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Neoliberalised Water in South Africa

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Neoliberalised Water in South Africa

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Abstract : This Working Paper explores the system of provision for water and sanitation in South Africa with particular reference to finance and financialisation. The country is extremely water stressed with low rainfall combined with water intensive energy and agricultural production. The supply of water is stratified according to function along the stages of the water “value chain”. Raw water is abstracted from surface or ground sources. In some cases this goes directly to end users or to bulk water boards which treat the water and transport it to end users and to Water Service Authorities, many of which are municipalities who then provide water to end users including households. Since the end of apartheid state investment has led to considerable progress in increasing access to water and sanitation to remedy the inequality that prevailed before 1994. However millions still lack access to basic services. Service delivery continues to be split along the racial (and/or parallel class) lines that dominated the apartheid era. There is a significant gap between policy rhetoric and outcomes in practice. Core policies such as cost recovery and decentralization are contradictory and contested in practice and the core objectives of equity and sustainability have been compromised as a result.

Key words: South Africa, water, privatization, financialisation

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1 Introduction

This Working Paper explores the system of provision (sop) for water in South Africa with particular reference to finance and financialisation as part of the South Africa contribution to Work Package 8 Task 6 case studies under the EU FP7 FESSUD grant (see Isaacs (2016) for the Working Paper exploring the South African sop for housing and more detail on the national context). The sop approach is based on the idea that sector outcomes emerge as a result of relations between agents which are themselves embedded in historically evolved social and economic structures and processes. This is in contrast with orthodox economic approaches which view the world in terms of deviations from an idealized, market-like state. Originally devised in connection with consumption studies, part of this FESSUD research programme aims to extend the sop scope to consider public sector systems of provision with particular reference to housing and water (for more on this see Bayliss, Fine and Robertson 2013).

One of the key principles of the sop approach is that consumption is not the spontaneous outcome of decisions made by rational individuals but is inherently linked to the production process in a vertical chain. Agents have diverse and often competing interests with settlements highly contested, and contestations continue to evolve. For the sop approach, each commodity has its own material culture which is unique in time and location. Outcomes are therefore context-specific and the analysis is anchored in the real world.

When it comes to the provision of water, there are material factors which shape its delivery and consumption. Water is heavy to transport and so is delivered by networks of pipes and pumps; supply is typically monopolistic; it is essential for all life and therefore there is a strong social element to the delivery system. When the geographical, historical and socio-economic context are added, the result is a sop that is unique to South African water.

Water production in South Africa is stratified according to function in a system which is widely known as the water "value chain" (see, for example, Treasury 2014a). This describes the stages by which water production is vertically segregated. "Raw water" is abstracted from surface or ground water. This can require pipes and pumps and dams or sometimes just uses a borehole. In some cases this goes directly to the end user (for example with some irrigated agriculture or large industrial users and mines) and much of it is consumed by bulk water boards (WBs) which treat and transport the water to some end users and to Water Service



Authorities (WSAs), many of which are municipalities who are responsible for provision to end users including households. This is in contrast with vertically integrated water providers, as for example in England and Wales. The delineation is not clear-cut with some WBs also providing some municipal services and some municipalities obtaining their own bulk water directly. However, this chapter, which explores the finance of the sector, is structured broadly along these lines.

As currently deployed, South Africa's water resources are barely sufficient to cover water needs. Low rainfall combined with water-intensive energy production and a high reliance on agriculture is placing the sector under enormous strain. Water resources are depleted further with pollution from mining and industrial production. Climate change is expected to shrink reserves still further. The country is significantly water-stressed with all resources used almost to the maximum.

Since the end of apartheid, state investment has led to great progress in increasing access to water and sanitation for black households and remedying the extreme inequality that prevailed before 1994. However, while significant progress has been made, millions living in rural areas and in informal settlements lack access to basic services. The allocation of resources in the sector still replicates the extensive inequalities that prevailed under apartheid. Service delivery in South Africa continues to be split along the racial (and/or parallel class) lines that dominated the apartheid era. Water is readily available for those that have money. Hence, mines owned by wealthy global shareholders sit next to slum shacks where households have little access to basic services.

There are three general themes that have shaped water policy since the end of apartheid. First there has been an emphasis on addressing the extreme inequality that dominated the apartheid regime. This has taken the form of government investment to roll out infrastructure to poor areas as well as policy initiatives to ensure that basic services are provided to the poorest. Second, policy is informed by a neoliberal ethos with an emphasis on cost recovery, on 'user pays' and 'demand management'. Scarcity, both in terms of water supplies and financing, inform this approach to sector policy. Water pricing is intended to reflect the economic value and shape resource allocation. Finally, services are intended to be sustainable and self-financing at a local level (except where poor communities cannot afford basic services, in which case government may subsidise construction but not the operation of



services). Decentralisation of responsibilities to municipalities is intended to devolve decision making to the local level to increase accountability.

In practice, these policies are contradictory and contested and the core objectives of equity and sustainability have been compromised as a result. The vertically segregated production structure combined with the philosophy of 'user pays' means that the large industries and mines that are able to use raw water and bulk water directly, do so at a lower price than households who are charged an additional mark up by their municipality. The additional costs of further treating and processing water are added to water bills. The resulting structure has a notional fairness on the grounds that costs are paid by the users of specific infrastructure investments. However, this system treats all users equally, putting mines and industry on the same footing as municipalities. The result is that households pay more for water than mining companies as they are more costly to serve.

In terms of sustainability, there are two major weaknesses in the municipal water system. First, low incomes constrain affordability. Research by the DWA confirms that in many municipalities, the water tariff is not affordable for most households. The result is that extensive indebtedness permeates the system. Households struggle to pay municipalities and these have high levels of debt owing to bulk water providers, some of which are close to collapse. Second, many municipalities do not have the capacity to manage water services with some operating in crisis mode. Decentralisation initiatives have not been matched with skills and resource transfer. The result is that government investment programmes are constrained by the inability of some municipalities to disburse government grants. The weakest municipalities are the most disadvantaged. Environmental sustainability is also threatened by weak state capacity and continued water intensive mining practices.

Private finance, let alone financialisation is not a directly dominant feature of the sop in South Africa, in that the financial sector is not heavily involved. Sector finance comes from the state via taxation, from end users and there is some private sector financing. Bulk water providers and some municipalities raise finance from the private sector with bond issues. A few municipalities have had concession contracts with private water companies for the management of municipal service but the private sector has little involvement in the sop at present.



This Working Paper shows that there is a continued gap between the rhetoric of policy and outcomes in practice. While great progress has been made in expanding the number of households connected to water services, millions have had their supplies disconnected for failure to pay. Meanwhile, higher end users face little sanctions for luxury consumption. The sector is undergoing considerable reform just now. The country's 12 Water Boards are being consolidated into nine Regional Water Utilities. The pricing strategy is being revised and infrastructure investment is being planned. There is awareness in the Department for Water Affairs (DWA) that after twenty years, the impact of sector policy on inequality has been disappointing. However, for new initiatives to have a significant impact on this, there needs to be more emphasis on integrated redistribution at the national level rather than just meeting the basic needs of the poorest.

The paper is structured as follows. The next section reviews the context of water provision in South Africa, looking at the geography and history of the water supply as well as the current legal framework. Section 3 provides an overview of water consumption according to different users showing that agriculture usage dominates but mining can have a significant impact on water quality. There are then three sections on water production which traces the different stages in the production process and the interface between them. Section 4 deals with the production of raw water, section 5, bulk water provision and section 6 turns to municipalities and their role in the water supply. Section 7 considers the nature of water consumption at the municipal level and impact of social policy in redressing inequality before section 8 concludes.

2 Context

2.1 Geography

The population of South Africa is about 53 million across the country's nine provinces. The most populated are Gauteng (24%), KwaZulu-Natal (19.7%) and Eastern Cape (12.5%).¹ The country is categorized as highly water-stressed,² with less water per person than neighbouring countries widely considered to be much drier, such as Namibia and Botswana (DWA 2013b). Water comes primarily from surface sources (77%) with 9% from ground water and 14% reuse of return flows. Desalination is used on a small scale by industrial and mining sectors (Hedden and Cilliers 2014). Average rainfall at 450mm pa is about 60% of the world's average (DWA 2013). The country experiences huge variations in temporal and spatial

distribution of rainfall (WWF 2014b). It also has one of the lowest ratios of mean annual precipitation (MAP) to mean annual run-off (MAR) in the world with only 9% of rainfall entering the rivers compared with a global average of 31%. Climate change threatens to exacerbate conditions further (DWA 3013c).

The country is close to the limit of water use with 98% of the country's water supply already allocated and shortages predicted in the future. The Department of Water Affairs (DWA) estimates a shortfall in the water supply of 1.7% by 2025 (WWF 2014a). Eleven out of 19 water catchment areas have a negative water balance. Many rural settlements have insufficient water to meet their basic water demands and more water resources are needed (DWA 2013).

The country's limited water supplies are further constrained by high levels of pollution and environmental degradation with 40% of fresh water systems in a critical condition (WWF 2014a; DWA 2013b, P.8). The main causes of pollution are mining (including coal mining), urban development (salinity, nutrients, microbiological pollution), industry (chemicals and toxins), agriculture (sediment, nutrients, agrochemicals, salinity through irrigation return flows) and untreated or poorly treated wastewater (WWF 2014b).

A further challenge to the already precarious situation is that what little water there is (relative to demand) is not found in the areas of highest usage. Economic development was driven by the presence of commodities such as gold, coal and diamonds so that urban development is not aligned with water availability. Gauteng Province, where the largest urban area, Johannesburg, is located, accounts for around 33% of the country's GDP and 49.6% of all employee remuneration in the country and accommodates just over a fifth of the country's population. But this region has fragile water resources. Gauteng Province is located on a watershed which means that outflows of wastewater pollute the water resources on which it depends (WWF 2014a).

Despite severe constraints, the country has managed to achieve a high level of water security relative to water availability due to engineering projects with a well-developed system of dams (both major ones and municipal and farm dams) as well as micro-level boreholes and small-scale irrigation schemes. There is an extensive water infrastructure which enables the country to manage long periods of drought (WWF 2014b) and dams divert water to where it is



most used. Gauteng imports 88% of its water from a series of complex transfer schemes (at considerable cost) and relies on water from Lesotho via the Lesotho Highlands Water Project (LHWP). The Project was launched in 1998 and in 2014 work began on Phase II which is due to be operational in 2022 (Africa Research Bulletin 2014).

2.2 Water policy

Before the end of apartheid in 1994, access to water was racially segregated and concentrated in the hands of the white minority population. At the end of the 19th century, most of the water used in South Africa was for white commercial agriculture. Water for irrigation was generally diverted directly from rivers since few dams had been constructed. Legislation protected the water rights of farmers located along the rivers. Expanding industrialisation led to the 1956 Water Act (Act 54) which was intended to ensure an equitable distribution for industrial and other competing uses and to authorise strict control over the abstraction, use, supply, distribution and pollution of water. With the expansion of mining post WWII, large inter-basin transfer schemes were set up including the LHWP (DWA 1994).

Under the apartheid system infrastructure investments served the white community while other areas were left to fend for themselves. Jurisdiction over water followed the geographical segregation of the regime. Commercial farmers were well served by the apartheid government and rights were primarily vested in riparian land holders. Meanwhile, a total of ten Bantustan or Bantu homelands were established where land was set aside for black residents. These were densely populated with high rates of poverty. Under apartheid, formal water authority was under the Homeland governments but tribal chiefs played an important role (Koppen et al 2002). In 1994, virtually 100% of the Indian and 99.9% of the white population had access to safe water. The figure for the coloured population was 95.4% while only 43.3% of the black population had access to safe water (DWA 1994 White Paper).

Water in black areas was under-resourced, in part due to non-payment. According to DWA lack of political legitimacy of the homeland governments, meant that it was impossible to enforce any tariff policy and so the homeland budgets became increasingly absorbed into the payment of operating subsidies. With inefficient management in the black townships, "the meager services which did exist in the townships could not survive the protracted boycotts which black civil society resorted to as one of the last remaining tools of resistance before the fall of apartheid" (DWA 1994, p.5).

With the election of the ANC Government in 1994 came national reform with the Reconstruction and Development Programme (RDP), described as (para 1.1.1) “an integrated, coherent socio-economic policy framework” which aims to “mobilise all our people and our country’s resources toward the final eradication of apartheid and the building of a democratic, non-racial and non-sexist future”. One of the key programmes of the RDP (para 1.4.2) was meeting basic needs including jobs, land, housing water, electricity, telecommunications, transport, health care and social welfare. Improving access to water was an important component of the RDP objectives of eradicating poverty and promoting sustainable economic and social development.

