



Proposal to Revise the Pricing Strategy for Water Use Charges and Develop a Funding Model for Water Infrastructure Development and Use and a Model for the Establishment of an Economic Regulator (WP10465)

Review of Economic Regulation

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1 Introduction

This report captures the results of an examination of international practice in economic regulation in the water sector, as well as economic regulation in other sectors in South Africa, in order to support the development of an economic regulator for the water sector in South Africa, under the PERR project.

At the outset, it is important to note that there is widespread experience across the world in developed and developing countries around the economic regulation of water services, with a range of different models and approaches that have been used. Much can be drawn from this experience to support the development of an effective regulator in South Africa.

At the other end of the value chain, however, there is very limited experience in terms of economic regulation of raw water, except, possibly, through hydropower contracts where the regulation is by contract rather than any other means.

The consideration, therefore, in South Africa, of an economic regulator that regulates the entire value chain is one that does not have precedent anywhere else. The definition of an economic regulator for water resources will therefore need some innovative thinking, and a clear definition of the role of economic regulation in this arena, as opposed to technical and governance regulation.

1.1 Why do we need regulation?

Regulation is generally said to be needed when market mechanisms for a good or service are not working properly in the delivery of society's/ government's policies and objectives in that market. Regulation is therefore argued as being necessary to ensure that the failures of those markets are corrected.[1] In reality, regulation is driven by a wide range of factors, some of which may well conflict with each other, such as the desire for some businesses to exclude others from entry into the market; regional objectives such as enticing particularly companies to locate in a particular area; and the bureaucratic desire for control.

Regulation must be seen as a contested terrain, and one in which different players will be looking for different outcomes and approaches, to serve their own ends. Stigler, quoted in Rees J (1998), found a significant body of literature which indicates that regulation is often demanded by private firms in order to "*increase their market, curb risks or reduce competition by creating barriers to entry for new firms or substitute products*" (pp. 26)

Within this, while the regulator should be fair and balanced, the reality is that there is always a possibility of the regulator being 'captured' by the regulated, and regulating in the interests of the regulated body, rather than in the interests of the public or consumers. Any regulatory strategy and set of institutional arrangements must take this into account and try to prevent such regulatory capture from happening.

Having said that, the goals of economic regulation are generally to:

- encourage efficient, low-cost service provision (productive efficiency)

[1] Khanyisile Consulting Services CC 2009: IRF Framework for the Water Sector: Report on Possible Regulatory Options and Models for the Water Sector(Discussion Paper) Department of Water Affairs, Pretoria.

- set tariffs for cost recovery to ensure financial viability
- encourage investment (including extension of service)
- provide affordable services to low income groups

Thus the objective of economic regulation is to ensure that goods or services are provided in a cost efficient, fair, and sustainable manner, while bearing in mind social and economic priorities set out by the policy makers (both at national and local government levels).

The main objectives of economic regulation can be broken down into three elements:

- To protect customers from authorities' abuse of their monopoly power and from political interference,
- To protect water institutions from expedient political decisions, and
- To enable the public sector to ensure the achievement of long-term policy objectives.

Appropriate economic regulation is a key enabler of infrastructure investment. It ensures the provision of safe and appropriate services without discouraging those that provide the services, and without undue harm to others (through externalities). Economic regulation can, theoretically, safeguard against monopoly formation and environmental harm, and improve the overall stability of markets. In the water sector context in South Africa, however, the institutions to be regulated are primarily organs of state with a monopoly position, and must be regulated as such.

In order to effectively martial the (potentially) conflicting interests of investors, users, citizens and the environment, a regulatory environment needs to adhere to certain principles. Core amongst these are accountability, transparency, predictability and consistency.

A strong policy foundation, supporting a comprehensive legislative framework, must be cemented together by an institutional arrangement that embeds the principles of good governance articulated by the King Reports.

The policy, legislative and institutional establishment needs to take cognisance of existing and potential users and providers of services.

The role of an economic regulator will be to find a balance between the needs of users and the requirements of investors/service providers – within the context of broader social and environmental impacts.

Where there is private sector involvement, the highly capital intensive nature of water infrastructure and operations means that investors would require reassurance that they will receive a suitable return from their investment – over a relatively long time period. At the same time, the users of services require protection from high prices that may otherwise be charged by services that have a tendency towards monopoly. The economic regulator also has to take cognisance of the impacts of services on non-users – the environment as well as the social impacts. As mentioned, however, the South African context is of regulation of public sector bodies mainly, and economic regulation will therefore be focused less on return on investment and more on the sustainable financing of service provision, the protection of consumers, and the maintenance of minimum service standards.

In a normative economic context, economic regulation is also meant to encourage competition by addressing the barriers to entry caused by high set up costs and/or state ownership. In theory, this

should lead to improved efficiency in the provision of services. Once again, this is barely relevant in the South African context where economic regulation will need to provide a proxy for competition in a monopoly context.

Finally, it is critical that economic regulation is not only embedded in clear and unambiguous policy and a comprehensive legal framework, but that the institutional arrangements support strong governance. Good corporate governance will help to demonstrate accountability and transparency, ensuring impartiality from the many role-players and stakeholders affected by the administration of water in South Africa.

1.2 Structure of this document

Chapter 2 looks at approaches to regulation, followed by principles for economic regulation in chapter 3. Chapter 4 describes the approach to economic regulation in South Africa, looking at the water sector, the energy sector and the transport sector.

The second part of the report deals with case studies from other countries, looking at the UK, Kenya, Zambia, Australia, Brazil, Mexico and the Philippines.

2 Approaches to economic regulation

2.1 Definition of economic regulation

Governments use economic regulation to improve the efficiency with which society's resources are allocated, to alter the distribution of income and to achieve broad social or cultural goals. Government also imposes regulations to alter the distribution of income partly to prevent monopoly profits and to prevent unjust discrimination and to ensure that consumers are charged "fair and reasonable" rates. Regulation may also be used to reduce the speed of economic change and the redistribution of income through administrative processes, a justification based on the notion that the public is generally averse to risk and that the marketplace, with its sometimes abrupt changes, unfairly distributes income. Finally, regulation may be used to confer benefits on certain customers at the expense of others. Economic regulation is typically focused on the regulation of “business” issues which are critical for institutions involved in the value chain.

In the context of the water sector, economic regulation can be viewed in a narrow light as being directed at regulating the costs (tariffs) charged by the various institutions/authorities involved in the supply and delivery of water and sanitation services to the end consumer. However, a broader definition of economic regulation sees four basic but inter-related functions:

- *Price regulation* which consists of regulating tariff/charge levels and tariff/charge structures to ensure delivery of services/water at an affordable cost while ensuring the long-term financial viability of water institutions, infrastructure and service delivery.
- *Service quality regulation* which entails defining levels of service related to quality, technical requirements, reliability and customer responsiveness.
- *Consumer protection* relating to resolving consumer complaints/queries that the responsible water institution has failed to or been unable to resolve.
- *Competition regulation* which entails monitoring and regulating competition in the sector. In South Africa most water institutions are public bodies and regulating competition would be

more likely to be focused on benchmarking of efficiencies to control the possible abuse of monopoly power and to protect the interests of consumers and the public.

Erhardt et al define economic regulation as "the rules and organizations that set, monitor, enforce, and change allowed tariffs and service standards".

By definition, therefore, economic regulation intervenes directly in market decisions such as pricing, competition, market entry, or exit.

Economic regulation is probably the most difficult form of regulation and requires detailed data and information on the assets, cost-of-capital and operating costs of utilities.

Economic regulation results in the setting of overall tariff levels – as well as tariff structures for different customer categories. Social imperatives may require a degree of cross-subsidisation or pro-poor support.

Economic regulation, generally, has been applied to water services (water supply and sanitation) with little or no economic regulation applied to raw water.

2.2 Institutional, Regulatory and Financial models

There is no one model for economic regulation that can be cited as best practice. Different countries use different arrangements of rules, tools and organisations to achieve the results they require. The appropriate regulatory arrangements should be defined according to the problems that one wants to address, the key objectives, and, in the case of economic regulation, understanding to what extent economic regulation will serve to achieve the objectives and address the problems.

There are different approaches to economic regulation that can be adopted – regulation through contract, or regulation through legislation and regulations. In France, the Czech Republic, Senegal and Cote d'Ivoire, for example, regulation of the water services sector is primarily through contract. There is no one regulator, and the regulation is done through the state or municipal agency signing the contract. There is evidence of this approach having worked well in these cases, but it is a model that can only work where there is a formal contract with the water services provider, and in the cases sited this has been a private sector provider. It also requires sufficient capacity on the part of the municipality signing the contract to regulate the service provider. In many cases, specialist government organisations have been put in place to assist in monitoring and enforcing compliance with the contract.

However, research shows that there are common pre-requisites or preconditions that are necessary for good regulation to be possible, regardless of the institutional structure or models used to regulate. These are termed as the "enablers" and include:

- **Mandate (political governance)** – the extent to which government has established policy, legislation and regulations (regulatory framework) to ensure effective governance.
- **Coherent Policy and Legislation** (including regulatory requirements) – Are these appropriately established to fulfil the mandate and specifically address the degree of integration, alignment and/or co-operation?
- **Regulatory Capacity** – Are the dedicated capacity, skills, structures, systems, processes and resources necessary for the regulatory entity to execute the regulatory mandate available?

- **Institutional Capacity –** Do the institutions that are to be regulated have the necessary levels of capacity, skills, systems, processes and resources available to enable them to be regulated?
- **Access to Information** - The ability to regulate effectively is directly related to the availability of accurate information pertinent to the regulatory domain.

The most common forms or models of regulation that are generally utilised are the following:

Regulation by agency (this typically involves regulation by government (national and or local) or regulation by an independent regulator where regulatory mandates are clearly defined by legislation.

- Regulation by agency supported by an expert panel (where government is the regulator but the expert panel provides for a degree of independence/autonomy)
- Regulation by contract (where the regulation mechanisms are specifically defined in contractual provisions such as licences, concession contracts, service provider contracts and service level agreements).
- Contracted out regulation (where certain regulatory functions may be contracted out to third parties).

These forms of regulation can be very domain specific, for example the regulation of water resources (access and use), is indisputably the role of government but water pricing and services could be provided by an independent regulator or agency supported by an expert panel (where government is the regulator but the expert panel provides for a degree of independence/autonomy).

When considering alternative regulatory options and institutional models a key element is the extent to which the desired regulatory outcomes/objectives can be achieved using the above forms of regulation or variants of these.

There are a number of obvious regulatory domains that are relevant in the context of the water cycle/ value chain such as environmental, drinking water quality, economic, technical and social regulation. Each of these domains have unique regulatory objectives and needs and consequently require different institutional and model approaches if they are to be successful. It needs to be understood however, that there are significant interdependencies/linkages between the different regulatory domains and changes/decisions in one domain can have significant impacts in other domains. A typical example of this is where technical standards are changed (the technical domain) which result in substantial cost increases (the economic domain).

The selected regulatory models and approaches therefore need to ensure that there is an appropriate level of integration across the regulatory domains.

A large quantity of international literature has emerged in recent years around how to assess the effectiveness of regulatory systems or models. Many of these approaches are *ex post,* i.e. they seek to measure and assess the effectiveness of existing regulatory institutions and models. However, many of the principles are relevant to *ex ante* assessments of potential regulatory models or

options. There is also a growing literature on best-practice principles that are important in the design of regulatory systems.

The literature tends to distinguish between issues relevant to regulatory governance and those related to regulatory substance. Regulatory governance refers to the legal design of the regulatory system, institutional arrangements and the processes of regulatory decision-making, while regulatory substance refers to the content of regulation, such as tariff-setting or quality standards, and their impacts on consumers or utilities. In determining appropriate regulatory models, it will be necessary to evaluate the extent to which regulatory governance and regulatory substance meet international best practice.

Despite the overarching requirement to ensure that there is a more holistic approach to economic regulation of the water sector (water resources and services), different approaches and models in regulatory design for different regulatory domains are predictable and necessary. It is also necessary that the internal structures of DWA and associated functions (national and regional), complement and align with the regulatory framework and the regulatory models

It is also clear that establishing an appropriate regulatory framework for the water sector is not a matter of just choosing a specific option or model for regulation. Moving from the current situation to any form of revised or improved regulatory option/model is not a "flicking of the switch" scenario which will take the sector to a new regulatory world. Regardless of the choice of options the reality is that, due to current water sector "market conditions", **a transformational regulatory reform process** will be required. If this is not done in a well programmed, progressive and transitional manner the prospects of failure are high.

While there has been considerable discussion around the need for an independent regulator, this is not always a model that has worked well, and it must be considered carefully in relation to the specific South African context. In Manila, for example, when water services were privatised, the regulator found itself in conflict with the terms of the contracts that had already been signed. There was, as a result, regulatory incoherence, poor transparency, and a confusion of roles between those signing the contracts and the regulator.

In the South African context, where economic regulation in the water sector is primarily regulation of state service providers at national and local government level, as well as state agencies, the question of the need for an independent regulator requires particular examination.

3 Principles for economic regulation

Regulators and regulatory principles are nothing new, but regulatory success is not an easily measurable concept. Hence, the question of what may constitute 'successful' regulation is, in itself, the subject of much debate. A structured analysis or grouping of certain characteristics of what seems to be 'working', and what not, is a more recent development that has been gaining momentum, particularly in the context of recent regulatory failures. It is possible though to identify common principles that appear to be universally workable and which could form the basis of a common approach to regulation – i.e. an emerging framework for "good regulation". The following universal regulatory principles were identified in a regulatory benchmarking study conducted for

DWA as part of the development of options for an Integrated Regulatory Framework (IRF) for the water sector in 2009.

- **Clear Roles –** Is there clear separation of the roles of policy, oversight, operations and regulation and are regulatory responsibilities clearly defined and allocated? Regulators should have clear and quantified objectives accompanied by clear measures of success/failure.
- **Transparency –** Is access to information free flowing? Are the various processes and decisions of the regulator and their justifications documented, transparent and open for scrutiny?
- **Accountability –** Is the counter principle to independence and ensures that the regulator is accountable for its decisions and actions. Consumers and the regulated body should have a right of appeal against the regulator's decisions.
- **Non discriminatory –** relates to discrimination of regulated entities as well as discrimination by the regulator. Regulatory processes should not discriminate between regulated entities, and regulatory decisions should be technologically neutral.
- **Independence** – this principle has 3 legs; independence from political intervention, independence from role-players, stakeholders, consumers and other interests (no conflicts of interest) and financial independence (source of revenue /funding). This does not necessarily reflect an institutional independence, but a way of operating.
- **Participation** – do sector role-players/stakeholders participate in the regulatory process and periodic reviews? Is the voice of the citizen heard?
- **Effective Monitoring and Enforcement –** does the regulatory regime allow for effective monitoring and enforcement of decisions by the regulator?
- **Minimal Regulation** – Is the regulatory framework only focused on areas where regulation is necessary to achieve specific objectives/outcomes?
- **Predictability** – refers to constraints on arbitrary changes of regulatory or regulated companies' powers and obligations, publication and application of regulatory principles and importantly, consistency of decision making.

It is important to note that these are not the only possible regulatory principles. Due to the diversity of regulatory needs (internationally and locally) there are other principles that may be important in a given situation that may not appear on this list. Likewise there may be less emphasis placed on some of these principles where different approaches are taken to regulation and different models of regulation are used. For example the requirement for regulatory independence will be lower where government regulates access to and use of water resources. The relative importance of the regulatory principles and enablers is therefore also a factor of the form of regulation. Different approaches and models in regulatory design for different regulatory domains are therefore predictable and necessary.

The international literature would suggest the addition of one further principle to this list:

- **Regulatory legitimacy:** In a review of regulators the requirement for regulatory legitimacy was found to provide a consistent and coherent framework for good regulation. Baldwin and Cave propose five key tests of 'legitimacy' or 'worthiness of support' of a regulatory regime, these are:

- "Is the action or regime supported by legislative authority?
- Is there an appropriate scheme of accountability?
- Are procedures fair, accessible and open?
- Is the regulator acting with sufficient expertise?
- Is the action or regime efficient?"

3.1.1 Compliance Monitoring and Enforcement

A key requirement for effective regulation is that it is underpinned by strong compliance monitoring and enforcement capability. Those that break the law must be held accountable and sanctioned for such practice. A critical element of this is ensuring effective monitoring, data collection and assessment, and the taking of appropriate action based on the results.

