to allow for Cooperative Regulation and Management

The process of applying for environmental authorisation for development activities needs to be aligned between the relevant government departments. Thus, in revising the National Water Act of 1998 and National Environmental Management Act of 1998, the processes for requiring licences need to be aligned between the key departments including DWS, DEA, DMR and DAFF. Furthermore, relevant government departments need to work together coherently to protect the environment and share resources.

1. In revising the National Water Act and Water Services Act to deal with governance through the value chain, the following needs to be incorporated:
   i) DWS and COGTA needs to work with municipalities to assist in dealing with WCWDM; and regarding support for revenue and financial management
   ii) CMAs need to work closely with municipalities, water boards and WUAs to ensure service delivery as well as protection of resources
   iii) The functions and oversight of institutions such as Water Boards and Water User Associations that have both WRM and water service provision functions needs to be addressed appropriately

7.3 Improving Institutions through which Governance Occurs

South Africa adopted a decentralised water resource management model, but has failed to adopt it appropriately. Thus, the institutions for WRM are appropriate, but implementation and capacitation needs to be fast-tracked.

1. The creation of CMAs for catchment-level water resource management needs to be fast-tracked in order to ensure better regulation, accountability and collaboration in water governance.

2. The functioning of CMAs within administrative boundaries needs to be clarified, since WMAs straddle provincial and local boundaries. CMAs should however work with all stakeholders within the catchment including Water Use Associations, Water Boards, CMFs and municipalities.

3. The following needs to be clarified regarding localised water management institutions:

    i) The institution responsible for localised water resource and infrastructure management;

    ii) The functions of localised water management institutions;

    iii) The functioning of water management institutions, including:

        a. whether all water users within the WUAs jurisdiction should be a part of the WUA

        b. representation and capacitation of previously disadvantaged communities

        c. inclusion of future water users

    iv) The transformation of previous irrigation boards

    v) Oversight of these institutions

4. The following needs to be clarified regarding the Water Boards:

    i) Their role of Water Boards in WRM functions such as providing support to CMFs needs to be clarified viz. a viz. other institutions;

    ii) The role of Water Boards in providing “local” water on behalf of some municipalities;

    iii) Who is responsible for bulk regional services outside of existing Water Board services areas?

    iv) Oversight of these institutions

5. Prior to its suspension the Water Tribunal played a critical role in resolving disputes with regards a range of regulatory matters. The absence of the Tribunal has been problematic by effectively creating a space for unfair practice (either by users or by the regulators). Even more importantly the Tribunal plays a key role for determining best practice through dispute resolution and as such pushes the DWS to improve upon its role as a regulator. The re-establishment of the Tribunal is matter of urgency.

6. Given that regulation of in-house activities is difficult, the DWS should seriously consider the creation of an Economic Regulator which: i) regulates tariffs on water boards and raw water in order to ensure equity; ii) arbitrates on tariffs; iii) inputs on the raw water pricing strategy; iv) develops reporting requirements; and v) publishes reports, among other things.

7. The operation and maintenance of existing infrastructure and development of new infrastructure is of utmost importance, given increasing climate change challenges. The department should consider the creation of an Agency that will be solely responsible for managing current infrastructure and development of new infrastructure where necessary.

7.4 Creation of New Partnerships to Improve Governance

Given the capacity and resource challenges facing the DWS, it needs to actively pursue collaboration with non-governmental institutions in the water sector in order to improve water resource governance and management.

1. While corporates bring resources, technical expertise and convening power within the governance space, government oversight of corporates with regard to governance needs to be improved too. Further opportunities should be considered through vehicles like the SWPN, as well as replicability of interventions in other contexts.
2. Traditional governance systems provide an opportunity for water resource governance by communities for communities. Malzbender et al. (2005) suggests that an audit be done in specific regions to establish strengths and weaknesses in local knowledge systems.
3. Community engagement in governance issues needs to be strengthened. CMFs provide a vehicle for this to occur, but support is required in terms of administrative capacity, upskilling, funding and capacitation.

7.5 Improving Policy and Regulation for Governance

1. Government needs to foster a culture of policy certainty in the water policy space in order to regain credibility. This includes:

   i) Acting on policy, for example, creation of CMAs (and delegation of functions)
   ii) Reviewing policy when necessary and ensuring a transformation focus
   iii) Implementing policy

   What this does require is a national water resource management think tank, led by the DWS as sector lead, that provides key stakeholders and actors an opportunity to re-engage with the Department and the business of managing resources. The DWS cannot manage water resources without the support of a range of stakeholders and institutions, many of which have felt ostracised over the last five years. The development of new partnerships is the way forward.

2. The delegation of water licencing to the CMAs provides an opportunity for improvement of the process. The following should be considered:

i) The licencing regime needs to be transformative, with a focus on licencing of large users of water with GAs used more effectively
ii) The licencing process should be made more efficient, with an integrated process between DEA, DMR, DWS and DAFF
iii) The capacity to evaluate licences should be improved
iv) Enforcement of licence conditions should be improved

3. Finalise the revised Raw Water Pricing Strategy while ensuring that the principles of equity and efficiency are being realised through the strategy.

4. Finalise the WDCS and begin implementation as a matter of urgency.

5. Reserves: As noted earlier, the challenges existing in this regard are linked to how we give effect to the policy and legislation. The methods for the setting of the Reserve are technically complex, and once the set there are challenges in terms of seeing the Reserve implemented. This will be challenging in many systems where we will in effect need to "claw back" from a water resource that is, in many systems, close to over-allocated or is over allocated. To do this there will need to be strong political will. International experience shows us that we will need to address the following challenges (amongst others) if we want to see these environmental flows implemented:

   i) Lack of political will and stakeholder support

   ii) Insufficient resources and capacity

   iii) Institutional barriers and conflicts of interest

   iv) Understanding of the socio-economic benefits

Alignment in cross-sector policy with regards to resource protection is critical, although by using the NWA as a SEMA, there are real possibilities for the use of the NWA to ensure resource protection across the various sectors. This will require the DWS and CMAs (with political support) to adjust their role to really champion resource directed measures, as a foundation that thereafter enables sustainable resource development, and to monitor and oversee implementation. This is a paradigm shift away from the current more dormant role.

7.6 Giving Effect to Regulations

Compliance, monitoring and enforcement of regulation should be improved. A few things need to be in place for more effective regulation, and we highlight three of these below:

1. In the context of limited capacity, targeted regulation may be a preferred option. This should be coupled (for transformation purposes) with the state protecting and supporting water use of small users, for example, through infrastructure provision, subsidies, technology transfer, and market support. A similar approach can be applied to regulation of discharge, regulating most strictly those dischargers with the most significant potential impact in the catchment.

2. Devise an integrated licencing system that synergises the financial and human resources between DEA, DWS, DMR and DAFF.

3. Fast-track roll out of CMAs, while capacitating them for regulation.

7.7 Giving Effect to Reforms by Building Human Resources (human, financial and administrative)

For too long the sector has done little to really support the transformation of the sector. Support at the institutional level has been little more than window dressing. In order to aid transformation in the water sector, the following need to be engaged with:

1. Support should be given to developmental WUAs[40] in order to function effectively?
2. Support/oversight should be given to the setup processes of WUAs/transformation of irrigation boards.
3. Support should be given to WUAs and CMFs in order to capacitate previously disadvantaged water users to participate more effectively in WRM.
4. Improve the policy regarding future users of water and the question of land in order to improve access to water.
5. Provide seed funding to WUAs and CMFs to support set-up and initial administrative costs.

[40] While we have used WUAs here, given that WUAs may be established, this could refer to any future-mandated localised water management institutions.

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