Norms for policy implementation lags in the South African water sector

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by

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Executive Summary

In 1998 South Africa transformed its laws aimed at managing its water resources. This introduced aspects of international discourse on management in the form of Integrated Water Resources Management (IWRM). The new policy and laws aimed at socially equitable allocation of water, redressing past discrimination in allocations, abolishing ownership of the resource and vesting the custodianship in the state. All are to be done whilst ensuring the integrity and sustainability of the resource. This new approach was also heavily rooted in the Constitution, placing water management within the normative framework of human rights.

Since then, the implementation of IWRM has been the main task of the Department of Water Affairs (DWA) and it has necessitated serious administrative, management and governance reforms, although some functions are now being transferred to the few Catchment Management Agencies that are operating. To date, some of the envisaged reforms have taken place, but considerable amounts remain unexecuted. Although lag time is inevitable, particularly where new institutions, laws, frameworks, and strategies are necessary, at some point we must ask the question: how long is too long?

This paper explores how to better evaluate, legally and practically, implementation lags within the context of IWRM. By implementation lags, the authors refer to the time between the enactment of policy or law and its adequate implementation. In particular, it places this evaluation process within the Constitutional framework that underpins water management reform in South Africa. In doing so, it applies important legal concepts such as 'reasonableness' and 'progressive realisation' to as means to evaluate IWRM lags. Building on these legal obligations, the authors propose a framework and application tool for evaluating IWRM lags that is strongly rooted in complexity theory and strategic adaptive management. The framework and tool itself will ideally be implemented within existing strategic planning frameworks, namely the catchment management strategy and national water resource strategy processes.

Introduction and aims of the consultancy

Movik (2010) gives an account of the 'transitions' that have occurred in relation to coping with water related issues over the centuries. Her accounts relate to societies' efforts in dealing with perceptions of scarcity and the major shifts that have occurred. She maintains that over the last decades a shift has occurred where Integrated Water Resource Management (IWRM) has gained prominence as a powerful water management paradigm and the notion of tradable formal or administrative entitlements, known variously as permits, licences, concessions or grants play a prominent role. Movik describes a shift from water rights regimes, such as the riparian principle, to ones where authority to issue or use water is vested in the State.

Along these lines, South Africa has also undergone a systematic shift in its water management system by adopting IWRM; however, as Movik recognizes, South Africa is unique in that it has undergone deep systemic changes, not only for environmental and sustainability reasons, but also to "engage in reallocation of resources in order to rectify an extremely skewed distribution resulting from a historical legacy of colonialism, apartheid and discrimination." Thus, changes

Box 1 – Reform or transform?

We take **reform** characteristics to be congruent with: restructure, rearrange, carry forward differently, reformulate and change direction, where **transformation** occurs when there is systemic change, new policy and principles, removal and replacement, redesign, adopt new procedures and

were necessary because the previous water law (Water Act 54 of 1956 including other pieces of legislation related to water) did not adequately address sustainability of the water resource and favoured the use of water by a dominant group which had privileged access to land and economic power. (White Paper for National Water Policy, DWAF, 1997; Movik, 2009; Movik, 2010).

In many official documents the South African government refers to 'water reform', but in many respects it is more accurate to name the change process 'transformation'. As mentioned, the new IWRM approach is central to the re-orientation embodied in water resource management transformation (Pollard & Du Toit, 2008), and it adopts entirely new principles and approaches (which are truly transformative) for managing water. The Department of Water Affairs & Forestry, now the Department of Water Affairs, (DWA) defines IWRM as '*a philosophy, a process and a management strategy to achieve sustainable use of resources by all stakeholders at catchment, regional, national and international levels, while maintaining the characteristics and integrity of water resources at the catchment scale within agreed limits'*((DWAF, 2003a; see also Pollard & Du Toit; 2008; GWP 2002; Jones et al., 2006). The new system challenges the policies and values of the past by framing water resource management within the context of two fundamental principles: equity and sustainability, both of which are reflected throughout the new Constitution of the Republic of South Africa and are rooted in the economic, social, environmental and political circumstances of the country. (RSA, 1998; Pollard & Du Toit, 2008; Thompson, 2006). These principles are strongly transformative in nature, seeking to move towards integration, redistribution and equitable allocation, sustainable use, resource protection and participation. IWRM therefore aims to strike a balance between the use of resources for livelihoods and its protection for future generations, whilst promoting social equity, environmental sustainability and economic efficiency (DWAF, 2004 a). (Pollard & Du Toit, 2008). Such shifts demand new tools, mechanisms, infrastructure, personnel, institutions and procedures.

As with any transformative policy, it will take and has taken time for the government to implement the new water management approach. In other words, when there is a significant transformation of policy and priorities to manage a complex system, as with the water resource management sector in South Africa, there will always be a "**lag**" from policy formulation to implementation (Pollard & Du Toit, 2008). For example, in the field of economics, this period between policy formulation and implementation is referred to as an implementation lag. Lags are a natural consequence of changes in policy, law and administrative procedure.

Nevertheless, despite the inevitability of implementation lags, the best designed and intentioned policies are meaningless, however, if 1) the time it takes to "implement" them is too long or 2) their implementation is of an unacceptable quality or standard.[1] The key, therefore, is to understand <u>when a lag is unreasonable with respect to these two categories.</u>

The main aim of this study is to understand more about the key issues that contribute to **implementation lags** in water reform in South Africa, and to better understand how to evaluate, both legally and practically, whether these lags are reasonable. Furthermore, it aims to scope out the legal instruments and strategic planning frameworks that can guide management process so that lag times can both be evaluated for their reasonableness and be made reasonable. In doing so we define fundamental concepts such as 'transformation', 'progressive realisation' and 'reasonableness' and recommend that

[1] Importantly, one must be cognisant that a lag is not only a temporal delay, but also encompasses the quality of an action. Thus, a catchment management agency may be established within an appropriate time frame, but if it does not have the resources and expertise to undertake its functions, that would still constitute an unreasonable lag.

progressive realisation, a constitutional obligation related to ensuring various socio-economic rights, should be the main avenue by which lags in implementing IWRM are evaluated. The focus is largely limited to water resources management, however, it includes water supply insofar as it is related to the water management process.

The five aims of the consultancy are to elaborate on:

1. The importance of water reforms in ensuring a sustainable resource, redressing past inequities and optimal use of resource through decentralized management and governance of water.
2. Definition of lag.
3. International status of benchmarking of lags.
4. recommended policy implementation lag assessments.
5. Recommendations moving ahead.

Methodology

This study is based on desktop review of available research and legislative, regulatory, strategic, and planning documents in place around the management of water resources. The team includes expertise in the areas of human rights law, water law and environmental law; ecology; hydrology; water management; and social learning theory. It is the authors' position that an interdisciplinary team is required to adequately address the multiple facets necessary to understand and evaluate IWRM implementation lags.

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A. Water management reform in South Africa

This section takes a closer look at how water management reform has unfolded in South Africa, particularly focusing on the legal planning, legal and strategic apparatus in place to foster reform.

1. The Constitution as the key driver of water resource management transformation in South Africa

The transformation from the 1956 to the 1998 water law, which as discussed above as adopted IWRM as the management paradigm, is rooted in the Constitution, which espouses fundamental rights around sustainable development, participation, non-discrimination, and access to basic services. The Constitution also places great emphasis on cooperative government, and creates a normative framework for many environmental law principles, such as the precautionary principle and the polluters pay principle. The importance of linking IWRM with Constitutional norms is that it places the implementation of water management policy and law within the context of constitutional obligations, namely, as we urge below, the obligation to enact reasonable legislative and other measures and the obligation to progressively realise constitutional rights related to sustainability, equity and various socio-economic rights. The implications of linking reasonableness and progressive realisation to IWRM are discussed later in section C.

The Constitutional mandate related to water resource management is primarily rooted in Section 24 and 27 of the Constitution. Section 24 establishes a fundamental right to an environment that is not harmful to his or her health or well-being, and requires the environment to be protected for the benefit of the present and future generations (Section *24(a)* and (b) of the Constitution). The protection should be afforded through reasonable legislative and other measures that secure ecologically sustainable development and use of the water resources, while promoting justifiable economic and social development (Section 24*(a)* and *(b)*(iii) of the Constitution).[2] The Constitutional Court has recognized that Section 24 provides for the principle of **sustainable development**, which contemplates the **integration of socio development, economic development, and environmental protection**.[3] Importantly, *Fuel Retailers* also reinforced the legal obligation to assess the **cumulative impacts** of potential activities on the environment, socio-economic conditions and cultural heritage (para. 73). This means that the regulator cannot look at an activity's potential impacts on the environment in isolation, but within a much broader context that takes into consideration other activities that are taking place. It will also require an assessment of impacts from the proposed activity to existing activities. For example, how might the filling station impact the operation of other businesses?

The Court also, and appropriately, recognised the inter-linkage between the **precautionary principle** and assessing cumulative impacts. (para. 81). Principle 15 of the Rio Declaration provides the following well-established definition of the precautionary principle: "*Where there are threats of serious or*

[2] Brief discussion of section 24 citing to glazewski and kidd

[3] (*Fuel Retailers Association of Southern Africa v DG Environmental Management, Department of Agriculture, Conservation and Environment Mpumalanga Province*, paras. 45, 63 (CCT 67/06, 7 June 2007; see also Ferris 2008, Glazewski 2005, Kidd 2011).

irreversible damage, lack of scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." The Court held that the "precautionary approach is especially important in the light of section 24(7)(b) of the National Environmental Management Act (NEMA) which requires the cumulative impact of a development on the environmental and socio-economic conditions to be investigated and addressed".

Moreover, Section 25 of the Constitution places a commitment on South Africa to bring about equitable access to the water resources. (Section 25(4)*(a)*) The State may take legislative and other measures to achieve water reform in order to redress the results of past racial discrimination (Section 25(8)).

Every person also has a fundamental right of access to sufficient water. The right to water is indirectly linked to the sustainable management of water resources, because in order to ensure sufficient and clean water in the long term, the resource must be managed sustainably. [4] Giving effect to this right could also give effect to the constitutional right that a person has to have his or her dignity respected and protected (Section 10) and to the right to life (Section 11).

Section 27 places the obligation on government to reasonable legislative and other measures to **progressively realise** to ensure sufficient water. In other words, the Constitution, by adopting the concept of progressive realisation implicitly recognises time delays (lags) when fulfilling this fundamental right. In the absence of available resources, the failure of the State to fulfil its obligations should not be a violation. Should resources become available, it will be difficult for the State to justify its failure to devote those resources to the fulfilment of its obligations. As more resources become available, more should be done.

We also propose and elaborate on in section C that the obligation of progressive realisation applies to Section 24, even though this language is not specifically included in that section.

Effect should be given to the constitutional mandate in such a manner that the other fundamental rights are respected, protected and fulfilled.[5] These include the right to:

- equal protection and benefit of the law (Section 9(1));
- non-discrimination (Section 9(3));
- privacy (Section 14);
- access to information (Section 32);
- just administrative actions (Section 33); and
- disputes that could be resolved by the application of the law decided in fair public hearing before a court or, where appropriate, another independent and impartial tribunal or forum (Section 34).

[4] The right to have access to sufficient water is arguably equally relevant to informing water management practice. Unfortunately, this right has been restricted and narrowly applied in South Africa to focus on providing water services. We assert that this narrow definition of the right to water neither comports with how it has been defined in international law nor is logical, as providing access to sufficient water is directly linked with ensuring a sustainable resource. Although beyond the scope of this deliverable, a comprehensive discussion of the right to water within the context of IWRM and its relation to an environmental right is also warranted.

[5] The Constitutional mandate is entrenched in the "Fundamental Principles and Objectives for the new water law in South Africa", which was approved by Cabinet in November 1996.

All of these rights are not absolute and may be limited in terms of a law of general application to the extent that the limitation is reasonable and justifiable in an open and democratic society based on human dignity, equality and freedom, taking into consideration certain factors (Section 36).

The Constitution also requires a high level of **cooperative governance** between vertically and horizontally overlapping mandates. Section 40 recognises that the three spheres of government (local, provincial, and national) are interdependent and interrelated. Section 40(2) further recognises that all levels must adhere to the principles of cooperative government and intergovernmental relations set out in Chapter 3 of the Constitution, and that all spheres must conduct their activities within the parameters set out by this Chapter.

Section 41(1)(f) is relevant in this regard, and requires all spheres of government to, among other things, co-operate with one another in mutual trust and good faith by fostering friendly relations; assisting and supporting one another; informing one another of, and consulting one another on, matters of common interest; co-ordinating their actions and legislation with one another; adhering to agreed procedures; and avoiding legal proceedings against one another[6]. All of these requirements have important implications on how various spheres of government coordinate their regulatory actions around the environment, including water resources.[7] As will be discussed in Section 5 below, the lack of cooperative government is a major theme being raised around enforcement and water resources.

These overarching norms provide the basis for the shifts that the administrative, legal and collaborative management system needs to respond to. Clearly they bring new priorities for action and with that the possibility for the need to adopt new systems for functioning and performance. At the same time, this shift will require learning, competence and skills development.

2. Legislative and strategic planning framework

The ultimate goal of the water management reform process is to give effect to the Constitutional norms described above. As mentioned, this process cannot be achieved overnight, and can only be achieved through reasonable legislative and other institutional measures, within the available (technical, financial, temporal, etc.) resources and in a phased and progressive manner. In order to answer when a lag is taking too long or when an action is of an unacceptable standard, it is necessary to first review the policy, legislative, regulatory, and strategic planning frameworks that are in place for achieving water management reform goals. Although a comprehensive review of this is outside the scope of this paper, a brief overview of the process is presented. Importantly, legal instruments do not operate in isolation, but they instead work in tandem, or even in contradiction, to each other. Obviously, legal instruments that give rise to contradictory management actions are highly problematic and can be yet another source of administrative lags.

[6] The last requirement, to avoid legal proceedings against one another, is addressed in one of the legal sub-project's case studies that focuses on criminal enforcement as an option to regulate the unlawful discharge of sewage waste by municipalities.

[7] The legislature has passed the Intergovernmental Framework Relation Act (IGFRA), Act 13 of 2005, as a means to facilitate cooperative government and resolve inter-governmental disputes. The purpose of IGFRA is to "establish a framework for the national government, provincial governments and local governments to promote and facilitate intergovernmental relations; to provide for mechanisms and procedures to facilitate the settlement of intergovernmental disputes; and to provide for matters connected therewith".

a. National Water Act (Act 36 of 1998)

The National Water Act (Act 36 of 1998) (NWA) is the main legislation governing water management in South Africa, and it builds on the 1996 Fundamental Principles and Objectives for a New South African Water Law and the White Paper on a National Water Policy in South Africa. It re-orients the water resource management system and adopts an IWRM approach. The Act explicitly recognizes 'the need for the integrated management of all aspects of water resources'. The purposes of the Act include promoting equitable access to water; redressing the results of past racial and gender discrimination; promoting the efficient, sustainable and beneficial use of water in the public interest; facilitating social and economic development; protecting aquatic and associated ecosystems and their biological diversity; and meeting international obligations (Section 2).

Critically, the NWA departs significantly from the previous water management regime by adopting the **public trust doctrine** which espouses that the (National) Government should be the public trustee of the water resources. The Government, acting through the Minister of Water (and Environmental) Affairs must ensure that the water resources and the water within them are protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner, for the benefit of all of the persons. This should be done in accordance with an accepted value system. This value system is contained in the Constitution, the so-called Constitutional mandate (Thompson, 2006; Van den Scyff, 2011).

The National Water Resources Strategy (NWRS) and Catchment Management Strategies (CMS)

The Act requires the national government to establish a National Water Resource Strategy that should promote the management of catchments within a water management area in a holistic and integrated manner (Section 5 to 11, Thompson, 2006). Water resources should be protected, used, developed, conserved, managed and controlled in accordance with the NWRS (Ibid.). The first NWRS was adopted in 2004, and the second NWRS is now overdue.

The Act also requires, once functioning, a catchment management agency to prepare a catchment management strategy at least every five years. (NWA Section 8). A CMA must involve relevant stakeholders within the particular catchment in the development of the strategy. It must also ensure that the CMS does not conflict with and is aligned to the NWRS (Section 9 and Part 2 preamble). Among other things, the CMS must "set out the strategies, objectives, plans, guidelines and procedures of the catchment management agency for the protection, use, development, conservation, management and control of water resources within its water management area" and contain water allocation plans. (Ibid.)