Compliance is strongly influenced by a number of features, including whether the regulation is seen as legitimate by those being regulated. Regulations perceived to be legitimate are more likely to be complied with than those lacking legitimacy. This includes legitimacy of the content of the regulation, the distributional effects, the process of making the regulations, and the process of implementation of the regulations. Perception of fairness of implementation, and people's experience of how they have been treated by the regulatory authority, are a critical part of the recognition of legitimacy and the response to regulations.

Compliance is also strongly dependent on the relationship between the economic benefits of breaking the regulations and the economic consequences of any sanctions that might be applied if non-compliance is detected. The likelihood of non-compliance being detected and acted on is an important part of people complying with regulation.

The issue of compliance monitoring and enforcement is raised here to particular prominence as there are particular challenges associated with it in the context of the regulation of other public sector bodies, rather than the regulation of the private sector. In particular, the question of sanctions for non-compliance is more difficult in a public sector context than in a private sector context. As Ehrhardt et al (2007) recognise, regulating state-owned enterprises is particularly difficult because of rewards and penalties are difficult to implement.

3.1.2 Critical design features

While there is no one size fits all model for economic regulation in the water sector, Erhardt et al have identified a number of critical design features on the basis of an analysis of international practice. These design features are intended to support coherence, predictability and legitimacy and can be summarised as follows:

Working within the existing organisational framework: It is best to work from the existing regulatory base and to build on it, rather than to assume that one is starting from scratch. By building on the existing legal and organisational base, one can capitalise on existing strengths and introduce solutions for weaknesses and failures. International experience also shows that the credibility of the regulator is enhanced if it fits within existing practices and organisational arrangements.

Creating an appropriate role for politics: It is not practically possible to keep the regulatory domain entirely separate from politics, and therefore a role for politics in regulation should be defined, and may well provide a source of collective decision making and accountability.

Limiting the discretion given to regulatory decision makers: The public and service providers are better protected where the regulator has limited discretion in decision making – which makes the outcome of decision more predictable and transparent. It also decreases the risk of lobbying or pressure to change the outcome of decisions. This is particularly true in the context of a new regulator. More discretion may be given as a regulator matures, as long as there are sufficient checks and balances to avoid regulatory capture.

Trading off sophistication in favour of simplicity: Also sophisticated approaches may seem to be better, the reality is that simple rules may be more effective, particularly where regulatory capacity is limited and where information may be lacking or unreliable.

According to Ehrhardt et al: "The most important lesson for regulatory designers to bear in mind is that there is no single international best practice for regulatory design. A check-box approach to introducing regulation has often been unsuccessful.

"A better approach would incorporate country-specific considerations and make room for politics and pragmatic design features in regulation. It would also ensure that regulatory decisions are credible and coherent by limiting the discretion given to decision makers and setting out clear and simple rules and processes for their application to enhance transparency. This type of approach should help designers to select a combination of legal instruments and organizations that best suits the specific country environment, and that achieves regulatory coherence, predictability, and legitimacy."

3.1.3 Economic regulation approaches

There are two main approaches available for economic regulation:

Price-cap regulation: under price-cap regulation a maximum price is set, and the provider must operate within that cap. In the private sector context, profit would then be determined by how efficiently the provider could lower their costs below the cap. In developing countries where inflation may be high and variable this approach may be problematic. It is also not clear whether it would act as an incentive to municipalities. All privatised water utilities in the UK, for example, have been subject to price-cap regulation.

Cost of service or Rate of return regulation: The cost of service approach looks at determining an efficient cost for the delivery of the services. Historically, this was calculated on the cost of providing the service in previous years, but this has a number of built in flaws. Currently the approach is to use a benchmark or yardstick for a similar organisation – otherwise known as 'yardstick comparison'. Four main approaches to comparative performance measurement are used: productivity indices, stochastic analysis of production and cost functions, mathematical modelling and engineering models. It is also possible for these different approaches to be combined into one more complex process[2].

[2] Crew and Parker 2006

In the UK the benchmarking process is now part of the price-cap setting process.

4 South African Approach to Economic Regulation

4.1 South African Economic Regulation Approach/Debate

There are a number of debates around economic regulation in South Africa currently, partly on the back of challenges being faced by the energy regulator in particular. The two key elements of this debate revolve around the value of so-called 'independent' regulation, and the potential for one economic regulator for all sectors across the country.

The debate on whether there is a need for an independent economic regulator for the water sector has been on the cards for several years, without clear resolution. This PERR project is intended to assist in resolving this debate and proposing the most appropriate model for the South African water sector.

At the same time as this project is underway, the Presidency is considering the potential for creating one economic regulator for all network sectors in South Africa. The consideration, therefore, of the economic regulator for the water sector must take place within the context of these debates.

4.2 South African Water Sector

Currently, regulation of the water value chain is done by different institutions, in terms of differing constitutional mandates and enabling legislation. In terms of economic regulation, DWA is largely responsible for what economic regulation is in place, with Parliament playing a role as well.

At present there is no coherent economic regulation of the entire water value chain (water resources and water services). Economic regulation is currently targeted at specific institutions operating in the value chain such as water boards and municipalities. While there is a mechanism to regulate water resource pricing through the raw water pricing strategy, and guidelines for determination and implementation of water use charges, in reality the raw water charges are set by DWA without regulatory oversight.

The figure below shows the various charges imposed in the water value chain. The discussion that follows looks at what economic regulation (charges and standards) is currently in place across the value chain. It also describes the broader regulatory framework for water within which economic regulation must be situated.

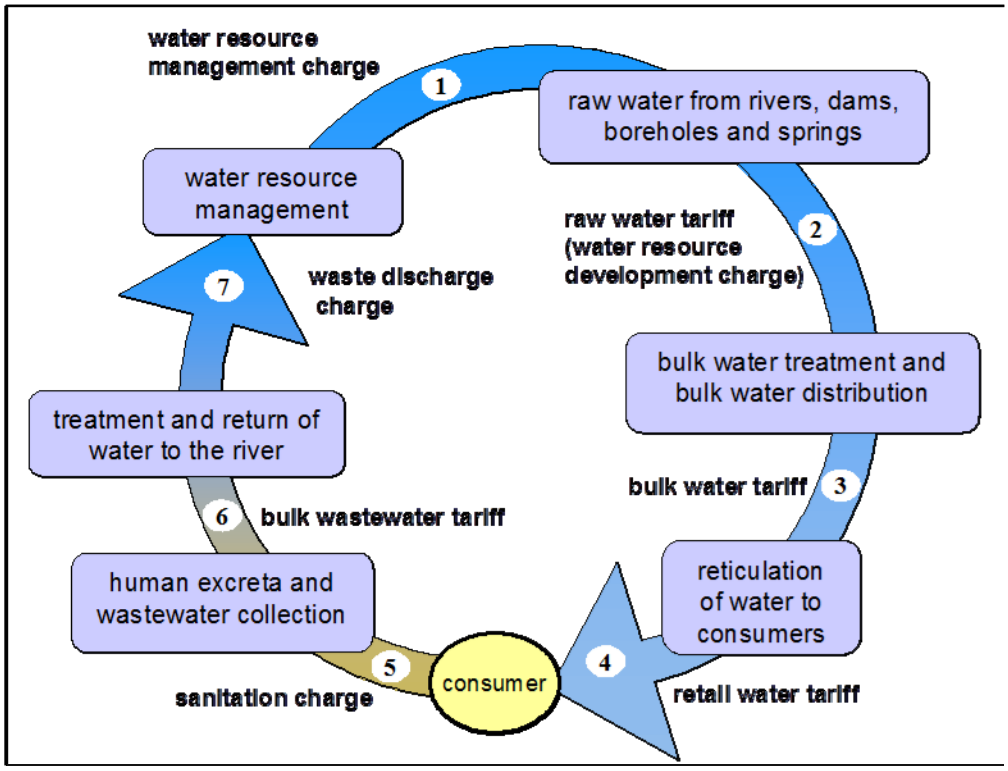


Figure 1: Water Value Chain[3]

The various institutions responsible for the delivery of this value chain are as set out in figure 2 below.

The institutional arrangement for the water sector is set out in figure 4 below.

[3] The draft National Water Services Regulation Strategy (DWA).

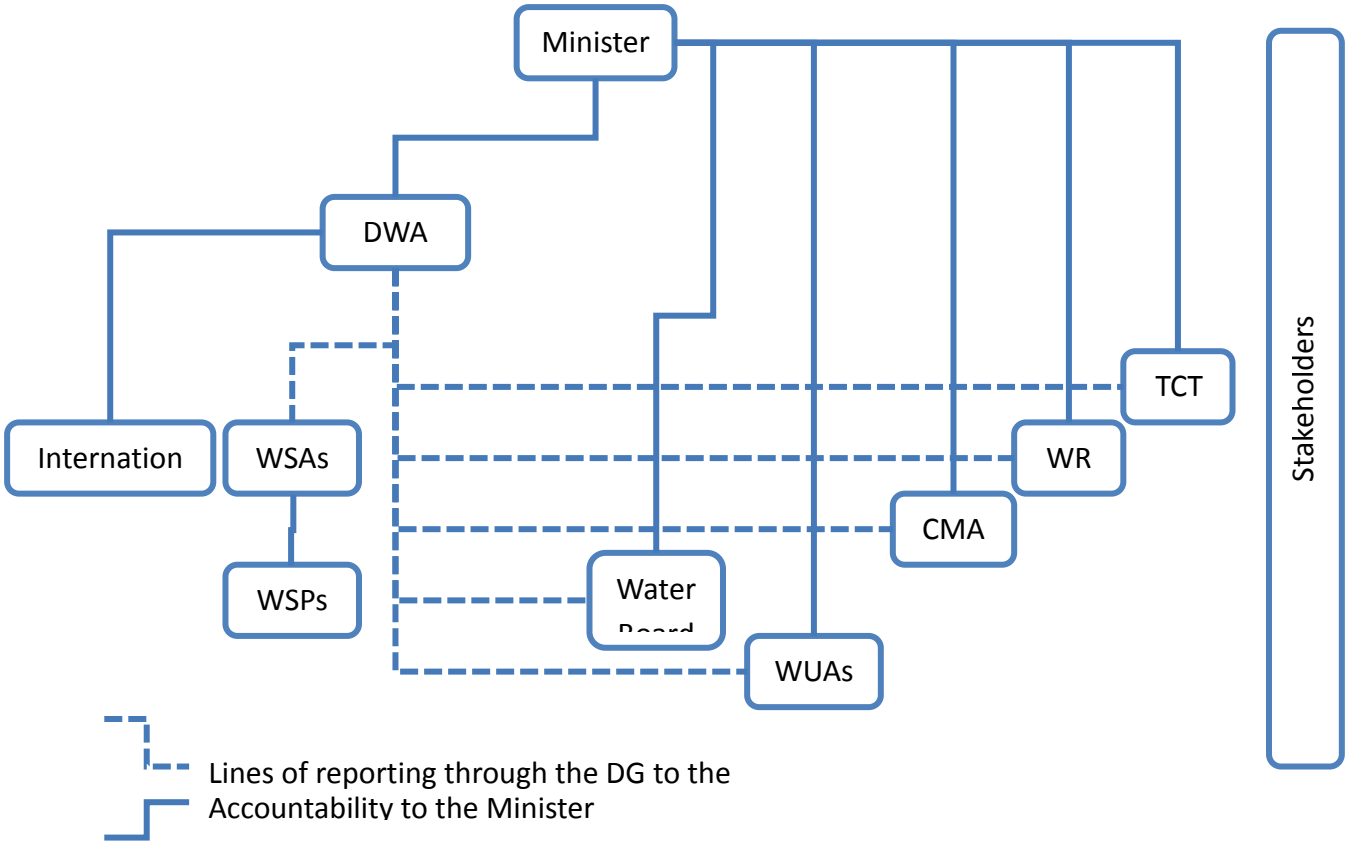


Figure 2: Institutional Arrangements for the Water Sector

The DWA oversees the activities of all water sector institutions and is responsible for all national resource planning and allocation. The CMAs are responsible for water resource planning and management at catchment level and where CMAs have not been established the DWA fulfils these functions. Municipalities are water services authorities (WSAs) responsible for the provision of water services within their areas of jurisdiction. Water services providers (WSPs) are responsible for operational water provision and/ or sanitation services. Water Boards (WBs) are regional or bulk water services providers and either sell water to or accept waste water from other WSPs. The WB is accountable to the WSA as an organ of state but the WB is owned, controlled and regulated by the DWA (under the NWA) and the National Treasury (under the Public Finance Management Act[4]).

4.2.1 Regulation of Water Resources Management (institutions)

The policy and legislative framework for water resources regulation is provided by the Constitution, 1996 and the Bill of Rights, the National Water Act[5] (NWA) and the White Paper on a National Water Policy for South Africa, 1997. The White Paper states that *"While describing the rights of our people to a just and fair society, the Bill of Rights also establishes the framework within which regulation and allocation of water can take place."* The Bill of Rights states that everyone has the right of access to sufficient water, to an environment not harmful to their health or well-being, and that corrective action can be taken to address the results of past injustices or discrimination.

[4] Act 1 of 1999 (**PFMA**).
[5] Act 38 of 1998.

The White Paper continues by stressing that *"The governance of water use has always, in a constitutional sense, been subject to the notion that the Government retains the right to regulate the country's economy and the nation's future, by reserving to itself the responsibility of determining the proper use of the country's natural resources."* This implies the right of the government to regulate the proper use of the country's water, in support of the national objectives of the government.

There are three aspects to water resources regulation which can be identified, as per figure 3 below. Of these three (technical, governance and economic regulation) economic regulation is the most poorly done. There is also a view to be taken that governance and economic regulation have considerable overlap.

The institutional arrangements for water resources regulation in South Africa are relatively complex,

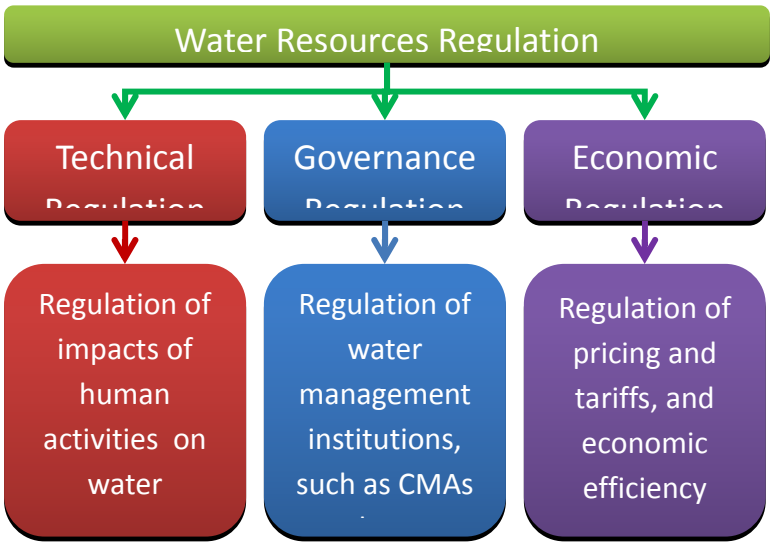


Figure 3: Three areas of water resources regulation

with a long chain of regulatory players, as shown in figure 2. This chain includes the courts, the Water Tribunal and Parliament who all have a critical role to play.

Parliament establishes the legislation that provides the Department of Water Affairs with its legal mandate to regulate water use. Parliament also has an oversight role in terms of ensuring that the aims of the legislation are being achieved. Any amendments to legislation in order to enhance the effectiveness of water resources regulation require the approval of Parliament. Parliament has various mechanisms for holding departments accountable, which are set out in the Constitution and the Parliamentary rules (C September pers comm. 2010). Parliament holds the executive accountable by

- Asking parliamentary questions
- Having parliamentary debates about important issues
- Proposing and voting on motions, and
- Requiring the executive and state institutions to report to Parliament.

The courts and the Water Tribunal influence regulation through binding rulings that give interpretation both to the meaning of legislation and regulations, but also to the methods used to implement regulation.