Water policy in 1994, was set out in a White Paper in light of the RDP. As with the RDP, the policy aimed to curtail the vast inequities of the apartheid era (DWAF 1994, p.1):

In a country with nuclear power, cellular telephones and vast inter-catchment water transfer schemes, more than 12 million people do not have access to an adequate supply of potable water...The goal of Government is thus to ensure that all South Africans have access to essential basic water supply and sanitation services at a cost which is affordable to both the household and to the country as a whole.

The White Paper continues (p.4):

This inequity in access to water has a simple origin. The public funds available for water supply development have been invested mainly to assure that bulk supplies are available to those who can afford to exploit them.

The 1994 water policy had eight policy principles: Development should be demand driven and community based; basic services are a human right; “Some for All” rather than “All for Some”; equitable regional allocation of development resources; water has economic value; the user pays; integrated development; environmental integrity (DWAF 1994, p.8).

The 1994 White Paper established some core principles in water policy that have continued for the past twenty years. First, the approach to equity took the form of meeting basic needs. The policy as set out in 1994 was to ensure that all South Africans have access to basic water supply and sanitation services within seven years or less. The White Paper provided a definition of a basic water supply: 25 litres per person per day (considered to be the minimum



required for direct consumption, preparation of food and personal hygiene – not considered adequate for full healthy and productive life which is why it is considered as a minimum). The maximum distance a person should have to cart water to their dwelling is 200 metres although this may be reduced in steep terrain. The flow of water should not be less than 10 litres a minute and should be available on a regular, daily basis.

Second, financial sustainability was a core element of policy. A key principle of the RDP was that services should be provided and paid for in a manner which does not require ongoing government funds. DWA (1994, p.18): “The basic policy of government is that services should be self-financing at a local and regional level. The only exception to this is that, where poor communities are not able to afford basic services, Government may subsidise the cost of construction of basic minimum services but not the operating, maintenance or replacement costs”. There was provision for subsidies to be made available to communities which cannot otherwise afford minimum services (p.18). They will only cover the cost of minimum service provision and will not cover operating and maintenance costs and the subsidy value will be determined by the actual cost of providing the service. Provision of services to lower income households is, then, separated as with the basic needs approach. This leads to a framework where those that can, finance their own services while those that cannot are to receive government subsidy.

Third, the idea of cost recovery pricing was emphasized, based on concepts of scarcity both in terms of finance (the government has not got enough funds) and water (economic pricing will mean that water use will reflect the true cost). In addition, cost recovery was built on the idea that people would have more interest in the welfare of a service for which they have to pay (DWA 1994, p.7):

an insistence that disadvantaged people should pay for improved water services may seem harsh but the evidence indicates that the worst possible approach is to regard poor people as having no resources. This leads to people being treated as the objects rather than as the subjects of development.

And later (p.22):

Communities must pay for their operating and maintenance costs to ensure both equity and sustainability. Where communities do not pay, and Government must cover



these costs on their behalf, the result is a rapid reduction in finances available for the development of basic services for those citizens who have nothing...if the community expects some outside agency to be responsible for keeping their supplies going, they will have no control over the processes and lose leverage and ownership.

Responsibility for keeping the service going is placed with a remote authority and accountability is lost. This will have an impact on the reliability of the supplies since the person who has to carry water everyday is likely to be far more interested in the sustainability of the village water scheme than some remote Government official.

Privatisation was not a core part of the 1994 policy although the envisaged institutional framework was one where the government was a facilitator rather than a provider of primary services. Government should "create an environment within which locally based organisations can plan, construct and manage their own services. These can include both local government institutions as well as specialized utilities operating on a commercial but accountable basis". There was a potential but unspecified role for the private sector: "The private sector represents a vast resource which must be harnessed to contribute to the implementation of this [water] policy in a variety of areas including: capital investment, operation and maintenance, training and capacity building, organization development, financing and commercial services".

The RDP was followed a couple of years later by the Growth, Employment and Redistribution (GEAR) in 1996 which was along more neoliberal lines.³ Following advice from the World Bank, the IMF and other donors (with heavy lobbying from water MNCs,) the South African government drastically decreased grants and subsidies to local municipalities and city councils and supported the development of financial instruments for privatised delivery.⁴ For McKinley (2005, p. 182), this "effectively forced local government to turn to the commercialization and privatization of basic services as a means of generating the revenue no longer provided by the state". In the late 1990s, some local governments began to privatize and/or corporatize public water utilities by entering into service and management partnerships with multi national water companies.

A revised White Paper on Water Policy in 1997 set out in more detail the principles of allocation. Water required to meet basic needs and maintain environmental sustainability will be guaranteed as a right while other water uses "will be subject to a system of allocation that

promotes use which is optimal for the achievement of equitable and sustainable economic and social development". The White Paper proposes (2.1.4) a reform to the water law as "the right to equality requires equitable access by all South Africans to and benefit from the nation's water resources, and an end to discrimination with regard to access to water on the basis of race, class or gender". A further White Paper in 2002 (DWA 2002) set out more scope for decentralization of service provision and government grants to support poor households and to provide for the Free Basic Water Policy including the Municipal Infrastructure Grant (MIG) and the Equitable Share Grant, discussed below.

2.3 Legislation

According to the Human Rights Commission, South Africa has one of the most progressive legislative and policy frameworks for basic services in the world (SAHRC 2014 p.28). It is one of the few countries where the right to water is enshrined in the national Constitution which reads (Section 27 (1) (b)): "Everyone has the right to have access to ... sufficient food and water". There are two core pieces of legislation which govern the provision of water. First, the ***National Water Act, 1998 (Act No 36 of 1998)*** is the main legal instrument relating to water resources. The Act creates a legal framework for the management of resources to include rivers, streams, dams and groundwater and this is the responsibility of the national government. The guiding principles (Chapter 1) are "sustainability and equity" in the "protection, use, development, conservation, management and control of water resources" The Act seeks to ensure that the country's water resources are protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all people and assigns the national government as the public trustee of the water resources (DWA 2013c). With the new law, the government abolished the former system of riparian rights and took over responsibility for water management and with the abolition of the Homelands, DWA's jurisdiction became national. According to van Koppen et al (2002), while the Act provides potentially for radical changes, achieving these depends on DWA's interpretation of the Act and in controlling water use by high volume users.

Second, the ***Water Services Act (1997)*** is the primary legal instrument relating to the accessibility and provision of water services and covers drinking water and sanitation services supplied by municipalities to households and other municipal water users. This is intended to secure the right of access to a "basic water supply and basic sanitation". The Act stipulates

that Water Service Authorities have a duty to ensure efficient, affordable, economical and sustainable access to water services for all consumers or potential consumers in its area of jurisdiction.

The elements of the 1998 NWA are implemented or operationalised via the country's National Water Resource Strategy. The first water strategy (NWRS1) was formulated in 2004. This has since been superseded by NWRS2 in 2013 (DWA 2013b). NWRS2 emerged as a result of the Government's 2010 National Development Plan (NDP) and outlines the strategy to meet the goals set in the NDP that are related to water, providing targets through to 2035. The overall objectives of the NDP are to eliminate poverty, deliver environmental protection and promote economic development by 2030. NWRS2 is centred on three main concepts (DWA 2013b, p.12):

- Water supports development and the elimination of poverty and inequality. This applies to equality in access to services, to resources and to benefits from water resources.
- Water contributes to the economy and job creation. The NDP has targeted the creation of 11 million jobs by 2030. Water is critical to such employment expansion across sectors.
- Water is protected, used, developed, conserved, managed and controlled sustainably and equitably.

According to NWRS2, equity is the one principle of the National Water Act that has not received adequate attention and little substantive progress has been achieved since the promulgation of the 1998 NWA (DWA 2012b, p. 45). However, as before, this is less about fair distribution than about covering basic needs: "The principle of equity means that special attention must be given to the needs of those that were historically denied access to water or the economic benefits of water". In part to address equity issues, the Water Allocation Reform (WAR) programme was established by DWA. Under the WAR, water can be set aside in a catchment for allocation to black and women users. Another element of the programme is compulsory licensing where all the water uses in an area are reviewed and water is reallocated according to specific imperatives, needs and requirements. Initial findings from the WAR programme indicate that allocations are still largely in the hands of the previously advantaged (DWA 2012b, p.46). Water allocations are tied in with the country's contentious land reform programme (see below).



The 2013 Strategy continues to place considerable importance on the economic value of water, at least when it comes to rhetoric: “the value of water resources must be recognized from an economic point of view and the social and environmental benefits of the resource: it is important that society recognizes determining the economic value of water, accounting for the use of water (for example household water supply and irrigation for agriculture) and the ecosystem services provided or supported by water resources” (DWA 2013b p. 43). This is however difficult to achieve in practice with competing uses for water and no obvious mode of evaluating these. What is the economic value of water for a household compared with water for a gold mine or for an ecosystem? In practice, the potential conflicts in these complex conceptual issues. For example, there is a drive for economic expansion in the NDP in order to create jobs for the relatively unskilled with structured redistribution. The NDP proposes expanding the mining sector and sees the agricultural sector as having the potential to create one million new jobs by 2030. This requires a 50% increase in land under irrigation. However, this proposed expansion of agricultural activity fails to recognise that there may not be enough water available to fulfill this goal (WWF 2014a; WWF 2014b).

3 Consumption by sector

Water in South Africa is an important resource for agricultural and industrial production as well as for household consumption. It is vital for sustaining livelihoods and promoting economic and social development. However, there is competition for access and consumption across sectors. Irrigated agriculture is the main user of water in South Africa, accounting for around 60% of use (**Table 1**). While mining, industry and electricity generation account for a smaller proportion, these are of major economic weight in the country and they also have a significant impact on water quality. Many (eg the UN, the FAO, the World Economic Forum) now talk in terms of a Food-Water-Energy nexus which recognizes that these sectors are interrelated.⁵Water production and distribution requires energy. Energy production requires water and food production mostly requires energy and water. In South Africa, this picture of interdependencies across sectors is complicated further by energy and agriculture being among the sectors which have most responsibility for water pollution in the country (WWF 2014a). The World Wildlife Fund (WWF) is concerned about the increasing water-allocation trade-offs between agricultural production, energy generation, industrial development and urban residential consumption.

Table 1: Proportional water use per main economic sector (%)

	%
Agriculture / irrigation	61
Municipal / Domestic	24
Industrial	3
Afforestation	3
Livestock and nature conservation	2.5
Mining	2.5
Domestic rural	2
Power generation	2

Source: DWA 2013b, p.9

South Africa's commercial agriculture production is heavily dependent on irrigation. Only 12% of the land is considered suitable for growing unirrigated, rain-fed crops. Irrigation accounts for 90% of vegetable, fruit and wine production. Although only 1.5% of the land is under irrigation this accounts for 30% of the country's crops. With limited arable land, the only way to increase the capacity of the sector is with irrigation. The NDP proposes a 50% increase in irrigated land at the same time as the DWA estimates a 1.75% water shortfall by 2025 (WWF 2014a). More intensive farming has led to pollution of ground and surface water, loss of biodiversity, loss of soil fertility and erosion (WWF 2014b). Decreased water availability leads to risks for irrigation and for the whole agro-industrial sector (WWF 2014a). Illegal water abstractions especially by irrigation farmers present serious problems in the sector (DWA 2013b p.72 and see below).

In 1994, almost 90 percent of the land in SA was owned by white South Africans who made up less than 10% of the population. Land reform has been one of the thorniest issues to address in improving equality in the country. Agriculture still continues to be dominated by large white-owned farms. However, as part of the drive to improve equity the most recent water strategy proposes equitable water pricing which includes financial support for water based rural livelihoods.

Mining and industry are key economic sectors in the country and are expected to drive economic growth. They require significant quantities of water. Resources are set aside for their use. Sasol, for example, a large energy and chemical company, depends on large volumes of water for washing, extraction and cooling during production processes. The South

African government allocates 150million m³ to the company every year, 120million m³ of which comes from the Vaal River, which provides water to Gauteng Province.⁶ Mining (particularly for coal and platinum) is expanding but these new mines are located in water scarce catchments (for example in the Lephalale and Steelpoort Valley areas). Water scarcity is said to be restricting the mining industry. Press reports indicate that mining companies are having to reconsider expansion projects and work on improving water efficiency because of water constraints in the country.⁷

Mining has been a major source of water pollution and is the main contributor to water quality problems (although much of the damage stems from a time when less stringent conditions were imposed on mine discharges before the promulgation of the National Water Act (DWA 2013b)). Acid mine drainage (AMD) has been reported in a number of areas in South Africa, including the Witwatersrand Gold Fields, the Mpumalanga and KwaZulu-Natal Coal Fields and the O'Kiep Copper District (DWA 2013 p. 9). More than 6,000 mines have been abandoned in South Africa with damage from acidic water requiring an estimated R30bn in clean up costs. Thousands of abandoned and derelict mine workings continue to pose a water pollution threat (DWA 2013). The notion of the polluter pays principle is difficult to apply when companies have left mining sites and/or gone bankrupt,⁸ and illegal miners continue to use disused mining shafts.⁹

Coal production, from mining through to power generation, requires vast volumes of water and puts high pressure on groundwater quality and quantity.¹⁰ South Africa is heavily dependent on coal, both for electricity production and for export. Coal accounts for 86% of electricity generation (WWF 2014a). Eskom, the state owned power utility which generates 92% of South Africa's electricity, uses around 270m m³ of water per year for power generation, which is about 2% of the country's total water consumption (WWF 2014b). The generation and power generation is regarded as a water use of strategic importance (DWA 2010; DWA 2013b). An elaborate and sophisticated network of water transfer and storage schemes has been developed specifically to support this sector and ensure high levels of reliability.