Water Management Institutions under the NWA

Another fundamental change that accompanied the policy overhaul was the management of water resources on a catchment basis. Indeed the Act notes that the NWRS must provide the framework within which water will be managed at the regional or catchment level in defined water management areas. To give effect to this, the NWRS divided the country to 19 Water Management Areas (WMAs) based on catchment boundaries that are to be governed by a Catchment Management Agency (CMA) each. These areas are under review and will probably be reduced. Thus a vital component of IWRM is the progressive devolution of responsibility and authority over water to CMAs, and the Act requires that a CMS must be

developed for each of the WMAs and states that the CMS will serve as the framework for water resource management in a WMA (Pollard & Du Toit, 2008). The NWRS highlights the importance of CMAs:

> The agencies will therefore have to establish co-operative relationships with a range of stakeholders, including other water management institutions, water services institutions, provincial and local government authorities, communities, water users ranging from large industries to individual irrigators, and other interested parties. The success of integrated water resources management will therefore depend heavily on the development of a framework of co-operation among all relevant institutions, organisations and individuals. This co-operative framework must facilitate planning at all geographic scales ranging from international projects to activities on individual smallholdings, and the co-ordination of programmes.

Two new instruments for resource protection and regulation of use

The NWA and the NWRS have established a framework for implementing IWRM and meeting the Constitutional obligations. They identify two complementary strategic areas, known as **Resource Directed Measures** (RDM) for protection and **Source Directed Controls** (SDC) for regulation of use. Collectively, these are the key, overarching strategies for IWRM in South Africa (DWAF, 2003 b; 2004 b-e; DWAF and DFID 2004; DWAF 2005 a-c; 2006 a,b; Pollard & Du Toit, 2008; Thompson, 2006).

The RDM are directed at protecting the water resources base by setting objectives for the desired condition of resources, and collectively this comprises Classification, the Reserve and Resource Quality Objectives. These measures focus on the quality of the water resource itself. Resource quality means the overall condition of the water resource (including quantity and quality) of instream and riparian habitats and aquatic biota.

The SDC are measures to control water use to limit impacts to acceptable levels, as defined through RDM. These measures contribute to defining the limits and constraints that must be imposed on the use of water resources to achieve the desired level of protection, and primarily implemented through conditions on water use authorizations. The SDC cannot be undertaken without RDM and vice versa (NWRS Chapter 3, Pollard & Du Toit, 2008). These strategies apply to both surface water and ground water resources, and to issues of quantity and quality.

Under RDM and SDC fall a number of planning instruments that are aimed at addressing specific issues some examples of these are: Water Allocation Plans (WAP) and Water Conservation and Water Demand Management Plans (WCDM). All of these plans and strategies need to work in tandem with instruments that fall under legislative frameworks for example the Water Services development Plans (WSDP) under the WSA, Environmental Management Plans under NEMA, and other relevant legislation.

b. Water Services Act (No. 108 of 1997)

The WSA governs water services and includes as its objectives, among other things, to provide access to basic water supply and sanitation to all in South Africa, to provide a regulatory framework for water service institutions, and for extensive monitoring of water service quality. The WSA requires all

metropolitan and district municipalities, all of which are designated as water services authorities, and any local municipalities authorised to fulfil the role of a water services authority, to prepare **water services development plans** (WSDP) in terms of the WSA. These plans should form part of the **Integrated Development Plans** that municipalities must prepare in terms of the Municipal Systems Act, 2000 (No. 32 of 2000). The WSDP serves as a key document for DWA or the CMA to determine water allocation to a municipality.

c. Management actions under the NWA and WSA

As described, the system for implementing the new water management approach is complex and requires multiple programmes, tools, and practices. Table 1 presents, in no particular order, a provisional list of management actions under the water legislation. The operationalisation of these programmes, tools, institutions, and practices has begun. Some are more critical than others for ensuring equitable and sustainable water resources, and the complexity and contextual factors in achieving each is variable. These management actions will form the basis for the later discussions on progress and transformation evaluation.

Table 1. Management actions under the NWA and WSA

Management actions under the **NWA**	Management actions under the **WSA**
• institution creation and development, such as CMA, WUA • classification of water resources • authorization and licensing • validation and verification • water allocation reform • Reserve (determination and implementation) • conservation and demand management • water resource infrastructure and rehabilitation • resource quality objectives (set and implemented) • pollution control • compliance monitoring • enforcement • transboundary obligations	• infrastructure development • wastewater treatment • water treatment • setting tariffs • compliance monitoring • enforcement

d. Other legislation

As indicated in Table 2 below, there is several other legislation related to the water resource management reform process, including the National Environmental Management Act of 1998, and its subsequent amendments, and the Mineral and Petroleum Resources Development Act of 2002. All of these interface with the authorisation, monitoring and enforcement processes associated with management.

A collection of new laws and planning instruments

The following is a table of key laws and a selection of associated key planning instruments that have an impact on water management practices. The law requires that these work together to meet the Constitutional obligations.

Table 2. Laws and planning instruments driving the transformation of water management in South Africa (examples only)

	Legislation		Planning instruments
	Primary		
	The Constitution	1996	
	National Water Act	1998	National Water Resource Strategy (NWRS) Resource directed measures (Classes and Reserves) Catchment Management Strategy (CMS) Water Allocation Plan (WAP) Water Conservation and Water Demand Management Plan (WCDMP)
	Water Services Act	1998	Water Service Development Plan (WSDP)
	National Environmental Management Act	1998	Environmental Management Plan (EMP) Environmental Impact Assessment (EIA) Consolidated Environmental

	Legislation		Planning instruments
	Primary		
			Implementation and Management Plan (CEIMP)
	Secondary		
	Conservation of Agricultural Resources Act	1983	Land Use Management Zoning
	Minerals and Petroleum Resources Development Act	2002	EMP EMPR
	Municipal Structures Act	1998	
	Municipal Systems Act	2000	Integrated Development Plan (IDP) Spatial Development Framework (SDF)
	Disaster Management Act	2002	Disaster Management Plan (DMP)
	Intergovernmental Relations Framework Act	2005	
	Procedural		
	Promotion of Administrative Justice Act	2000	Administrative procedures
	Promotion of Access to Information Act	2000	Transparency procedures

As described above, systemic transformation as attempted in South Africa has a number of features but all taken together amount to extensive review and revision. Many of these aspects are interlinked meaning that an attempt to change one aspect of the system precipitates the need to change one or more other aspects. In sum, the new water management system has shifted priorities and introduced new:

- policies and management principles (a Bill of Rights focus, water as a public good, Minister as custodian, environmental water requirements)
- legislation and regulations (e.g. National Water Act and EIA regulations)
- spatial arrangements (i.e. catchment boundaries introduced)
- identities and functions (regulator, mediator, custodian)
- institutional arrangements (CMAs, WUAs, etc.)
- language of management (strategic planning, strategic adaptive management)
- norm standards (RQOs, WCDM)
- practices, plans, options, procedures, tools and measures for management (see CMS framework for management requirements)
- relationships with other depts./regulators/authorizing agents (authorisation chains and integrated licensing)
- arrangements with stakeholders and uses (collaborative planning, consultation, public comment)
- procedures and sequences for conducting management (administrative action and procedure)
- procedures for Monitoring and Enforcement (satellite monitoring, directives, interdicts, etc)
- financial implications for users (waste charge discharge system, incentives, water resources management charges)

Thus, it is imperative to recognise, as does the law through the obligation to progressively realise socio-economic and environmental rights, that lags during this process will occur.

B. Water management reform in other countries: can we compare experiences?

Many countries have incorporated IWRM into their water management reform process, including much of Africa and South America, where major transformation in policy, legislation, and creation of new institutions have taken place. For example, according to the UN, at the end of 2005 approximately 20 countries had plans and/or strategies in place or were well underway in incorporating the main elements of the IWRM approach, 50 countries were in the process of preparing national strategies or plans, and 25 countries had taken initial steps towards IWRM (UN Water, 2008).

Nevertheless, despite this increased trend towards adopting IWRM internationally, one needs to ask how useful is it to compare countries' implementation of water management reform and extrapolate lessons to evaluating lags in South Africa's implementation process? We submit that although such an exercise can be useful, for reasons listed in the following section, extrapolating or superimposing other countries' experiences implementing IWRM to compare lags in the South African situation is difficult.

1. Challenges around comparing water reform experiences

First, although IWRM has common features, such as the use of tradable, formal or administrative rights, IWRM has not been implemented or defined consistently. As one expert noted, the concept [of IWRM] is vague enough to allow for a variety of interpretations, and it has proved difficult to implement in practice." (Movik, 2010).

Second, every country has different legal, governmental, institutional, social, political, environmental and economic contexts that shape policy formation and implementation. (Movik, 2010; UN Water, 2008; IUCN, 2009). Some examples of this diversity around enacting and implementing policy reforms, include:

- **Types of government structures**: Governments typically lie somewhere on a continuum between federal or unitary structures. Federal-oriented systems, such as Canada, the United States and Mexico have a division of powers between national and sub-national governments, whereas unitary governments concentrate their governance at the national level. (IUCN, 2009; UN Water, 2008).
- **Modes of government**: Various modes of government can also shape water reform. Generally, there are three modes of government: authoritative governance, liberal or representative democracy, and direct or participatory democracy (IUCN, 2009). Each of these modes of government approach water reform in different ways.
- **Legal systems**: Countries generally have common law or civil law systems, while others rely on religious systems, such as Shariah law in Iran (IUCN, 2009). Civil law systems generally rely on specific codes of law on various subjects that are then interpreted by judges. Common law countries centre on the principle of legal precedent which is applied by judges. Although both systems are converging in many ways, such as the increase of statutory law in common law countries, and the increased reliance on precedent in civil law countries, the various systems still remain very different.
- **Drivers for reform**? Although in almost all countries water reform is prompted by problems arising from water shortages and environmental problems, however, there can be many other contributing factors. For example, in Australia, Spain, and the United States, urban

growth concerns have presented major challenges (Bruns et al., 2005). Social and political inequities in access to water played a prominent role in South Africa and various South American countries, while water pollution was an enormous problem affecting basins in Mexico. (Ibid)

- **Historical differences**: Water management systems are shaped by a country's history. For example, the legacy of apartheid and colonialism played a significant role in shaping water reform in South Africa.
- **Water Users and land usage**: Each country has different types and numbers of land usage and water users. For example, agricultural, mining, forestry, and other industries may play a significant role in one country, and less so in others. Some countries are developing countries while others are developed. Some are also rich in minerals but poor in economically utilisable water resources. Inappropriate practices could impact negatively on the development and utilisation of the water resources.
- **Diversity in Demographics:** An enormous diversity exists between countries' demographic makeup, all of which can influence water reform. (UN Water, 2008) For example, the percentage of population that are under 30, the amount of tourism, the types of industry, the percentage of population in urban centres, and literacy, health and sickness and poverty rates all influence water reform. (Ibid.)
- **Ecosystem context:** The aridity of the country or even region can influence water reform. For example, in the United States, the east coast does not face water shortage issues, and thus has adopted a riparian system for water management. On the other hand, in the west coast, because water shortage is a major issue, the water management system is based on a prior appropriation system, where efficiency and beneficial use play an important role in allocating water rights.
- **The water cycle and hydrology:** The natural water cycle and its relationship with life on earth govern the availability of water. People, plants and animals interfere, intercept and remove water from the cycle to survive as well as for social and economical development. This could alter the quantity, quality and flow rate of the water. It could also affect the quantity and quality of the sediments, banks, animals plant and microbes of the water resources, which aspects are needed to remove and purify substances entering the water resources to ensure that the water resources stay fit for use in the long term. It is therefore necessary to recognise the unity of the water in the water cycle when managing such resources. Another key point to make here is that there has been a shift from managing water in the cycle from a supply perspective to a demand management paradigm.
- **Climate:** The climate usually varies with in a country, sometimes even from desert to humid. This results in variance in rainfall and sometimes the areas of highest rainfall are also from the industrial and urban heartland and from areas of rural poverty. Together with this, climate change may have the potential to impact very significantly on both the availability and requirements for water.
- **The role of traditional law**: Some countries, like South Africa, give credence to customary law, which can be defined as un-codified, long-standing customs and practices of traditional or religious groups (IUCN, 2009). Customary law can interplay with statutory law and presents a particular challenge to the extent it conflicts with statutory law.
- **Constitutionals frameworks:** Very few countries have enshrined a right to have access to water or a right to a healthy environment in their constitutions. Having a constitutional

mandate to achieve these rights places specific obligations on governments to progressively realise the right to water with in the available resources.

Taking into consideration these factors, it becomes evident that an informed and comprehensive comparative exercise between various countries' water reforms is a difficult and arduous task, because to fully understand the motivations, policies, laws, and challenges in implementation, one needs to grasp the diverse characteristics of each country.

Moreover, South Africa is unique in its water reforms. For example, one of the main focuses of water reform in South Africa is to address the inequitable allocation of water rights resulting from a historical legacy of colonialism and apartheid (Movik, 2010; IUCN, 2009; NWA). Licensing all water users is thus a tool to address past discrimination and to ensure equity. Moreover, South Africa is one of the few countries that have enshrined the right to have access to sufficient water and an environmental right in its Constitution, creating a constitutional mandate for realizing these rights. Finally, South Africa, by adopting resource quality measures, including the novel concept of the Reserve, set a precedent for incorporating sustainability into water management reform (IUCN, 2009; Movik, 2010). Taking these factors as well as many other diversity factors discussed above into consideration, a comparative benchmarking of South Africa's progress implementing IWRM with other countries' progress must be done carefully.

2. Two examples: drawing on the Mexican and Australian experience

Keeping the foregoing discussion in mind, a brief review of water reform in Mexico and Australia, with some lessons learned from those countries' experiences is discussed below. Both countries have undertaken major water reform toward IWRM and are thus relevant to the South African experience. Recognising that the comparison might have limited application because of the unique diversity characteristics between the five countries, we have chosen two examples that arise out of different socio-economic situations. We do this in order to determine if there are any key emergent issues that could inform a South African case.

a. Water Management Reform in Mexico

This section provides a brief summary of the Mexico's efforts to reform their water management system. It is not a comprehensive comparative analysis, but describes some challenges and lessons learned from the Mexican experience.

Mexican water management reform has loosely followed an IWRM approach. (Scott & Banister, 2007). Similarities with South Africa include:

- there is no private ownership of water
- water is subject to a permitting system
- a push to manage water on a basin level

- an effort to include basin level public participation into the water resource management planning process

- a process to register existing lawful users during the transition into the new water law.

Surface Water Availability and Characteristics

Mexico primarily has tropical climate and contains mountainous, valley, and plateau regions. Many of Mexico's rivers are short and flow from central mountain regions to the Atlantic and Pacific Oceans (Garduno, 2005). Rainfall averages less than 500mm/year in the north and Yucatan Peninsula in the west to between 1,000-2,000 mm/year in the south. Despite the relative abundance of water, pollution is a major problem and thus reduces availability (Ibid.). In addition, approximately 10 percent of Mexicans, particularly in rural areas, do not have access to fresh water, and 25 percent suffer from extremely low water availability (Zomosa-Singoret, 2007). Water distribution problems can be largely attributed to obsolete infrastructure and water losses estimated at 50% (Ibid.). Moreover, outside of the southeast where water is abundant and the population small, water use is competitive and leads to conflicts among water uses, users, states, and regions (Garduno, 2005).

Reform of Mexican Water Laws and Institutions

The Mexican Constitution does not enshrine the right to water, however, it does recognize that the State shall ensure all social and economic activities will be undertaken with due care to the environment and that there is not private ownership of water.

Starting in 1976, the Agriculture and Water Resources Ministry managed the nation's water, which regulated water pursuant to the Federal Waters Law (FWL) adopted in 1972. In 1989, the National Water Commission (NWC) was established, and took over water management regulation. The NWC currently falls under the Ministry of the Environment and its main functions include:

- granting, modifying, or cancelling concessions (entitlements) pertaining to national waters;
- granting, modifying, or cancelling wastewater disposal permits;
- detecting illegal users;
- monitoring compliance with legal obligations;
- monitoring payment of water charges;
- determining sanctions against users who violate applicable regulations; and
- updating the water user database

Because the FWL was insufficient to deal with a rapid increase in water use, a new water law, the National Water Plan Law (NWL), was adopted in 1992, superseding the FWL. The NWL incorporated IWRM principles to water quantity and quality management, and sought to make river basins the area in which planning, development, and management of water resources should occur. The NWC was reorganized to have 13 regional units, and although still organized along municipal boundaries, the regional units loosely reflected river basin boundaries (Garduno, 2005; Scott & Banister, 2007). It also sought to register all existing water users who did not have formal water licenses into formal concessions. Concessions would last between 5 to 50 years, and would be recorded in a Water Right Public Register.