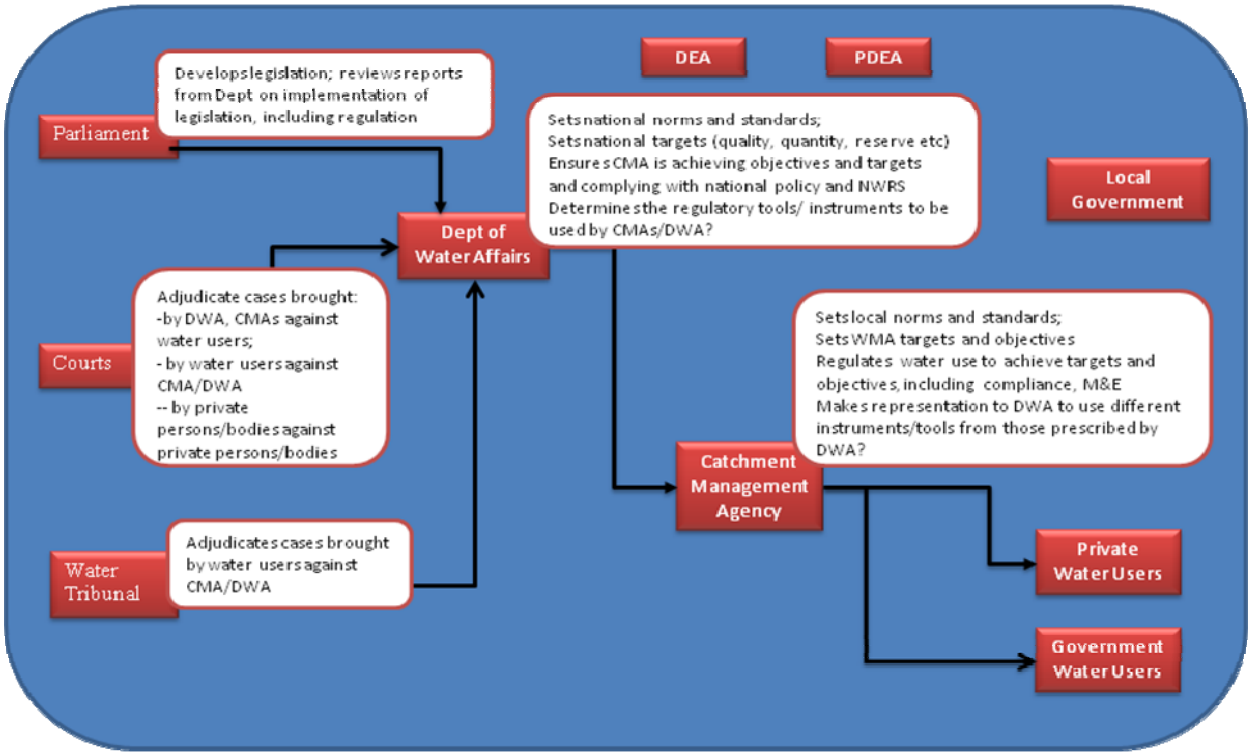


Figure 2: Roleplayers in the Water Resources Regulatory chain in South Africa[6]

Currently DWA is responsible for almost all water resource management functions, except, in the two[7] water management areas where Catchment Management Agencies (CMAs) have been established and are carrying out the initial functions assigned to CMAs in the legislation. All regulatory functions are still performed by DWA, except for limited functions performed by Irrigation Boards and Water User Associations in terms of ensuring that members use water in accordance with authorisation requirements and scheduling arrangements.

Currently, raw water charges are determined by DWA without regulation by any oversight body. This is not unusual in the water resources sector internationally. The CUC charge is calculated by the TCTA for schemes that they are financing, and is factored in to the raw water charge by DWA. DWA calculates the infrastructure charge for infrastructure that it manages. The raw water charge includes capital, O&M, and RoA elements. In being able to calculate this charge correctly, it is important to know the value of the asset. To this end, DWA has done several valuations of its water infrastructure assets, revealing a currently replacement value of around R140 billion. There appears to be an annual deficit on income, and a current backlog on maintenance of DWA infrastructure of around R13 billion.

The water resources management charge (WRMC) is also determined by DWA, although this responsibility will move to CMAs in due course. Currently, there is no clear and common methodology used by the regional offices to calculate the WRMC and there are significant deviations between regions. There is also very poor revenue collection, with an apparent income during 2011/12 of in the region of 40% of what was billed.

[6] Pegasys/ WRC 2010. Water Resources Regulation Arrangements in South Africa: Institutional Criteria, Functions and Arrangements. Water Research Commission, Pretoria.
[7] Inkomati Catchment Management Agency and Breede Overberg Catchment Management Agency.

From a regulatory perspective there is currently a conflict of interest with the DWA determining the raw water pricing strategy and setting the raw water tariffs, while also being the infrastructure developer and operator and the management body that spends the revenue from those tariffs. Currently DWA is the player and referee where raw water tariffs are concerned. The biggest concern in this regard relates to the substantial infrastructure portion of the water tariff that is passed through institutions to the end consumer. The question in this regard is whether DWA is able to regulate the setting of tariffs effectively when it is also setting charges for raw water.

An economic regulator would have to be able to take on these very serious challenges in water resources revenue and tariff setting.

4.2.2 Regulation of Water Services

The mandate of national government to regulate water and sanitation services is given in Section 156 of the Constitution and the Water Services Act[8]. The Strategic Framework for Water Services (2003) sets out a vision for the sector with specific goals and targets. One of the agreed sector goals is *"the effective regulation of water and sanitation services".* The sector vision has three important elements:

- All people living in South Africa have access to adequate, safe, appropriate and affordable water and sanitation services, use water wisely and practice safe sanitation.
- Water supply and sanitation services are provided by effective, efficient and sustainable institutions that are accountable and responsive to those whom they serve. Water services institutions reflect the cultural, gender and racial diversity in South Africa.
- Water is used effectively, efficiently and sustainably in order to reduce poverty, improve human health and promote economic development. Water and wastewater are managed in an environmentally responsible and sustainable manner.

In 2010 several Key Outcomes were defined by government. One of these was the creation of "an independent water regulator to implement price regulation". This statement by government should now be taken forward to further investigation, consultation with stakeholders, and consultation with the Presidency on suggestions that have been made regarding the possible creation of one economic regulator for the country.

The Constitution provides that local government has the executive authority over the right to administer water and sanitation services (limited to the provision of potable water supply systems and domestic waste water and sewage disposal systems).

The Water Services Act provides for the establishment of water services institutions that will ensure provision of water services to communities and provides the standards that should form the base for the provision of water services. The following institutions are established through the Water Services Act namely:

- Water Services Authorities for the management of water services
- Water Boards
- Water Services Committees
- Water Services Providers

[8] Act 208 of 1997

Across the country, either district or local municipalities have been designated as water services authorities. A water services authority (WSA) may determine whether water services will be provided in its area of jurisdiction through an internal or external water services provider (WSP). It is expected that the WSA will regulate the WSP, although the reality is that this is not always the case, and in many smaller municipalities there is little separation between the WSA and the WSP.

The Water Services Act allows the Minister some measure of regulation of water tariffs, through section 10. However, municipal water tariffs are not being regulated effectively by DWA and challenges range from under-recovery of costs to inappropriate pricing impacts on the poor. In many case, unfortunately, the end charge is not reflective of the full cost of providing water or the achievement of wider social objectives that are of key importance in setting water charges[9], and in many cases it would appear that the municipality do not understand the real costs of providing the services. In many cases, monies recovered from water charges in municipalities are not properly ring-fenced, and there is a disjuncture between the billing services and the water services, resulting in inappropriate tariffs and poor billing and revenue collection incentives. [10]

The Municipal Systems Act and the Water Services Act sets out the principles for setting tariffs:

- Cost based and take account of equity and sustainability considerations and principles of proportionality
- All forms of subsidy should be fully disclosed

Section 10 of the Water Services Act allows the Minister to set norms and standards for water services tariffs as follows:

> **10.** (1) The Minister may, with the concurrence of the Minister of Finance, from time to time prescribe norms and standards in respect of tariffs for water services.
>
> (2) These norms and standards may-
>
> (a) differentiate on an equitable basis between-
>
> (i) different users of water services;
>
> (ii) different types of water services; and
>
> (iii) different geographic areas, taking into account, among other factors, the socio-economic and physical attributes of each area;
>
> (b)place limitations on surplus or profit;
>
> (c)place limitations on the use of income generated by the recovery of charges; and
>
> (d)provide for tariffs to be used to promote or achieve water conservation.
>
> (3) In prescribing the norms and standards, the Minister must consider, among other factors-

[9] Eberhard, R. (undated) Administered prices: Water. National Treasury.
[10] Footnote 8, pg.

(a) any national standards prescribed by him or her;

(b) social equity;

(c) the financial sustainability of the water services in the geographic area in question;

(d) the recovery of costs reasonably associated with providing the water services;

(e) the redemption period of any loans for the provision of water services;

(f) the need for a return on capital invested for the provision of water services; and

(g) the need to provide for drought and excess water availability.

(4) No water services institution may use a tariff which is substantially different from any prescribed norms and standards.

Bulk water tariffs are set by Water Boards and require the authorisation of the Minister. The process of setting these tariffs usually involves consultation with affected municipalities, but lack of regulation means there is little incentive to become more efficient in the provision of the services. While water boards are naturally ring-fenced, they face large backlogs in payments, primarily from municipalities, which affects their financial status.

4.2.3 Water research levy

The water research levy is calculated annually by the Water Research Commission on the basis of the raw water pricing strategy and is submitted to DWA for approval and inclusion in the water charges billed by DWA.

4.2.4 Transformational regulation

Water regulation in South Africa operates in a context in which there is a profound social and economic transformation requirement. The South African context of a highly unequal society with high levels of poverty[11] requires that economic regulation of water should have a consciously pro-poor and equity-driven focus.

Poverty has many different manifestations. Some people experience chronic poverty[12] which is passed down from one generation to another, so that the children of those living in poverty are also likely to live in poverty. Many others, however, move in and out of poverty over time. Even those that are defined as being 'ultra-poor', those whose "monthly adult equivalent expenditure is less than half of the poverty line"[13], move in and out of poverty over time. In a study conducted in KwaZulu Natal in 1998, 32% of ultra-poor households were above the poverty line 5 years later[14].

Another way of understanding poverty is to look at structural poverty. The structurally poor[15] lack sufficient assets of whatever nature to recover from a setback, and to generate sufficient income

[11] Seekings 2007
[12] Aliber 2003
[13] Aliber 2003:477
[14] Aliber 2003
[15] Carter and May 2001

and food. Access to natural assets, such as water, can play an important part in reducing structural poverty, particularly, but not only, in rural areas.[16] While the provision of infrastructure is, in many cases, a critical part of enabling access to water by the poor, a regulatory approach which protects the entitlement of communities to such water is also important. This refers to. These latter include wetland services, fish, building materials such as reeds, and water quality.

Even small amounts of water can provide important income support to poor households, including through activities such as ice-making, planting fruit trees, brewing beer, and supporting livestock, enabling increased income per capita per year of between around USD 6 from tree planting to just under USD 200 for beer brewing[17]. In general, the poorer the household the more important is the income generated through common natural resources, including wetlands and water resources[18].

In addressing poverty, there are two approaches that can be taken to achieve pro-poor growth[19]. The first ensures that the growth path immediately raises the income of the poor and that growth takes place where the poor are found and in the appropriate sectors of the economy. This approach identifies where the poor are located and what factors of production they have access to that can be used in economic growth, including water.

The second is driven by redistributive public policy, such as progressive taxation and targeted government programmes to invest in the poor, either to encourage economic activity or as welfare payments.

Both of these approaches can be addressed in the regulatory framework, whether through ensuring sufficient water is available in specific locations and sectors, by supporting redistributive approaches through, for example, subsidies and (re)allocation of water to those living in poverty, or through pro-poor regulation of water prices.

The challenge in South Africa is not only one of high levels of poverty, but the degree of inequity in the country. The South African economy is one of the most unequal in the world, with a vast gap between the rich and the poor. In this context, one of the drivers of water resources regulation must be to contribute to raising the living standards of the poor and closing that gap. This approach is mandated by the principle of 'equity' in the water resources policy and legislation. In a context where certain sectors of the society have been disadvantaged for generations, equity calls for redistribution and redress, and for actions that will address the needs of the poor, close the gap between rich and poor and benefit the poor disproportionately. This is a critical issue that must be dealt with by an economic regulator.

4.3 Energy Regulation

The Department of Energy is responsible for the development of energy policy for the country.

Eskom was established as a public entity to generate and distribute electricity. As from 1 July 2002, it became a public company, Eskom Holdings Limited, under the Eskom Conservation Act[20]. It is

[16] Reed 2001
[17] Soussan et al undated
[18] OECD 2008
[19] Klasen 2003
[20] Act 13 of 2001.

governed by a Board of Directors and is accountable to the Minister of Public Enterprises. Each year, Eskom, in consultation with the Minister of Public Enterprises, agrees on its performance objectives, measures and indicators in line with Treasury regulations under the PFMA.

The National Energy Regulator (NERSA) is a regulatory authority established under Section 3 of the National Energy Regulator Act[21]. NERSA has five part-time members and four full-time members, and is designed to act as economic regulator for the electricity, piped-gas and petroleum pipeline industries.

The Electricity Regulation division of NERSA has four departments/functional areas:

- The **Licensing and Compliance Department** which issues licences for generation, transmission and distribution of electricity, import/export of electricity, and electricity traders. It also registers anyone who provides such services but doesn't require a licence. And it monitors compliance with licence terms and conditions.
- The **Pricing and Tariffs** section which sets tariff guidelines and structure, determines tariff methodologies (e.g. Rate of Return, Multi Year Price Determination) and pricing frameworks, and evaluates tariff applications. Eskom cannot increase its tariffs until they have been approved by NERSA and to achieve this, it needs to prove to NERSA that the increase is warranted. In this process, NERSA is expected to protect the interests of consumers.
- The **Electricity Infrastructure Planning** section which is responsible for planning for future electricity demand through the National Integrated Resource Plan; promoting alternative electricity generation technologies such as renewable energy and cogeneration options; and promoting demand side management and energy efficiency.
- The **Regulatory Reform** section which is responsible for designing the regulatory framework, research and development of the Electricity Distribution Industry, and developing the international trading framework

The Energy Regulator is supported by a secretariat which falls under the aegis of the CEO.

[21] Act 40 of 2004.

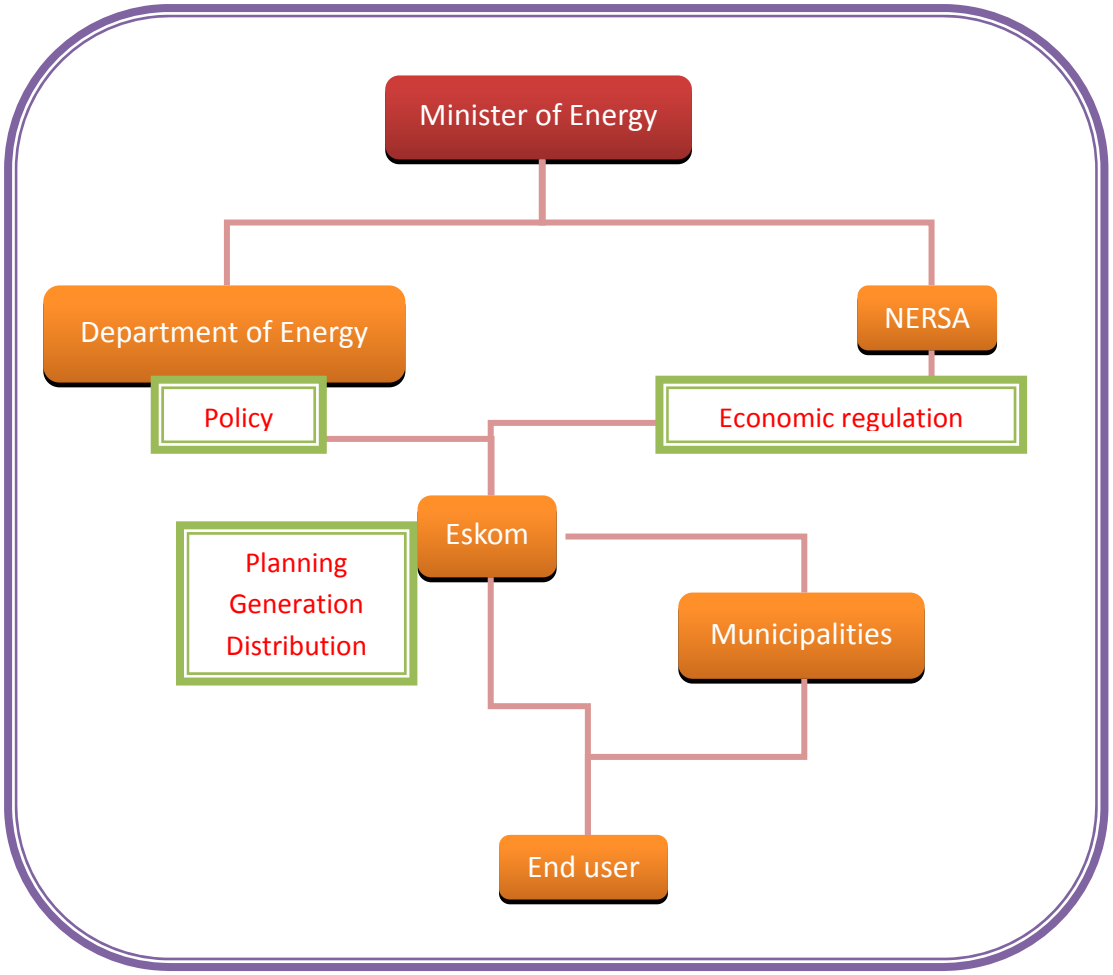


Figure 4: Energy regulation in South Africa

One of the challenges in relation to economic regulation in the electricity sector is that NERSA only regulates the price of energy in relation to Eskom. There is no regulation of the price of electricity charged by municipalities to the end-users. Municipalities are regulated under the Municipal Finance Management Act[22] rather than by NERSA.