Eskom, is also committed to two new large coal-fired plants (Medupi and Kusile) to deal with South Africa's pressing energy needs. The capacity of these two plants is expected to be higher than the capacity of all the other coal fired plants currently in existence (WWF 2014b). Demand for South African coal is set to increase with expansion projects by Eskom and Sasol as well as exports of coal to India, China and the European Union.¹¹ New mines are rapidly being established and there is a high number of pending mining applications for new coal mines to satisfy Eskom's increased demand. Most of these mines are in the upper reaches of the Vaal River's catchment which supplies Gauteng Province. According to the bulk water producer for the region, there is a risk that this mining will "destroy the lifeline of Rand Water's consumers if pollution cannot be curtailed" (RW 2013 p.83).

While the DWA recognises that water scarcity is a challenge for energy production and recommends dry-cooling technology at new power plants, more could be done to shift reliance away from coal. According to the WWF, the DWA has failed to insist on a transition to water-free renewable technology "because electricity is seen as a high-value economic use of water, the allocation of water to Eskom's power station is considered as being of strategic importance and is an unquestionable priority" (WWF 2014b, p. 24).

Water quality has far-reaching effects. Declining quality is a major concern with potential adverse impact on food for domestic consumption and for export. Dangerous levels of water pollution can be disastrous and destroy local agriculture (taking jobs with it), drive up the cost of cleaning the water and increase demands on energy for water purification, and increase costs. "The most vulnerable will be the small-scale farmers who will be unable to install water-filtration devices and will have no option but to draw from increasingly polluted sources" (WWF 2014a p.25).

The WWF (2014a) provide the example of the Western Cape which accounts for 25% of the agricultural sector's total gross income and more than 50% of the exported produce of the country. During the 2004/2005 export season, production came under threat due to salinity, nutrient enrichment and microbial pollution of the Berg River. With water quality falling below the EU microbial standards for food production, overseas retailers threatened to cancel fruit imports. The potential loss of the export market is estimated at anything between R190m and

R570m. Municipal and provincial governments are now working to improve water quality in this catchment. If South African produce no longer meets international food-quality standards, there will be constraints on job creation in the agricultural sector and jobs will be lost (WWF 2014a).

4 Production of Raw water

Across the country, water management is the responsibility of one of nine regional Catchment Management Agencies (CMAs).¹² These are responsible for water resources in a designated Water Management Area (WMA) (**Figure 1**). The CMAs are in the process of being established. Only two are currently operational, with DWA managing responsibilities in the other seven until they are up and running. The CMA is required to devise a Catchment Management Strategy (CMS).

Figure 1: Water Management Areas in South Africa



Source: DWA 2013b

Raw water comes from surface and (under) ground sources and often requires infrastructure to be accessed (such as dams and boreholes). According to the DBSA Water Strategy (p.2), there are over 500 large dams and 25 existing inter-basin schemes in South Africa which enable the transfer of water from one catchment to another to align supply with demand.

Users of raw water include large industries, mines and irrigators that take water directly from surface or ground sources. Other users may take water to process and sell on, such as bulk water companies and municipalities. All water users are required to register with the Ministry. Each registered user is allocated a registered water use volume and is required to pay for raw water. To work out the charge, the total cost of activities is divided by the total registered water use volumes to reach a unit charge. This is multiplied by the registered water use volume to reach a billed figure for each user.

In 2013 the DWA brought out a draft revised pricing strategy for raw water (2013d). This strategy is underpinned by the following principles (p.2-3):

- *Economic development* – water is obviously important for this.
- *Enabling equitable economic development* – the pricing strategy is intended to support new economic development and promote national aims in this regard.
- *Social equity* – “The water use charges coupled to the granting of financial assistance will contribute to social equity and redress of the imbalances of the past, both with respect to

equitable access to water supply services through municipalities and water boards and direct access to raw water for resource poor farmers and tree growers.”

- *Ecological sustainability* – charges need to cover the management activities required to ensure maintenance of ecosystems.
- *Financial sustainability* – “water pricing must be based on sound business principles, recognising that where, for social equity, environmental or affordability reasons, water management cannot be sustainably financed from specific water users, the shortfall must be recovered from the fiscus or through cross-subsidisation”
- *Economic efficiency* – “In the context of water scarcity, ensuring an efficiency allocation of scarce water resources requires that the price of water is set to reflect its scarcity value, to ensure, firstly that water is conserved and secondly that some water used for low-value purposes is redirected to alternative high value purposes”.
- *Polluter pays and user pays* – polluters and users must pay for the costs of their water (taking into account the need for targeted subsidies where users or polluters are not able to afford the full costs of these.
- *Equity and affordability* – water use charges need to take account of this with respect to poor, marginalised and historically disadvantaged communities.

This pricing strategy moves on from the three principles that underpinned the original Water Act: sustainability, equity and efficiency. The revised strategy states that of all the principles that were enshrined in the original Water Act, the one that has been most neglected is equity. However there are tensions in these objectives for example there may be trade offs between water for economic development and equity. It is not clear how these will be addressed. The revised strategy proposes that raw water charges are allocated to end users which are grouped into the following categories:

- High assurance use
- Municipal (divided into metros, small towns and poor rural municipalities);
- Industry/mining;

- Agriculture (with some differentiation for poor farmers and tree growers);
- Stream flow reduction activities; and
- Hydropower.

The water users which come under the “high assurance user” category are assured a water supply which is equal to 99.5% which means that they should get their full supply of water for all but one year out of two hundred. Those in the high assurance category include Sasol and (probably) Eskom but details of these are not easy to find. The energy sector is a strategic water consumer requiring maximum possible assurance (DWA 2010 p.11). The price is structured so that it reflects higher supply security. Those in the high assurance bracket pay a higher proportion of costs. Municipal is in the same category as industry and mining in terms of supply assurance (and cost). These users have a higher assurance of supply than agriculture but less than that of the high assurance consumers (DWA 2013d, p.13).

The pricing of raw water covers the costs of abstraction, water resources management and infrastructure. Where they use water from a specific infrastructure scheme, users also pay a charge based on the cost of the scheme which is distributed among the registered users pro rata according to the amount of water they are licensed to use (see TCTA below). The price also includes a charge known as a “return on assets” but this is not a return in the financing sense so much as a charge to raise finance for future infrastructure development. The RoA is set to be replaced by a “Future Infrastructure Build Charge” (FIBC) which is a more accurate description of the nature of the charge. There are proposals also for a Basic Human Needs Water Resources Charge (BWC) in raw water pricing which will be calculated on the basis of the volume of water required in a municipality to provide 50 litres per person per day for the indigent population according to the Stats South Africa figures. This charge would be calculated on a national basis so the total national cost of such provision will be divided by the total national municipal volumes and then allocated across municipalities, to be paid by municipalities or by Water Boards that supply municipalities. There are provisions for poorer municipalities to pay a smaller percentage of this charge with the balance is paid by the state budget (DWA 2013d, p. 12).

The current pricing strategy includes caps on raw water charges for some types of consumer, notably irrigation. The revised strategy proposes that these subsidies are better targeted, and



that they should include support for “resource poor farmers”, for commercial farmers, for the BWC shortfall and for the backlog in infrastructure refurbishment. These subsidies, instead of taking the form of lower water charges will be funded from general taxation (DWA 2013d, p.18).

Charges are scheme based.¹³ So an average tariff is charged at the scheme level. For example, water use from an interconnected infrastructure such as the Western Cape system, which serves the City of Cape Town, is charged at a flat rate for the scheme. Here, all users that draw water from an interconnected system would pay the same charge in terms of both the infrastructure and WRM charges. New infrastructure costs are allocated across the whole system rather than just paid by new users. Agricultural users pay irrigation raw water tariffs.¹⁴

There are considerable challenges in applying the principles of raw water pricing in practice. As mentioned above, some users take priority over others. The high assurance users pay for a more secure supply. This may mean that economic power carries more weight than equity in water distribution. And on a practical level, the allocation of charges is based on licensed rather than actual consumption. Consultants Pegasys (2013), in their review of the sector, recommend that this system is replaced with a metering system and there are regulations under development that will require compulsory metering or measurement for raw water users in order to have an accurate account of the nation's water resources and consumption (Pegasys 2013 p.5). But there are challenges in metering raw water due to the cost of installing meters and because some infrastructure, such as boreholes, is impossible to meter (Pegasys 2013).

Many water users take water directly from ground and surface water sources, and there is a problem with illegal abstraction. The DWA has environmental inspectors (known as the ‘Blue Scorpions’) to enforce compliance with water-use licenses although their effectiveness is called into question in the media.¹⁵ The WWF is also concerned about illegal abstraction: “In many cases poor water resource management is not due to the lack of adequate policies but rather to poor implementation and enforcement. Inadequate enforcement of the National Water Act means that South Africa's already stressed resource is further compromised” (WWF 2014a, p.23).



According to NWRS2 (p.63), national water infrastructure refers to schemes that are of wider importance than local schemes because they transfer water across national boundaries or between management areas, serve multiple use sectors or large geographic areas, comprise several interconnected catchments or serve a strategic purpose such as the generation of electricity for the national grid. This is managed by two entities: TCTA and the Water Trading Entity.

4.1 Trans Caledon Tunnel Authority (TCTA)

The biggest infrastructure project in the country and in the region is the Lesotho Highlands Water Project (LHWP) by which water is diverted from the Kingdom of Lesotho to supply Gauteng Province. The project transfers water from Lesotho via a series of dams and transfer tunnels using associated power stations. The project is governed by a treaty between South Africa and Lesotho. TCTA, state owned enterprise, is the implementing authority for the South African side of the project.

Initially the project was financed using the public budget but, in 1986, the TCTA was established to seek alternative funding for LWHP. TCTA now arranges financing for other large raw water infrastructure projects in the country. While LWHP provided the original mandate for TCTA, the organisation now has a further 15 directives including providing advisory services to water boards (Annual Report 2014). The TCTA 2014 Annual Report lists an extensive range of projects which include large-scale construction (such as the LWHP, Berg Water Project, Olifants River Water Resources Development Project, the Mooi-Mgeni Transfer Scheme Phase 2) and advisory (for example to Umgeni Water) activities.

Mostly, TCTA's role is restricted to arranging funding for projects that can recover their costs directly through charges to end users, so this is only used for projects that are considered "economically viable" (DWA 2013b). This is described as "off-budget" financing. Before capital can be raised in this way, off-take agreements must be signed by the commercial recipients of the water, specifying the amount they will take at a price set for the duration of the project. Capital investment requires prior negotiations with future users before a project can start. All projects are ring-fenced and there is no cross subsidisation (Pegasys 2012, P.48).

The first TCTA project (the LWHP) was backed by an explicit government guarantee on debt. Subsequent projects rely on implicit guarantees where TCTA debt appears on the state's

national balance sheet as a contingent liability. DWA signs an income agreement with the TCTA which provides an implicit guarantee and this reduces the risk for TCTA investments.

TCTA raises financing via issuing nominal debt in the South African capital market, long-term loans from local banks and loans from local and international development financial institutions. TCTA liabilities include bonds, CPI-linked bonds, commercial paper, fixed rate loans (local), fixed rate loans (foreign), variable rate loans (local), trade and other payables (TCTA AR 2014, p.154) and these are attached to each project. There is little foreign financing (less than 2% of the entire project financing). Domestic finance is accessed via a 'commercial paper programme' and other loans. TCTA also borrows from DBSA and EIB for some projects (including LHWP). TCTA is not completely financially independent. In 2013/14, TCTA obtained around 87% of funds from tariffs (down slightly from 89% in the previous year) with the balance received from DWA transfers (TCTA Annual Report 2014).

TCTA pays construction, operating and finance costs for the infrastructure projects. Funds are repaid via a Capital Unit Charge (CUC) which is then billed and collected from users by DWA and then transferred to the TCTA (Pegasys 2012, p.37, DWA 2013d). Charges are set at a rate that will repay the debt while ensuring long-term stability of charges. As debt is repaid, new projects can be undertaken (Pegasys 2012, p.49). TCTA does not make profits. Charges to end users are those of actual costs incurred. Surpluses are accumulated as changes in equity but TCTA does not pay dividends.