In April 2004, the water law was again amended, which stipulated that the thirteen decentralized NWC regions would become basin organizations, or more specifically, serve as the technical arm of more broad-based river basin councils that incorporate civil society interests (Scott & Banister, 2007). The river basin councils are similar to Catchment Management Forum in South Africa and their main tasks are

to participate in the planning and development of water resources and pollution control (NWC, 2010). The CNA was given eighteen months from April 2004 to publish revised regulations and establish the new basin organizations in the thirteen regions, but as of April 2007, the CNA had done neither. By end of 2009, 26 rivers basin councils had been established (NWC, 2010).

Challenges in regularizing existing water users

Perhaps one of the biggest challenges in implementing the NWL was the process to regularize existing water users. Initially, the NWL provided one year for all existing user to obtain a concession, however, after 18 months from passage, it was clear that one year target was not feasible (Garduno, 2005). As a result the NWC simplified the process. Unfortunately, this did not ease the burden and in October 1995, the Mexican president issued three decrees covering agriculture and livestock, industries and services (business, hotels, etc…), and water supply utilities. The decrees established that all users who applied for concessions would automatically be granted a 10 year concession and all unpaid water charges, in most cases, would be pardoned; the rationale being that when users applied for renewal of their 10 years concessions, at that point government would have much better knowledge of water availability and use (Ibid.). The reaction to the decrees was overwhelming, and the NWC was unable to handle the sheer volume of concession requests (Ibid.). The president further simplified the process with a new set of decrees in 1996. By December 2000, about 320,000 users had been regularized and their permits recorded in the Water Right Public Register, a dramatic increase from only 2,000 permits in 1992. Although the regularization process was a great achievement, several lessons can be learned.

- It took much longer than expected to implement reform
- Because of the rush to regularize existing users, several river basin and aquifers in dry regions granted extraction concessions that exceeded available water (Garduno, 2005).
- A large portion of the Water Right Public Register, which reflects water users, is unreliable, including users not using their full allocation or using water for different purposes than stated in their concessions (Ibid.).
- Although the initial legislation and regulations proved unworkable, the government was able to dynamically adapt and work flexibly to address the legislation's drawbacks.

The Importance of Water Tariffs

The introduction of water charges has been critical in Mexico. Charging for water was introduced as part of the NWC to, among other reasons, provide funds for water resources management (Garduno, 2005). Income from water charges has consistently increased over the years and represents a significant percentage of the NWC operating budget. Oddly, although agriculture accounts for over 80% of water users in Mexico, that industry is exempted from paying water charges, except fees for operation and maintenance. The problem with this "subsidy" to the agriculture sector, is that is promotes inefficient water use, and there is a movement to remove the agriculture exemption (Ibid.).

Implementing Information Systems

The government has created four main information databases to regulate water use (Garduno, 2005):

1) A user population database: A learning model which estimates the number of users and polluters as well as abstraction and wastewater discharge volumes, through available hard data and indirect information and indices.
2) The application follow-up database: keeps track of all steps required to reply to a user's application.

3) The Water Rights Public Register: holds files of concessions, permits, and water rights trades and provides information to the public on request.
4) The water taxpayers' database: tracks charges paid by users and polluters.

According to one expert, several lessons can be learned from how Mexico has used the water rights information system (Garduno, 2005):

- The system must contain reliable information, and auditing and training can improve the quality control of data, processes, and decisions.
- The system must be user friendly, and must be tailored to fit the requirements of decision makers at all levels of the institution. To this end, an executive module with relevant summaries is being developed to aid decision makers.
- There must be adequate human resources and up-to-date software and hardware to maintain the system.
- There should be a link to share information between those who supply the raw data and those processing the information.
- Providing relevant information to high level officials from the start helps obtain support for budgeting and further improvements.

b. *Water Management Reform in Australia*

This section provides a brief summary of New South Wales' water reform efforts, and as mentioned above, it is not a comprehensive comparative analysis, but describes some challenges and lessons learned.

Australia has a strong federal system of government. The Constitution provides each of its 6 sovereign states the right to manage their own water resources, although there is a constant push for more national control and harmonization of water management policies and laws between states. This section will focus on water reforms in the state of New South Wales (NSW), where IWRM principles have been integrated into the new water laws. NSW also includes the Murray-Darling River basin, the boundaries of which it shares with two other states. This basin accounts for approximately 40% of the agricultural production for all of Australia. Similarities between NSW and South Africa include:

- A major reform in water law
- No private ownership of water
- Water is subject to a permitting system
- An over allocation of water resources
- An effort to include community-based public participation into the water resource management planning process
- Human and environmental needs are prioritised water uses
- An effort to recognize existing lawful users during the transition into the new water law.

Surface Water Availability and Characteristics

Australia is one of the driest countries, and the topography varies from desert throughout most of the inland, temperate zones in the southeast and southwest and wet tropical zones in the north. NSW is located in the southeast of the country and has a population of two million people, approximately 10 percent of Australia's population. The Murray and Darling rivers run through NSW, and they are characterized by highly variable flows, very flat gradients, and limited runoff (Haisman, 2005). The water resources of the Murray-Darling Basin are highly developed and approximately 90% of the water that is diverted from the basin goes to irrigation.

Reform of NSW Water Laws and Institutions

The Water Act of 1912 vested the NSW government the right to the "use, control, and flow: of all surface and groundwater". The 1912 Act provided for a system of licenses to extract water from a water source and allowed for conditions to be attached to licenses. Irrigation schemes were not subject to licenses. Initially there was no charge for water use, but eventually amendments to the 1912 Act allowed for limited levying where a government work augmented or assured the supply in the river, like a dam. (Haisman, 2005)

Beginning in the 1960s, large scale commercial agriculture began to take off, and it put a severe strain on the water resource which was already under pressure (Haisman, 2005). Large scale agriculture, however, hit roadblocks because the water security situation limited the amount of water extraction granted to each license. Farmers worked around this by subdivided and leasing their lands to individuals (often friends or family), but nevertheless continued to operate as a single enterprise (Ibid.). In this way, they were able to amalgamate the water they needed. At the same time, because there were no fees charged for most licensed water users, many users did not value their allocations and much of the water allocated remained unused. This led to the government to assume that 30% of licensed water was not being used (Haisman, 2005). These factors combines led to unsustainable water use. As one expert noted, "the advent of large-scale irrigation and the flawed assumption of a permanent under-use of licenses, led to an over-allocation of resources" (Ibid.)

Over the years, the government took major steps to address the sustainability issues and to introduce IWRM principles to the management system, culminating in the passage of the Water Management Act of 2000 and its 2004 amendments. Some of the reforms include:

- Allowing for water trading, to be approved where it was operationally possible and there were no adverse environmental impacts.
- Creating a comprehensive approach to ensure environmental flows.
- Setting priorities of use for human and environmental needs in times of water shortage.
- A common set of license conditions for each river system developed by a community-based Water Management Committees (WMCs). The WMCs develop Water Management Plans that set these license conditions and they develop water sharing rules and water source protection measures.
- A 10-year license period which gives some security to the user, but also allows the state to amend the license on renewal to meet emerging environmental or other considerations.

- A system to flexibly limit extractions on regulated rivers. Where government operates a state-owned dam on a river, that river is considered a regulated river. On regulated rivers, access licenses confer a right for an annual allocation of a volume of water, but only to the extent that water is available to meet environmental requirements, taking into consideration system losses and minimum expected inflows. For example, the government can limit extraction 65% of the granted allocation, but then increase it to 75% soon after. Based on this, licenses are classified as high security, which have around 99% extraction of allocation, or general security, which range from 35-70% extraction of allocation. Municipal water suppliers typically use high security licenses, while most irrigators use general security licenses.

- Prioritizing river health and requiring that water management and development conform to the needs of the environment.

- The creation of a publicly available registers that records every application for an access license and license that is granted, renewed, transferred, suspended or cancelled.

Lessons learned from the Australian experience

As with any catchment, there are situations where users need to give up portions of their historical allocations to allow for more equitable distribution of water to new users and to users that have a disproportionately less allocation. This is a problem South Africa is also facing. NSW's approach to these difficult situations has been to undertake intensive public participation in an effort gain support for their reallocation rules (Haisman, 2005). Although various communities differ, the result of the public participation campaign is that more often than not users agree to impose a progressive reduction factor to the overuse over a time period that is financially absorbable to the user.

The NSW has also consistently underestimated the resources needed for water rights regulation, including enforcement (Haisman, 2005). One expert has pointed out that the water sector regulators are "stretched in coping" with license administration and other reform objectives (Ibid.).

The use of general security licenses, discussed above, have significantly contributed to the rehabilitation of rivers, and allowed the state to have flexibility to address environmental needs. Giving responsibility to water-management committees for the creation of Water Management Plans coupled with an intense public outreach effort has created a strong public perception of the failing health of rivers associated with high levels of extraction. This has finally led to a recognition by all stakeholders that water is a finite resource and must be managed accordingly (Haisman, 2005).

3. What can South Africa learn from these experiences?

A brief review of Australia's and Mexico's water management reform efforts provides lessons that can be applied to South Africa. These include:

- Looking at Mexico and Australia there is the possibility that water reform in SA was applied too rapidly with too many ambitious goals addressed simultaneously (Schreiner, 2009)
- There has been an underestimation of the resources required: money, time and effort to transform a system that had been developed over decades
- The contextual challenges of managing water in a highly variable semi-arid/arid environmental that need to be understood before certain instruments can be effectively applied. For example, the difficulty of establishing apparatus for regulation that can respond to variability (droughts, etc.).

- Experiences point to the need for reflexivity and strategic adaptive management (see later) i.e. learning from experience – trying new approaches, learn and adapt.
- These countries have placed resources into developing reliable and extensive databases to help manage water licenses, keep track of allocations, and to allow the public to access information regarding licenses. This has been a difficult and lengthy process, but it highlights the recognition that information management and transparency are critical for managing natural resources.
- Mexico and Australia recognized that the water use authorization process must be flexible so as to address socio-economic needs. They realised that they could not wait to assess the state of sustainability and the total allocations for river catchments before allocated licenses. As a result, these countries chose a middle ground approach that granted short term water use licenses (10 years). This approach gave the government more time to access sustainability issues, while at the same time allowing the authorization process to move forward.
- Australia's use of general security licenses gave the government flexibility to change allocations based on environmental needs. This was based on the recognition that environmental flows are dynamic, and that different allocations may be needed depending on a variety of factors, such as drought or infrastructure issues.
- These countries place a strong emphasis on water trading and promoting water markets as a means to improve sustainability. This is a potential tool that should be better explored in South Africa.
- The reform process needs to anticipate delays created by administrative action, legal systems and litigation.
- Perceived 'conflict of rights' presents a problem for the judiciary. For example S 24 – right to healthy environment and S25 – property clause can be held to be contradictory. There is a fear that reallocation of water licences will be challenged on basis of expropriation of rights without compensation.
- There is a need to respond to research findings. Research has central role to play in guiding transformation. Integrations of academic and managerial tools (data, methods, info systems).
- Fear of litigation and disputes has delayed transformation. Need to use legal instruments with greater confidence
- Australia's efforts have shown that creating public awareness of sustainability issues and a fostering recognition that sacrifices need to be made require considerable public outreach.

These countries have had obstacles and unpredicted outcomes in implementing their water management reform process, highlighting that lags in implementation are inevitable, and must be expected. However, both countries have made efforts to recognize where policies and laws are not working, and to address problems. Flexibility is key.

C. The legal obligation of 'progressive realisation' and 'reasonableness' to inform the evaluation of IWRM implementation lags in South Africa

Earlier we discussed the transformation of water resource management policy in South Africa to a system of integrated water resource management. We discussed how this transformation is rooted the 1996 Constitution and is based on the principles of equity and sustainability, including the need to address past inequities. Most importantly, we highlighted that any major transformation in policy and law will inevitably result in lags in implementation. In other words, no transformation occurs overnight, particularly where, as in South Africa, the new water management system calls for, among other things, new institutions, practices, measures, policies, strategies, laws, identities, functions, and relationships.

Implementation lags are thus a normal part of complex systems) and should be anticipated. However there are situations where the lag becomes too long or the implementation of an action is of an unacceptable standard, either resulting in the breakdown of functionality. The key, therefore, is to understand when a lag is unreasonable in terms of one or other overarching criteria and whether implementation lags are working against the progressive realisation of the underlying constitutional rights in question**.** This is the central issue for the remainder of this report.

1. Progressive realisation and reasonableness to inform evaluation of implementation lags

As mentioned, a lag is normal in any complex reform where positive steps are required by the government. The question is whether the lag is acceptable. This is a difficult and complex question and a response requires a multi-faceted approach which seeks to understand legal, administrative, and practical aspects of IWRM. However, to answer this question one must first understand the nature of the legal obligations created by the constitutional norms, highlighted above, that lay the foundation for IWRM, before turning to other aspects related to evaluating lags.

We argue that the legal evaluation of whether an implementation lag is acceptable takes place under a **reasonableness framework** and against the legal obligation of **progressive realisation**.

The obligation of progressive realisation

The transformation of the water management system requires the government to take substantial positive steps. In law, this is referred to as **positive legal obligations**. Positive legal obligations are generally associated with socio-economic rights or second-generational rights, and the evaluation of such obligations is subject to a **progressive realisation** standard. This standard is contained in the Constitution specifically in association with socio-economic rights, such as section 26 (housing), section 27 (health care, food, water and social security), and section 29 (1)(b) (further education), and defined by the Constitutional Court drawing from international law. International law has created the obligation to progressively realise positive legal obligations associated with socio-economic rights because it

recognises that the realisation of such rights cannot happen immediately, but must instead occur over a period of time. As General Comment 3 of the United Nations' Committee on Economic, Social and Cultural Right (CESCR) explains, "concept of progressive realization constitutes a recognition of the fact that full realization of all economic, social and cultural rights will generally not be able to be achieved in a short period of time. In this sense the obligation differs significantly from that contained in article 2 of the International Covenant on Civil and Political Rights which embodies an immediate obligation to respect and ensure all of the relevant rights" (para. 9).

Section 24(b) of the Constitution does not include a reference to progressive realisation, but states that everyone has the right "to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures" that prevent pollution and ecological degradation, promote conservation and secure sustainable development. We argue for several reasons, however, that positive legal obligations required under Section 24(b) should be evaluated based on a progressive realisation standard, including many of the actions required to implement IWRM. First, Section 24 is considered a third-generational right, and conceptually is more akin to socio-economic rights obligations (second generational rights) which require both negative and positive obligations, rather than civil and political rights obligations, which are generally thought to impose negative obligations on states to refrain from interfering with such rights (see General Comment 3). The duty to progressively realise socio-economic rights is based on the notion that such rights require positive action that cannot be implemented overnight, but that will require a progressive approach that takes time.[8] Many of the actions required to manage water resources sustainably also require positive and long term steps. As we discussed in section A, this includes creating entirely new institutions, undertaking several resource-directed measures, and transforming water management from a riparian regime to a licensing system where the public trust doctrine plays a prominent role. Thus, to the extent IWRM requires positive action, it should also be evaluated through a progressive realisation paradigm.[9] Second, sustainably managing water resources as required by section 24(b) is intimately linked with section 27, the right of access to sufficient water. Simply put, access to clean and sufficient water cannot be guaranteed without an appropriate water management regime. Accordingly, Section 27's progressive realisation obligation inherently includes water management actions.

Importantly, progressive realisation offers a tool for applying legal instruments for the interpretation of lags, and more importantly, it offers a broader framework for water managers to evaluate the implementation of key IWRM actions. But how does one monitor progressive realisation and what legal obligations does it create practically speaking? These difficult questions have presented a dilemma to many experts and courts, and there is no shortage of literature on the subject (see e.g. Chapman, 1996; Hertel, 2006; Jacobs, 2009; Felner, 2009; Tissington, 2010).