It is interesting to note that the many of the staff of NERSA are former Eskom staff members, suggesting a potential lack of independence of the one from the other.

Despite the presence of an energy regulator,

- Eskom plans to nearly double the price of electricity to 97.5c in 2017 at an average increase of 14% a year
- The price of electricity has gone up by 159% over the last four years to 31 March 2012
- Eskom is targeting a return on equity (ROE) of 16.45% in 2017.
- Employee numbers increased 23% to 43 473 in 2012 despite electricity sales being flat over this period – and average total cost per employee increased by 60%[23]

[22] Act 56 of 2003.
[23] Chris Logan Eskom monopoly rewards inefficiency June 28 2012 http://www.iol.co.za/business/business-news/eskom-monopoly-rewards-inefficiency-1.1329453#.T-wfahd-fK0

One of the challenges in relation to Eskom is that they have chosen to use consumer revenue to partly finance new build, requiring massive increases in tariffs. It is the role of the regulator to balance the income required by Eskom with protection of the consumer.

4.4 Transport Regulation

South Africa currently has a fragmented approach to the economic regulation of transport. There are multiple regulators in the aviation and maritime sectors, with a rail regulator in the process of being established. There is no coordination in the work of these regulators, which means that inter-modal regulation is not occurring (i.e. the impact of regulation in one mode on the economic efficiency of anther mode).

The current regulators are also plagued by a lack of resources which impacts on their ability to regulate their sectors.

Whilst there may be multiple regulators, they do not comprehensively cover the transport sector, which means that gaps remain that are not subject to regulation. What follows is a brief discussion of the Regulators in the transport sector.

4.4.1 Aviation Industry Regulation

There are three economic regulators in the aviation industry, namely;

- Regulation Committee
- International Air Service Council
- Air Services Licencing Council

These regulators have recently reached a deadlock on tariffs and a ministerial task team had to be set up to look into ways of resolving the deadlock.[24]

4.4.2 Independent Ports Regulator of South Africa

The Ports Regulator of South Africa was established under the provisions of the National Ports Act, 2005. Under this Act, the main functions of the Ports Regulator are to:

- Exercise economic regulation of the ports system in line with government's strategic objectives;
- Promote equity of access to ports and to facilities and services provided in ports;
- Monitor the activities of the National Ports Authority to ensure that it performs its functions in accordance with the National Ports Act.
- Hear complaints and appeals under the National Ports Act;

This mandate is to be exercised in accordance with the "National Commercial Ports Policy.[25]" The Ports Regulator is not able to function properly due to insufficient financial and human resources.[26]

[24] Department of Transport. Terms of Reference for the establishment of a Single Transport Economic Regulator through policy, legislation and implementation plan. 2011
[25] http://www.portsregulator.org/html/about_us.html
[26] Footnote 13.

4.4.3 Rail sector

The rail transport sector has no independent economic regulator and some of the regulatory functions are performed by:

- The Rail Safety Regulator
- Transnet

The Department of Transport is in the process of considering whether to establish an independent regulator for the rail transport industry. This skewed regulation has resulted in the road freight industry being preferred as a services provider with the undesired impact on road infrastructure.[27]

4.4.4 Road

The National Land Transport Act, 2009 was only recently promulgated and allows for the establishment of:

- A National Regulatory Entity
- A Provincial Regulatory Entity
- A Municipal Regulatory Entity

4.4.5 A single economic regulator?

The Department of Transport has recently awarded a tender to review the status quo of regulation in the whole transport sector and to consider the need for a single economic regulator for transport. Areas for improvement include the development of a single and coordinated policy framework, the development of comprehensive legislation, and the introduction of strong governance and enforcement relating to the regulator.

The intention is that the body will conduct the economic regulation of roads, aviation, maritime and rail transport, and that this will attract increased private sector investment. This is partly driven by the recognition that the current situation does not allow for predictable tariff structures to guide investment decisions.

5 International Experience – Case Studies

The following countries have been selected for review to benchmark best practices and or approaches to regulation:

- United Kingdom
- Kenya
- Zambia
- Brazil
- Australia
- Mexico
- Philippines
- Chile

[27] Footnote 13.

5.1 United Kingdom

The United Kingdom is classified as a water rich developed country with a centralised model of water sector regulation. The links between environment and water are strong. Water resources management and water services are administered in terms of separate water legislation. Most of the regulations that affect the water sector directly stem from EU directives such as the Water Framework Directive. Others are specific to all or some parts of the UK, for example economic regulation and customer service standards. Figure 4 below, illustrates the institutional arrangements for the water sector in the United Kingdom (UK).

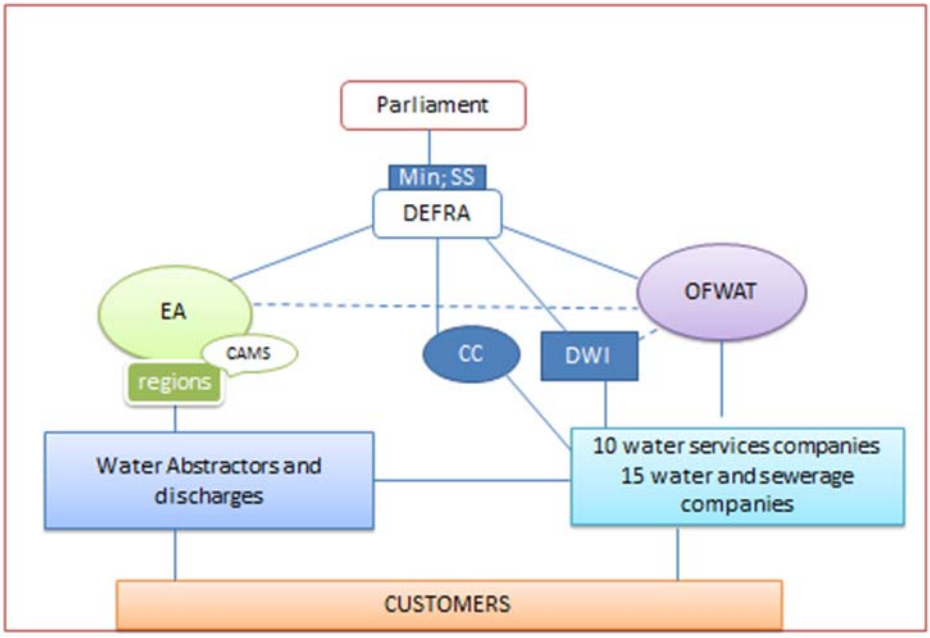


Figure 5: Institutional Arrangements for the UK Water Sector

5.1.1 Water Resources Regulation

Water suppliers are licensed by the Environment Agency (EA) in England and Wales to abstract defined amounts of water daily and annually. The EA is responsible for maintaining the right balance between abstraction and environmental protection (Water UK 2008). In the UK water resources regulation is centralised and the links between environment and water are strong.

The EA is an executive non-departmental public body and is accountable to the Department of Environment, Food and Rural Affairs (DEFRA). The functions of the EA include, amongst others:

- Environmental regulation including water resource management
- Water quality standards and pollution control
- Licensing for abstraction and discharge

It has a staff complement of 12 163 employees and an annual budget of £ 1.8 billion. It has seven regional offices and these regional offices are responsible for developing Catchment Abstraction Management Strategies (CAMS) to assess how much water is available per catchment and introduce

time bound licensing. 70% of its funding comes from government with the remaining 30% from various charges schemes.[28]

In terms of the independent review conducted by Professor Martin Cave in 2009[29], abstraction licences are currently allocated on a first come first served basis and many of the existing licences have been issued for an indefinite term. It is only since 2001 that definite term licences have been introduced. The licence conditions are crude and:

- Do not differentiate based on scarcity, environmental sensitivity or social impact
- Charge account for assumed loss factors which are designed to proxy the consumptiveness i.e. the degree to which water is returned to the water body close to the point of abstraction
- Do not accurately reflect the consumptiveness of abstraction

Availability of licences is determined at local level in terms of the CAMS. If there is no available water or the catchment is over licensed or over abstracted, the EA is not likely to issue a licence. Where water is available licences will be issued and there are unlikely to be concerns that water has been misallocated. The average utilisation of licences is under 50%, even in a dry year. It is reported that 782 licences in England and 84 licences in Wales for the use of 50 mega litres of water per annum is not being used. Abstraction charges are low and there is no incentive to hand underutilised licenses back to the EA to allow high value users an opportunity to apply for the water available under the underutilised licence. Section 52 of the Water Resources Act[30] allows the EA to amend or revoke an abstraction licence but the process is bureaucratic e.g. an appeal can take up to 2 years and cost the EA and licence holder up to £50 000 each. This limits the speed at which sustainable abstraction levels can be achieved.

The Cave report found that there could be significant environmental and economic gains if the charges more fully accounted for the social, economic and environmental costs of water abstraction and waste discharge.

Although the EA has regulatory powers to promote better allocation and use of raw water it is not adequately using those regulatory powers and there does not appear to be any regulation of the price of raw water.

5.1.2 Regulation of the water services and sewerage companies

Strong regulation in all aspects of water - drinking water quality, wastewater quality, environmental improvement and price control – underpins the water industry in the UK.

Economic regulation of the price that people pay for treated water is carried out by Ofwat (Water Services Regulation Authority) in England and Wales (Water UK 2008).

Ofwat was established in 1989, when the water services industry was privatised, to regulate the water services and sanitation companies in England and Wales. It is a non-ministerial government department that operates independently from government and operators and is directly accountable to Parliament. The office of the Director General (DG) in DEFRA was abolished in April

[28] http://www.environment-agency.gov.uk/aboutus/default.aspx
[29] Cave, M 2009. Independent Review of Competition and Innovation in Water Markets; Final Report. England. (the **Cave Report**)
[30] Act

2004 and the DG became the chairperson of Ofwat and his term will end in 2012. Ofwat is a body corporate[31] with a board that is appointed by the DEFRA Secretary of State. It employs approximately 200 employees.[32]

Since the privatisation 22 years ago[33], the water and sewerage sector has improved the services they deliver to their clients and have reduced negative impacts on the environment. Services are reported to be safer, better and more secure. For three quarters of clients, water and sewerage services accounts for less than 3% of their annual disposable income. The manner in which Ofwat has regulated the industry has further resulted in:

- Giving investors and lenders the confidence to invest more than £90 billion in the sector
- Challenging monopoly companies to improve all aspects of the services they provide

Ofwat conducts a price review every 5 years and its last review was conducted in 2009 and will be valid for the period 2010 to 2015. Prices are set on a so-called K-factor[34] set out in the business plans of the water companies and takes account of:

- Proposed investments schemes
- Expected operational efficiency gains

By way of illustration, the K-Factor for the Cholderton and District Water Company Limited for the period of 2010 to 2015 is set out in the table below.[35]

Year	09/10	10/11	11/12	12/13	13/14	14/15
K-Factor (%)		2.4	2.4	2.4	2.4	4.4
Avg. Bills £	187.7	192.21	196.82	201.54	206.38	215.45

Each water services and sewerage company is required to submit a business plan to Ofwat detailing its charges for the next five years and how the increases have been calculated. Ofwat comments on the content of the business plan extensively before it finalises the pricing review and sets the limits for the next five years. The water companies are required to take account of Ofwat's initiatives to make the water sector industry more competitive and innovative. Until the water sector industry is more competitive Ofwat will continue with this strict form of regulation.[36] In addition to the business plans, Ofwat requires the water providers to have action plans on serviceability to show that assets are capable of delivery of the right level of services to customers now and in future.

[31] Section 34 of the Water Act, 2003. The 2003 Water Act amends the Water Industry Act of 1991.
[32] http://www.ofwat.gov.uk/aboutofwat/
[33] Water Services Regulation Authority (Ofwat). Annual Report and Accounts 2010-11 (for the period 1 April 2012 to 31 March 2011.
[34] The K-Factor determines the average value of price rises above the current rate of inflation for the next 5 years.
[35] Cholderton & District Water Company Limited, 2009. Final Business Plan: 2010 to 2015 (Commentary).
[36] Ofwat: Setting Price Limits for 2010 to 15: Framework and approach. 2009

Section 37 of the Water Act, 2003 gives Ofwat the power to modify conditions of appointment of a company as a water or sewerage provider. These companies are held publically accountable and Ofwat has imposed penalties to the value of £75 million.

The Cave Report notes that the industry is dominated by 21 vertically integrated monopolies. There is a choice to some customers, but because of restrictive conditions, there have only been 18 appointments to date. The water supply licensing regime introduced in 2005 established a common carriage model for competition but it was flawed in conception and implementation. As a result only one customer has recently been able to switch to a new supplier. There is also variable use of bulk supplies, self-supply and pre-treatment capacity. A special merger regime, which requires all mergers to be referred to the Competition Commission, discourages further consolidation. Consequently, efficiency in the industry is almost totally driven by Ofwat. Improved performance is encouraged through rewards for outperformance relative to cost, and service quality improvements are promoted through overall performance assessment.[37]

Price-capping and yardstick competition

Since its inception, Ofwat has used yardstick competition as part of its price-cap setting, as legislated for in section 34(3) of the Water Act of 1991. It was considered that this approach would work well in a sector with geographical monopolies but a relatively large number of water companies that could be compared with each other. However, the specific models used within this have varied significantly over time.

It must be recognised, however, that building models that accurately reflect true costs is difficult.

There have also been difficulties in building service quality targets into the yardstick competition approach, and ensuring that financial efficiency is not achieved at the expense of service standards. The yardstick competition must penalise network failures, otherwise the incentive will be to reduce service standards.

5.1.2.1 Drinking Water Inspectorate

The Drinking Water Inspectorate (DWI) was established in 1990 in terms of the Water Industry Act. It is independent of DEFRA and has the following functions:

- Enforce environmental and quality standards
- Scrutinise water companies' activities
- Work with other stakeholders (EA, Ofwat, etc.)
- Commission research around drinking water quality
- Publish data on drinking water quality

It has 38 staff members and its Chief Director is appointed by the Secretary of State of DEFRA and it has three departments:

- Regulation – input into Ofwat periodic review
- Operations
- Science and strategy

[37] Footnote 11, page 6.

5.1.2.2 Consumer Council for Water

The Consumer Council for water (CC) represents water and sewerage consumers in England and Wales. Section 27A of the Water Industry Act provides that the CC[38]:

- supports the implementation of DEFRAs Business Plan
- has super complainant status under the Enterprise Act, 2002
- is an executive non-departmental public body

Secretary of State for DEFRA is accountable to parliament for the activities of the CC and also appoints:

- its board;
- Chief Executive; and
- Staff.[39]

5.1.3 Principles for economic regulation

The principles for economic regulation in the UK are contained in the table below[40].

Accountability • independent regulation needs to take place within a framework of duties and policies set by a democratically accountable Parliament and Government • roles and responsibilities between Government and economic regulators should be allocated in such a way as to ensure that regulatory decisions are taken by the body that has the legitimacy, expertise and capability to arbitrate between the required trade-offs • decision-making powers of regulators should be, within the constraints imposed by the need to preserve commercial confidentiality, exercised transparently and subject to appropriate scrutiny and challenge
Focus • the role of economic regulators should be concentrated on protecting the interests of end users of infrastructure services5by ensuring the operation of well-functioning and contestable markets where appropriate or by designing a system of incentives and penalties that replicate as far as possible the outcomes of competitive markets. • economic regulators should have clearly defined, articulated and prioritised statutory responsibilities focussed on outcomes rather than specified inputs or tools • economic regulators should have adequate discretion to choose the tools that best achieve these outcomes
Predictability • the framework for economic regulation should provide a stable and objective environment enabling all those affected to anticipate the context for future decisions and to make long term investment decisions with confidence • the framework of economic regulation should not unreasonably unravel past decisions, and should allow efficient and necessary investments to receive a reasonable return, subject to the normal risks inherent in markets

[38] CC Water Framework Document. (http://www.ccwater.org.uk/upload/pdf/frameworkdocument.pdf)
[39] http://www.ccwater.org.uk/server.php?show=nav.435
[40] Principles for Economic Regulation, Department for Business Innovation and Skills, April 2011. http://www.bis.gov.uk/assets/biscore/better-regulation/docs/p/11-795-principles-for-economic-regulation

Coherence • regulatory frameworks should form a logical part of the Government's broader policy context, consistent with established priorities • regulatory frameworks should enable cross-sector delivery of policy goals where appropriate
Adaptability • the framework of economic regulation needs capacity to evolve to respond to changing circumstances and continue to be relevant and effective over time
Efficiency • policy interventions must be proportionate and cost-effective while decision making should be timely, and robust

5.1.4 Lessons from the UK Case

Despite strong regulation and efficiency in the waters services and sewerage sector there appears to be no economic regulation of the water resources sector.