A tariff structure is established for each project which is aimed to ensure break-even revenue with regard to costs over a specified period. According to the TCTA Annual Report, key principles applied in determining an appropriate tariff structure include: end user affordability, predictability and constant tariff in real terms. It is beyond the scope of this research project to determine whether the detailed pricing structure is in practice able to match these principles but there is potentially considerable ambiguity, for example, in accounting for historical costs.

TCTA uses derivatives to hedge risk exposure which is mainly risk of changes in foreign currency exchange on the repayment of foreign loans and interest rate changes. A proportion of TCTA borrowings is at a fixed rates of interest and the proportion varies from project to project. TCTA tries to mitigate against the credit risk associated with derivative instruments

by negotiating agreements with “various market-makers” (TCTA Annual Report 2014, p. 177). The financial activities of TCTA are for risk mitigation rather than financial speculation.

The TCTA financing structure means that the costs incurred in financing infrastructure are passed on directly to the users. The TCTA website provides two reasons for financing works off-budget:¹⁶

1. To ensure that the cost of the infrastructure is paid for by the benefitting end consumer and not by the entire tax base; and
2. To reduce government borrowing requirements

This is based on the principles of user pays and cost recovery so that those that use the infrastructure are the ones that pay for it and full costs are recovered. The consumers of TCTA water include mines, industry, farmers and water boards. Costs are shared among these. But these are different kinds of consumers. Water boards do not consume water like the other categories. They treat and process water before selling it on, also to mines and industry but mainly to municipalities. These then provide water to households. At each stage of production there are additional costs and prices increase, as this paper shows. The effect then of this approach to raw water pricing is that those that consume bulk water at an early stage in production pay a lower price than those at the end of the value-chain which is where households are located.

Substantial further investment is required in the water sector. According to NWRS2 (DWA 2012b p. 84), capital investment in new water infrastructure and refurbishment is projected to require an estimated R700 billion over the next 10 years (R70 billion a year) compared with the current amount of R30 billion a year. The Strategy envisages mobilizing private sector finance for the “economically viable portion of water resource development; that is water supplies to users who can afford to repay loan finance, such as industries, mines and power generation and domestic users receiving high levels of water services” (NWRS2 DWA 2012b, p. 86). This approach which largely by-passes government spending (although there are some DWA transfers) also means that wealthy (‘economically viable’) users do not have to engage with government financing but are encouraged to contribute to separate private financial structures. While the Strategy includes a social element, this is limited to *encouraging* the private sector to contribute towards the social component of infrastructure investment where

they use water from the same infrastructure. So, mines will be “encouraged” to invest a portion of their corporate social investment obligation in water infrastructure for the benefit of the communities from which they draw their labour force but presumably encouragement is not legally enforceable. This approach to financing is in contrast to the integrated pooling of finance observed elsewhere, for example in vertically integrated water utilities.

4.2 Water Trading Entity

While the TCTA manages off-budget national infrastructure, the Water Trading Entity (part of DWA and formerly the Water Trading Account) is the means by which the government finances water and sanitation (Treasury 2014a). Funds for the WTE come from revenue that is generated from raw water charges and it gets some government funding via the National Water Resource Infrastructure Programme. The water resources management charges cover the operational costs of all water management areas (DWA 2013c). This is known as on-budget financing and is the government budget complement to the off-budget financing provided by TCTA. In 2006 it became the WTE and was intended to manage the recovery of usage costs to ensure the long-term sustainability of the country's water resources (DWA 2013c).

The WTE has two components (DWA 2013c): water resources management which manages water quality, conservation and allocation of water through CMAs (and through proto CMAs located in regional offices where these are not yet established) and infrastructure management that oversees the operations and maintenance of existing water infrastructure as well as the development of new infrastructure.

The WTE provides budget finance to national water resources. It maintains and funds new infrastructure for bulk raw water such as dams, canals and reservoirs. The WTE also provides finance for regional bulk infrastructure and support for local government to manage water services. The WTE fund transfers are based on claims made by the WTE to the DWA. Around 86% of the funds transferred are for infrastructure development with the balance spent of operational costs of the WTE and servicing loans for Komati River Basin for the Driekoppies and Maguga Dams situated on the borders of South Africa and Swaziland (Treasury 2014a).

The WTE is not at present recovering costs so is not breaking even. In part this is related to the lack of cost recovery for municipalities and water boards (see below). However, financial management weaknesses persist within WTE including incomplete and inaccurate database



of registered and licensed water users; inaccurate or absent water meters; inaccurate and out of date billing information and non-enforcement of obligations to pay due to failings in debtor management (DWA 2012b p.86). According to the NWRS2, it is recognized that the WTE is not the most appropriate or efficient institutional arrangement for managing national water infrastructure and there are plans to establish an alternative National Water Resources Infrastructure institutional model for developing, financing and managing national water infrastructure (DWA 2012b, p. 59).

4.3 Government grants

In addition to the national infrastructure entities (WTE and TCTA) there are some smaller government grants to develop infrastructure required to connect or augment a water resource to infrastructure serving extensive areas across municipal boundaries or large regional bulk infrastructure serving numerous communities over a large area within a municipality. For example, the Regional Bulk Infrastructure Grant (RBIG) was established in 2007 providing up to R5,738bn over six years from 2007/08 to support capital funding for the social component of new bulk infrastructure. Other grants for the sector are discussed below.

5 Production – bulk water

South Africa currently has 12 Water Boards (WBs) and these are responsible for bulk potable water supply schemes, buying raw water and selling water to municipalities and industries. They also operate some retail infrastructure and wastewater systems (DWA 2013). A WB may serve several municipalities and it will operate a number of water infrastructure “schemes.” Water produced by bulk water providers is then distributed to Water Management Institutions (WMIs) which may be Water Service Providers (WSPs) or a local municipality.

These WBs are independent state entities and the government is the sole shareholder. According to the 1994 White Paper, the WBs are expected to be run on a self financing, non-profit basis as independent financially viable institutions. The 1997 Water Services Act sets out the primary activity of WBs which is to provide water services to other water services institutions within its service area (para 29). WBs set and enforce general conditions including tariffs. They are required to prepare a policy statement and an annual five-year business plan. Section 34 (1) reads “...a water board must achieve a balance between –

- (a) striving to provide efficient, reliable and sustainable water services;
- (b) optimally using available resources;
- (c) striving to be financially viable;
- (d) promoting the efficiency of water services authorities;
- (e) taking cognizance of the needs of water services institutions, consumers and users;
- (f) taking into account national and provincial policies, objects and developments;
- (g) acting in an equitable, transparent and fair manner;
- (h) complying with health and environmental policies; and
- (i) taking reasonable measures to promote water conservation

So, while WBs are encouraged to be financially independent, the Act acknowledges that there are policy trade offs. WBs are largely self financing but some receive government subsidies and some raise debt finance. In practice, WBs vary greatly in their size and in technical and financial capacity and this in part derives from the area which they serve. Rand Water, which covers the economically active Gauteng province, is as large as all the other WBs put together (Pegasys 2012, p. 48) and has consistently made a surplus and has accumulated reserves. Similarly, Umgeni Water which serves Durban and the rest of KwaZulu-Natal has made a profit for the past five years (Umgeni Annual Report 2014). Other regions and WBs are less prosperous and rely on government support. Botshelo Water which provides water services to schemes in areas of the North West Province which were previously under the homeland of Bophuthatswana receives almost 73% of total subsidies disbursed by the DWA (DWA 2014).

Rand Water and Umgeni Water issue bonds on the capital markets.¹⁷ Others borrow from banks. Mhlathuze Water 's main credit facility is with ABSA Bank.¹⁸ In 2002 the Treasury issued guidelines limiting the borrowing powers of Water Boards and they need to obtain National Treasury permission if they wish to exceed their borrowing limits. The aggregated debt:equity levels have been reduced from 175% in 2004 to around 50% in 2011. Aggregate long-term debt has decreased from R7bn to R3bn between 2004 and 2011 while equity levels have almost tripled over the same period. This is mainly attributable to Rand Water and

Umgeni Water reducing their debt levels substantially (Pegasys 2012). While financialisation is not deeply embedded in the sector, a review by SALGA in 2013 indicated that a number of WBs were seeking prices to provide a higher net profit margin than previously. The justification for a higher margin is the need to obtain or maintain a minimum interest rate cover to satisfy lenders (SALGA 2013, p.8).

5.1 Bulk water tariffs

WBs set their own tariffs and requests for tariff increases are reviewed by the Treasury under the Municipal Finance Management Act (MFMA 2003). They are required to consult with the municipalities on proposed increases. However, at a meeting of the Parliamentary Monitoring Group (PMG) in 2013, the South African Local Government Association (SALGA) felt that some WBs had not fulfilled their requirements in this regard.¹⁹

The tariffs charged are based on the input costs. WBs charge a flat fee across all users which includes charges for raw water, electricity, chemical treatment, labour and capital investment. For example Umgeni Water raw water costs increased sharply to cover the Capital Unit Charge for the Spring Grove Dam in 2012.²⁰ However, there is no consistent policy for the setting of bulk tariffs. And there are some state subsidies available for bulk water via the Regional Bulk Infrastructure Grant so it is not clear to what extent the tariffs reflect costs.

Table 2 shows the bulk water tariffs for 2013/14 for the 12 Water Boards. There is considerable variation with Amatola Water the highest and twice the price of the Mhlathuze Water tariff.

Table 2: Bulk Water Tariffs 2013/14

	R per m ³	US\$ per m ³
Amatola Water	7.55	0.69
Bloem Water	4.37	0.40
Botshelo Water	5.71	0.52
Bushbuckridge	4.37	0.40
Lepelle	4.50	0.41
Magalies	4.65	0.42
Mhlathuze	3.35	0.31
Overberg	7.00	0.64
Pelladrift	3.20	0.29
Rand Water	5.52	0.50

Sedibeng	7.17	0.65
Umgeni	4.70	0.43

Source: DWA 2014

WBs are largely reliant on revenue from the sales of water. Debt collection is a major concern for most WB. The financial sustainability of some is threatened by the high value of amounts owed by municipalities. According to Sigwasa (2011), total arrears for municipal debt amounted to 10.5% of total sales. **Table 3** lists the WBs and shows the province where they are located (although the geographical boundaries of the WBs go across provinces).

Table 3: Municipal debt owed to Water Boards - December 2011

Name of Water Board	Province	Outstanding Balance (Rm)	Converted to US\$m ²¹	Debtor days*
Amatola Water	Eastern Cape	15.9	1.9	125
Bloem Water	Free State	75.7	9.3	52
Botshelo Water	North West	81.1	10.0	474
Bushbuckridge Water	Mpumalanga	255.3	31.6	289
Lepelle Northern Water	Limpopo	325.9	40.2	-
Magalies Water	North West Gauteng	20.7	2.6	97
Mhlathuze Water	KwaZulu-Natal	7.6	0.9	37
Overberg Water	Western Cape	0.9	0.1	79
Pelladrift Water	Northern Cape	0.3	0.04	-
Sedibeng Water	Free State North West	553.3	68.4	379
Rand Water	Gauteng	626.9	77.5	37
Umgeni Water	KwaZulu-Natal	156.4	19.3	40
TOTAL		2,120.3	262.1	

Source: Pegasys 2012 *DWA 2014

Table 3 shows the amounts owed to WBs by municipalities in 2011. Total municipal debts amounted to around US\$262m. However, the absolute value of debts does not necessarily indicate the financial health of the WB. Rand Water has the highest amount outstanding, but debtors' days (which measures how long it takes to collect cash from debtors) are among the

lowest. Meanwhile other WBs have a more problematic debt profile (Amatola, Sedibeng Botshelo, Bushbuckridge and Lepelle (Haswell 2012).

In addition to the high levels of unpaid municipal bills, the financial sustainability of WBs faces challenges from customers obtaining water from other sources. Amatola WB for example, sells more than 70% of the water to one customer - Buffalo City (East London) and there is a risk in that Buffalo City is reducing demand from Amatola Water Board and planning to increase its own supply (DWA 2014). Similarly, around 77.1% of the sales of Umgeni Water are to the Durban water utility, eThekweni. Future sales for Umgeni are predicted to drop in 2019/20 as a result of the commissioning by eThekweni Municipality of their own wastewater reuse plants.²²

Rand Water has started taking over the operations of the poorly performing WB Bushbuckridge as part of sectoral reform. The 12 existing WBs are in the process of being consolidated into nine Regional Water Utilities (RWUs) so some are in the process of being 'de-established.' The RWUs are to be operational by 2015, according to the provisions of the NWRS2. They will manage bulk water services and bulk sanitation for wastewater treatment (DWA 2014).