The Constitutional Court has defined progressive realisation by essentially referring to its development in international human rights law.[10] The Court refers to General Comment 3 of the United Nations' Committee on Economic, Social and Cultural Right, the treaty body charged with interpreting and monitoring the International Covenant on Economic, Social and Cultural Rights (ICESCR), the most

[8] See General Comment 3, CESCR; *Government of the Republic of South Africa v. Grootboom*, 2001 (1) SALR 46 CC (*Grootboom*)
[9] We are not suggesting, however, that progressive realisation apply to negative legal obligations created under Section 24, such as those where the state is required to respect the content of section 24. This might include situation where the state inappropriately authorizes an activity that will have direct negative impacts on the environment.
[10] Grootboom, para. 45.

recognized international human rights treaty. The Court concluded that the meaning of progressive realisation in the Constitution is the same as how the CESCR has defined it. The Court stated:

> Although the committee's analysis is intended to explain the scope of states parties' obligations under the Covenant, it is also helpful in plumbing the meaning of "progressive realisation" in the context of our Constitution. The meaning ascribed to the phrase is in harmony with the context in which the phrase is used in our Constitution and there is no reason not to accept that it bears the same meaning in the Constitution as in the document from which it was so clearly derived.[11]

General Comment 3 of the CESCR relates to the nature of States parties' obligations under the treaty. Paragraph 9 of the Comment, to which the Constitutional Court also cite, elaborates on the nature of the obligation of progressive realisation:

> The concept of progressive realisation constitutes a recognition of the fact that full realisation of all economic, social and cultural rights will generally not be able to be achieved in a short period of time. Nevertheless, the fact that realisation over time, or in other words progressively, is foreseen under the Covenant should not be misinterpreted as depriving the obligation of all meaningful content. … It thus imposes an obligation to move as expeditiously and effectively as possible towards that goal. Moreover, any deliberately retrogressive measures in that regard would require the most careful consideration and would need to be fully justified by reference to the totality of the rights provided for in the Covenant and in the context of the full use of the maximum available resources.

How then does the CESCR monitor whether States are complying with the obligation to progressively realise the ESC rights within the Convenant? More specifically, how does one determine if a country is moving as expeditiously and effectively as possible? An important mechanism through which the CESCR monitor progressive realisation of the rights encapsulated within the ICESCR is through the use of indicators and benchmarks (CESCR, 2003; GC, 15; UN, 2008; Rosga & Satterthwaite, 2009). Indicators can serve as a critical evaluative tool, and present evaluative categories that allow for the monitoring of progress. The United Nations defines indicators as a "measure or a statistical value expressed in a meaningful way that provides an indication of the condition or direction over time of performance of a defined process or achievement of a defined outcome. An indicator provides evidence that a certain condition exists or certain results have or have not been achieved." (UN Water, 2006) In particular, indicators enable decision-makers to assess progress in implementing policy, typically by setting various benchmarks or targets for each category of indicator.

For example, General Comment 15 of the CESCR states that:

> To assist the monitoring process, right to water indicators should be identified in the national water strategies or plans of action. The

[11] Ibid.

> indicators should be designed to monitor, at the national and international levels, the State party's obligations under articles 11, paragraph 1, and 12. Indicators should address the different components of adequate water (such as sufficiency, safety and acceptability, affordability and physical accessibility), be disaggregated by the prohibited grounds of discrimination, and cover all persons residing in the State party's territorial jurisdiction or under their control.

Indicators can be classified into many different categories and they can be developed for a multitude of purposes. The literature on indicators is extensive and diverse across many different fields and situations, and readers are referred to the literature on the subject for a more comprehensive discussion (See Pollard et al., 2009 (reviewing the literature on sustainability indicators, and proposing wetland indicators); [12] Rosga & Satterthweite, 2009 (reviewing the history of human rights indicators)).[13] Within the proposed framework, indicators are critical for evaluating the desired state of an action, a key aspect of evaluating progressive realisation).

As Rosga and Satterthwaite (2009) comment, although the precise role that the CESCR and other treaty bodies will play in using indicators to evaluate State obligations remains unclear, there is no doubt that indicators must play a key role in the monitoring process. Section D discusses the implications of progressive realisation on IWRM, and the potential use of indicators to evaluate progress.

The following section discusses the meaning of reasonable legislative and other measures contained in Sections 24 and 27 of the Constitution.

Legal definition of Reasonableness

Sections 24 and 27 of the Constitutional require that reasonable and other measures be taken to achieve the content of each right.

[12] Sustainability indicators have generally been placed into three broad categories: diagnostic, outcome and process indicators (Pollard et al. 2009). **Diagnostic indicators** (status or condition indicators) convey information about the current condition of a system by observing the state of some system element(s) (Wardrop et al., 2007; Hershner et al., 2007). They are parameters or processes that can either provide insight into the causes of ecosystem deterioration or measure the success of ecosystem restoration and protection programs (Cairns et al., 1993). **Process indicators** have been a measure of progress in project activities involving inputs and outputs of goods, physical structures, and services. Process indicators have also been able to demonstrate actual, on-the-ground institutional and political progress in the implementation of program activities. They are a particular value used to measure the products of activities such as policies, the laws passed, permits issued or denied, and the money spent (Duda 2002). **Outcome indicators** document the changes in socio-economic or physical conditions brought about by the activities of a program. There are also other categories of sustainable development indicators.

[13] Human rights indicators also typically are classified into three categories: *structural, process,* and *outcome.* Briefly, *structural indicators* reflect the ratification and adoption of legal instruments and existence of basic institutional mechanisms deemed necessary for facilitating realisation of a human right (Rosga & Satterthweite 2008, citing UN OHCHR 2008). *Process indicators* measure the efforts of States as they implement and enforce human rights; they measure things like the amount of money spent on a program to fulfill a given right, or the number of complaints processed by the authorities concerning alleged violations of the right being assessed (Ibid.). Finally, *outcome indicators* aim to measure the actual enjoyment of the human right under consideration by the relevant population. (Ibid.).

The Constitutional Court has elaborated on what reasonable means in a few cases. It should be noted that although the principles extracted from these cases have broad application, none of these cases is related to water resource management (see Thompson, 2006).

One environmental law expert has summarised the Constitutional Court's test for reasonableness to require measures that are:

- comprehensive and co-ordinated, clearly allocating responsibilities and tasks;
- capable of promoting realisation of the right;
- reasonable in conception and realisation;
- balanced and flexible, providing for needs of different degrees of urgency, and refraining from excluding significant elements of society;
- and responsive to the most urgent needs and the management of crises.[14]

Other requirements include

- that reasonableness must be determined on a case by case basis and requires an assessment of context to determine whether a government programme is indeed reasonable (para. 92)[15];
- although different spheres of government may be responsible for implementing the programme, the national government has the ultimate responsibility for ensuring that the programme is reasonable. (Grootboom, para. 39);
- a considerable amount of discretion should be given to the State in deciding how it should go about fulfilling the right to water. "A court … will not enquire whether other more desirable or favourable measures could have been adopted, or whether public money could have been better spent." (Grootboom, para. 41)

In sum, although the test for "reasonable legislative and other measures" was developed within the right to housing, the test is equally applicable to the same language contained in Sections 24 and 27 of the Constitution (Kidd, 2011; Glazewski, 2006). In addition, although the Court undertook a separate analysis for what constitutes progressive realisation under the right to housing, we suggest that many of the elements of the reasonableness test can also serve to evaluate progressive realisation. In other words, if the government is not meeting certain elements of the reasonableness test, it would also be difficult to argue that it is working towards progressive realisation of the right in question. For example, the Court's requirement that government not just stop at legislative measures, but also enact well-directed policies and programmes envisions a progressive approach. In addition, the requirement that programmes meet short, medium and long term needs also overlaps with a progressive approach. Developing this connection between the two legal obligations is critical moving ahead.

Nevertheless, despite the Court's efforts to define reasonableness and progressive realisation, they remain difficult legal concepts. For example, within the context of water resource management, the issues and information that should be weighed up every time to determine what is reasonable differ from case to case, and require a fact specific inquiry taking into consideration contextual elements such as the state of the water resource at issue, the technical complexity of the specific policy requirements or tool, available resources, and social, ecological, political and other elements.

[14] (Glazewski 2004), drawing from *Grootboom*.
[15] See Wilson and Dugard, forthcoming 2011.

2. The status of IWRM implementation in South Africa

Although it is not possible to provide a thorough update on the status of water management reform in South Africa, some observations from experts on the ground, including AWARD's observations in the six Lowveld Rivers are illustrative (Schreiner, 2009; Pollard & Du Toit 2010, 2011).

The overall situation in South Africa

Schreiner (2009) reviewed whether the NWA is achieved the desired objectives of water resource management. In doing so, she also ascertained the status of implementation of many water management actions, including key challenges to water resource governance. Specifically, Schreiner identified the following categories of challenges around implementation of the NWA: water and poverty eradication, the beneficial use of water, resource protection and weak vs. strong sustainability, water allocation and use, institutional arrangements, and good water governance.

For example, Schreiner noted that since the enactment of the NWA, no water has been reallocated to previously disadvantaged users through compulsory licensing. This has strong implications on the use of water to alleviate poverty. Schreiner also observed that the NWA's institutional requirements, such as the creation of CMAs, are extremely delayed. She remarked, at the time of writing, that only one CMA is functional in the sense that it has an executive staff and board of directors. In addition, Schreiner explained that the professional bureaucracy necessary to achieve good governance of water resources is lacking, with an unacceptably high vacancy rate at DWA due to a variety of reasons.

Perhaps most important, Schreiner noted confusion among within government around the nature of the sustainability path towards water resource protection. She makes a distinction between weak and strong sustainability, where ecological protection hold different values in relation to manufactured capital or economic development. Schreiner suggested that the NWA makes provision, through the Reserve, for a strong sustainability discourse. However, she noted that although Reserve determination is proceeding, due to lack of monitoring and management, there is little evidence that the Reserve is being implemented. She also highlighted unlawful municipal waste from treatment plants as a major contributor to the degradation of water quality.

Examples from the Lowveld Rivers

The following is a vignette of themes where AWARD observed lags in implementation of the NWA, and the WSA in so far as it related to the NWA.

Resource Directed Measures (RDM):

The Reserve: All of the six river catchments are non-compliant with the ecological Reserve. Moreover, there is generally a lack of understanding or knowledge of the Ecological Reserve throughout government sectors.

Source Directed Controls (SDC):

1) **Validation and verification**: Validation and verification is generally greatly delayed. The result is that the Water Allocation and Reform process, including compulsory licensing, is delayed.

2) **Licensing:** There are many complaints that the licensing process takes too long. AWARD has observed situations where license applications have been lost by DWA regional and where approvals are taking several years.

3) **Compliance and enforcement unlawful use:** There are many examples of unlawful use of water, both in terms of extraction and pollution. In these instances the regulator is absent and not enforcing against violations. There is a perception that the regulator "lacks teeth" and is ineffective. The Compliance, Monitoring and Enforcement Directorate has been established, however, in Mpumalanga, the Directorate does not have adequate capacity and experience to address the sheer amount of unlawful activities that are taking place. Moreover, there is poor coordination within and between government agencies tasked with enforcing against unlawful activities. The result is that there are few costs to being non-compliant.

Institutional

Delays in the delegation and assignment of functions to the CMA. Delays in the transformation of Irrigation boards meaning that they cannot be constituted as legal entities and therefore cannot be assigned function to carry out IWRM functions (collection of WRM charges being an example).

Integration

The lack of integration between water services and water resources and the provision of water services is a stumbling block to the sustainable implementation of water resource management. This disjunction takes place in many ways, including a lack of information sharing and harmonisation of planning instruments with water resource management objectives and institutions (i.e. The IDPs, WSDPs, SDPs, BPs and the NWRS, CMSs) that results in an expansion of infrastructure without any regard to sustainability**.**

Moreover, there is conflict between the approval process between different sectors, such as mining. For example, the fact that the authorisation of mining activities is 'done in parallel' has resulted in serious problems for regulating water use by that sector. The net effect is that there appears to be a lag in the implementation of regulatory functions under the NWA.

D. Recommendations for evaluating lags in South Africa's IWRM implementation

In this section we present a synthesis of recommendations that emerged as part of this scoping exercise and introduce a simple tool for visualizing the progress towards realizing goals for water management. We also provide a set of key features that will assist IWRM in South Africa, in a way that comports with obligations to enact reasonable and other measures to progressively realise constitutional obligations around sustainability of water resources. Ultimately it would be useful to develop targets and indicators to evaluate acceptable time frames and quality standards to achieve those objectives.

1. A framework to evaluate lags

The aim of developing a 'culture of achievement' needs to be focused and supportive of those who will ultimately be held accountable for delivering against national priorities and obligations. In supporting practitioners it is less than useful to impose performance indicators that are unreasonable and over ambitious. We therefore suggest that in working towards particular goals, practitioners (or institutions) need to apply a framework for themselves so that they can evaluate their own progress.

We also suggest that the framework (presented below) can be applied through the Catchment Management Strategy (CMS) process, which is linked to, and guided by, the National Water Resource Strategy (NWRS). The actions we propose are all drawn from the Inkomati CMS, the first CMS to be completed, although not yet gazetted. The link between the proposed framework and the CMS will be discussed in section E.

2. The framework's theoretical foundation

The proposed framework for understanding lags has its roots in complexity theory, and strategic adaptive management (SAM), which is a process for managing in a reflexive manner towards a particular goal over time. Many scholars have written about complexity theory and adaptive management and detailed overview of complexity theory and SAM. Readers are referred to other WRC projects that overview complexity theory in relation to IWRM in greater detail (Pollard et al., 2008; Pollard et al., 2011; Pollard and Du Toit, 2010). Nonetheless, the major themes underlying the theory are given here as they are necessary to understand the framework we propose.

Complexity theory is rooted in the recognition that ecosystems are complex, dynamic systems, as opposed to linear systems, where outcomes (such as inadequate water flow) cannot be attributed to a single factor alone but rather represent a complex interaction of socio-economic, ecological and political factors (Pollard et al., 2008; Gunderson et al., 1995; Holling, 2000; Kinzig et al., 2000; Holling, 2001; Folke et al., 2002; Holling et al., 2002).

These socio-ecosystems have the following prominent characteristics (synthesised by Pollard et al., 2008 from Holling, 2001; Gunderson and Holling, 2002; Berkes et al., 2003; Walker et al., 2004; Allison and Hobbs, 2006):

- Socio-ecosystems are dynamic and in a state of flux.
- They have multiple drivers that are non-linear in their effects and that operate at different scales. For example, a reduction in water flow can be attributed to increased abstraction, the construction of a dam, and political decision to subsidize sugarcane farming for bio-fuels production.
- A complex system shows feedbacks (reinforcing or balancing) in its cause and effect relationships, which, usually because of operation at different scales, cause emergence (i.e. the feedbacks generate surprising new properties not predictable from the original bits and pieces making up the system). For example, a reinforcing loop – where an effect increases – can be seen when wetland health improves, resulting in an increase in the water table which, in turn causes a further improvement to wetland health.
- Multiple drivers and feedbacks lead to uncertainty, making exact outcomes unpredictable. Patterns, however, can be determined.
- Complex systems display lags, often it is difficult to see immediate responses or benefits.
- Complex systems are often not complicated and typically have only a handful of key drivers; it is the way these interact (and in particular the feedbacks) which produce the complexity. The drivers invariably vary in strength over space and time, producing different combinations of outcomes. At a certain range (called a threshold) in the values of these different drivers, systems can fundamentally change their nature, say from grassland to savanna, or from family to sibling kinship networks. In practice this usually takes place as a series of linked thresholds and system states, called a regime, and a regime shift follows (see e.g. Scheffer et al., 2001; Carpenter, 2003; Folke et al., 2004). An example of a regime shift is the change in the nature of rivers in the lowveld from bedrock-influenced, higher-flow, and with lower human utilisation to alluvium-dominated, lower flow, and with higher levels of human abstraction. A series of interlinked thresholds is crossed in each of these factors, leading to a different overall state. Essentially in a new state the rules-of-the-game – or underlying processes – change.

It is important to note that complexity is not the same as complicated, as a complicated system may not be complex. For example, a watch or a mechanical engine has many components and it is complicated; however it is not a complex system because these components interact in a way that produces are predictable and certain outcome (Pollard et al., 2008).

As part of the recognition of complexity and systems dynamics, Holling (1986) introduced a key concept – that of **resilience** – which has been further developed by the Resilience Network. They suggest that this concept lies at the very heart of sustainability in that a resilient socio-ecological system can buffer disturbance and adapt to change without flipping states (a fundamental shift in the underlying characteristics of a system). Importantly, ecological, social and economic sustainability is synonymous with resilience (Berkes et al., 2003; Pollard et al., 2009).