The Water Resources Act requires an MOU between the EA and Ofwat but this does not seem to be helping an integrated approach to regulation. As a consequence, the attempts by Ofwat to achieve competition in the water industry may prove futile as licences for abstraction and discharge are not regulated to achieve the same results. Because licences are not necessarily being allocated on basis of efficiency, water companies that could provide a more competitive service may not be able to acquire a licence from the EA. Whether or not the water value chain is regulated by one institution, the UK case provides a useful lesson to reflect that there must be strong links between how water resources and water services are regulated.

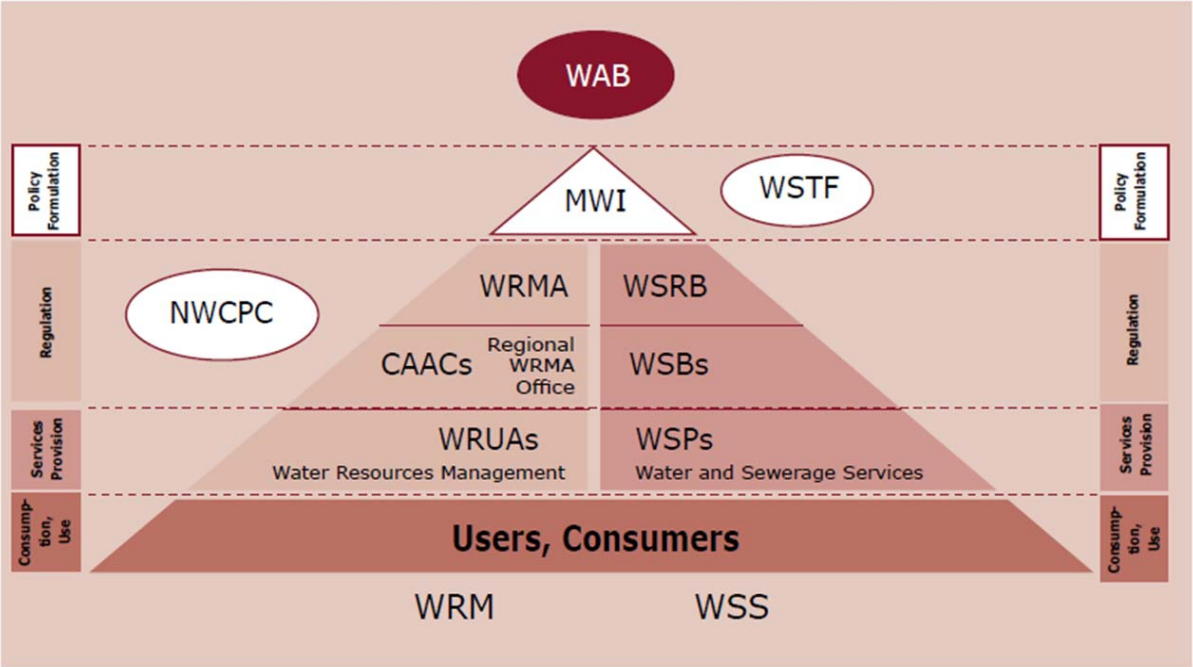
Ofwat is generally considered to be an independent regulator, with a board appointed by the Secretary of State and being accountable to Parliament. It is certainly an excellent example of a well-functioning regulator based outside of a government department. However, the actual independence of the regulator may be called into question in light of the fact that government is responsible for appointing the board and staff.

Although Ofwat has a lean organisation, the technical capacity required of the regulator is high given the extent to which it engages the business plans of the water companies. The level of technical capacity required to regulate the water business is critical and holds major lessons for economic regulation of the water sector in South Africa.

5.2 Kenya

Kenya is classified as a water scarce developing country. Kenya's Water Act, 2002 introduced new water management institutions to govern water and sanitation in Kenya. In the new structure, the Ministry of Water and Irrigation (MWI) has decentralized its traditional role to regional and grassroots institutions. Its regulatory role has been delegated to public regulatory agencies. Implementation of these roles has been assigned to communities, private sector and voluntary sectors.

Figure 6: Institutional Framework after Kenya's Water Act (2002)



Source: Enhancing Water and Sanitation Governance in Kenya, Kenya Water for Health Organisation

The MWI established the following institutions as part of the sector reforms process:

INSTITUTION	ROLE/ MANADATE
The Water Resources Management Authority (WRMA)	Management of water resources as provided in Section 8(i) of the Water Act
The Catchment Area Advisory Committee (CAACs)	Management of water resources, conservation, use and apportionment of water resources in a defined catchment area as presented in Section 16(i) of the Water Act
The Water Services Regulatory Board (WSRB)	Licensing and management the supply of water and sewerage services in accordance with Section 47 of the Water Act
Water Services Boards (WSBs) and Water Services Providers (WSPs)	Service delivery provided in Section 5 of Water Act
Water Services Trust Fund (WSTF)	To mobilize financial resources for development and rehabilitation of water and sewerage services resources infrastructure, especially to under-served areas.
Water Appeals Board	Conflict resolution within the sector management.
National Water Conservation and Pipeline Corporation (NWCPC)	To take over the management of Government operated water supply systems that could be run on a commercial basis.

5.2.1 Separation of regulatory functions

The Water Act separates water resources management from the delivery of water services. Part III of the Act is devoted to water resources management while Part IV is devoted to the provision of water and sewerage services. It establishes two autonomous regulatory public agencies:

1. to regulate the management of water resources; and
2. to regulate the provision of water and sewerage services.

The Water Act ***divests the Minister in charge water affairs of regulatory functions*** over the management of water resources. This becomes the mandate of a new institution, the **Water Resources Management Authority (WRMA),** established in section 7 of the Water Act. The Authority is responsible, among other things, for the allocation of water resources through a permit system. The framework for the exercise of the water resources allocation function comprises the development of national and regional water resource management strategies which are intended to outline the principles, objectives and procedures for the management of water resources.

Similarly, the Water Act divests the Minister in charge water affairs of regulatory functions over the provision of water and sewerage services and vests this function in another public body, the **Water Services Regulatory Board (WASREB),** which is created in section 46. WASREB is mandated to licence all providers of water and sewerage services who supply water services to more than twenty households. Community managed water systems therefore need to obtain a licence from WASREB to continue providing water to their members. This is a departure from the practice previously prevailing under which community water systems, unlike the other systems, operated without a licence. WASREB is also responsible for setting standards and guidelines for service provision, performance benchmarking, approval of Service Provision Agreements and tariff adjustments (developing tariff guidelines and carrying out tariff negotiations). Since 2008 WASREB has published an annual 'impact report' on the state of water services provision in Kenya, although the information is by no means complete for the whole country. The report looks at water quantity, quality, distance, cost and waiting time as well as economic efficiency, which takes into account collection rates, level of non-revenue water, metering ratios and labour productivity. Most Kenyan water services providers do not meet the benchmarks for these criteria.

Tariffs must be approved by WASREB, and WASREB can require a WSB to formulate a tariff adjustment. Tariff adjustments can take three forms: - Regular Tariff Adjustments based on the WSPs' business plan; Extraordinary Tariff Adjustments when the cost structure undergoes significant changes; or Automatic Tariff Adjustments every 12 months which might be part of a service provision agreement with a WSP.

Water Regulators

WRMA	WASREB
Key Functions of WRMA under the Water Act include: • Developing principles, guidelines and procedures for the allocation of water resources. • Monitoring and periodically reassessing the national water strategy. • Issuing, verifying, transferring and cancelling water permits. • Monitoring and enforcing the conditions attached to the water permits. • Regulating and protecting water resources quality from adverse impacts. • Managing and protecting water catchments. • Determining charges and levying water use fees. • Gathering and maintaining water information and publishing the information periodically. • Liaising with other actors for better regulation and management of water resources.	Section 47 of the Water Act spells out the function of the WASREB as follows: • Issuing licenses for provision of water services. • Determining standards for the provision of water to consumers. • Establishing procedures for handling complaints made by consumers against licences. • Monitoring compliances with established standards for the design, construction, operation and maintenance of facilities for water services. • Monitoring and regulating licenses and to enforce license conditions. • Advising licenses on procedures for dealing with complaints from consumers and to monitor the operations of the procedures.

5.2.2 The role of non-government entities

The Water Act has continued – and even enhanced - a long standing tradition in Kenya of involving non-government entities and individuals in the management of water resources as well as in the provision of water services.

The Water Act envisages the appointment of private individuals to the boards of both WRMA and WASREB. Rule 2 of the First Schedule to the Act, which deals with the qualification of members for appointment to the boards of the two public bodies, states that, in making appointments, regard shall be had to, among other factors, the degree to which water users are represented on the board. More specifically, subsection 3 of section 16 states that the members of the catchment advisory committee shall be chosen from among, inter alia, representatives of farmers, pastoralists, the business community, non-governmental organizations as well as other competent persons. Similarly, membership on the board of the water services boards may include private persons.

Most significantly however, the Water Act provides a role for community groups, organized as water resources users associations, in the management of water resources. Section 15(5) states that these associations will act as forums for conflict resolution and cooperative management of water resources. With regard to water services, section 53(2) stipulates that water services shall only be provided by a water service provider, which is defined as "a company, non-governmental organization or other person providing water services under and in accordance with an agreement with a licensee [the water services board]." Community self-help groups providing water services may therefore qualify as water services providers. In the rural areas where private sector water service providers are likely to be few, the role of community self-help groups in the provision of water services is likely to remain significant, despite the new legal framework. The role of non-government entities in the management of water resources and in provision of water services is thus clearly recognized. However, given the state centric premise of the Water Act, the role assigned to non-government entities, particularly self-help community groups, is rather marginal.

5.2.3 Lessons from Kenya

- Water services and water resources are dealt with in one act, which provides a useful starting point for an integrated regulatory framework of the water sector, whilst still splitting the regulation of the water resources management and water services provision.
- In practice, regulation through an intermediary in water services provision (regulation has historically been through water service boards (WSBs) has been frustrating because of the poor performance of WSBs. Collecting revenue from the water service providers (WSPs) through the WSBs was problematic and WASREB has now moved to obtain its revenue directly from the WSPs, without going through the WSBs.
- To avoid a duplication of activities and overlap between water resource development and water regulation, WRMA's mandate has been restricted to regulation of water resource use, in particular apportionment, permitting and enforcement, supported by the planning and information management required to perform this regulatory function. Activities such as catchment management and protection activities (including water conservation activities and responsibility for WRUAs) were then divested from WRMA and vested in the National Land Commission and County Governments.
- WASREB is responsible for both the setting of standards for services provision and monitoring of performance against these standards.
- The establishment of WASREB has resulted in a substantial increase in the information available on water services provision on an annual basis.

5.3 Zambia

Regulatory institutions in the Zambian water sector are statutory bodies established by acts of parliament. They are sector specific and their roles are defined in their respective establishing legislations. However, all the regulators are concerned with the economic, environmental and quality of service regulation. The main regulatory institutions are:

- **The Water Resource Management Authority (WRMA)** which is responsible for allocating raw water rights to the various sectors of the economy operates under the Water Act, 2011. The Water Act empowers the Board to control the use of water resources by charging abstraction fees.

- **The National Water Supply &Sanitation Council (NWASCO)** which was established under the Water Supply and Sanitation Act, 1997 and is responsible for regulating the provision of water supply and sanitation services throughout the country. The water providers are now 'forced' to adopt measures that are aimed at reducing the rampant water wastage (national average of greater than 50%), at introducing metering and moving towards charging water rates that recover most of the costs and that consumers should conserve water through reducing wastage.
- **The Environmental Council of Zambia (ECZ)** which was established under the Environmental Protection and Pollution Control Act, 1990 is empowered to, among other things, establish water quality and pollution controls standards; determine conditions for the discharge of effluents into the aquatic environment and thus ensuring the preservation of the integrity of all natural water bodies in the environment, both surface and ground.

The Water sector in Zambia is primarily under the responsibility of two ministries. The Ministry of Energy and Water Development, through the Department of Water Affairs, WRMA and NWASCO, is responsible for overall water resources management (planning, regulation, development) while the Ministry of Local Government and Housing, through the Local Authorities and Commercial Utilities, are responsible for water supply and sanitation delivery services.

5.3.1 Water Supply and Sanitation Regulation in Zambia

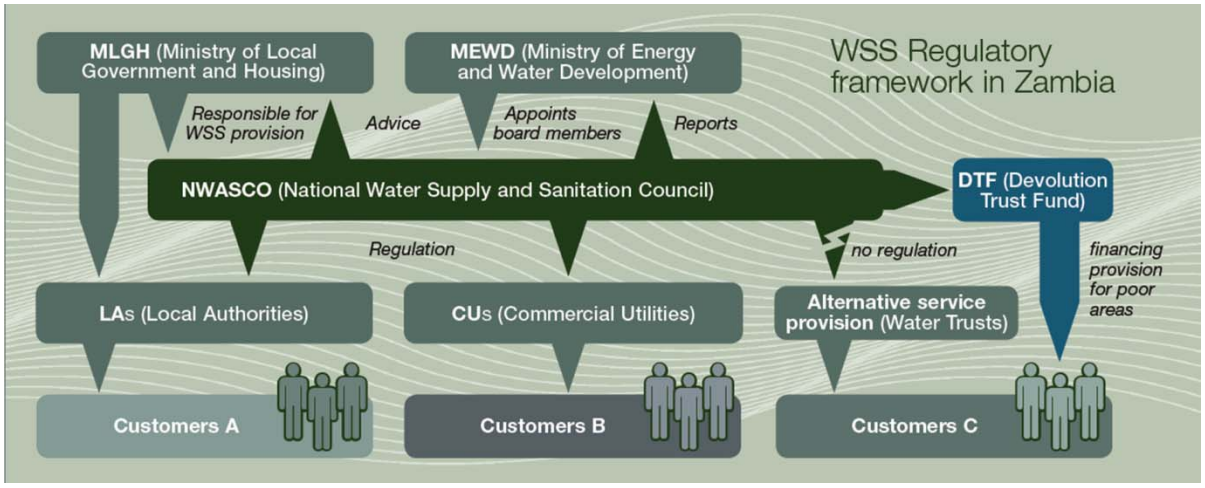
Urban water supply and sanitation (WSS) services in Zambia are mainly provided by Commercial Utilities (CUs), which are owned by Local Authorities as shareholders. 84% of the urban population resides in the service area of one of the ten CUs. The remaining 16% are still serviced by Local Authorities directly (15%) or by private companies that supply water to their employees (1%). Within the official coverage area of the Lusaka Water and Sewerage Company (LWSC), a very large proportion of the peri-urban areas receive their supply through community-managed Water Trusts.

As noted above, NWASCO (est. 2000) regulates urban WSS service provision. All the WSS service providers who provide services other than for their own use are required by the WSS Act to obtain an operator's licence. Other service providers operating in the service area of a CU, i.e. small-scale providers are required to enter into formal agreements with the licensee. The community-managed Water Trust, up to now; operate outside of the regulatory regime. NWASCO presently has a staff contingent of 13 people. Its board is composed of 16 stakeholders, representing government institutions, private sector and other agencies.

In 2004, its annual expenditure amounted to about €300,000, 84% of which is covered through the license fees of 1% of the service providers' turnover. The remaining comes from government and donor assistance.

The water sector's "line" ministry is the Ministry of Energy and Water Development (MEWD). NWASCO reports to parliament through the Minister of MEWD who also appoints the members of the regulator's board after the institutions represented on the board have submitted proposals. The responsibility for WSS, however, is under the Ministry of Local Government and Housing (MLGH), ensuring a clear separation between policy/executive and regulatory functions. See Figure 7 below.