5.2 Rand Water

Rand Water is by far the biggest WB in South Africa and the largest utility in Africa, supplying Gauteng and parts of the Free State, Mpumalanga and the Northwest province (RW 2013). The Rand Water supply area generates 60% of South Africa's GDP and 10% of the whole continent's GDP (Rand Water 2013, p.83). The WB's primary function is the abstraction, purification and distribution of bulk potable water which is almost all from the Vaal dam which it pumps to booster pumping stations and from there to reservoirs and to customers. Rand Water (like all the WBs) is owned by the Government of South Africa through the DWA and this relationship is governed by the provisions of the 1997 Water Services Act. The Board is appointed by the Minister for Water Affairs.

The main source of income for Rand Water is from the sale of bulk potable water to local municipalities. Approximately 90% of the Group's revenue is attributable to sales transactions with six major customers (RW 2013). Rand Water lists its customers as follows: three out of the country's eight metropolitan councils (Ekurhuleni Metro, Tshwane Metro, which includes

Pretoria, and Johannesburg Metro), 15 municipalities, the Royal Bafokeng administration, 45 mines and approximately 771 industries and direct consumers²³ and see **Table 4**.

Table 4: Rand Water customer base

Customer	%
Greater Johannesburg Metro	35
Ekurhuleni Metro	24
Tshwane Metro	15
Emfuleni Metro	6
Other Municipalities	11
Mines	4
Industries	2
Non-potable water	3

Source: Critchley 2014

Rand Water recovers all operational costs, as well as some rehabilitation and replacement projects, from the tariffs set and internally generated funds. In 2012/13, the tariff increased by 11.3% (RW 2013, p.169) compared with a CPI rate of inflation of 5.5% in October 2012.²⁴ The main costs drivers are raw water and energy costs. Rand Water funds its capital expenditure programme through internal resources (accumulated profits and cash reserves). Additional funding requirements are met through the raising of funds in the debt capital market and other external sources (RW2013 p.34). The company has accumulated reserves in 2014 of R9750 million (USD843million). In 2013, RW's gearing (debt to equity) level was 22%, up from 20% in 2012 and 14% in 2011 and significantly below their target of 50% reflecting substantial capacity to fund future spending (RW 2013, p.170). The company has a stand-alone credit rating of BBB+ which is better than that of its shareholder, the Republic of South Africa. The replacement asset value is estimated to be R80bn and at least 60% of this is located in pipeline infrastructure (RW2013).

In common with the other WBs, Rand Water has a big problem with unpaid bills. In 2012, outstanding debts amounted to around US\$75m (R831m) (RW 2013). However, debts are recovered relatively quickly (**Table 3**) and the company is regarded as being in "an excellent financial position, which is not surprising as it is serving the most economically well off part of South Africa" (DWA 2014 p.13).

6 Production municipalities

6.1 Overview

Water is provided to end-users by Water Services Authorities (WSAs) (that is if the end user does not obtain raw water directly or bulk water direct from a WB). A WSA is defined as “any municipality responsible for ensuring access to water service”²⁵ including a district or rural council as defined in the Local Government Transition Act, 1993 (Act No. 209 of 1993). The country has 152 WSAs (**Table 5**). Municipalities receive water from Water Boards and they also have their own dams, boreholes and springs, water treatment plants and waste water systems. There are three classifications of WSA. **Table 5** shows distribution of the 152 WSAs in the country, eight of which are classified as metros.

Table 5: Water Service Authorities by province

Province	District Municipality	Local Municipality	Metro	Total
Eastern Cape	5	9	2	16
Free State	0	19	1	20
Gauteng	0	7	3	10
KwaZulu Natal	10	3	1	14
Limpopo	4	7	0	11
Mpumalanga	0	18	0	18
Northern Cape	0	27	0	27
North West	2	9	0	11
Western Cape	0	24	1	25
Total	21	123	8	152

Source: DWA 2013 Strategic Overview of the Water Sector in South Africa 2013

WSAs are able to subcontract water services to private providers. However privatization has not been widespread. Despite the legislative commitment of the ANC to commercialization and privatization of water after taking office (McDonald and Ruiters 2004), and extensive pressure from donors and private companies, there is now little private sector involvement in municipal water. Some contracts have expired and others were terminated early. Three

contracts signed in the Eastern Cape in 1999 were either terminated or not renewed (Ruiters 2004). Johannesburg had a management contract with French multinational, Suez for five years from 2001 but this was not extended when it expired in 2006. There are some BOT contracts, for example with WSSA, but mostly the provision of water is under the control of municipal government.

The two long-term contracts still remaining have been consolidated into a single owner. In 1999 the Nelspruit Local Authority contracted UK firm Biwater to provide water services for 30 years in the Greater Nelspruit Water Concession, the first of its kind in the South African water sector. While the contract has led to increases in investment and access, it was initially unpopular due to strong payment enforcement practices in low-income areas (Smith et al (2004). Also in 1999 Siza Water Company owned by French company Saur, was awarded a concession contract to supply water in Dolphin Coast for 30 years, buying bulk water from Umgeni Water. Initially the contract was not profitable due in part to the poor state of existing infrastructure and lower than expected demand. More recently, a growth in residential and business property in the area has increased profits and the contract is stable. Both of these concessions were taken over by Cascad in 2007 which was in 2012 bought out by Sembcorp, a Singapore based global conglomerate 49.5% of which is owned by Temasek Holdings, an investment company owned by the Government of Singapore, and 50.5% of which is publicly listed. The Greater Nelspruit Utility Company is now known as Sembcorp Silulumanzi and water services in Dolphin Coast are now provided by Sembcorp Siza Water Ltd.²⁶

Even where activities are delegated to a WSP, the WSA retains responsibility for the provision of water. WSAs are required to develop a five year Water Services Development Plan (WSDP). This must show how the WSA will provide universal access to water services including the eradication of historical backlogs within its area of jurisdiction and the WSA must report annually on progress with regard to the WSDP (DWA 2013). The DWA monitors the performance of WSS with a Municipal Strategic Self-assessment (MSSA) to check the "overall business health of a municipality / WSA and identify key areas of vulnerability". Sixteen key areas of service performance vulnerability within a WSA are assessed including infrastructure management, drinking water quality, revenue collection, and customer care (DWA 2013, p. 34).



6.2 Municipal Finance

Water is just one of several services provided by municipalities. The municipality's accounts present bulk purchases of water and electricity as cost items along with other expenditures and sales of electricity and water come under the "income" heading for the municipality (see for example SSA 2014a). Water charges go into the general finance pool for municipal revenue, and service costs come out of the general expenses. So the delivery of water and electricity and other municipal services can subsidise one another. Municipal finance for water and sanitation comes almost entirely from government grants, from borrowing and from end users. Each of these is discussed below.

6.2.1 Central government grants

Municipalities are supposed to charge 'cost reflective' tariffs for water but central government funds are targeted at service delivery for poor households through a mixture of equitable share and conditional grant funds (Kenyon 2013). The DWA's total budget increased from R10.2bn in 2013/14 to R12.4bn in 2014/15 and R15.5bn in 2015/16, boosted by several water infrastructure improvement and rejuvenation programmes. These are part of the country's National Infrastructure Plan announced in 2012 which sets out nineteen Strategic Integrated Projects (SIPs). Water and sanitation come under SIP 18 which aims to "address the estimated backlog of adequate water to supply 1.4m households and 2.1m households to basic sanitation."²⁷ As part of SIP 18, in 2013 it was announced that the DWA was to roll out R4.3bn as part of its Interim Water Supply Programme (IWSP) aimed to address the backlogs in municipal water-related service delivery. This was to be funded via the Municipal Water Infrastructure Grant (MWIG) which was introduced in 2013/14.²⁸ This is distinct from the Municipal Infrastructure Grant (MIG) which was approved in 2003 and aims to provide all South Africans with a basic level of services and which also includes R7.1 billion for water and sanitation (Kenyon 2013).

The MWIG, introduced in 2013/14 is a conditional grant in the sense that it is targeted specifically at expanding the reach of the network to unconnected, low-income households and businesses that serve low-income communities (SAHRC 2104 p.56). The MIG aims to support the planning, acceleration and implementation of various projects that will ensure that water is supplied to communities identified as not receiving a basic water supply services, particularly those in rural areas. The aim is to focus on the 24 district municipalities with the highest backlogs. Projects must be identified by municipalities and form part of their



Integrated Development Plan And Water Services Development Plan (DWA 2013a). However, in July 2014 it was reported that municipalities had been under-spending on the MIG – discussed below.

The Equitable Share Grant (ESG) in contrast to the MIG and MWIG, is an unconditional grant. It is based on the idea from the Constitution that each sphere of government – national, provincial and local – is entitled to an equitable share of revenue raised nationally to enable it to provide basic services and perform its functions. Since 1998, the equitable division of revenue takes into account the functions assigned to each part of government and its capacity to self-finance through its own receipts and revenues. The equitable share is an unconditional allocation in that local government determines how it is spent compared with conditional grants which are attached to specific policies and programmes of national departments.²⁹

A revised formula for establishing the Equitable Share was proposed in 2013. In discussions of the Parliamentary Monitoring Group in February 2013, the new formula proposed was to provide a subsidy amount for each poor household (below a specified income threshold) to provide water, sanitation, refuse removal, energy and included an amount of 10% to cover maintenance. Allocations were based on the number of households and the grant is to be adjusted to take account of the revenue-raising capacity of municipalities. The impact of the new formula is to increase the proportion of the Equitable Share going to rural areas and municipalities. However, in discussions in Parliament, one of the significant issues discussed was that within some municipalities there are highly unequal distributions so they have high levels of both wealth and poverty and there is questionable scope for monitoring the way in which municipal governments delivered their Equitable Share.³⁰ In addition, this grant is not monitored and there are concerns that where municipalities face financial difficulties, they use the equitable share for other expenses and then they do not have the funds to pay WBs (Sigwasa 2011).

Other grants related to water include the Urban Settlements Development Grant, the Rural Households Infrastructure Grant, the Water Services Operating Subsidy and the Regional Bulk Infrastructure Grant (see Kenyon 2013 for more details). The recent expansion of grants to municipalities comes in the wake of a period of declining local financing. According to Bond



(2014b), after 1994, there was a rise in national funding made available for capital expenditures on basic services. This included a World Bank designed capital grant including hook ups to the water and electricity grids. But in the initial post-apartheid period this occurred alongside a dramatic decline in operating and maintenance grants for municipalities. So this is where decentralisation of state services translated into “unfunded mandates” where the “central government commands that municipalities do more things with fewer resources” (p.7).

6.2.2 Borrowing

WSAs are separate from the municipality but come under the control of the municipality. For example, Johannesburg Water (JW) is owned by the City of Johannesburg (CoJ) which is its only shareholder. Hence, financing for infrastructure development occurs at the level of the municipality. Several pieces of legislation govern aspects of municipal borrowing, notably the MFMA and its debt disclosure regulations as well as the PFMA. Section 45 of the MFMA allows municipalities and municipal entities to incur short-term debt for bridging finance for operational purposes only. This has to be recovered within the financial year in which the debt is incurred. According to the National Treasury expenditure report, short-term debt accounted for 6% of total municipal debt in 2010 - 70% of this being in the form of commercial paper.³¹ This is a change from three years earlier when most short-term debt was simply in the form of overdrafts. Section 46 of the MFMA permits long-term debt for capital expenditure or the re-financing of certain existing long-term debt. The Treasury Expenditure Review reports that long-term loans amount to approximately 64% of total local government debt.

Since 2004 the municipal bond market has expanded significantly due to the need for the metro cities to finance large-scale infrastructure projects. Municipal bonds have been issued by the cities of Cape Town, Johannesburg and Ekurhuleni and in 2013 the City of Tshwane raised R1.39bn in its debut bond issue to finance capital investment.³² The City of Johannesburg has successfully launched seven municipal bonds (**Table 6**). The City, as a Government entity issues the bonds to the public, guaranteeing to pay interest (coupons) at set periods and to repay the principal on a specified date. A total of over R8bn has been raised via bond issues by the City (**Table 6**).