The implications of complexity theory for water resource management

What does complexity theory mean in practice? Because the overarching characteristics are that systems interact on many levels and they are not entirely predictable (although they show pattern), it is important

to strive to see the system holistically, with all systems as sub-systems of bigger systems, and invariably interacting with other sub-systems and the bigger and smaller systems to which they relate (Pollard et al,. 2008). In other words, one must manage a natural resource keeping in mind it complex characteristics of the system.

Berkes et al. (2003) assert that there are three fundamental implications for resource management of accepting complexity:

- Models and perspectives based on linear thinking are inadequate (including optimisation models)
- Qualitative analysis is an important complement to quantitative approaches
- A multiplicity of perspectives is needed to analyse and manage in complex systems.

There are a number of ways of dealing with uncertainty and complexity (Biggs, 2008):

- Strive to get as many people as possible thinking holistically about the system (biophysical, socioeconomic and institutional) and events
- Scenario-based planning (aided by mathematical and computer simulation and statistical analyses if necessary) can help one plan and account for random events
- Be prudent when making decisions ensuring that there are buffers to absorb surprises
- Employ adaptive management which seeks to 'learn-by-doing' so that the direction can be adapted as new information becomes available
- Recognise that in complex systems there are a number of ways to arrive at the same endpoint.

This thinking has led to a shift toward managing resources through a process of **strategic adaptive management** that fundamentally embraces learning by doing.[16] Learning is taken to be a social process where engagement, communication and dialogue provide the basis for reflecting on and responding to feedback in a way that is open to change and that encourages creative and innovative responses to an ever evolving context (Pollard et al., 2009). Indeed SAM integrates research, planning, management, and monitoring in repeated cycles of learning that seek to improve on, and active, objectives (Pollard and Du Toit, 2007). The Inkomati Catchment Management Agency (ICMA) in developing its catchment management strategy and the Kruger National Park (KNP) have each utilised SAM, and their efforts provide a valuable window into how to manage complex systems (see Pollard & Du Toit, 2007; Pollard & Du Toit, 2008; ICMA, 2010).

A brief discussion of how KNP has adopted SAM is warranted, as it serves as a good model for the proposed framework below. This description of the KNP's SAM framework is adapted from Pollard and Du Toit (2007), and readers are referred to that publication for a more detailed discussion. The KNP's framework is comprised of a clear statement of vision and mission developed through extensive stakeholder involvement. Flowing from this is a hierarchy of objectives, which, through increasing levels of detail, is ultimately linked to clear, auditable endpoints called Thresholds of Potential Concern (TPC). The framework broadly follows the following design hierarchy:

[16] Many scholars have unpacked the main tenants of SAM, and in the context of South African protected areas, Biggs and Rogers (2003) built on the early work of Rogers and Bestbier (1997) and Breen (1993) whilst Pollard and du Toit (2007) summarised these experiences and explored experiences with local practitioners in the Kruger National Park

• a goal/vision, to
• a management objective, to
• components of concern/ focus, to
• a description of a desired state for that component, to
• indicators for that component, to
• a rationale for that component, to
• a TPC.

TPCs are upper and lower limits of acceptable change in selected indicators (environmental or biodiversity but could also be other). The specified upper and lower ranges are essentially set as hypotheses of spatial and temporal limits of acceptable ecosystem change that can change based on new information. Setting TPC's requires an existing understanding of the dynamics of the system to determine the agents of change, appropriate indicators of change in these agents, and the limits of acceptable change in the indicators. TPCs are thus based on the best available understanding and can be subsequently refined as knowledge of the system improves. TPCs are meant to provide an early warning that some ecological specification is in danger of being exceeded through a "red flag" concept. Importantly, TPCs provide management with strategic targets or outcomes against which to monitor the consequences of the activities.

Although there are clear differences between managing Kruger Park's ecosystem and delivering IWRM in South Africa, the framework KNP has adopted is very relevant and useful to evaluating lags within the context of IWRM.

A framework for evaluating governance and management action

Complexity theory and SAM are not just tools for understanding and managing socio-ecological systems (like KNP), but they can also better evaluate governance and management of natural resources.

To be clear, governance and management are terms with multiple definitions and understandings, and thus it is important to define them. In essence, **governance** is a socio-political process to manage affairs (see Pollard et al., 2009) It thus encompasses the relationships between people and the rules and norms that are set up to guide these interactions. It operates at a number of nested as well as independent levels. **Management** on the other hand, refers to the implementation of actions aimed at achieving a particular agenda. Management is not the same as governance although the same body could be involved. Importantly the term governance is often conflated with other terms such as 'management' – which is only one aspect of governance, or with 'government' (Ibid). **Government** is a body that has the power to make, and the authority to enforce rules and laws within various groups (civil, religious, academic) (Ibid.). Governments are engaged with governance – but they are only one of the institutions and actors involved.

The framework we propose below is concerned with evaluating governments' management of natural resources, focusing on water resource management.

IWRM in South Africa Recognises Complexity

Complexity theory is closely linked to IWRM. In fact, the principles of water management, the National Water Act, and the National Water Resource Strategy and other planning and legal instruments recognize

that water management takes place in a complex system (Burns, Audouin et al., 2006; Pollard and Toit, 2008).

The National Water Policy identifies the need for an integrated approach for water management, and the NWA explicitly recognises 'the need for the integrated management of all aspects of water resources'. The Department of Water Affairs & Forestry (DWAF, 2003) defines IWRM as '*a philosophy, a process and a management strategy to achieve sustainable use of resources by all stakeholders at catchment, regional, national and international levels, while maintaining the characteristics and integrity of water resources at the catchment scale within agreed limits*' (see also GWP, 2002; Jones et al., 2006). This definition recognizes that an integrated management approach is necessary. Perhaps most telling, the NWRS recognizes that water management is takes place within a complex system, and calls on water managers to consider and address the following interactions:

a. freshwater is a complex ecosystem with multiple dimensions, where groundwater, surface water, and water quality and quantity are linked together in the hydrological cycle

b. water resources also interact with other systems, such as human activities

c. water resources must also take heed of the principle of sustainable development, where socio-economic objectives play a prominent role in decision-making.

The NWRS explains that large amounts of institutions and organisations, both domestic and internationally, play a role in administering and managing complex water management systems. Accordingly, it identifies the Catchment Management Agency as the primary mechanism through which the complex system is managed (see also Pollard and Du Toit, 2008; Pollard and Du Toit, 2010). The NWRS states:

> [CMAs] will be responsible, among other things, for ensuring that there is consonance between their water-related plans and programmes and the plans and programmes of all other role players in the catchments they manage. The agencies will therefore have to establish co-operative relationships with a range of stakeholders, including other water management institutions, water services institutions, provincial and local government authorities, communities, water users ranging from large industries to individual irrigators, and other interested parties.

The main tool by which the CMA will carry out its function is the Catchment Management Strategy. The CMS, a legislative requirement that must be aligned with the National Water Resource Strategy, offers the opportunity to plan for complexity and to manage this through a strategic, adaptive process that embraces learning informed by practice (DWAF, 2004). The ICMA completed the first CMS in early 2010.

Because the CMS plays such a crucial role in the regional management of water the proposed framework draws on the CMS process (ICMA, 2010; Pollard and Du Toit, 2008).

3. What elements should a framework for evaluating lags include?

Here we present some key criteria we believe should be reflected in any framework that monitors and evaluates operationalisation progress in natural resource management, all of which are derived from complexity theory and SAM.

A framework should include some of the following elements:

- It should consider that natural resource systems are complex, where multiple variables play a role and where there is a high level of uncertainty and interdependency;
- It should be flexible, thus allowing it to adapt appropriately based on experience, reflection and learning;
- It should reflect the various actions necessary to achieve management objectives, and have some means to monitor and measure progress, preferably through temporal targets and desired-state indicators for achieving these actions.
- It should be dynamic so that it can evaluate various management actions and natural resource systems that are interlinked.
- It should be able to evaluate governments' governance management of natural resources.

The following section presents a proposed framework that seeks to incorporate some of these elements The following section briefly discusses the theoretical and practical underpinnings of the framework in complexity theory and strategic adaptive management, a tool designed to manage in complex systems. Next, it reviews key elements that should be included in a framework to evaluate lags, and it introduces and reviews the framework's major elements. Finally, it provides some insights as to how this framework may be utilized to evaluate the progressive realisation of IWRM.

4. A framework for evaluating lags

We now present a proposed framework for evaluating lags. This framework is meant to frame or support a more robust effort moving ahead, and as we suggest below, it should be folded into the CMS process. To the extent that we have included any content, it is for illustrative purposes. It is worth repeating that this framework, although potentially applicable to other management actions, focuses on evaluating government's management of water resources. Thus, it does not focus on community-based management systems or non-governmental management systems, or the full-spectrum of governance of natural resources. Moreover, the completed framework will be different depending on what catchment is at issue because water management will require different actions for different needs in various catchments.

The basic framework

The framework presents a hierarchical process that results in the development of indicators, and includes cycles of monitoring, reflections, learning and action. The key elements of the framework include (see Figures 1 and 2):

- A Vision
- Principles Informing the Vision
- What are the key strategic objectives and sub-objectives?
- What steps/requirements are needed to operationalise the sub-objectives?
- Temporal and qualitative targets for steps/requirements
- Developing and testing indicators and benchmarks
- Implementation of steps and requirements
- Evaluative cycle of monitoring, reflections, learning and action to assess the status of lags through the legal obligations of reasonableness and progressive realisation.

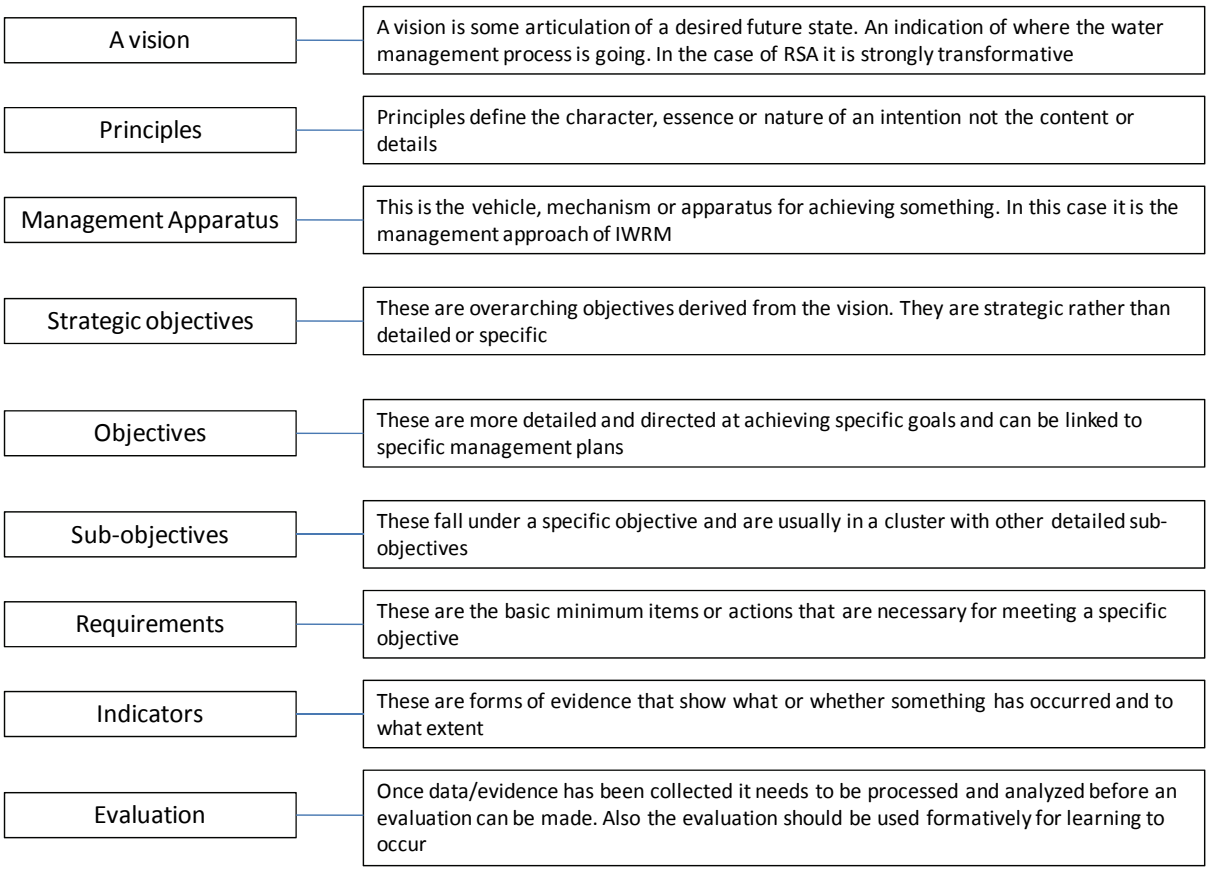


Figure 1. The structure of the framework is based on a vision that informs a series of elements in the framework. Without each of these elements it would be difficult to use indicators to evaluate action and therefore progress. It is important to note that indictors may be required for a spectrum of management actions as shown in the framework

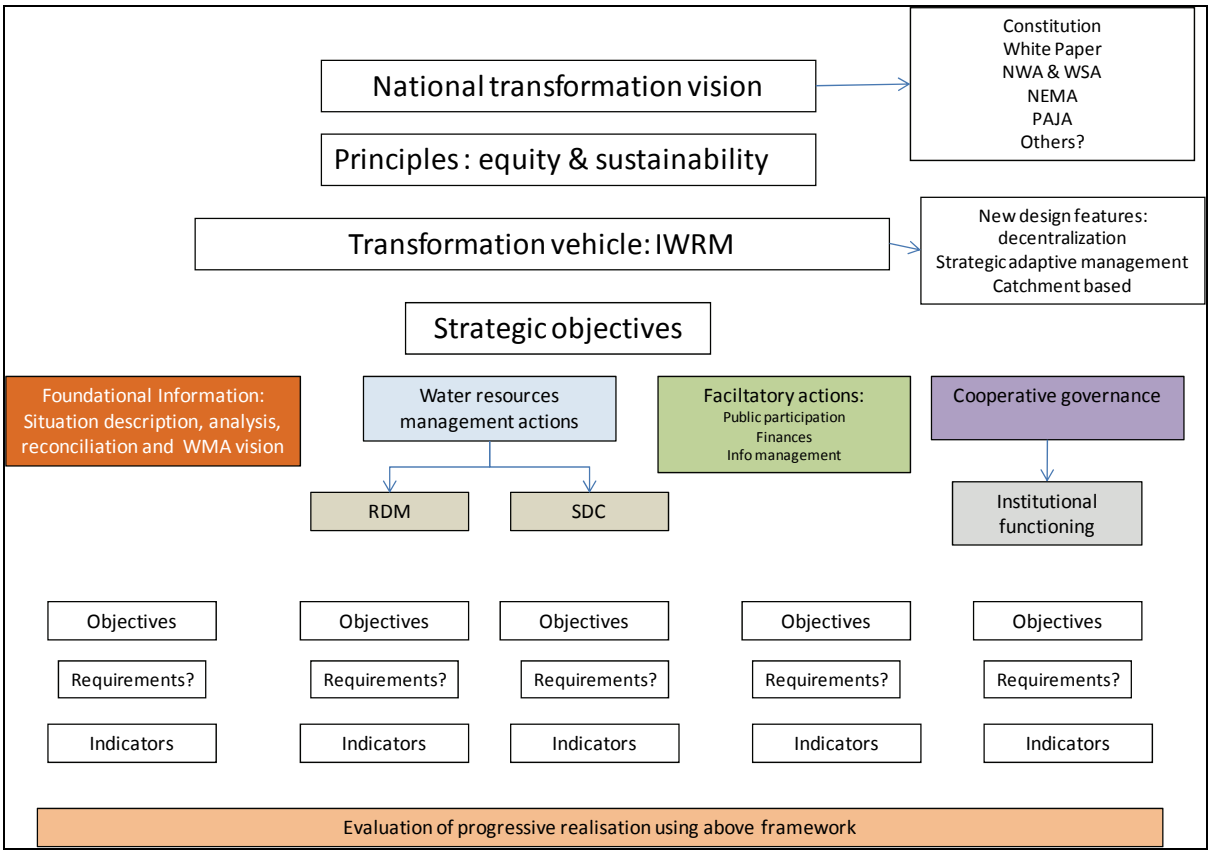


Figure 2 – Detailed structure of a proposed framework for evaluating lags

Each of the Framework's elements is discussed in turn.