Figure 7: Water Services Sector Regulatory Framework in Zambia



Source: GTZ, Regulation and Supervision in Water Supply and Sanitation (WSS) in Zambia

The main functions of NWASCO, as established under the WSS Act, are advising government institutions, licensing of utilities, developing guidelines for WSS, establishing and enforcing standards for the design and management of utilities, advising utilities and other service providers, disseminating information to consumers, as well as other activities.

NWASCO has powers to enforce its functions through the licensing and tariff setting process and through enforcement notices and penalties. NWASCO's power with regard to price regulation is based on the WSS Act. Applications for tariff-adjustments by providers go through a number of stages before final approval by the regulator. Before submitting a tariff adjustment proposal a provider has to hold a consultative meeting with customer representatives. A new tariff model is applied since 2005.

Additionally, there are a number of incentive mechanisms that are presently being applied in the urban water sector in Zambia:

- the Service Level Agreement and Service Level Guarantee based on the respective guideline by NWASCO
- the tariff setting mechanism which is designed to stimulate CUs to become more efficient in their operations, and improve services while moving towards cost-recovery
- the Performance Oriented Incentive Scheme (POIS), which is a system aimed at improving human resources management and development linking financial and non-financial rewards to performance, and
- a process to deal with poorly performing utilities.

NWASCO has developed a number of guidelines for commercial utilities on, for example, minimum service levels, accounting standards, water quality, reporting, investments and financial projects. They also offer training to managers of the commercial utilities in using these guidelines.

NWASCO also ensures the dissemination of information to the public on service delivery, and makes their guidelines available to the public for a small fee.

NWASCO runs a national information system (NIS) which is focused on the information needed by decision makers and the public. It provides a tool for the monitoring and comparison of CU

performance and their compliance with norms and standards. This system has improved NWASCO's regulatory efficiency. At the same time, providers can use the reports from the NIS to support their own management decisions and to check on their own compliance.

Every year NWASCO publishes a report on peri-urban and urban water sector performance. Awards are presented to the top three performing CUs while the worst performers are mentioned in the report as well.

5.3.2 Special Regulatory Supervision - SRS

NWASCO has special intervention powers under something called Special Regulator Supervision, which is an enforcement process put in place when a provider's performance has deteriorated beyond acceptable limits. NWASCO and the provider sign an SRS agreement under which NWASCO will closely monitor the operations of the provider. It goes to the extent that, under the SRS, NWASCO can send a representative to attend Board meetings to monitor the internal decisions of the provider. This allows NWASCO to closely monitor a range of activities that impact on the performance of the provider, such as collection efficiency, quality of service, expenditure patterns, and production operations. Under the SRS the provider must put together an improvement plan and it must report monthly against this plan.

The SRS has been used with several CUs, some of which are now high performing utilities.

5.3.3 Mechanisms for improved regulation

NWASCO has assigned a 'desk officer' to each CU. The desk officer is expected to have all relevant documentation and information on the assigned CU readily to hand, to follow up on the operations of the provider and to ensure that colleagues are up to date on progress. The DO is also expected to raise the alarm if there are problems with service delivery or standards. The DO also does physical inspections and spot checks and must validate the information received from the CU.

This system works, however, because there are a limited number of CUs in Zambia. In South Africa, this would require the employment of close on 200 desk officers.

Over and above the desk offices, NWASCO staff conduct compliance inspections of the CUs every year.

5.3.4 Penalties

NWASCO has the authority to issue directives to CUs in the case of non-compliance. If the directive is not complied with, NWASCO can issue an enforcement notice and can fine the CU for noncompliance in certain cases. In severe cases, NWASCO is entitled to suspend the operating license of the CU which results in the Board of Directors and the Managing Director immediately losing their positions. Until such time as a new Board and Managing Director are appointed, the Minister of Local Government must appoint a statutory Manager

5.3.5 Lesson's from Zambia

Impact of Regulatory Reform on sector performance has been a number of commercial utilities (CUs) have improved their technical performance with regard to collection efficiency, cost coverage, hours of supply, water quality and customer services, in particular when compared to areas still served by local authorities. Nevertheless, significant further progress needs to be made with regard

to financial performance since most CUs were started only a few years ago from a very low level when taking over operations from the councils. Although tariffs have been raised considerably and continuously over the last few years, the tariff levels are still relatively low, resulting in insufficient operational cost recovery. It is expected that all CUs will be able to meet their operational costs within the next two years given a satisfactory level of collection efficiency. The objective is to reach full cost recovery four years after covering 100% of operational costs.

One of the major challenges remaining in the water services sector and for NWASCO is the low service coverage of most CUs, which results in inadequate service provision in the continuously growing peri-urban areas. The regulator will have to continue to promote the extension of service provision with appropriate approaches and technologies. One of the steps, which NWASCO plans to undertake, is to integrate the Water Trusts in Lusaka into the regulatory regime.

The Zambia example shows clearly how a good information system that serves the needs of both the regulated companies and the regulator can serve to improve service delivery and the meeting of standards.

In Zambia, NWASCO is responsible for setting services standards and for measuring delivery against those standards.

NWASCO has strong intervention powers, including the issuing of directives, the suspension of a licence to operate and using the SRS approach. The SRS approach is as useful intervention tool, and has shown remarkably good results in several cases. It is an approach that should be considered for the South African context.

5.4 Australia

5.4.1 Water Resources Regulation

Australia provides a particularly interesting example of institutional arrangements, particularly in relation to the Murray-Darling Basin, which is the most important basin in Australia. Historically, water resources management has been the responsibility of the states, with relatively little federal authority in the matter. Since the Murray-Darling Basin stretches across several states, the Murray-Darling Basin Commission was established to co-ordinate management of the basin. Decision making power, however, remained in the hands of the states.

The Murray-Darling Basin Commission's mandate was to:

- Manage and distribute the water resources of the basin
- Protect and improve water quality in the basin and
- Advise the Murray-Darling Ministerial Council on water, land and environmental management in the basin.

However, recent challenges, including a prolonged period of low rainfall, driven by climate change, have exacerbated the problems in the basin, and resulted in significant institutional changes, driven by the promulgation of the Water Act, 2007 which came into force in early 2008.

This Act establishes the Murray-Darling Basin Authority (replacing the Murray-Darling Basin Commission) which reports to the Minister for Climate Change and Water. The Act requires the MDBA to develop a basin plan, and for the first time, water resources planning will consider the

basin as a whole, rather than in state-level pieces. The Plan has to set limits for water withdrawals, which may have significant impacts on water use in the basin. In essence, this process has removed power to plan water resources from the states and brought it to basin and federal level. Implementation, however, remains with the states, with a proviso for the Commonwealth government to step in if a state consistently transgresses the requirements set out in the plan. A Ministerial Council, made up of a minister from each of the Basin states and the Australian Capital Territory and the Commonwealth Minister of Climate Change and Water has an advisory role in the preparation of the Basin Plan by the Authority.

In addition to the commission's mandate, the new authority's role includes:

- preparing a Basin Plan by 2010 which, amongst other things, sets sustainable limits on water surface and groundwater withdrawals across the Basin;
- advising the minister on the accreditation of state water resource plans
- developing a water rights information service to support water trading across the basin
- measuring and monitoring water resources, collecting information and undertaking research, and
- engaging stakeholders in managing the basin.

States still issue authorisations to take water and determine how much can be taken by users within the parameters that will be set by the new plan of how much total water can be abstracted in each state. Where there is a dispute among the states, the first response is to attempt to resolve it at the level of the officials. If this fails, the dispute goes to a Ministerial Council, and if that fails the States or the Commonwealth can take it to the Courts.

All water trading is now under the control of the National Competition Authority. South Australia instituted legal action against the State of Victoria in the High Court as Victoria is trying to slow down the trade of water out of its area of jurisdiction. South Australia is arguing that this in unconstitutional as there is supposed to be free trade among states (Mike Young, pers comm. 2010).

The Act also establishes what is called the Commonwealth Environmental Water Holder which will "manage the Commonwealth's environmental water to protect and restore the environmental assets of the Murray-Darling Basin, and outside the Basin where the Commonwealth owns water"[41].

5.4.2 Water Services Regulation

5.4.2.1 Independent Pricing and Regulatory Tribunal (New South Wales) –economic regulation

Australia also provides a useful example of economic regulation of water services. The Independent Pricing and Regulatory Tribunal of New South Wales (IPART), not only regulate water services tariffs, but also consider activities required to address water resource management under the Water Management Act, 2000 and the National Water Initiative. IPART determines the maximum price that may be charged by the State Water and the Water Administration Ministerial Corporation for bulk-water related services, including water resource management, provided to farmers, irrigators, industry and municipalities, the Sydney Catchment Authority and Hunter Water[42]. IPART is responsible for regulation of bulk water prices, metro water prices, and licensing for government utilities and private sector water infrastructure operators, and for access to the network.

[41] http://www.environment.gov.au/water/australia/water-act/key-features.html
[42] www.ipart.nsw.gov.au

IPART was established in 1992 by the IPART act which was substantially amended in 1996. Under the IPART Act, IPART has the following six primary responsibilities:

1. Regulating prices and reviewing the pricing policies of government monopoly services, including the maximum prices that can be charged by declared public water utilities for water services in NSW metropolitan areas and rural water services, as well as the maximum fares that RailCorp can charge for CityRail services
2. Undertaking reviews as required in relation to industry, pricing or competition
3. Arbitrating access disputes in relation to public infrastructure access regimes
4. Registering access agreements
5. Making recommendations towards and monitoring compliance and reporting in relation to water, electricity and gas licences under the Electricity Supply Act 1995, Gas Supply Act 1996, Hunter Water Act 1991, Sydney Water Act 1994, Central Coast Water Corporation Act 2006, Sydney Water Catchment Management Act 1998, State Water Corporation Act 2004 and Water Industry Competition Act 2006, and
6. Investigating complaints under New South Wales' competitive neutrality regime

IPART's role in relation to local government

IPART determines the allowable percentage increase in general income derived from rates and annual charges — commonly known as the 'rate peg' on an annual basis. Councils may decide to apply for a variation in rates that exceed the rate peg, and IPART publishes a list of these councils along with extracts of their applications.

In consideration of these applications, IPART requires local councils to have conducted workshops, held public hearings and otherwise consulted with their communities and industry stakeholders. IPART also require councils to demonstrate that there is community support for their expenditure and revenue plans.

Other determination criteria include demonstrated need, reasonable impact on ratepayers, a sustainable financing strategy and well-documented council productivity improvements over previous years. In its review, IPART will assess public submissions, such as letters from local councillors or Members of Parliament, local media reports and a range of other materials it deems relevant. The reasoning behind its final decisions as to whether special rate variations are approved, partially approved or rejected are then made available to the public on IPART's website.

5.4.3 Essential Services Commission of South Australia

The Essential Services Commission of South Australia (the Commission) was established under the Essential Services Commission Act 2002 (ESC Act), which came into effect on 12 September 2002. The Commission is the same body corporate as the former South Australian Independent Industry Regulator (SAIIR), which was previously responsible for some of the Commission's regulatory functions.

The Commission's objective, specified in the ESC Act is the "protection of the long term interests of South Australian consumers with respect to the price, quality and reliability of essential services".

Essential services are defined as being electricity, gas, water and sewerage, maritime, rail and any other services prescribed from time to time. In pursuing its primary objective, the Commission is required at the same time to have regard to the need to:

- Promote competitive and fair market conduct;
- Prevent misuse of monopoly or market power;
- Facilitate entry into relevant markets;
- Promote economic efficiency;
- Ensure consumers benefit from competition and efficiency;
- Facilitate maintenance of the financial viability of regulated industries and the incentive for long term investment; and
- Promote consistency in regulation with other jurisdictions.

The Commission undertakes a number of functions in carrying out its responsibilities as the South Australian economic regulator of services. Most of the Commission's functions cannot be actioned in the absence of specific reference in industry legislation. The table below summarises such legislation in force as at 1 January 2011 for various sectors as well as summarising the nature of the regulatory tasks performed by the Commission in each sector.

Legislation	SECTOR	Function of Commission
Electricity Act 1996	ELECTRICITY	Licensing of specified electricity operations in SA administration of 2005 distribution price determination, retail price control, performance monitoring, consumer protection, Residential Energy Efficiency Scheme administration.
Gas Act 1997	GAS	Licensing of specified gas operations in SA, retail price control, performance monitoring, consumer protection, Residential Energy Efficiency Scheme administration.
Maritime Services (Access) Act 2002	PORTS	Pricing and access regulator for specified types of port services.
AustralAsia Railway (Third Party Access) Act 1999 & Railway (Operations and Access) Act 1997	RAIL	Regulator under the AustralAsia Railway (Third Party Access) Code for the Tarcoola – Darwin railway; access regulator for specified intrastate rail lines

The Commission has a role in conducting inquiries into the Government's processes for setting water and sewerage regulation of South Australia's water and sewerage services. In light of the fact that it is an integrated regulator lessons from one industry can be shared with another. Although the water services regulation was only recently taken over by the Commission, it has about 10 years' experience in the electricity and gas sectors that will be useful to inform regulation of the water sector eg how to increase competition in the water sector. In light of the fact that the Commission is

not structured on an industry basis and has a relatively small staff compliment of 30, professional skills and experience can be shared across industries.

Though the Commission is not structured on an industry basis, it has three divisions, namely:

- Pricing and analysis (economists and accountants)
- Price determination, access disputes, analysis with regards to for example market segments, competition, consumer and regulatory affairs (attorneys and policy professionals)
- Non- price regulation egg licensing, services standard setting, monitoring and compliance, administration (finance and IT professionals)

It is anticipated that 90% of the staff of the Commission will be allocated to water services regulation in the next 5 years with water being the main focus of the Commission.

In setting the prices of water services, the Commission must take account of the costs of meeting the South Australia EPA standards when doing price determinations. If a cost is not considered efficient or prudent the Commission is not obliged to include it in the price determination.

5.4.4 Lessons from Australia

Australia provides a useful example of a single regulator for what they term essential services where the different sectors have been included in a phased manner to build experience of regulation over the years. In a country where technical capacity and financial resources are limited, an integrated regulator of this nature could eventually substantial benefits for South Africa.

5.5 Brazil

The Brazilian context is an interesting one because of the socio-economic similarities with South Africa. Brazil, like South Africa, has one of the highest Gini co-efficients in the world, and therefore has to deal with issues of affordability in the pricing of water, as well as issues of cost recovery. This inequity resulted, inter alia, in a social investment policy in expansion of water supply systems and a process of cross-subsidization. The issue of affordability can be seen in figure 7 below which indicated clearly that low income households spend a much greater proportion of their income on water supply and sanitation than do wealthy households.

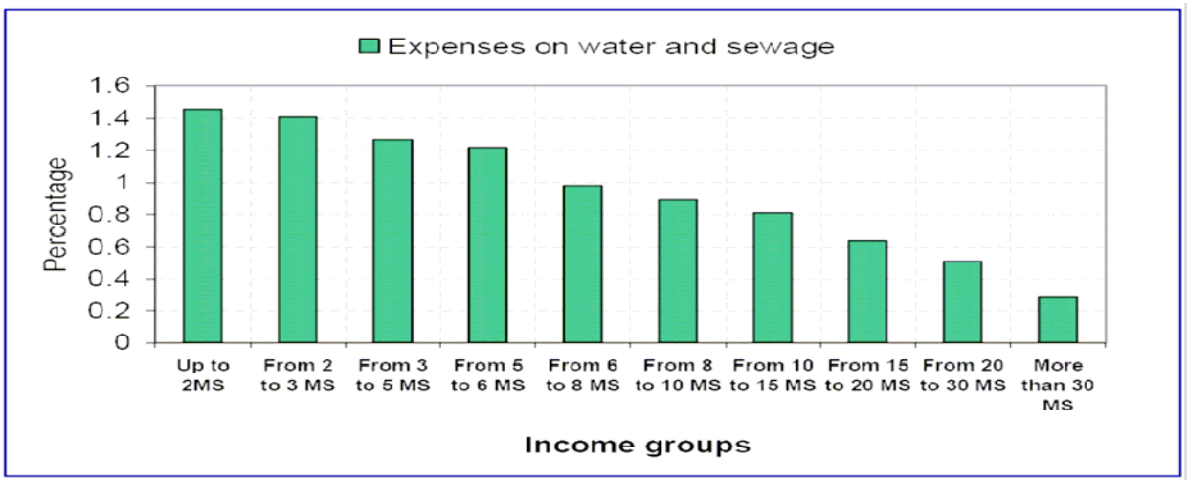


Figure 8: Percentage of household income spent on water and sewage per income group (IBGE – 2002-2003 Survey of Household Budgets (POF))

Of significant difference from South Africa, however, is that water services are provided by private companies in a significant proportion of Brazilian municipalities.