Table 6: Bonds issued by City of Johannesburg

	Maturity Date	Spread at Issuance	Coupon (%)	Volume Issued to Date (Rm)	Govt Bench-mark	Current Spread
COJ01	13-Apr-10	230	11.95	1,000	153	<i>Matured</i>
COJ02	15-Sep-16	164	11.90	1,000	157	250
COJ03	26-Apr-13	154	9.70	700	157	135
COJ04	5-Jun-18	120	9.00	1,733	203	250
COJ05	5-Jun-23	230	12.21	2,286	208	230
COJ06	5-Dec-15	265	10.82	900	157	275
COJ07	21-Mar-21	195	10.78	850	208	195

http://www.joburg-archive.co.za/2009/pdfs/bonds/coj07_bond_issuance.pdf

The bond issuances are widely regarded as successful. COJ02, for example, was oversubscribed 2.3 times and rated AA- by Fitch. The objective of this bond was to finance capital expenditures for water, urban streets and electricity distribution projects; to refinance outstanding high cost loans and reduce the overall interest rate on the city's debt obligations; to extend the maturity on the City's debt to lower debt service payments; and diversify funding sources. These bonds were not underwritten by government guarantees but there was a partial credit guarantee (PCG) from the IFC and DBSA, so there is donor support for bond financing.³³ The PCG raised the bond's credit rating three notches above the City's standalone rating.³⁴ In 2014, it was reported that Johannesburg was planning to return to the market to "lead a resurgence in municipal bond sales" to raise funds for infrastructure.³⁵ Elsewhere it was reported that bond sales were set to triple in 2014 to about 3bn Rand (\$272m) as cities tapped into debt markets to fund development.³⁶

eThekweni Municipality in Durban, in contrast, has not made so much use of bond issues, raising external borrowing mainly from South African banks, DBSA, EIB, AfD. The municipality has set out detailed guidelines for borrowing³⁷ where it states that the Municipality will in general seek to minimize its dependence on borrowings in order to reduce future revenue committed to debt servicing and redemption charges. The municipality is required to maintain a gearing ratio below 50% (p.4).

6.3 Revenue from end users

Water tariffs are set by municipalities on an annual basis. The 1997 Water Policy White paper sets out a number of principles that need to be observed in water pricing. It states that "the price paid for water by major users should progressively be raised to meet the full financial

costs of making it available and to reflect its value to society” (6.5.1) and (6.5.2) “many of the financial constraints faced in water resource development will be removed if the responsibility for paying the costs of such development is accepted by users.” However it is recognised that it is important “that the introduction of realistic pricing for water does not further penalise disadvantaged communities who were already penalized during the apartheid era” and (6.5.3) in relation to supply for basic human needs, the Government is to “encourage the adoption of lifeline tariffs for water services to ensure that all South Africans can achieve access to basic services.”

Municipalities are required to take into account the operational costs, capital repayments, refurbishment and asset management needs. The DWA reviews the proposed tariffs (DWA 2013a). Although there is general guidance on what prices should involve, for example they should be pro-poor, reflect the economic value of water, promote conservation, ensure financial sustainability (e.g. see NWRS2 and DWA 2013a), it is difficult to find detailed guidance on exactly how prices are set. In the 2012 mid-term budget for JW, it is stated that tariffs are set “with a view of striking a balance between the interests of poor households, other customers and ensuring the financial sustainability of the municipality” (CoJ 2012, p.26). For the 2012 budget, the percentage increase in bulk prices from Eskom and Rand Water were 16% and 13.5% respectively which meant an increase in domestic tariffs at a rate higher than inflation.³⁸ **Table 7** and **Table 8** show the tariffs for three of the country’s largest municipalities Johannesburg, Durban and Cape Town. Each of these municipalities has an Increasing Block Tariff (IBT) where different consumption volumes are charged at different prices.

Table 7: Johannesburg water tariffs 2013/14 (excluding VAT)

	Domestic metered		Domestic prepaid	
	R/ m ³	US\$/ m ³	R/ m ³	US\$/ m ³
>0to 6kl	Free	Free	Free	Free
>6 to 10kl	5.84	0.53	4.52	0.41
>10 to15kl	9.27	0.85	5.91	0.54
>15 to 20kl	12.91	1.18	10.7	0.98
>20 to 30kl	16.86	1.54	16.14	1.47
>30 to 40kl	17.88	1.63	17.13	1.56
>40kl	21.98	2.01	21.73	1.98

Source: Johannesburg Water³⁹

Since 2001, WSAs have been required to provide households with a basic level of water without charge. This is the Free Basic Water (FBW) policy. Based on the amount of the basic minimum consumption level of 25 l/c/p/d and a notional occupancy of eight per household, the FBW policy requires that each household be provided with the first 6kl each month without charge. WSAs can decide whether this is provided universally or directed to those that qualify as 'indigents' (see below) and different policies are applied. In Cape Town for example, indigent households qualify for 4.5kl of water in addition to the 6kl FBW. In Durban, the first 9kl are provided without charge.

Table 8: Water tariffs 2013/14 (excluding VAT)

EThekwini (Durban)			Cape Town		
Consumption	R/ m ³	US\$/ m ³	Consumption	R/ m ³	US\$/ m ³
0 to 9 kl	0	0	0 to 6kl	0	0
9 to 25	8.37	0.76	6 to 10.5kl	7.60	0.69
25 to 30	11.46	1.05	10.5 to 20kl	11.61	1.06
0 to 45	25.24	2.30	20 to 35kl	17.20	1.57
>45	27.77	2.53	35 to 50kl	21.24	1.94
			>50kl	28.01	2.56

Sources: eThekwini website⁴⁰ and Cape Town Budget⁴¹

The municipalities are free to determine their own tariff structure (Burger and Jansen 2014), and **Table 7** and **Table 8** show that the three metros have different approaches. Durban has only four categories of consumption after the FBW point whereas Cape Town has five and Johannesburg has six. Durban also has a higher volume of FBW but, thereafter, the charge for all the other categories is higher than for the other two metros. For Johannesburg, the prepaid meter users are charged at a lower rate for subsequent consumption units but once consumption reaches more than 20m³ the unit tariffs are similar for prepaid and other meters. The prices at higher consumption levels show a considerable markup on the bulk water price of R5.52 per m³ which Johannesburg Water is charged by Rand Water (and this is

also the rate paid by mining and industry consumers). Durban water pays R4.70 per m³ to Umgeni Water (**Table 2**) and charges are then considerably higher to consumers after the FBW 9kl threshold. Cape Town largely sources its own bulk water supply.

The idea behind the IBT tariff structure is that higher consumption users subsidise those households that consume less and is based on an assumption that the poor will use less water. However, this requires metering of services and can be regressive where lower income households live in higher-density accommodation so that the tap consumption quickly goes to the highest bracket, even if individual consumption is low. The average household size of non-poor households in South Africa was 3.1 in 2011 compared with 5.1 for poor households (SSA 2014b).

Burger and Jansen (2014) empirically assess the effectiveness of the subsidy element of the IBT structure in South Africa. One obvious constraint in reaching the poorest households is that the FBW and the IBT structure require the end user to have a water connection in the first place. They show that even with a cross-subsidisation structure built into the IBT, where water access is low, the subsidy will not reach the intended beneficiaries. The research by Burger and Jansen (2014) shows that, while the wealthiest consumers contribute more with the IBT structure, in terms of a premium paid on water consumption, mostly this is captured by households in the middle of the income distribution rather than the poorest households. They conclude that income distribution instruments are more effective if applied at a national level due to disparities across locations.

6.4 Municipal challenges

Services are compromised by weak performance in the management of water supply and sanitation provision (DWA 2013b). Most WSAs are not performing well. An assessment of WSAs under the MSSA (6.1 above) in relation to 16 key performance indicators found that only 3% of WSAs (or 5 out of 152) were classified as having low (or acceptable) water services vulnerability. For 18%, vulnerability was classified as moderate; 33% were considered to be high risk and 46% (or 70 out of 152) WSAs were classified as having very high water services vulnerability. The most critical area of vulnerability was revenue collection. For 14% of WSAs, water tariffs cover less than 50% of the operations and maintenance and refurbishment costs. For 25% of WSAs, revenue collection was less than half of that which was billed and 52% reported an increase in debtors (DWA 2013e).

Such capacity constraints at the local level severely limit the impact of sector policy and the application of broader principles such as cost recovery and targeting of subsidies. Service provision can become trapped in a downward spiral with poorly maintained, aging infrastructure coupled with weak financial management and limited funds for financing investment.⁴² This leads to increased interruptions in supply and high levels of unaccounted for water, poor management of wastewater treatment works resulting in deteriorating raw water quality in some areas (DWA 2013c). Water treatment plants, bulk water supply, reticulation and water storage systems are not well maintained. Many are in disrepair across the country and sanitation systems are often in a very poor condition. In many areas sewerage systems and ventilated improved pits (VIPs) are no longer functional and municipalities have not made an effort to repair them (SAHRC 2104).

Many municipalities do not have adequate staffing. An assessment of staff capacity found that 22% of the 152 WSAs had less than half of their posts within their technical staff organizational organogram filled and 28% do not have sufficient network operations and repair staff (DWA 2013e). Weak staff capacity at the municipal level limits the impact of national programmes as grant allocations are often underspent. In a Parliamentary hearing in July 2014, it was reported that the causes for the underspend of the MIG included “the lack of municipal readiness to address extension of basic services to areas where there are no services especially with regards to project prioritization and registration, lack of information regarding basic service backlogs per ward/village in targeted municipalities, non-functional water schemes, outdated sector plans, poor project preparation, lack of contract and project management skills, poor financial management.”⁴³

If a municipality fails to spend its allocated grant in a year there is a great possibility that funding will be reduced in the following year. Weak capacity constrains monitoring of contractors and increases the risk of corruption and maladministration. The municipalities that most need the funds are the least able to spend them (SAHRC 2014). The weakest municipalities are the worst affected. According to a WRC study, “municipalities are continuously in a crisis management mode with limited management information and poor decision-making processes, financial and technical management” (McKenzie et al 2012 p x).

A high proportion of water is stolen, lost or leaking away in municipalities. An extensive study submitted to the Water Research Commission, based on data gathered from 132

municipalities throughout South Africa (representing over 75% of the total volume of municipal water supply) shows that the level of non-revenue water (NRW) for the country as a whole is 36.8%. Of this, 25.4% is considered to be lost through physical leakage (McKenzie et al 2012). **Table 9** shows the % NRW in the country's eight Metros which account for 46% of the country's urban water use. However, such estimations are challenging when the quality of the data presented by some municipalities was very poor.

Table 9: % NRW in South Africa's eight Metros (December 2012)

Metro	% NRW
Johannesburg	37.8
Tshwane	23.8
Ekurhuleni	40.8
eThekweni	35.6
Cape Town	20.7
Nelson Mandela Bay	43.1
Buffalo City	47.7
Mangaung	39.5
Weighted Average	33.7

Source: DWA 2013 p.40

Leakage and NRW can occur from leaking pipes. If services are metered, it is the end user that bears the risk of losing water this way if a leak occurs on the consumer side of the meter and this can result in high bills for households. An option, suggested for consumers in Durban, is for domestic water customers to insure themselves against undetected underground leaks by paying a monthly premium which is forwarded to a private insurance company.⁴⁴

Municipalities have extensive outstanding debts. **Table 10** shows that in June 2014 total amounts owed to municipalities stood at R94bn (US\$8.4bn). This level of debt was reported to have caused "dismay" to the Parliamentary Select Committee on Finance at a briefing in July 2014. Debts owed to municipalities in 2014 were R1bn more than in 2012/13.⁴⁵ Gauteng accounted for over 40% of the debt.

Table 10: National debtors by province and metro, June 2014 (R'000)

Province	Total	%	Metros	Total
Eastern Cape	6,174,962	6.57	Buffalo City	1,106,950
Free State	9,055,990	9.63	Cape Town	6,459,106
Gauteng	41,119,671	43.73	Ekurthuleni Metro	10,736,264
KwaZuluNatal	10,142,031	10.79	EThekweni	5,293,463
Limpopo	3,504,902	3.73	City of Johannesburg	17,386,821
Mpumalanga	6,266,854	6.67	Mangaung	2,892,412
North West	6,977,923	7.42	Nelson Mandela Bay	2,376,541
Northern Cape	2,361,714	2.51	City of Tshwane	6,627,609
Western Cape	8,420,435	8.96		52,879,166
Total	94,024,482	100		

Source: Treasury 2014b, p.21 and p.9

The country's metropolitan municipalities were owed R52.9 billion in outstanding debt as at 30 June 2014, accounting for over half of the municipal debts, as shown in the columns on the right of **Table 10**. Johannesburg accounts for over 30% of the debts owed to metros and 18% of the debts owed to municipalities. **Table 11** shows the total debts broken down into categories. The municipal service with the highest amount outstanding is water, and unpaid water bills account for over a quarter of the total municipal debt. Turning to the customer group breakdown, most of the debt is due from households which account for over 60% of the debt. Without going into further breakdown of the debt these data indicate that municipal finances are constrained by the failure of households to pay their water bills. Water services are contributing to high levels of household debts. Households have amassed substantial debts in unpaid water bills.

Table 11: Debts outstanding by charge category

	R'000	%		R'000	%
Water	24,746,562	26.32	Households	57,892,837	61.57
Electricity	15,076,062	16.03	Commercial	19,748,768	21.00
Property Rates	20,524,474	21.83	State entities	4,503,794	4.79
Waste Water Management	9,846,422	10.47	Other	11,879,083	12.63
Waste Management	7,389,493	7.86		94,024,482	100
Interest on arrear debtor accounts	8,244,378	8.77			

Property Rental Debtors	1,802,269	1.92	
Other	6,394,820	6.80	
Total	94,024,480	100	

Source: Treasury 2014b, Table 18, p. 21.