Vision

The overall vision for the framework is the normative apparatus that governs water resource management. In this case, as we have discussed, the starting point are the constitutional norms. The remaining apparatus stems from this and includes the water policy, the framework legislation (NWA, WSA, NEMA and others), and ensuing plans and strategies. As we explained in the first deliverable, the key principles that can be extracted from this normative backdrop are sustainability, and equity. The main vehicle for achieving these principles in South Africa is through IWRM, which has been developed in the policy, laws and strategies.

Strategic Objectives

To determine the framework's strategic objectives, we draw from the National Water Resource Strategy and the CMS guidelines, both of which have conceptualised IWRM into four categories (DWA, 2004; ICMA, 2010; Pollard and Du Toit, 2008). A number of these deal specifically with the 'business' of IWRM whilst others facilitate IWRM. The four key strategic objectives are: 1) foundational information; 2) water resource management actions; 3) facilitation actions; and 4) integration actions (see figure 1).

Foundation information is not so much an action, but provides the foundation for the other three key strategies. It recognizes that adequate planning can be undertaken without an understanding of the current and projected situation in the water management area (WMA) (Pollard and Du Toit, 2008). In

essence, this objective comprises a holistic assessment of both the *status quo* and of the potential future scenarios against water availability, requirements (reconciliation), and the overall vision for the WMA.

Water resource management actions are comprised of two key, complementary strategic areas discussed above, known as Resource Directed Measures and Source Directed Controls, both of which were discussed in the first deliverable. RDM are directed at protecting the water resources base by setting objectives for the desired condition of resources, whilst SDC are measures to regulate water use to limit impacts within acceptable levels, as defined through RDM. Key sub-objectives (see below discussion) under RDM include delivering the Reserve, classification of water resources, and setting resource quality objectives. Key sub-objectives under SDC include undertaking adequate compliance monitoring and enforcement of authorized use and unlawful use, developing operating rules, and determining license conditions.

Facilitation actions can be thought of the 'oil' that keeps the 'engine' of IWRM going (Pollard and Du Toit, 2008). In other words, without strategic plans for stakeholder engagement, communication, information management and monitoring, and finances, the intentions of IWRM cannot be achieved.

Finally, co-operative governance and institutional arrangements are an important tenet of achieving IWRM. Multiple institutions are involved with various aspects of water-related activities, either directly or indirectly, including the CMA, DWA, local government, and water users. Other strategic planning processes either have to be aligned (e.g. relevant municipal planning processes such as the integrated development plans and water services development plans; the sectoral plans such as water conservation & demand management plans) or at least considered (Pollard and Du Toit, 2008). The lack of coordination between departments is a key challenge. To effectively implement IWRM, government machinery has to allow for cross department coordination and overall integration in results (e.g. planning commissions; integrated licensing etc).

It becomes clear that each of these key strategic objectives is inter-related and many of their sub-objectives overlap with or play a role in achieving other sub-objectives. For example, a fully functioning CMA will enable achieving RDM and SDC measures. Cooperative governance will be essential to deliver the reserve and monitor and enforce SDCs. Understanding these linkages is key to strategic planning, and ultimately understanding and evaluating lags.

Sub-Objectives

Each of the four main categories of objectives presented above will have several layers of sub-objectives (see Figure 1) that will need to be determined. For example, the strategic objective "water resource management actions" has two main sub-objectives: RDM and SDC. Compliance monitoring and Enforcement is likely a further sub-objective of SDC (appendix 1), whereas, setting the Reserve, classifying resources, and setting Resource Quality Objectives are all sub-objectives of RDM.

These sub-objectives will need to be determined in a collaborative and iterative process involving a wide range of relevant regulatory actors, and they may be different based on the requirements of each catchment. However, a useful starting point is the ICMA, which has already listed several such sub-objectives in its catchment management strategy.

Requirements for Sub-Objectives

The regulator must determine requirements (or actions) necessary to achieve sub-objectives (ultimately the strategic objectives and vision). We recommend the creation of these requirements through an exploration, definition and analysis of the key drivers and components of the system (Pollard et al., 2009). This is a collective process that is context-specific, and should include all parties responsible for operationalising the strategic objectives and sub-objectives eventually delineated in the proposed framework. The boundaries of these drivers, rationales associated with them and their inter-linkages need to be explored collectively. In this regard the development of a systems diagram (or 'the way the world works'), proves crucial (descriptions of f the development of systems diagrams is given in Pollard et al., 2008a and Pollard et al., 2009).

Creating a systems diagram is beneficial for several reasons. First, it encourages people to think beyond their own boundaries of expertise or interest, and requires an examination of drivers, determinants and outcomes – and in particular of the multiple drivers, outcomes and feedback loops so prevalent in complex systems (Pollard et al., 2009). This will allow for an understanding of how specific requirements may cut-across sub-objectives, and the relation between the requirements and the sub-objectives they are listed under. Secondly it allows the team to share a common – but not necessarily identical – understanding, providing the basis for more complex discussions (i.e. talking 'from the same page') (Ibid.). Having such a systems view in place facilitates identifying the various components of the system and gaining clarity on definitions so that one can also choose indicators more appropriately (discussed below).

For example, placing the Ecological Reserve (a sub-objective under RDMs) within a systems context, the following key requirements could be derived:

- determination of the Ecological Reserve (which will include international obligations)
- implementation or operationalisation
- water resource protection measures
- financial planning
- stakeholder participation
- compliance monitoring, enforcement
- cooperative governance.

To take another example, the following key requirements that could be allocated under compliance monitoring and enforcement (a sub-objective under SDCs) (adapted from ICMA, 2010):

- Establishing a dedicated CME unit
- Cooperative governance
- Effective monitoring and information systems
- Systems to deal with transgressors
- CMA functions assigned
- Clear standards

Each of these requirements may have sub-requirements. For example establishing a dedicated CME unit may have the following sub-requirements that may cut across other requirements:

- Financial resources
- Capacity

These listed requirements are of course illustrative and have not undergone the collaborative and iterative process required under the framework. Determining the hierarchy of sub-objectives and their related requirements is a time-consuming process that must be coordinated as it requires the engagement of a wide range of practitioners regulators, experts and other relevant stakeholders. However, this list demonstrates that various requirements will cross-cut against other sub-objectives, and cross-cut within the same sub-objective. For example monitoring and information systems will be linked to water use authorisation, another category of sub-objective. Or within the same sub-objective, establishing a CME unit is linked to assigned functions to the CMA. One should also be cognisant about who will operationalise these requirements, thus linking this sub-objective to facilitation actions and integration actions.

Setting Temporal Targets

Simply determining the various requirements for each sub-objective is not enough. Without setting appropriate temporal targets, requirements or actions become meaningless, thus creating an unreasonable temporal lag. For example, if it takes ten years to begin monitoring the Ecological Reserve after it has been determined, delivering the Reserve becomes jeopardised.

Setting these temporal oriented targets is a difficult task, particularly where the requirements at issue are novel. The process will initially depend in large part on "informed estimations" rather than experience, and there is no hard and fast guide or formula to draw upon. Nevertheless, one can ask a series of exploratory questions that can help guide the process. These questions can be divided into three broad categories: 1) Technical Assessments; 2) Contextual Assessments; and 3) Externalities

Technical assessments (Box 2) seek to understand, among other things, the level of expertise necessary to implement actions, the financial and non-financial resources required, whether the requirement requires the creation of new institutions, and whether there the requirement is an entirely new practice or one that builds on previous practice.

Box 2 – Technical Assessments

- Is the specific programme/tool/practice a reform from previous practice or is it formalizing 'normative' or existing practice?
- What resources (financial and non-financial) are required to implement the programme/tool/practice?
- What level of technical expertise is necessary to implement the programme/tool/practice?
- Does the implementation require the creation of new institutions?
- Which sphere(s) of government is responsible for implementation, and how much coordination is necessary between various government agencies?
- What kinds of legal or administrative requirements must be met before it can be implemented, such as public participation or notice requirements?

Contextual assessments (Box 3) seek to determine the status quo and can include the state of the resource (at a catchment level), both in terms of quality and quantity, how much financial and non-financial resources are reasonably available, what is the status of implementation of the requirement and sub-objective, what positive steps have already been taken, the different water uses in the catchment, and various indicators and targets already in place.

Box 3 – Contextual Assessment

- What is the state of the resource, both in terms of quality and quantity?
- How much resources (financial, staff, etc.) are reasonably available to implement the programme/tool/practice?
- What is the status of implementation
- What positive steps have been taken?
- What indicators of progress are in place? What targets are in place?
- Who has access to water?
- What are the different water uses?
- Is there equitable allocation?

Finally, **externalities** focus on the social, economic, and environmental cost of non-compliance. This may include understanding ecological tipping points, the effects of non-compliance with eco-system goods and services, and the effects of non-compliance with human health and well-being. Understanding these externalities may influence the critical nature of the various requirements and may lend some urgency to their operationalisation.

Developing and Testing Indicators

Once the various requirements are delineated under each sub-objective and time frames for their operationalisation are indentified, the process of developing indicators must begin. As we presented in deliverable two, an indicator can be defined as a "measure or a statistical value expressed in a meaningful way that provides an indication of the condition or direction over time of performance of a defined process or achievement of a defined outcome. An indicator provides evidence that a certain condition exists or certain results have or have not been achieved." (UN Water, 2006) In other words, indicators are the main evaluative tool within the framework to access whether a desired state of an objective, sub-objective or requirement has been achieved. The goal is to develop indicators that can ultimately inform whether the key strategic objectives, and ultimately the vision, is being realised.

Evaluating and Learning

An important element of the framework is to learn from experiences and adapt over time. Adaptive management recognises 'learning from action' – with the aim to improve management practices. This is called reflexive learning. Thus learning is occurs "when a person reflects on what they have done, evaluates the action and then uses the assessment to influence future actions" (Pollard and Du Toit, 2007).

As discussed, using indicators and temporal benchmarks play a significant role in learning, because they help answer the following important questions:

- Has the sub-objective and requirements materialized?
- Were the requirements appropriate?
- Was the outcome actually acceptable? To whom?
- Even if the outcomes are acceptable, are the objectives and vision being met?

These questions are critical, as they direct a reflection of the entire hierarchy of the framework.
It is important to note the regulator is responsible for filling in the substance of the framework (i.e., the sub-objectives, steps/requirements, indicators and benchmarks), and the process will take time and it

should include all regulators responsible for the various management actions. Seeking the input of experts in various fields and non-governmental organisation is also highly recommended. Although examples are given above, it is beyond the scope of this deliverable to unpack every element of the framework as it relates to various water management actions. Ideally, it is primarily up to the CMAs to furnish the substance, drawing from the CMS and collaborating with DWA, and it is also up to the CMA to be accountable and provide evidence of progressive realisation should it be required for one or other purpose. The framework assists such institutions with the organisation of evidence.

5. Links to progressive realisation and reasonableness

There are several elements of the Constitutional Court's test for reasonableness and progressive realisation raises that can be linked with the proposed framework.

1. All levels of government must play a role in ensuring constitutional rights. A strategic objective of the framework is integration actions, which recognises that multiple institutions are involved with various aspects of water-related activities, either directly or indirectly, including the CMA, DWA, local government, and communal power structures.
2. A programme must be flexible and balanced, and consider short, medium, and long term needs. The framework is founded on SAM, which inherently allows for a dynamic and adaptive management process. Moreover, by exploring various contextual factors and potential externalities from inaction when setting temporal targets, the framework requires the government to consider short term, medium and long term needs in evaluating the temporal reasonableness of lags.
3. The Court's test recognises that implementation is a key aspect of evaluating reasonableness, not simply conceptualising a programme. In other words, simply having IWRM crystallised in policies and laws is not enough; if the implementation of IWRM is unreasonable (a lag as we define it), then the government may be in violation of the relevant constitutional norms.
4. Fourth, the court requires that to achieve progressive realisation, the government move as expeditiously an effectively as possible. The framework facilitates the government's ability to do this by requiring the regulator to set a clear hierarchy of objectives with temporal targets and indicators.
5. Fifth, the legal test recognizes resource limitations on progressive realisation. The framework also incorporates resource assessments, and requires government to assess the resources required to implement requirements and meet objectives against the resources reasonably available to do so. Notwithstanding this, subjecting progressive realisation to the availability of resources poses one of the most difficult challenges to adjudicating IWRM issues. This is discussed below.
6. The Court requires the government to constantly review its policies to determine reasonableness. The framework is based on adaptive management and requires this constant learning cycle.
7. The framework, like the Court, recognises that reasonability must be determined on a case by case basis, and that context is at the centre of the enquiry. Each catchment will have different sub-objectives, requirements, temporal targets and indicators. This allows for different frameworks to be developed (simultaneously) depending on what catchment is at issue. Moreover, contextual assessments are necessary to determine temporal reasonableness.

Based on these many connections,, we believe that if the regulator utilises the proposed framework to access lags, it will be complying with the legal requirements around reasonableness and progressive realisation.

6. A proposed tool for easy assessment IWRM lags

One of the challenges to achieving progressive realisation and reasonableness is the ability to apply the assessment outcome to real practice. Many indicators with data collected as evidence needs to be synthesized and its implications for practice need to be articulated. A difficulty of working with the sub objectives of IWRM is the integration into a unified picture that is not over simplified.

The other important issue is that progressive realisation and reasonableness needs to be assessed by relying on comparisons and trends. i.e. a single entry will say nothing of progressive realisation. A number of years need to be compared in order to assess the extent of the progress, the trends and the overall progress towards the targets. This also highlights an important component of progressive realisation that considers retrogressive steps as a legal violation. In other words, progress cannot move backwards.

The research team has therefore deliberated on these issues and proposes a simple tool (Fig 3) that might be valuable for water mangers to track progress. It is currently only a draft and would need to be developed with careful consideration and conjunction with the framework proposed above. Fig 4 shows how the simple scores for each strategic area are displayed over a three year period giving an indication of progressive realisation and reasonableness. Importantly, as we recommend below, both the framework and its assessment tool should be incorporated into the CMS process.