Brazil's water resources management operates within a federal political system. At the apex of the water resources management system is the National Council on Water Resources (NCWR) which has a mandate to promote the integration of water resources planning at the national, regional, and state levels and between user sectors. It consists of representatives of the Federal Government ministries, representatives of the State Councils on Water Resources, water user representatives and representatives of civil society organizations. It is chaired by the Minister of the Environment.

The National Water Authority (Autoridade Nacional da Agua – ANA) has the mandate to implement the national water policy and to develop criteria for the granting of water use rights and for pricing. ANA has administrative and financial independence.

At the river basin level, River Basin Committees (RBC) are stakeholder organizations that discuss and decide on the challenges and priorities in the basin, but they have no legal standing. They include water users, representatives of Federal, state and local government, and civil society organisations. River Basin Water Agencies act as executive secretariats for the River Basin Committees. Due to the federal nature of the Brazilian system, the basin agencies were created by the state governments rather than by national government.

Brazilian federal legislation requires the development of water resources plans at the river basin level. Each plan has to contain a range of water related information, including guidelines or criteria for water charges. Water charges refer to what would be termed raw water charges in South Africa, distinct from water services tariffs. Water charges are determined by the relevant authority, which in Brazil could be the federal government or the state government, depending on the status of the water resource in question. Proceeds from water charges are used to finance water studies, projects and programmes under the Water Resources Plans, as well as administrative and overhead costs for water resource management agencies to a maximum of 7.5% of income collected[43].

Brazil has a significant hydropower generation programme – on a very different scale from South Africa, which perhaps makes it difficult to draw lessons from the one to the other. A significant portion of hydropower generation is through private companies. Regulation of these companies is largely through contract.

5.5.1 Lessons from Brazil

There is no federal regulatory agency in Brazil responsible for regulating tariffs in the water sector, and while there are some state regulatory agencies in place they are not particularly effective. As with South Africa, many municipalities are not sufficiently resourced to regulate private water companies effectively. Water services tariffs set by private companies are either contained in the concession agreements or are negotiated between the state, the municipality and the private company.

[43] Brendan McNallen, Fixing the Leaks in Brazil's Water Law: Encouraging Sound Private Sector Participation through Legal and Regulatory Reform, 9 GONZ. J. INT'L L. 147 (2006), available at http://www.gonzagajil.org.

The water resources regulatory instruments work well to protect water resources in Brazil, albeit on a technical level, with no economic regulation apparent at for this sector. On the other hand, water and sanitation services remain largely unregulated, lacking monitoring and reporting on the effectiveness of service providers, availability of relevant data to consumers, regulation of tariff setting tariffs, and mechanisms for adjudicating disputes between consumers and government. There is no policy on tariff setting which occurs in different ways at a number of levels. In many cases government sets tariffs without a clear methodology and without transparency.

The law on water services concessions set out requirements for these concessions, but there is no regulatory agency to enforce them. Equally, users have rights to information on service provision, but the ability to enforce these rights is weak.

The Brazilian experience shows, very clearly, the need for clear policies, regulations and methodologies relating to information provision, tariff setting, and service standards, and the clear role of a regulator to enforce these. Without such, the legislative requirements remain paper requirements only.

5.6 Mexico

In 2004, Mexico made significant amendments to the National Water Law (Ley de Aguas Nacionales), which defined a process of decentralization of water resources management to river basins, through Basin Agencies (Organismos de Cuenca) and Basin Councils (Consejos de Cuenca) which would ensure the participation of all levels of government, as well as water users associations and civil society organizations in the decision-making process. The Basin Agencies would be drawn from existing parts of CONAGUA regional offices. The legal reforms also introduced a financing system to finance water resources management. However, there are still gaps in the regulations and bylaws which leave some of the institutional and financial arrangements unclear.

At the federal level, the National Water Commission (CONAGUA) is responsible for integrated water resources management (IWRM). CONAGUA, created in 1989, falls under the Ministry of Environment and Natural Resources. CONAGUA is responsible for water policy, water rights administration, planning, irrigation and drainage development, water supply and sanitation, and emergency and disaster management (both prevention and response) particularly with respect to flooding.

In the mid-1990s, CONAGUA was reorganized to include 13 Regional Offices with jurisdiction over areas based on hydrologic boundaries of one or more river basins. This was the beginning of a process of decentralised of WRM.

In recognition of the key principle of citizen participation, CONAGUA created the Water Citizen Movement (Castro et al, 2004; Tortejada et al, 2004), whose aims are creating a new water culture and in raising awareness around water issues. There are also provincial citizen water councils, which include water-user associations and NGOs. The citizen councils engage with the CONAGUA, and other relevant government departments, but there is little evidence of this engagement producing significant results in the lives of ordinary people. This may be influenced by the fact that the government defines who may participate in the various councils. (Armentia and Jimenez 2009)

However, a challenge is that the technical capacity in the regional offices of CONAGUA has declined over the years, leaving too little capacity to staff the Basin Agencies effectively. Some suggestions

have been made that technical capacity from the national or central office will need to be decentralised to the basin agencies. Such a move could enhance local capacity and build on the capacity present in municipal water companies, irrigation districts, and state water agencies.

Basin Authorities are funded from the federal budget and have no mandate to obtain their own financial resources. They have a mandate to collect and analyse information, to propose priorities and actions, and to estimate the resources required for water resources management in their area of jurisdiction.

25 Basin Councils and several Aquifer Committees (Comités Técnicos de Aguas Subterráneas (COTAS)) have been established. The challenge remains, however, in clarifying the precise roles and responsibilities of the various structures.

At the local level there are three main types of irrigation systems: irrigation districts (covering 53% of irrigated area), irrigation units and small private irrigation schemes. The responsibility for operation and maintenance of irrigation districts was transferred to water users associations (Asociaciones Civiles de Usuarios - WUAs) in the 90's, except for 5 per cent of the area and some upstream dams and canals that are still operated by CONAGUA.

Mexico uses a range of regulatory instruments for water resources management, including water use rights and well drilling prohibitions. Water transfers can only be approved by CONAGUA, which limits flexibility and makes the process slow.

5.7 Philippines

The Philippine Constitution (1987) provides for the policy on sustainable water use and water resources management. The Water Code of the Philippines (1976) governs the management of water resources. The administration and enforcement of the provisions of the Code lies with the National Water Resources Board (NWRB)[44]. The other legislations that impact the water sector are the Provincial Water Utilities Act (governs the local water districts and the Local Water Utilities Administration (LWUA)), Local Government Code (governs the basic service delivery of supply and sanitation), BOT law (covers the private sector participation in the water sector).

The responsibility for the water sector regulation is highly fragmented. There is no national government agency responsible for overall sector policy. The regulatory functions are spread across different government tiers and various national government agencies. There are many small service providers that fall under different regulatory and financing regimes that blurs accountability. There is not sufficient autonomy which has affected the efficiency of the institutions. This has led to a variance in regulation and enforcement across the groups of service providers as well as lack of co-ordination and cooperation. Each service provider is responsible for policy, planning and regulation specific to their jurisdiction e.g. financing, management, tariff setting, investment and financing support and setting of performance standards.

At a national level, the Department of Environment and Natural Resources formulates and enforces policies and guidelines for environmental protection and pollution control. The department

[44] Country Profile, Aquastat, http://www.fao.org/nr/water/aquastat/countries/philippines/index.stm

established the National Water Resources Board (NWRB) as the apex body responsible for overall water resources management and coordination of the activities of agencies involved in the water sector (in irrigation, hydropower, navigation, pollution, waste disposal, watershed management, etc.). The NWRB is also effectively the technical regulator and regulator of water utilities in the Philippines.

The National Water Resources Council divided the country into twelve water resources regions in efforts to establish manageable units for water resources planning. Although intentions were to base these regions on hydrological boundaries, the resulting borders generally correspond to existing political regions in the country (FAO, undated).

One of the challenges facing the NWRB as the chief water resources management body is the need to strengthen and regionalize the board. The NWRB largely remains a national body with limited involvement at the river basin level. At the same time, the board also believes there is potential conflict in being both the apex body for water resources and the regulator. As the body responsible for water resources management, the NWRB needs to engage with the water sector, and water users in particular, to facilitate the implementation and coordination of policies. However, at the same time, as the regulator the NWRB feels that it requires independence from users and implementers in order to effectively carry out its regulatory function (ADB, 2004).

Another issue relates to the current approach to water pricing. The NWRB states that the current approach of water pricing does not adequately reflect the true value of water and that the fees charged by it are insufficient to provide for cost recovery and sustainability of water resources. (ADB, 2004). In order to address this, the NWRB has put forward proposals for the adoption of a revised Raw Water Pricing strategy aimed at increasing water use efficiency and achieving resource protection. It is however not clear how and who will regulate raw water prices set by the board. The NWRB concedes that, at the same time, the raw water pricing strategy must consider:

- the needs of the poor
- issues in the agricultural sector and those of small farmers in particular
- the concerns of areas where water is critical, and
- the need for public consultations, information and education campaigns

Regarding the regulation of water use and allocation, like Pakistan, one of the challenges besetting the NWRB is that of illegal water use. According to the Network of Asian River Basin Organisations (NARBO), there are more illegal appropriations of water than the ones legally issued by the Board (NARBO, 2003). Added to this is the reported refusal of some indigenous groups to recognize permits issued by the Board under the argument that they own all natural resources including water within their ancestral domain. This has resulted in a situation where users issued permits by the NWRB are not allowed access to water and where indigenous groups appropriate water without securing a water permit [45].

The Institutional framework for water regulation in the Philippines is depicted below.

[45] Schreiner. B, Chimuti. S, Cupido. A, Mbanda. V, Water Resources Arrangements in South Africa: Institutional Criteria, Functions and Arrangements, May 2010

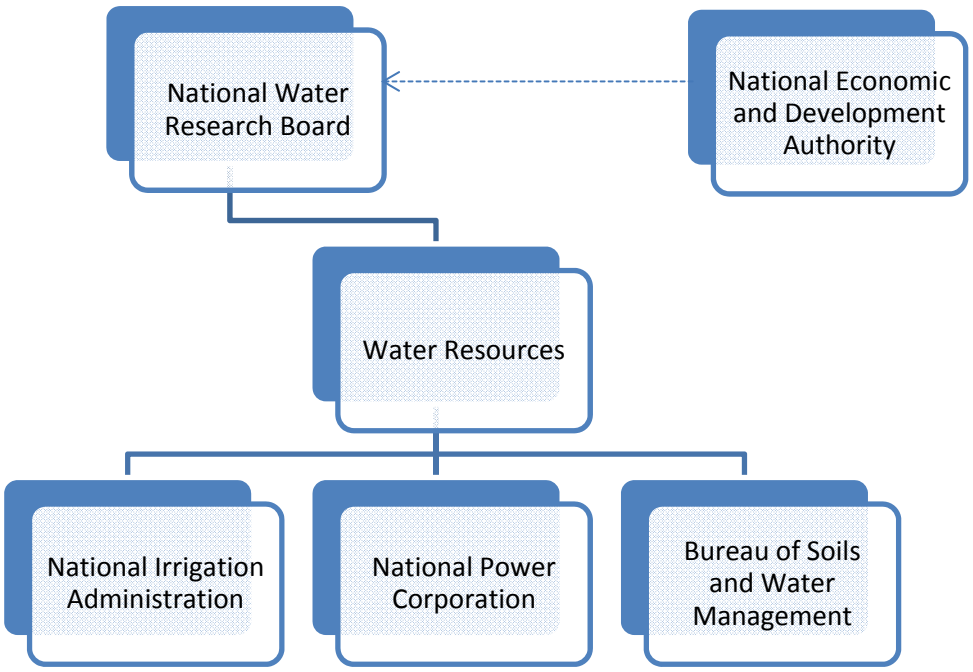


Figure 9: Water Resources Framework in Philippines

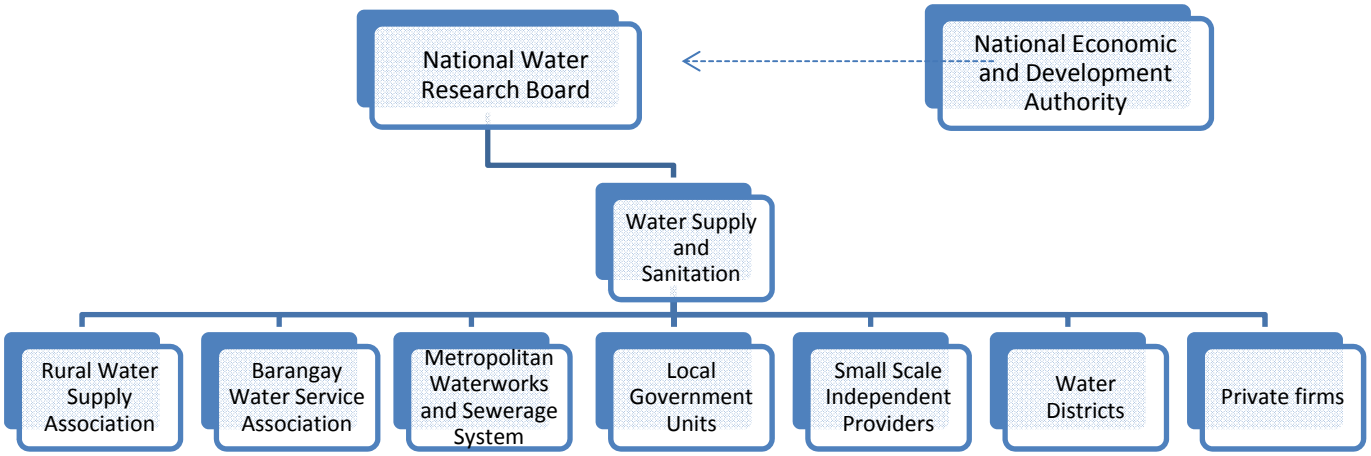


Figure 6: Water Supply and Sanitation Framework in Philippines

The **National Water Resources Board (NWRB**) is the overall government agency that is responsible for all the water resources and supply in the Philippines. The board regulates all water related activities in the country e.g. irrigation, hydropower, pollution, waste disposal, watershed management etc.). It is also the main institution to adopt the **Integrated Water Resources Management (IWRM)** in the country. The association is the economic regulator for the water districts and LGU's.

The **National Economic and Development Authority (NEDA),** which is the Philippines social and economic development planning and policy coordinating body, also plays important roles in the overall coordination in the planning and regulation of water resources in the country. It defines broad policies and sets broad targets for the country[46].

The main institutions governing the water resources in Philippines are:

National Irrigation Administration (NIA) is responsible for developing and operating irrigation systems in the country.

Bureau of Soils and Water Management (BSWM) is responsible for research and technologies for soil and water conservation

National Power Corporation (NPC) builds and operates nuclear, hydroelectric, thermal, and alternative power-generating facilities and works with independent producers under a build-operate-transfer program.

The NIA has constructed seven large dams and small reservoirs for irrigation projects. The large dams are managed by the NIA and the NPC. The small dams are jointly managed by BSWM, the NIA and the Department of Agrarian Reform through various international funding agencies.

The main institutions that are role players in the water supply and sanitation sector in Philippines are:

Water supply and sanitation services are provided by many service providers namely**, Barangay water service associations (BWSA), Local Government Units (LGUs),** water districts, **Rural water supply association (RWSA)**, cooperatives, and private firms including the two Metro Manila concessionaries[47]. There is also a significant portion of the population that do not have access to adequate public service that obtain services from **Small scale independent providers (SSIP)**[48] and some resort to self-provision through wells and surface water[49].

The operating bodies at local government level are Provincial LGU department at Province Level, RWSA at City Level, Municipal LGU department and RWSA at Municipality level and BWSA at Barangay level. The operating bodies are all responsible for their own policies, planning and regulatory functions in their own jurisdictions, including financing and tariff setting.

The **Metropolitan Waterworks and Sewerage System (MWSS)** is a Government owned and Controlled organisation responsible for the delivery of water, sewerage and sanitation services in Metro Manila and parts of the provinces of Cavite and the province of Rizal. The organisation monitors and enforces concession agreements. The two private concessionaries are Manila water Company Inc. (MWCI) and Maynilad Water Services Inc. (MWSI).

[46] Philippines, Meeting Infrastructure Challenges, The World bank Group in the Philippines, 2005
[47] The three administrative levels are provincial, municipalities and barangays
[48] SSIPs include real estate developers, homeowners' associations, local entrepreneurs, and mobile truckers and haulers
[49] Philippines, Meeting Infrastructure Challenges, The World bank Group in the Philippines, 2005

The **Local Water Utilities Administration (LWUA**) defines and enforces quality standards of service in municipalities and cities, and review charges established by local water utilities. The association acts as a lending institution to water districts for water supply and sanitation.