In its analysis of the data in these above tables, Treasury (2014b) attributes the underperformance of collections against billed revenue to (among other things – not stated) “the reduced affordability of municipal services by households”. The assessment continues: “The economic slowdown and substantial increases associated with municipal cost drivers such as fuel, bulk purchases (water and electricity) material etc are continuing to impact on affordability and subsequently the ability of consumers to pay for services” (Treasury 2014b, para 19, p. 3). Thus, notwithstanding the concerns regarding municipal capacity, services are becoming less affordable.

This is a view supported by the Local Government Association. According to SALGA in consultation on tariffs in 2013, the tariffs charged by WBs are unaffordable (SALGA 2013). They state: “It is our opinion that the high tariff increases is a contributing factor in the compounding debt owed to Water Boards by municipalities”. Half of the debt owed to municipalities was over 120 days old. Their review of debts shows that the debts owed to municipalities by consumers was seven times the debt owed to WBs. Furthermore, they state that this pattern has been on-going for years such that if it continues, municipalities will not be able to pay for both bulk water and electricity (SALGA 2013).

Municipalities are also creditors. At the end of June 2014 they owed a total of R25bn of which R3.6bn (US\$320m) was for bulk water (**Table 12**).

Table 12: Municipalities total creditors (June 2014)

	R'000	%
Bulk electricity	7,036,309	28.03
Bulk Water	3,613,312	14.40
PAYE deductions	314,592	1.25
VAT	-55,504	-0.22
Pensions	264,292	1.05

Loans	1,925,845	7.67
Trade creditors	8,373,984	33.36
Auditor-General	168,904	0.67
Other	3,456,757	13.77
	25,098,491	100.00

Source: Treasury 2014b

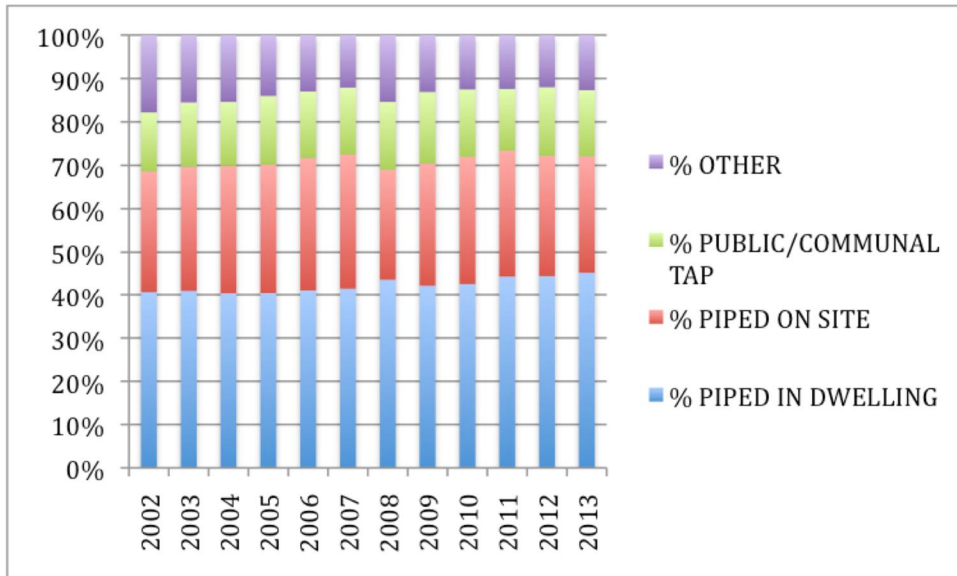
Overall, then this suggests that the financing of water is potentially unstable given that it rests on payments by households to municipalities who then pay bulk water providers. The discussion above indicates that these links in the system are shaky due to a combination of factors including weak capacity and low affordability. This overview of the whole chain provided above shows how affordability constraints are compounded and the result is potentially unstable. Note, however that this only relates to municipal water supply. Section 4 above shows that large volume users in agriculture, industry and mining are outside this part of the sop.

7 Consumption and social policy

7.1 Access

According to the DWA (2013c) 94.8% of the population has safe access to water up from 59% in 1994. However, a review of the breakdown of means of access over the past ten years indicates that the proportion of the population receiving water piped into the dwelling has not improved greatly (rising from 40.8% in 2002 to 45.3% in 2013) (**Figure 2**). The proportion using water piped on site increased from 27.8% to 26.8% while 31.4% of the population used "other" sources in 2002 compared with 27.9% in 2013.⁴⁶ In terms of numbers, 12.8 million households had access to piped water in 2013 compared with less than 9 million in 2004 (Treasury 2014c).

Figure 2: Source of water



Source: Treasury (2014c) General household Survey: 2013

While overall trends indicate substantial increases in water access since 1994, **Table 13** shows that there is considerable regional variation. Gauteng and Western Cape stand out with a high proportion accessing water piped into their dwelling and very few without access. The picture is reversed in other provinces with Limpopo with an overall rate of access of around 73% of the population and Eastern Cape only 68%.

Table 13: Access to water by province (% population)

	RDP Acceptable			Not RDP-Acceptable		Living below poverty line*
	Piped Water within Dwelling	Piped Water within Stand	Piped Water within 200 Meters from Stand	Piped Water more than 200 Meters from Stand	No Access to Piped Water	
Eastern Cape	32.8	16.6	18.6	8.8	22.2	60.8
Free State	44.8	44.3	6.2	2.6	2.2	41.2
Gauteng	62.1	27.3	6.0	2.8	1.8	22.9
KwaZulu Natal	40.0	23.6	14.8	7.6	14.1	56.6
Limpopo	18.4	33.9	20.5	13.2	14.0	63.8
Mpumalanga	35.7	36.0	9.2	6.6	12.6	52.1
North West	29.3	40.0	14.3	8.0	8.4	50.5
Northern Cape	45.8	32.3	12.8	6.6	2.6	46.8

Western Cape	75.1	13.3	8.3	2.4	0.9	24.7
South Africa	46.3	27.1	11.7	6.2	8.8	45.5

Sources: SAHRC 2014, p38 citing 2011 Census data; *SSA 2014b

The areas with the lowest rates of access are also largely those with the reported poorest water quality. Nationally, 63.2% of households rated the quality of water-related services they received as 'good.' This proportion has been falling steadily since 2005 when 76.4% gave this rating for their services. Residents of Free State, Mpumalanga and Eastern Cape have consistently been the least satisfied with the quality of their water. These are also the areas that have reported the most interruptions in service. The proportion of households that reported interruptions in services for more than two days at a time was highest in Mpumalanga (63.5%) and Limpopo (62.1%) while in Gauteng and Western Cape it was much lower, 8.3% and 2.7%, respectively. These provinces were also the most satisfied with the quality of the water they received (Treasury 2014c). So, while households may be registered as having access this may not mean that water flows through piped connections. For example, Mabeskraal, a village of 10,000 people in the North West, has water infrastructure but there has not been piped water for three years!⁴⁷

In addition, weak data mean that it may not even possible to know with accuracy the extent of water access. The Human Rights Commission cites the Social Justice Coalition (SJC) to show that while government statistics might indicate a high level of access to water and sanitation, the norms and standards being used to ascertain access levels are flawed. "Many local and provincial governments have no real understanding of how many people live in settlements, particularly in informal settlements. Without having this information, it is impossible to provide services to all" (SAHRC 2014, p.53). Similarly the Social Justice Coalition has also found discrepancies between reported access and conditions on the ground, with particular reference to sanitation in Khayelitsha, a township on the outskirts of Cape Town. ⁴⁸

Notwithstanding data limitations, many rural areas continue to lack access to water and sanitation. In farming communities, households are reliant on the landowner for the provision of basic services, and some farmworkers are unable to access water and sanitation where this is at the discretion of the landowner. There have been cases where the owners cut off supply to farmworkers. The Association for Rural Advancement (AFRA) comes across this



regularly. Livelihoods can be threatened further when livestock are deprived of water (SAHRC 2014). In rural areas, poor households are often dependent on their crops for food security. In research carried out by the Human Rights Commission, it was reported by one farmer from the Western Cape that there is water for richer white farmers while neighbouring poorer farmers do not have water (SAHRC 2014, p.62). In urban areas, residents of informal settlements can be difficult to reach with formal water services as households often do not have proper housing or water and reticulation infrastructure (SAHRC 2014).

Table 13 shows that the provinces with the higher levels of poverty are unsurprisingly the ones with the lowest rates of access. Within provinces, poor households have lower access to water in their house or yard (53%) compared with 82% of non-poor households (SSA 2014b, p.52). Levels of poverty are more than twice as high in rural areas and this is also reflected in water access. In urban areas 89% of households had access to piped water inside their dwelling or on site compared with only 39% of rural households. The incidence of poverty is more prevalent among females and black Africans and rural areas (SSA 2014b). While water policy has aimed to eradicate patterns of access based on race, gender and class, in practice, the persistence of poverty in specific locations and among these groups means that inequity in water access continues.

Furthermore, racial disparity persists in access to water. By 2012 only 40% of all black African urban households and only 4% of rural black households had an indoor water supply while almost 99% of whites have had this level of access for decades. Only 40.2% of black infants live in a home with a flush toilet. In shack areas, hundreds of families share a single tap (Ruiters 2014). Evidence from provincial hearings on access show that there are highly impoverished communities in South Africa that were historically disadvantaged under apartheid that remain without access to basic services. National averages seem to indicate progress but disaggregated statistics show limited access in historically poor areas (SAHRC 2014). Despite the rhetoric of the Constitution and successive White Papers, in practice reducing inequality in service delivery has been difficult to achieve.

Bond (2014a) describes a “width not depth approach” to the delivery of basic services, including housing, water/sanitation and electricity, meaning that the roll out of water services was driven with a focus on quantity in terms of numbers connected rather than quality or sustainability. The result was that taps were often located far from homes and a large



proportion broke down when people attempted to access pipes for direct connections. The DWA is aware of the need to do more to address social inequality: “despite the economic growth within the country, a large proportion of the population remains excluded from the formal economy, living in poverty and dependent on subsistence livelihoods and government grants. The Department has an important role to play, in ensuring that these communities are provided with safe drinking water and water for productive purposes in order to contribute to the drive to eradicate poverty” (DWA 2013c, p.9).

7.2 Social Policy - Free Basic Water

In 2001 the Government introduced the Free Basic Water (FBW) policy. One of the triggers was reported to be an outbreak of cholera in 2000-2001 in KwaZulu-Natal which drew attention to the lack of access faced by many due to pricing (Gowland-Gualtieri 2007). Durban Metro Water Services is understood to have been one of the pioneers of the FBW policy in South Africa, although, according to Loftus (2004), the FBW policy originated, not out of a drive for social policy so much as a business case in that it was not cost effective for the municipality to chase up bills for low levels of consumption.

While FBW is a national government policy, responsibility for implementation rests with the local government. The FBW component is financed from the local government Equitable Share (see above) and cross subsidisation from higher volume consumers. Government policy states that all indigents⁴⁹ are entitled to a supply of free basic water within a 200-metre radius of the household.⁵⁰ Some municipalities, including metros, provide free basic water for all households while smaller municipalities provided for registered indigents only (Ruiters 2014). Durban provides 9kl of water at no charge (**Table 8**). In Johannesburg there is a poverty index and allocations of free basic services vary, depending on a person's “poverty score” out of 100. The supply of FBW can increase to between 10 and 15kl per month depending on the scale of poverty.

The FBW policy has significant limitations. First, it is based on an assumed level of capacity for the municipality and the consumer. Households need to have water meters. Research by McKenzie et al (2012) found that the extensive development of RDP houses and informal settlements often created substantial areas that were unmetered and remained without a direct consumer for billing purposes. Where these areas are not metered they are sometimes also not billed. Some housing projects are implemented by regional authorities without



adequate communication with the local authorities. Larger municipalities such as the City of Tshwane Metro have installed bulk meters for all water supplied to such developments and informal areas and they hold the Department of Human Settlements responsible for payment. According to McKenzie et al (2012) there is currently no consensus or standard method for approaching similar cases which exist in many municipalities across the country.