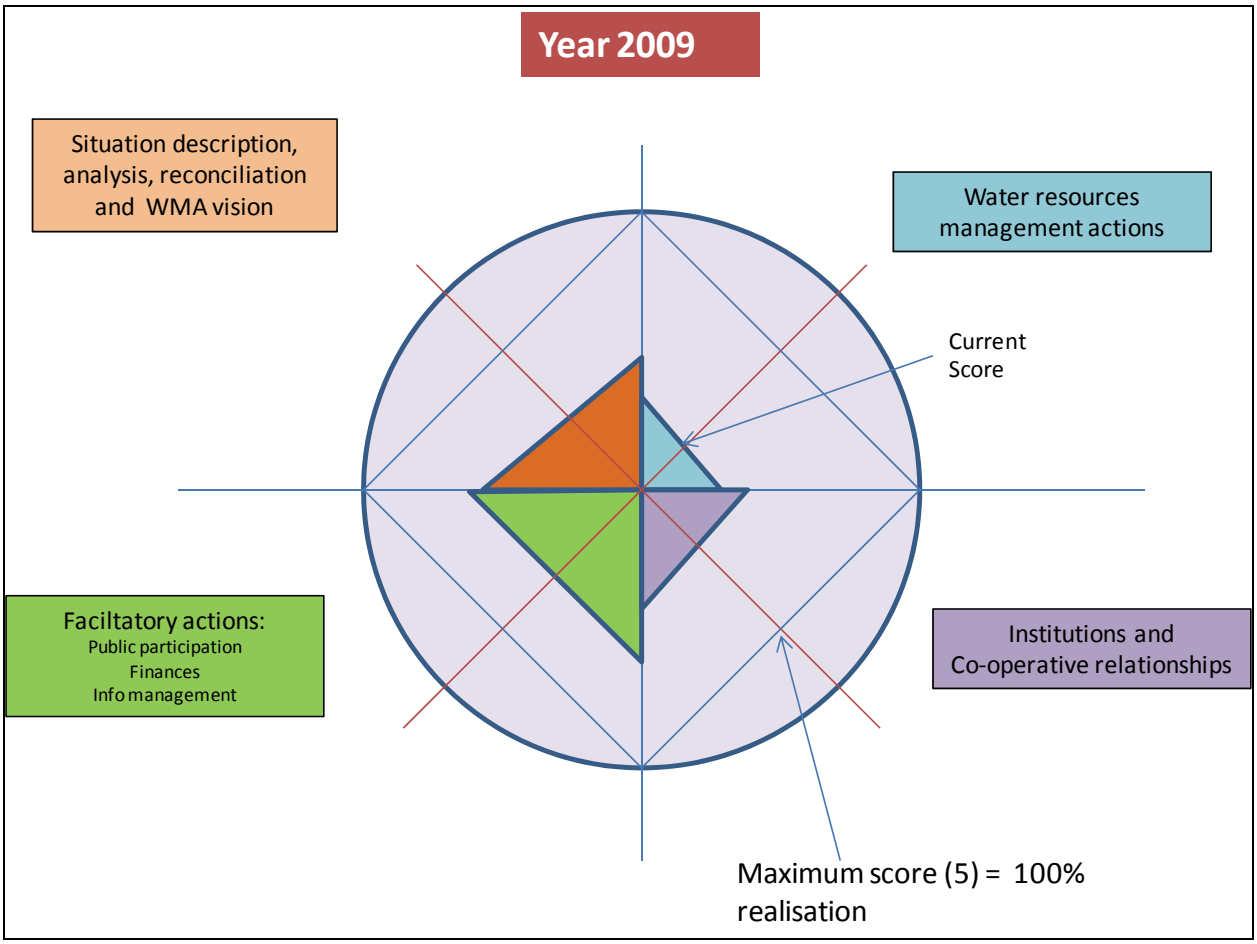
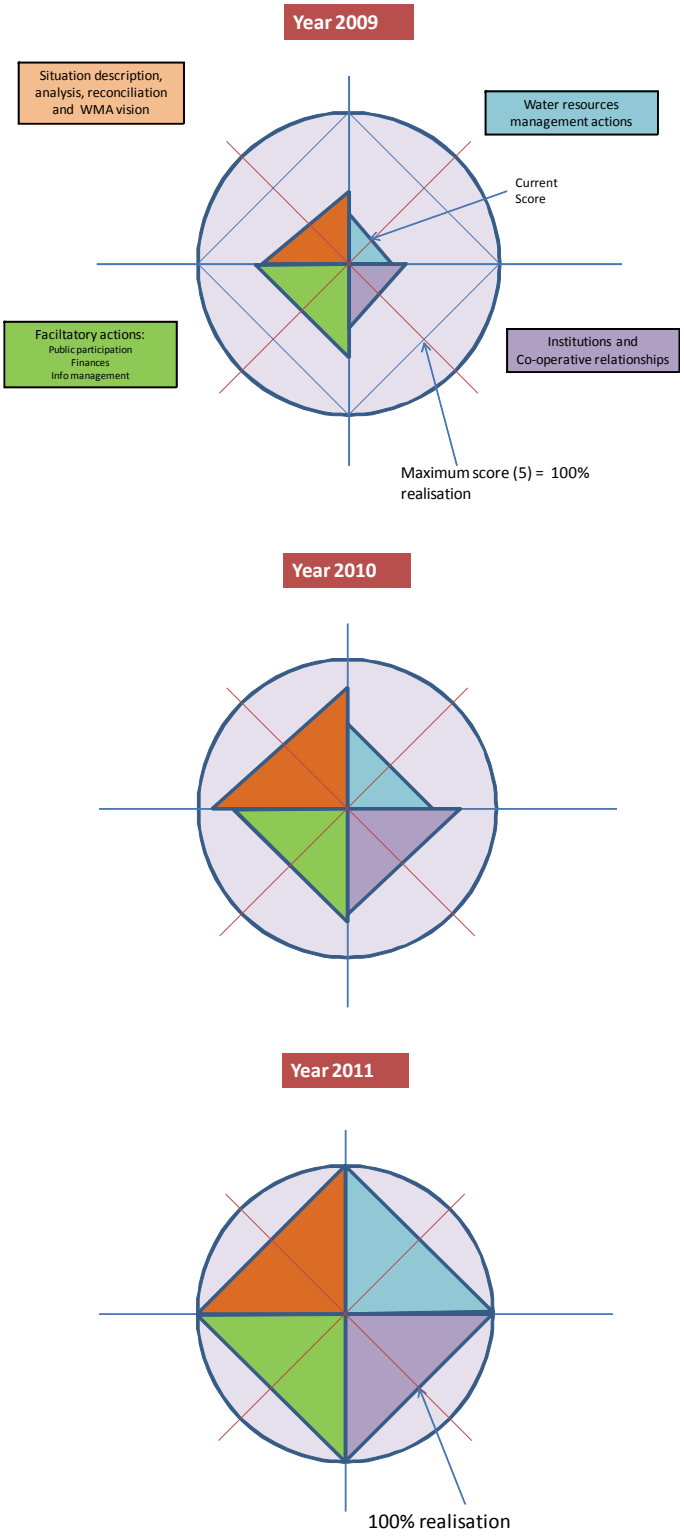


Figure 3 – The 'Spiderweb Chart' for assessment of Progressive Realisation

The chart presented in Figure 3 is a simplified way of representing action toward or away from progressive realisation. The faster the progress towards a top score of 5 for each of the 4 key strategic areas, the shorted the implementation lag. The important point is that an assessment needs to be conducted over consecutive years in order to evaluate progression (figure 4). Clearly indicators need to be developed for each of the 4 key strategic areas in order to conduct the evaluation process.



In this example case the charts show Progressive Realisation as the evaluation indicated an increase in scores towards 100% realisation over a three year period. This is indicated by increases in scores along the red axes (derived from indicators).

The visual representation allows for a 'snap-shot' of the progress in 4 key areas of IWRM and is useful for guiding future action in respect of those.

The challenge for such an evaluation, and presumably for courts of law, is to decide on the 'reasonableness' of the progress towards the 100% realisation or compliance.

Figure 4. The 'Spiderweb Chart' for assessment of Progressive Realisation

E. Linking the proposed framework with the CMS and NWRS process

The proposed framework and evaluative tool should not be implemented through an entirely new management process, but should instead be folded into an existing strategic mechanism. We recommend that this take place within the catchment management strategy process. Although there are only a handful of CMAs operating, this legislatively mandated institution is in the best position to understand the specific contextual issues for properly planning around water resource management (Pollard and Du Toit, 2011)

Section 8 of the NWA makes provision for the establishment of CMSs. Specifically it envisions that a CMS for each water management area be established in a phased and progressive manner and reviewed at intervals of not more than five years. This allows for the reflexivity required to constantly re-evaluate implementation lags. Most important, section 9 of the NWA sets out the contents for a CMS and requires that the CMS must be in harmony with and not conflict with the NWRS.

A review of the first completed (but not yet gazettes) CMS in the ICMA demonstrates just how linked it is to the NWRS, and also how it is well-positioned to serve as an ideal platform to evaluate lags (ICMA, 2010). As Figure 5 demonstrates, the four main parts to the CMS mirror the NWRS, and include developing a vision, and include developing a vision and situations assessment, water resource management strategies, facilitating strategies, and integration strategies.

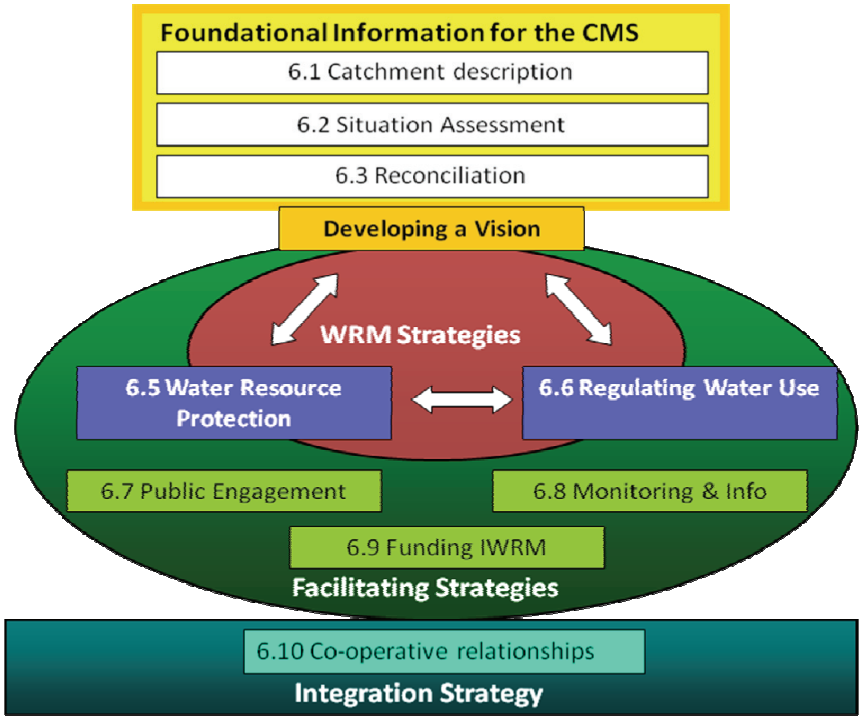


Figure 5 – Framework for CMS (adopted from DWA, 2007)

Most important, the ICMA has recognized that water resources are complex systems that require adaptive management. The ICMS states that "[t]he ICMA has taken the decision to base all its planning and decision making for IWRM on the process of [SAM]." (ICMS, 2010).

In sum, the CMS, in conjunction with the NWRS, serves as an ideal platform to evaluate lags. The main challenge will be to link the legal obligations of reasonableness and progressive realisation to the development and evaluation of the major actions provided by the catchment management strategies (See Du Toit, in progress). As the vast majority of water managers are not familiar with the law, particularly environmental law, this merging of water management discourses with legal ones will pose a significant challenge (Ibid).

F. Recommendations and way forward

In this final report we have highlighted some of the key issues in trying to understand the issues associated with water reform and 'implementation lags'. The intentions of this consultancy have not been to apply empirical research or to seek evidence through data gathering and analysis but rather to scope out the key issues that would be fundamental to assessing lags in the implementation of the NWA for consideration by the WRC, DWA and other interested and affected parties. In this closing section we present a number of recommendations to further the discussion, in no particular order.

1. We believe that the concept of 'lags' is embraced by complexity theory and systems thinking. These two theoretical frameworks accept that in any system there is going to be a lag between the time of a change with that system and for the effects or responses to that change to be experienced. However we believe that the framing of a 'lag' needs to be more precisely formulated to be of value to water resource managers and practitioners. We therefore recommend that the legal obligation of **reasonableness** and **progressive realisation,** taken from human rights law and enshrined in the South African Constitution, be used where a more precise formulation is required and that the word 'lag' remain a more colloquial term. Drawing on the bill of rights discourse makes a valuable contribution to the justiciability of progressive realisation through defining 'reasonableness' of a lag.
2. The CMS seems to be the best available instrument against which these legal obligations can be assessed. The link to the NWRS and the five year gap analysis conducted as part of the review of the CMS can establish the degree of reasonableness and progressive realisation in achieving the desired targets.
3. **Monitoring.** Monitoring is a key element of evaluating reasonableness and progressive realisation, and the framework discussed above places a great importance on monitoring, primarily through the use of indicators and temporal benchmarks. However, it is important than mechanisms are in place to facilitate this process. For example, the former Team for the Implementation of the NWA was great platform where all responsible individuals in DWA needed to come and report on progress. Its main task was to ensure that the NWRS five year progress was made. There should be an effort to incorporate monitoring of reasonableness and progressive realisation within the CMS, whether they exist or need to be created.
4. **Integrated Management.** We need a greater understanding of how government systems can be more effectively integrated (see Pollard and Du Toit, 2011 on feedback loops; Pegram & Mazibuko, 2006) through vertical and horizontal coordination. Indeed, the sub-objective of cooperative governance in the proposed framework explicitly recognises the importance of horizontal and vertical

integration and coordination. Work by Law (1992) on Actor Network Theory (ANT) looks at ways for integration of actors and infrastructure into integrated networks. We suggest that this be followed through with further study, and be adapted into the proposed framework. Administrative constellations in government organised around particular management actions are potentially useful in relation to a number of management actions for example, integration of Water Services Development Plans and Water Allocation Plans, water use licensing, monitoring and reporting, to name but a few. Moreover, the lack of ownership/lead organisation in management action is another obstacle related to cooperative governance. The complexities of IWRM mean that a number of departments have various overlapping mandates. For example the Department of Water Affairs and Department of Environment both have mandates to protect water resources. It is important to avoid conflict or contradiction of decisions between DWA and Environmental Affairs or whoever has the responsibility to protect water resources.

5. **Learning by doing and adaptive management.** Strategic adaptive management (SAM) is integral to accessing and achieving reasonableness and progressive realisation. Because IWRM is transformative, regulators and practitioners that are playing a role in its implementation are often walking on new ground, and often are unable to even understand if they are making a mistake or not doing things reasonably. As discussed in Section D, in SAM, learning is taken to be a social process where engagement, communication and dialogue provide the basis for reflecting on and responding to feedback in a way that is open to change and that encourages creative and innovative responses to an ever evolving context (Pollard et al., 2009). Indeed SAM integrates research, planning, management, and monitoring in repeated cycles of learning that seek to improve on, and active, objectives (Pollard and Du Toit, 2007). SAM allows for room to learn from mistakes in management in way that is constructive and not necessarily adversarial or judgmental.
6. We suggest that a **basic framework with some associated indicators** be attempted before any evaluation process is initiated. A framework should used in preference to a schedule of indicators that are devoid of contextual features. The development of criteria and indicators is likely to be controversial, not to say challenging, and we suggest a collaborative and iterative process in this regard. A key recommendation here would be to work collaboratively with the CMAs, or where they are not yet established the different directorates at DWA, in order to identify appropriate indicators for each of the four key areas outlined in the framework above. It is important for regulators to collaboratively develop the framework so that they identify with the outcomes, and so that they do not feel that the outcomes are unattainable or unrealistic. It is thus suggested that the framework be used in a formative manner in order to assist practitioners improve on their delivery. Thus, it is not a one-time activity, but a process that continues to build on itself. It is recommended that the framework be operated at the requisite level of simplicity and that elaborate tools be avoided. This is important as practitioners are likely to abandon the use of the instrument if they regard it as irrelevant or trivial.
7. Although the proposed framework or approach outlined above is an evaluative tool for regulators, it is also necessary to **explore how courts can better access reasonableness and progressive realisation** of specific constitutional obligations. The challenges are many, and it would require courts to review difficult technical issues where there is often disagreement among experts. There is much research that remains to be done in this area, and the lack of litigation around difficult natural resource management issues is perhaps the best evidence that the current approach is lacking. One useful research project would be to look at various potential ways IWRM issues can be litigated, and the kinds of inquiries, evidence, and legal arguments that such potential litigations may require.

Concluding comment

In summary, 'measuring change' is a challenging task. In moving towards an intention, goal or shared vision we accept that a system might not always be prepared for the change process. Rushing the process under such conditions can produce problems. For this reason we need to adopt an orientation that is supportive or formative as well as judgmental – not judgmental alone. Being critical and reflective on our progress and actions gives us a realistic sense of our achievements. But without a framework for conducting this process we are likely to be unstructured and not get a sense of trends or patterns over time.

Laws cannot provide management solutions and they certainly cannot be expected to predict outcomes. Whilst we generally accept that transformations are planned with the best possible intentions, transformation can precipitate outcomes unforeseen by legal and policy frameworks. This creates a critical need to better understand, among other things, how the government can practically evaluate its own performance against its obligations. Whilst the Constitutional Court provides a test for both what qualifies as reasonable and what meets the obligation to progressively realise, we cannot continually look to the courts for rulings. Practitioners need to develop reflexive habits that allow them to assess their own progress and, out of that formative process, design remediation and progressive future actions. The notions of progressive realisation and reasonableness are useful in this regard but one needs to exercise caution in recommending a system that introduces bureaucratic and administrative burdens where they cannot be carried. It is also important to engage the practitioners responsible for implementation so that they do not perceive the process to be burdensome and unwieldy. In the end they should benefit from the process through building better practice.