The **Laguna Lake Development Authority** promotes sustainable development in the Laguna de Bay Region and is an integrated water resources management (IWRM) authority. It regulates water quality monitoring, conservation of natural resources, and community-based natural resource management.

The **Department of Environment and Natural Resources (DENR)** through the **Environmental Management Bureau (EMB)**, looks at issues related to the implementation of water resources management. It is responsible for maintaining desirable water quality in the country and implement water quality management programmes e.g. classification of water bodies, water quality guidelines and effluent standards, discharge fee system and ambient effluent/monitoring, etc.

The **Water and Sanitation Coordination Office (WASCO)'s** main purpose is to implement the Presidents Priority Programme on Water for waterless municipalities.

The **National Power Corporation (NPC)** is responsible for the development of power sources including hydropower.

The Department of Health (DOH) monitors the quality of drinking water and regulates premises with sanitation installations.

The **Department of Interior and Local Government (DILG)** provides assistance to manage water supply, sewerage and sanitation services and assists in the facilitation of technical and financial support.

The Department of Public Works and Highways (DPWH) is responsible for flood control and drainage infrastructures.

The **Department of Agriculture** is responsible for irrigation development through the **National Irrigation Administration (NIA)** and is responsible for research and technologies for soil and water conservation through the **Bureau of Soils and Water Management (BSWM**).

5.7.1 Lessons from the Philippines Case

The Philippines water sector is an indication that such a highly fragmented sector can lead to variance in regulations and enforcement as well as lack of coordination and cooperation which could inevitably lead to inefficiently regulated institutions.

5.8 Chile

In Chile, the primary regulatory body for water supply and sanitation is the Superintendencia de Servicios Sanitarios (SISS), which, under Law No. 18.902 (1990), is responsible for: "inspecting industries that provide potable water and sanitation services; interpreting and ensuring compliance with standards regarding potable water and sanitation services; developing technical standards regarding the design, construction and operation of potable water and sanitation services;

controlling industries producing liquid waste; developing technical standards regarding discharge of liquid effluents; and imposing sanctions on potable water and sanitation service companies." [50]

In relation to a private company bidding for provision of water services, SISS monitors the bidding process and may cancel the bidding process if the rules are not complied with. It sets tariffs for the provision of services based on incremental costs which include the cost of capital. It is also responsible for enforcement of compliance with water services norms and standards. It has, over time, established itself as a credible and independent regulator. Disagreements between SISS and the private sector provider are resolved through a tripartite commission of experts. All of the processes, including the tariff setting and conflict resolution are transparent and allow for public input.

Interestingly, public water companies are subject to the same legislation as private water companies, including the same tariff guidelines and legal and regulatory framework.

6 Observations

Perhaps the most important lesson to be drawn from the international experience is that there is no existing model of one economic regulator dealing with the economic regulation of the entire water value chain. What South Africa is proposing in terms of economic regulation of the entire value chain is a new development in the international water sector.

In the vast majority of cases, economic regulators in the water sector are focused on the water services part of the value chain, and in many cases, the economic regulation is driven by the presence of private sector companies in the provision of water services.

The South African context is very different in that the role of the private sector is very limited in the provision of water services, and is essentially non-existent in the raw water sector. Thus the role of an economic regulator in South Africa would be to regulate the public sector provision of water.

What is important to realise in this context is that the sanctions that can be applied are very different in the context of private sector vs. public sector provision of services. In the context of the private sector, large fines act as significant deterrents to non-compliance. In the context of the public sector, large fines do not have the same impact, and alternative sanctions must therefore be able to be imposed.

A number of aspects have been identified in this review which are important for the establishment of an effective economic regulator for water in South Africa. Some of these are highlighted here:

- Access to reliable information is a critical component of effective regulation;
- The institutional arrangements may be secondary to ensuring sufficient capacity, clear roles and responsibilities and effective regulatory mechanisms;
- There are certain design criteria which have proved robust internationally and should be applied in the South African context, as follows:

[50] Brendan McNallen, Fixing the Leaks in Brazil's Water Law: Encouraging Sound Private Sector Participation through Legal and Regulatory Reform, 9 GONZ. J. INT'L L. 147 (2006), available at http://www.gonzagajil.org.

  - *Working within the existing organisational framework*:
  - *Creating an appropriate role for politics*
  - *Limiting the discretion given to regulatory decision makers:*
  - *Trading off sophistication in favour of simplicity:*
- There are different models for who determines the standards and who applies them. In several cases the same body is responsible for setting and regulating minimum standards;
- While it is critical for the economic regulator to have teeth, the applying of sanctions in the regulation of public sector bodies is much more difficult than in a private sector context
- Intervention capacity, as in the SRS intervention in Zambia can be an extremely useful tool.

References:

Reports:

Aliber 2003: Chronic poverty in South Africa: Incidence, causes and policies World Development, 2003 Elsevier

BIS 2011: Principles for Economic Regulation. Department for Business Innovation and Skills. UK. 2011. http://www.bis.gov.uk/assets/biscore/better-regulation/docs/p/11-795-principles-for-economic-regulation

Black 2002: Regulatory Conversations. Julia Black. Journal of Law and Society. Volume 29. Number 1. March 2002.

Blackman 2006: Economic Incentives to Control Water Pollution in Developing Countries How Well Has Colombia's Wastewater Discharge Fee Program Worked and Why? Allen Blackman. 2006 Available: http://www.rff.org/rff/Documents/RFF-Resources-161_EconomicIncentives.pdf Accessed: July 2009

Brannstrom 2004: Decentralizing Water Resource Management in Brazil. Brannstrom C. European Journal of Development Research, Vol 16 No. 1 Spring 2004 p214-234

Brendan McNallen, Fixing the Leaks in Brazil's Water Law: Encouraging Sound Private Sector Participation through Legal and Regulatory Reform, 9 GONZ. J. INT'L L. 147 **(**2006), available at http://www.gonzagajil.org.

Breyer 1982: Regulation and Its Reform. Stephen Breyer. Cambridge, Mass.: Harvard University Press, 1982.

Brown and Woodhouse 2006; Pioneering redistributive regulatory reform: a study of implementation of a Catchment Management Agency for the Inkomati Water Management Area. J Brown and P Woodhouse. In Regulatory Governance in Developing Countries. M Minogue and l Carino (eds). Centre on Regulation and Competition series on competition, regulation and development. Edward Elgar, Cheltenham UK. 2006.

Carter and May 2001: One Kind of Freedom: Poverty Dynamics in Post-apartheid South Africa. Michael R. Carter and Julian May. World Development. Volume 29, Issue 12, December 2001. Pages 1987-2006

Cash et al 2006: Scale and cross-scale dynamics: governance and information in a multilevel world. Cash, D. W., W. Adger, F. Berkes, P. Garden, L. Lebel, P. Olsson, L. Pritchard, and O. Young. 2006. *Ecology and Society* **11**(2): 8. [online] URL: http://www.ecologyandsociety.org/vol11/iss2/art8/

Cave, M 2009. Independent Review of Competition and Innovation in Water Markets; Final Report. England.

CC Water Framework Document. http://www.ccwater.org.uk/upload/pdf/frameworkdocument.pdf)

Cholderton & District Water Company Limited, 2009. Final Business Plan: 2010 to 2015 (Commentary).

Cocklin & Blunden 1998: Sustainability, Water Resources and Regulation. C. Cocklin and G. Blunden. Geoforum, Vol. 29, No. 1, pp. 51-68. 1998

Crew and Parker 2006: International Handbook on Economic Regulation. Crew M and Parker D (eds). Edward Elgar Publishing, UK.

Dablas Task Force undated: A methodology for the economic regulation of the water sector in Serbia. http://ec.europa.eu/environment/enlarg/dablas/pdf/dablas_balkans.pdf

Department of Transport. 2011. Terms of Reference for the establishment of a Single Transport Economic Regulator through policy, legislation and implementation plan.

Drummond and Marsden 1995: Regulating Sustainable Development. I Drummond and T K Marsden. *Global Environmental Change* Vol 5. No 1. Pp 51-63. 1995

DWAF 1997: White Paper on a National Water Policy for South Africa. Department of Water Affairs and Forestry, Pretoria. 1997

Eberhard, R. (undated) Administered prices: Water. National Treasury.

Echeverri-Carroll E. and Ayala S. G. (Undated). "Regulation and Competitiveness of U.S. Businesses: Is It Time for a Competitive Impact Statement?", http://www.ic2.utexas.edu/dmdocuments/echeverri-2008-Regulation-Competitiveness.pdf

Ehrhardt et al: Economic regulation of urban water and sanitation services: Some practical lessons. Ehrhardt D, Groom E, Halpern J, O'Connor S. Water Sector Board Discussion Paper Series No 9. April 2007. World Bank.

Eisner et al 2006:. Contemporary regulatory policy. Marc Allen Eisner, Jeff Worsham, Evan J Ringquist. 2nd Edition. Lynne Rienner Publishers Inc. Colorado. USA. 2006

Gausch and Hahn 1996: The Costs and Benefits of Regulation: Some Implications for Developing Countries* J. Luis Gausch and Robert W. Hahn March 1997 JSTOR: The Journal of Political Economy, Vol. 104, No. 6 (Dec., 1996), pp. 1314-1327

Hönke et al 2008: Fostering Environmental Regulation? Corporate Social Responsibility in Countries with Weak Regulatory Capacities. The Case of South Africa. J Hönke, N Kranz, TA Börzel, A Héritier. SFB-Governance Working Paper Series No 9. February 2008. http://www.ciaonet.org/wps/sfb/0000907/0000907.pdf accessed 19/08/09

Hood et al 2000: Regulation of Government: Has it increased, is it increasing, should it be diminished? Christopher Hood, Oliver James and Colin Scott, Public Administration Vol 78 No 2 2000 (283-04) Blackwell Publishers Oxford.

Huber and Thorne 1997: "**Economic Licensing Reform**". January 1997

James 2000: Regulation inside Government: Public Interest Justifications and Regulatory Failures Oliver James Public Administration Vol 78 No 2 2000 (327-343)

Johansson et al 2002: Pricing irrigation water: a review of theory and practice. Robert C. Johansson, Yacov Tsur, Terry L. Roe, Rachid Doukkali and Ariel Dinar Water Policy 4. 2002 Available: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.13.4961&rep=rep1&type=pdf. Accessed: August 2009

Johnstone and Horan 1994: Standards, Costs and Benefits: An International Perspective. DWM Johnstone and NJ Horan. 1994 Available: 10.1111/j.1747-6593.1994.tb01136.x Accessed: August 2009

Kemper 2001. Markets for Tradable Water Rights. Karin E. Kemper. International Food Policy Research Institute. 2020 Focus No. 09 - Brief 11. October 2001 Available: http://www.ifpri.org/2020/focus/focus09/focus09_11.asp Accessed: August 2009

Khanyisile Consulting Services CC 2009: IRF Framework for the Water Sector: Report on Possible Regulatory Options and Models for the Water Sector (Discussion Paper) Department of Water Affairs, Pretoria.

Klasen 2003: In Search of the Holy Grail: How to Achieve Pro-Poor Growth? Ibero America Institute for Economic Research (IAI) Discussion Papers Number 096. http://ideas.repec.org/p/got/iaidps/096.html last accessed 28/08/09

Laffont & Tirole 1991: The Politics of Government Decision-Making: A Theory of Regulatory Capture Jean-Jacques Laffont And Jean Tirole *The Quarterly Journal Of Economics,* November 1991

Laubscher 2007: Economic commentary. Jac Laubscher, Group Economist: Sanlam Limited 12 July 2007 The South African developmental state: myth or reality? http://www.sanlam.co.za/eng/economicinsight/economiccommentary/economic+commentary+-+12+july+2007.htm accessed 29/03/09

Lee M-K. 2007. "Experience of Regulatory Reform in Korea", Office for Government Policy Coordination, Republic of Korea

Markandya 1998: Poverty, Income Distribution and Policy Making. Markandya A. *Environmental and Resource Economics* 11(3-4): 459-472. 1998.

OECD 2006: The Distributional Effects of Environmental Policy. Edited by Ysé Serret and Nick Johnstone. Edward Elgar Publishing, UK. Published in association with the OECD.

Ofwat: Setting Price Limits for 2010 to 15: Framework and approach. 2009

Pegasys/ WRC 2009. Towards Water Resources Regulation in a context of Improved Water Resource Management in South Africa. Water Research Commission, Pretoria.

Pegasys/ WRC 2010. Water Resources Regulation Arrangements in South Africa: Institutional Criteria, Functions and Arrangements. Water Research Commission, Pretoria.

Piccioto and Campbell 2002: New Directions in Regulatory Theory. Piccioto , Sol and Campbell, David (eds). Blackwell publishing. 2002.

Principles for Economic Regulation, Department for Business Innovation and Skills, April 2011. http://www.bis.gov.uk/assets/biscore/better-regulation/docs/p/11-795-principles-for-economic-regulation

Reed 2001: Economic Change, Governance & Natural Resource Wealth – the Political Economy of Change in Southern Africa. Earthscan 2001.

Rees 1998. Regulation and Private Participation in the Water and Sanitation Sector. Judith A. Rees. July 1998. Global Water Partnership. Technical Advisory Committee (TAC). Available: www.gwpforum.org/gwp/library/TAC1.PDF. Accessed: August 2009

Rogers et al 2002: Water is an economic good: How to use prices to promote equity, efficiency, and sustainability. Peter Rogers, Radhika de Silva, Ramesh Bhatia. Water Policy 4 (2002) 1–17 Available: http://www.pacificwater.org/userfiles/file/IWRM/Toolboxes/financing%20IWRM/Water%20is%20an%20economic%20good_Rogers,%20de%20Silva,%20Bhatia_Water%20Policy.pdf Accessed: August 2009

Seekings 2007: Poverty and Inequality after Apartheid. CSSR Research. Working Paper No 200. Centre for Social Science Research. University of Cape Town. 2007

Solanes & Jouravlev 2007: Revisiting privatisation, foreign investment, international arbitration and water. Solanes M and Jouravlev A. Recursos Naturales e Infrastructura Serie 129. United National, Santiago, Chile. 2007

The draft National Water Services Regulation Strategy (DWA).

Thobani 1997: Formal Water Markets: Why, When, and How to Introduce Tradable Water Rights. Thobani WORLD BANK RES OBS.1997; 12: 161-179 Available: http://wbro.oxfordjournals.org/cgi/reprint/12/2/161 Accessed: August 2009

Tschumi P. and Hagan H. (Undated). "The Operational Guide for the Making Markets Work for the Poor (M4P) Approach", http://www.springfieldcentre.com/publications/sp0806.pdf

UN 2001: The Economic Regulation of Transport Infrastructure Facilities and Services: Principles and Issues. Economic and Social Commission for Asia and the Pacific, UN, New York. 2001. http://www.unescap.org/ttdw/Publications/TPTS_pubs/econregfulltext_2191.pdf

UNEP undated: Selection, Design and Implementation of Economic Instruments in the Solid Waste Management Sector in Kenya http://www.unep.ch/etb/publications/EconInst/Kenya.pdf accessed 19/08/09

Water Services Regulation Authority (Ofwat). Annual Report and Accounts 2010-11 (for the period 1 April 2012 to 31 March 2011.

Whitford 2007: Decentralized Policy Implementation. *Political Research Quarterly.* Salt Lake City. March 2007 Vol 60 Issue 1.

Wiener 1999: Global Environmental Regulation: Instrument Choice in Legal Context Author(s): Jonathan Baert Wiener. The Yale Law Journal, Vol. 108, No. 4 (Jan., 1999), pp. 677-800 Published by: The Yale Law Journal Company, Inc. Stable URL: http://www.jstor.org/stable/797394 Accessed: 16/07/2009 03:48

Legislation:

Constitution Act 108 of 1996.

National Water Act 38 of 1998.

Water Services Act.

Public Finance Management Act 1 of 1999.

Eskom Conservation Act 13 of 2001.

National Energy Regulator Act 40 of 2004.

Municipal Finance Management Act 56 of 2003.

UK

Water Industry Act of 1991.

Water Act, 2003.

Websites:

http://www.environment-agency.gov.uk/aboutus/default.aspx

http://www.ofwat.gov.uk/aboutofwat/

http://www.ccwater.org.uk/server.php?show=nav.435

http://www.environment.gov.au/water/australia/water-act/key-features.html

www.ipart.nsw.gov.au