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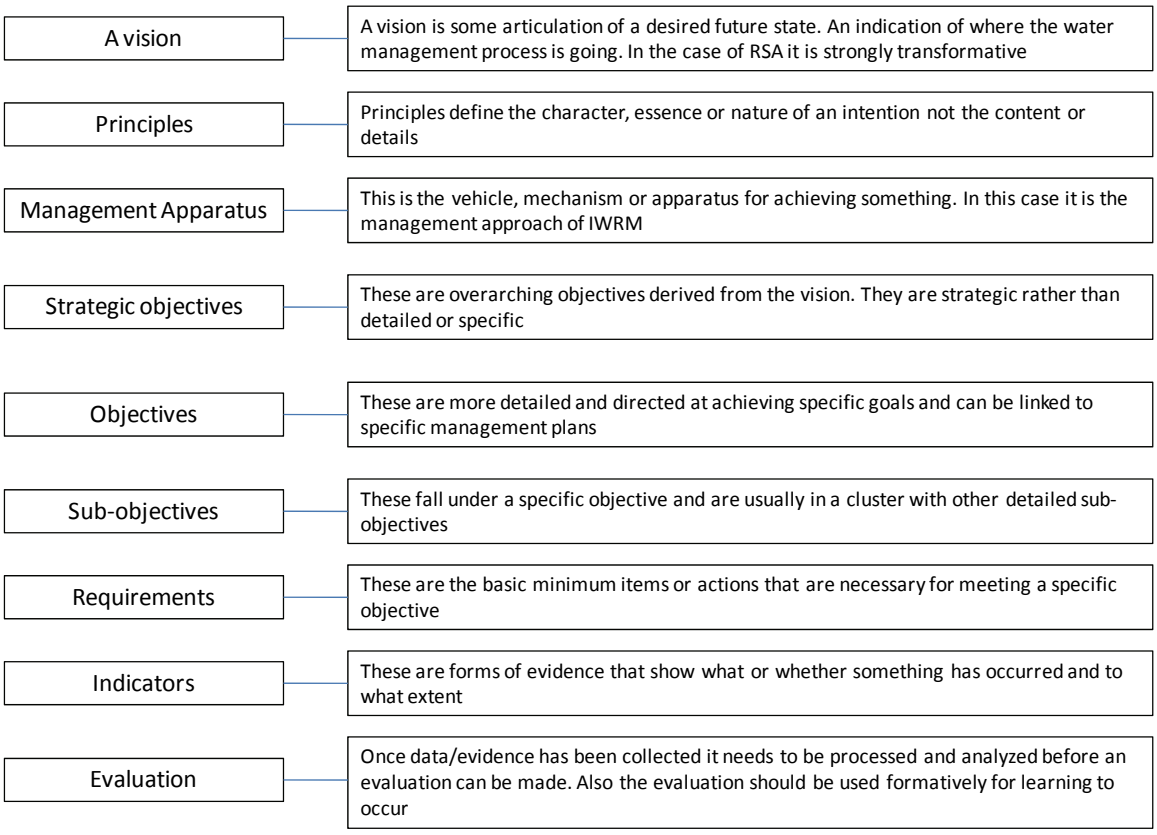
APPENDIX 1

A worked example of Water use regulation

In this appendix we share a worked example of water use regulation and how the framework is applied. The actual development of indicators has not been executed as this is beyond the scope of this consultancy. However the section below gives an example of how the strategic adaptive management approach can guide the development of an approach that allows us to assess progressive relation of IWRM.

Fig 1. The basic framework for evaluating progressive realization of IWRM



1. Vision

The management vision regarding the regulating the use of water of the State is derived from the Constitutional mandate, as contained in the Constitution of the Republic of South Africa, 108 of 1996 (Constitution). This mandate requires that the all state's actions regarding the regulation of water uses should be so that it is not procedurally unfair, which require that powers should be exercised in terms of

clear rules and principles set out in advance. There should further be adequate reasons for all actions taken, which should not be arbitrary in its substance. A due process should therefore be followed by the state when making decisions, which should be open and transparent. These should be incorporated into the law as well as other measures.
Government must formulate policy based on this mandate and effect should be given to this policy by securing the enactment of legislation. Thereafter, a process of implementing and administrating the policy should be done by developing strategies and progammes, and applying legislation and other measures to these.[17]
The Minister of Water and Environmental Affairs (Minister) initiated in May 1994 a process to review all the water-related legislation. This was due to the social, political and democratic reform in South Africa during the last decade of the 20th century, the water-related issues experienced, international declarations and the prominence given to fundamental human rights and environment-related matters during the second half of the 20th century, as well as the demands of the Constitution and because the water legislation was inadequate to give effect to these.[18] This resulted in a set of products after four years' of hard work and wide consultation.

2. Principles

The first real outcome of this process was the "Fundamental Principles and Objectives for the New Water Law in South Africa" which was approved by the Cabinet in November 1996. Some of the principles relevant to the regulating the use of water are as follows:
Principle 1: The water law shall be subject to and consistent with the Constitution in all matters including the determination of the public interest and the rights and obligations of all parties, public and private, with regards to water. While taking cognisance of existing uses, the water law will actively promote the values enshrined in the Bill of Rights.
Principle 2: All water, wherever it occurs in the water cycle, is a resource common to all, the use of which shall be subject to national control. All water shall have a consistent status in law, irrespective of where it occurs.
Principle 3: There shall be no ownership of water but only a right (for environmental and basic human needs) or an authorisation for its use. Any authorisation to use water in terms of the water law shall not be in perpetuity.
Principle 4: The location of the water resource in relation to land shall not in itself confer preferential rights to usage. The riparian principle shall not apply.
Principle 7: The objective of managing the quantity, quality and reliability of the nation's water resources is to achieve optimum, long term, environmentally sustainable, social and economic benefit for society.
Principle 8: The water required to ensure that all people have access to sufficient water shall be reserved.

[17] See *Government of the Republic of South Africa and Others v Grootboom and Others* 2001(1) SA 46 (CC) (200 (11) BCLR 1169). In *Elder v Burris* 6 Hump Tenn R 266 it is stated that "[all] laws are, or ought to be, an adaptation of principles of action to the State …".
[18] See Frank J Trelease, *New Water Legislation: Drafting for Development, Efficient Allocation and Environmental Protection*, 12 Land and Water Law Review (an article in *Water Resources Management – a Casebook in Law and Public Policy* by Tarlack, Corbridge & Getches (4th ed 1993), The foundation Press, New York at 37 where it is stated that "to meet these needs, new water laws must be drafted. They must be designed not only to facilitate and achieve efficient allocation of resources and environmental protection, but in many cases they must also help to achieve social and national goals. Each law must fit a particular set of physical and climatologically conditions and be compatible with historical and cultural backgrounds."

Principle 9: The quantity, quality and reliability of water required to maintain the ecological functions on which humans depend shall be reserved so that the human use of water does not individually or cumulatively compromise the long term sustainability of aquatic and associated ecosystems.
Principle 10: The water required to meet the basic human needs referred to in Principle 8 and the needs of the environment shall be identified as "The Reserve" and shall enjoy priority of use by right. The use of water for all other purposes shall be subject to authorisation.
Principle 14: Water resources shall be developed, apportioned and managed in such a manner as to enable all user sectors to gain equitable access to the desired quantity, quality and reliability of water. Conservation and other measures to manage demand shall be actively promoted as a preferred option to achieve these objectives.
Principle 15: Water quality and quantity are interdependent and shall be managed in an integrated manner, which is consistent with broader environmental management approaches.

The following three fundamental objectives for managing the water resources arise from these principles and objectives:

- to achieve equitable access to water, that is equity of access to water services, to the use of water resources and to the benefits from the use of water resources;
- to achieve sustainable use of water by making progressive adjustments to water use with the objective of striking a balance between water availability and legitimate water requirements, and by implementing measures to protect the water resources; and
- to achieve efficient and effective water use for optimum social and economic benefit.[19]

These principles and objectives guided an intensive programme involving the Minister, political leaders, officials from the Department of Water Affairs (DWA) and other organs of State, organised user groups and South Africans from all walks of life in a process of consultation, research and synthesis to develop the water resource management policy. This process was assisted by the support and involvement of officials and experts from other countries and from international organisations. This lead to the publishing of the National Water Policy[20] (NWP), outlining the direction to be given to the development of the water law and water management systems which should take South Africa into the 21st century.

3. Strategic objectives

The **objective** of the sub-strategy for water-use regulation is to define the limits and constraints, incentives and disincentives that must be imposed on the use of water resources to achieve the desired vision and water resources protection for the WMA. Based on the principles of equity, sustainability and efficiency, the strategy must address allocation, re-allocation, authorisation and licensing, water management and pollution control, augmentation measures, and compliance and enforcement.

The expected **outcome** is a comprehensive sub-strategy for water use regulation for a WMA that will draw on incentives and disincentives, verification, allocation planning, re-allocation, authorisation and

[19] See ch 1.1 of the *National Water Resource Strategy,* 1st ed, published in Government Notice 65 in *Government Gazette* 27199 dated 28 January 2005. For more detail on equity, sustainability and efficiency, see the strategy at 1 and 2.
[20] *White Paper on a National Water Policy for South Africa*, Department of Water Affairs and Forestry dated April 1997.

licensing, water management and pollution control, augmentation measures, and compliance and enforcement to realise the ideals of equity, sustainability and efficiency.

The following are some of the key principles of the NWP to guide regulating the use of water:

- The status of the nation's water resources as an indivisible national asset will be confirmed and formalised.
- National Government will act as the custodian of the nation's water resources and its powers in this regard will be exercised as a public trust.
- All water in the water cycle will be treated as part of the common resource and to the extent required to meet the broad objectives of water resource management, which will be subject to common approaches.
- Only water required to meet basic human needs and to maintain environmental sustainability will be guaranteed as a right. This will be known as the Reserve.
- In shared river basins, Government will be empowered to give priority over other uses in order to ensure that the legitimate requirements of neighbouring countries can be met.
- Water uses will be recognised only if they are beneficial in the public interest. These will be subject to a system of allocation that promotes use which is optimal to the achievement of equitable and sustainable economic and social development. The system will take into consideration the investments in infrastructure made by the water user.
- The new system of allocation will be implemented in a phased manner, beginning in water management areas that are already under stress. This system of allocation will use water pricing, limited term allocations and other administrative mechanisms to bring supply and demand into balance in a manner that is beneficial in the public interest.
- The riparian system of allocation, in which an entitlement to take water from a water resource is tied to the ownership of land along rivers, will effectively be abolished. Transitional arrangements will, in time, ensure an orderly, efficient and gradual shift in water use allocations as and when necessary.
- Entitlements to water allocations will no longer be permanent, but will be given for a reasonable period to a specific person, and provision will be made to enable the transfer or trade of these entitlements between users, with Ministerial consent.
- To promote the efficient use of water, the policy will be to charge users for the full financial costs of providing access to water, including infrastructure development and catchment management activities. This will be done on an equitable basis and according to a realistic, reasonable programme.
- All water uses, wherever in the water cycle it occurs, will be subject to a catchment management charge that will cover actual costs incurred.
- All water uses, wherever in the water cycle it occurs, will be subject to a resource conservation charge where there are competing beneficial users or where such use significantly affects other users.
- The use of water resources to dispose of waste will also be made subject to a catchment management charge, which will cover actual costs, and a resource conservation charge where there are competing beneficial users for such use and/or such use significantly affects other users.
- To promote equitable access to water for disadvantaged groups for productive purposes such as agriculture, some or all of the charges could be waived for a determined period where this is necessary to enable them to start using the resource.
- To promote equitable access to water for basic human needs, provision will also be made for some or all of the charges to be waived.

- All major water-user sectors should develop a water-use, conservation and protection policy, and regulations will be introduced to ensure compliance with the policy in key areas.[21]

According to the NWP, the country's water resources should be used within their capacity to recover. If water resources are over-utilised for short-term benefit, or if water resources are degraded due to the effects of waste and land use, they could lose their ability to sustain utilisation in the long term. These uses should be balanced with the protection of the resources, which include social and economic benefits as well as the determination of water resource quality objectives. This should involve those affected, or their representatives, in weighing up the options on an informed basis. To achieve this, the systematic monitoring and evaluation of information are necessary.
The fundamental aspect emanating is the requirement to protect water resources so as to ensure the sustainable use thereof. Flowing from this are the following imperatives:

- equity in access to water resources;
- optimal use of the water;
- protection of the water resource base; and
- eradication of poverty.

The National Water Act, 1998 (Act 36 of 1998) (NWA) was promulgated based on these principles and objectives and to give effect to the NWP. The NWP and NWA go a long way to ensure that effect is given to the constitutional right to an environment that is not harmful insofar as the water resources are concerned.
Various other piece of legislation has also been published to help to achieve the Constitutional mandate, such as the National Environmental Management Act 107 of 1998, Mineral and Petroleum Resources development Act 28 of 2002 and the Promotion of Administrative Justice Act 3 of 2000.

4. Requirements

The new basis for the allocation of water was preceded by "[a]cknowledging the national government's overall responsibility for and authority over the nation's water resources and their use, including the equitable allocation of water for beneficial use, the redistribution of water …"[22] The national government, acting through the Minister, is appointed as the public trustee of the water resources and must ensure that effect is given to this responsibility.[23]

Authorisation of water uses

Authorisation is generic term that refers to the granting of permission to use water, which is an entitlement to use water.

Use of water under a licence

If an envisaged water use is not permissible under Schedule 1, does not fall within the scope of an existing lawful water use or an issued general authorisation, a licence is required to undertake that use. A licence is also needed if a person intends to extend the scope of its activities beyond the extent of the authorised water use or the person intends to carry on with an authorised water use, if the authorisation lapses, is withdrawn or is amended and the water use does not fall within the scope of the authorisation after the amendment.

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[21] See NWP at 3 and 4.
[22] Preamble to the NWA.
[23] Section 3.

Publish regulations on the use of water

The Minister may make regulations to-

- promote the economic and sustainable use of water;
- conserve and protect water resources or, instream and riparian habitat;
- prevent wasteful water use;
- facilitate the management of water use and waterworks;
- facilitate the monitoring of water use and water resources.

The regulations made may differentiate between different water resources and geographical areas.

Pricing, charges, incentives and disincentives

Financial mechanisms for regulating water use relate to water pricing, charges and tariffs. By setting appropriate, fair and reasonable tariffs, charges and incentives, a catchment management agency is able to regulate the use of water for purpose of sustainability, equity and efficiency. They are also important mechanisms for protecting the environment and promoting social transformation and equity. The National Pricing Strategy provides an overarching framework for tariff setting, but the physical and demographic characteristics as well as the socio-economic circumstances of a particular area will determine the specifics of water pricing.

Managing the use of water, including monitoring and enforcement

The use of water should be managed and the water users should be monitored to ensure that they comply with the conditions attached or relevant to that use. Any contravention should be rectified.

a. Registration of water uses

The purpose of registering the different water uses is not only to determine whether a water use is lawful or not. It is also to obtain information on the location and extent of the uses that are taking place, usually within a specified area, to allow the regulators to

- manage the water resources more effectively;
- allocate water more fairly; and
- charge the water users for the water used.

b. Verification of existing water uses

The provision of the NWA dealing with the verification of existing water uses are aimed at verifying the water uses which are exercised by users who claim that they have the right to do so, but whose right to do so is doubted for being illegal or excessive or against the authorisation.

c. Rectification of contraventions

Action could be taken against a person who contravenes a provision of the NWA dealing with the use of water or a condition which applies to an authority to use water.[24] The responsible authority concerned

[24] See *Theron Michel v Regional Director (Northern Cape) and Department of Water Affairs and Forestry* (Water Tribunal WT31/T1 6 November 2003, unreported), *Fanie Griesel Trust v Regional Director (Northern Cape) and Department of Water Affairs and Forestry* (Water Tribunal WT29/F2 6 November 2003, unreported), *Hayward J J v Regional Director (Northern Cape) and Department of Water Affairs and Forestry* (Water Tribunal WT28/H3 6 November 2003, unreported) and *Rossouw G I v Regional Director (Northern Cape) and Department of Water Affairs and Forestry* (Water Tribunal WT30/R2 6 November 2003, unreported). In these cases the applicants were directed to reduce current water abstraction to the existing lawful water uses applicable to the property. The Water Tribunal confirmed the directives on appeal.

may by written notice direct a person or the owner of the property in relation to which the contravention occurs, to take the action specified in the notice to rectify the contravention.

d. Suspension and withdrawal of entitlements

A responsible authority may by written notice to a person entitled to use water under a licence, a continuation of an existing lawful water use or a general authorisation, suspend or withdraw that right if the person fails to comply with a condition of the right to use the water.[25] The suspension is for the period specified in the notice or until the responsible authority is satisfied that the person concerned has rectified the failure which led to the suspension.

5. Indicators

Indicators for determining PROGRESSIVE REALISATION of the objective to regulate users will need to be a focus of specifically directed research.

[25] Section 54, read with s 1(5).