Furthermore, the process of registering as indigent can be out of reach for the most marginalised groups. Studies by the Centre for Applied Legal Studies show that the indigent policy is only provided to those households that register as indigent so those that do not know to register, do not qualify, and this applies to other targeted interventions (SAHRC 2014). In Johannesburg, the social package (a programme called Siyasizana) provides a “basket of benefits” (including basic water, energy, sanitation and refuse removal) to those that qualify, based on their level of poverty. Any person earning less than R3,366 a month is encouraged to register. Different levels of poverty qualify for different levels of subsidy. Claimants need to provide information on their income and as such, may qualify for different levels of support depending into which of three income bands they fall. Registration takes place at specified customer service centres and individuals need to provide a South African ID number and details of the property in which they live. Homeless people do not qualify for the benefits that go to a property (water, electricity, rates, sanitation and refuse removal).⁵¹ This process therefore requires some administrative capacity on behalf of the claimant and those that are homeless do not receive the basic level of services.

Second, the amount of water provided is supposed to be equivalent to 25 litres per person per day in a household of eight people. This is equivalent to five baths per person per month or two toilet flushes per day. This is not sufficient to meet basic human needs. The WHO states that 20 litres pppd is the minimum requirement for basic human survival but 100 litres of water are needed for completely adequate access. Vulnerable households are particularly affected (e.g. those with HIV/AIDS (van Wijk 2003)); and poor households are typically higher density. According to Bond and Dugard (2008) the government has never offered any evidence that the six-kilolitre amount per household per month is an appropriate amount to meet basic needs. They cite evidence that 50l is the minimum basic requirement for human needs of drinking, sanitation and food preparation.



The IBT structure means that prices increase steeply once the FBW amount is exhausted. Densely populated households can quickly find themselves consuming at the second block tariff. According to Bond (2014b, p.9) in Durban, the overall cost of water ended up doubling for poor households after the introduction of the FBW policy because of a huge price increase in the second block after the first block in the IBT was used up. For poor people, this led to consumption cuts by a third in the subsequent six years, from 22 to 15 kl/hh/m to 15 (Bond 2010).

Third, where consumers fail to pay their water bills they risk having their supply disconnected. This can have the impact of wiping out the FBW policy. Bond and Dugard (2008) cite World Bank advice to the first post-apartheid water minister, Kader Asmal, that there needed to be a “credible threat” of cutting service if the country was going to attract private investment in municipal water provision. Municipalities have been routinely disconnecting those that fail to pay their bills.

According to the Declaration of the Coalition Against Water Privatisation (cited in Ruiters 2004, p.167) more than 10 million poor families had had their water services cut off and over 2 million had been evicted, often as part of the associated legal process to recover debt from poor customers.⁵² Research by Laila Smith in 2001 into debt management in Cape Town found that between 1999 and 2001 159,866 households had their water cut off for non payment (Smith 2004, p.182). Disconnection for non-payment leaves the household with no water at all and those with outstanding water debt are not eligible for their allocation of free water until their debt is paid off (Gowland-Gualtieri 2007).

Disconnections continue to be routine. In February 2014 it was reported that 26,305 customers had been disconnected for non-payment of water and electricity accounts in Durban.⁵³ In Tshwane in November 2014, the Gauteng provincial government stepped in to bail out schools that had had their water and electricity supplies disconnected.⁵⁴

Municipalities state their disconnection policies clearly. The City of Johannesburg website says that “the City is taking a tough line on non-payment of accounts”. If an account is more than 30 days overdue, the account holder will be scheduled for a cutoff. To avoid public health risks, instead of disconnecting households, their connection can be fitted with a ‘flow limiter’ to severely restrict the flow of water. The statement of Water Policy for Durban reads (p.5):⁵⁵



“In the case of domestic households, if there is no response from the customer, the water supply is then restricted to a flow of one litre per minute through the use of a specially designed washer. This is done notwithstanding the high court judgment in our favour which states that anyone using more than 6kl in a 30 day period and not paying for the extra consumption charges forfeits their right to access 6kl of free basic water and can have their water supply disconnected.”

When water is disconnected, this can have a catalytic effect on the bills of others. Disconnected households have to beg borrow or steal water in order to have any access which increases the bills of others and creates “a spiral of arrears in which more and more find themselves having to manage an escalating household debt” (Loftus 2004, p.197). For Neil MacLeod, Head of eThekweni, the water provider in Durban, in an interview with Loftus, these problems remained ones of “a culture of entitlement in which people don’t respect the economic value of water” (according to an interview with Loftus). For Loftus this approach is based on a perception that households can afford water but choose not to pay whereas his own research revealed that “poorer residents are painfully aware of the economic value of water but unable to cope with the rising arrears they have amassed”(p.197).

In order to improve revenue management, some municipalities introduced prepayment meters for water. This started in Soweto in 2003. Records show a ratio of unaccounted for water of 62% in the area in 2002 with payment levels at only 15%. Although there was supposed to be consultation, prepayment meters have met with considerable hostility, particularly in areas with very high rates of unemployment and poverty (Harvey 2004). Without meters, households were charged a flat rate based on a deemed consumption of 20kl per household per month.

Prepayment meters are intended to solve the problems of debt collection for the municipality. However, for households, once they have reached the limit of the water they can afford they effectively disconnect themselves. This may help with debt management but the issues of affordability and meeting basic needs remain. However, without the need for disconnection, such households are less visible. Loftus (2005) provides a detailed account of the daily human misery associated with life dominated by flow limiters and prepayment meters.



Prepayment meters can be expensive and subject to technical faults. Heymans et al (2014) document the use of prepayment meters in Mogale City, described as one of the pioneers of prepaid water, where more than 10,000 meters were installed in the late 1990s. The municipality prioritized two low income townships but from the start included affluent residents of an exclusive new thousand unit housing estate in a mainly white suburb so that prepaid meters did not get stigmatized as only used by poor black families. Installation of prepaid meters was optional and was widely accepted. Politicians promoted the angle that prepayment meters help poor households to manage their consumption and not get into debt. However, in an audit in 2012, the municipality found on inspection of nearly a third of all prepaid meters, that, eight years after installation, more than 90% of the meters were faulty and the vast majority was delivering free water. New meters have been installed at a cost of US\$270 each. Reviewing consumption in areas with prepayment meters, Heymans et al found that users tended to monitor consumption carefully and stick to the 6kl FBW amount and so paid nothing for water. There was then little revenue benefit from prepayment meters in low-income areas although bad debt is preempted.

There have been extensive protests against the policy of disconnection and forced installation of prepayment meters (see for example, von Schnitzler 2008). In 2007, five residents of Phiri, a slum area of Soweto mounted a legal challenge against the City of Johannesburg claiming that the forced installation of prepayment meters, as part of the City's Operation Gcin'amazi, was unlawful and unconstitutional. The initial ruling of the High Court found in favour of the residents and the judge also ordered that the residents should be provided with 50 litres pcpd. However this was overturned on appeal with a ruling that 42litres pcpd was sufficient and prepayment meters were lawful.⁵⁶

While the FBW policy has meant that some households are able to manage without paying for water, this is not possible for larger households. Furthermore, prepayment meters present an insurmountable barrier to water access that can be crippling. The Phiri legal case above gained momentum after a fire in the township where two children died. The prepayment meter automatically disconnected when the credit limit was reached, preventing neighbours from extinguishing the fire. The tap in question was shared between nine people and the FBW amount usually ran out around the 12th day of the month (Dugard 2008).



Thus, the provision of a small allowance of FBW does not constitute a substitute for comprehensive access to water and sanitation. Living with the risk of disconnection, flow limiters and prepayment meters requires a different way of life, where water conservation and re-use overshadow most aspects of everyday activities. According to Loftus (p.195) "In effect, the provision of this lifeline supply of free water has provided something of a moral justification for disconnections and restrictions and helped to fend off criticisms and reduce the likelihood of community mobilizations".

7.3 Why do people not pay for water?

Given the severe penalties associated with non-payment of water bills, the question remains, why are so many not paying their bills? There seems to be clear evidence that fewer households are paying for their water. According to the 2013 Census, the proportion of households who reported paying for water has been declining steadily over the past decade, falling from 66.9% in 2004 to 44.5% in 2013.

Reference is often made to what is termed a "culture of non-payment" which derives from protests in the apartheid era where black communities made a point of not paying utility bills as a matter of protest. Many believe that this ethos continues today and there is a sense that water is free so it should not be paid for. In the early stages of commercialization, protest movements reconnected households which had had their water and electricity disconnected. But analysis of the debts owed to municipalities in **Table 9**, above, indicates that nearly 80% of household debts are more than 90 days old (Treasury 2014b). Assuming that the longer a debt is outstanding, the greater the risk of disconnection, this debt profile suggests that households are unable rather than unwilling to pay their debts.

Some municipalities report high losses due to illegal connections to the water network. In 2010 Durban introduced an amnesty so that residents with illegal connections could come forward to have the connection regularised or to risk being caught and prosecuted. In February 2014 it was reported that the amnesty had led to 2,616 households coming forward.⁵⁷ News reports suggested that such connections were not just in poor areas but could be found in wealthy residential locations and business districts.⁵⁸ Clearly then, it is not just poor households that do not pay their bills and non-payment can be associated with unwillingness rather than inability to pay. Farrar (2012) attributes non-payment in part to what she terms "Constantia Syndrome" by which poor people want to be able to use services that are suitable

for wealthy households as in Constantia but they cannot afford the increased costs. The result is high debts and disconnection.

While the above reasons may be a factor in the debts owed to municipalities, there is compelling evidence that water is not affordable for the majority of the country. According to DWA (2014) it is generally accepted that households with an income of less than R38,200 pa (approx R3,200 per month) are unable to pay for water. Around 63% of the households served by the country's 12 water boards has an income which is too low to be able to afford to pay for water according to this criterion (DWA 2014 – see **Table 14**).

Table 14: Number of households for whom water is "unaffordable"

Water Board	Total Number of Households	Households with income <R38,200 p.a	
		Number	%
Bushbuckridge	195,500	155,621	80
Lepelle	1,285,762	998,130	78
Amatola Water	665,990	504,821	76
Sedibeng	563,727	405,112	72
Mhlathuze	463,409	330,982	71
Botshelo Water	499,295	350,613	70
Magalies	414,857	278,427	67
Bloem Water	340,713	222,545	65
Pelladrift	3,607	2,331	65
Umgeni	1,709,753	1,118,438	65
Overberg	39,701	21,092	53
Rand Water	4,582,738	2,448,686	53
South Africa	14,450,160	9,108,523	63

Source: DWA 2014, p.12, citing 2011 Census data

In practice, **Table 14** indicates that water is unaffordable for most of households in the country. In theory, these should qualify for basic services but as seen above this often misses those most in need and is too low for most to live on and once the FBW is reached, prices increase steeply for higher consumption levels. The result is high levels of household debt



and municipalities that are reliant on central government subsidies. This affects the ability of municipalities to pay the WB for bulk charges (DWA 2014). This widespread lack of affordability compromises the rhetoric in the Constitution and legislation regarding the right to basic services and commitment to redistribution.

8 Closing remarks

Twenty years after the end of apartheid, the system of provision for water and sanitation continues along unequal lines. Mining and industrial communities and wealthy households have easy access to water yet many in rural areas and informal settlements struggle to meet their basic needs. Of all the principles that are supposed to have underpinned sector policy, the equality element has been the least successful.

Weak state capacity is a significant constraint in the sector. The DWA struggles to fill posts with a national lack of technically skilled and experienced people, and the management of water services and bulk infrastructure is left to a diminishing number of qualified civil engineers in local government (WWF 2014a; DWA 2013c). There are state failings at every stage of the sop.⁵⁹ The low skills base undermines policy throughout. How can cost recovery be implemented when costs cannot be known with any accuracy? How can support be provided for low-income households when it is not clear where these are located or what access and consumption is taking place? Weak capacity also weakens the ability of the state to respond to some of the environmental pressures (WWF 2014a).

The sector is fragmented and there is confusion and contradiction in the structuring of the water sop. While the DWA is responsible for water resources, once the supply reaches the municipality, responsibility rests with local government rather than water affairs. So DWA provides water up to a point but then they have no control.⁶⁰ The DWA recognises the need to improve integration in the water sector, particularly in the way that the Department and Water Boards support local government and there are calls for greater integration and intergovernmental coordination (DWA 2013c p.9).

However, there are deeper tensions and contradictions in the sector which shape outcomes. Some government departments have more weight than others. According to WWF (2014a,



p.25) the Department of Agriculture, Forestry and Fisheries (DAFF) appears to be less empowered than the Department of Energy when it comes to policymaking for the food-energy-water nexus, and so the agricultural sector stands to lose the battle with the energy sector for access to water. Meanwhile, the economic might of the mining industry is likely to guarantee their continued water access despite the fundamental contradiction of continued water-intensive mineral production in dry areas while national supplies are running low.

There is considerable awareness and even some discomfort on the part of the Government concerning the continued inequality in the provision of water in the country. However, the commitment to equity is based around meeting basic needs rather than redistribution. The neoliberal emphasis on cost recovery and user pays is being imposed on a distinctly unequal pre-existing physical and socio-economic infrastructure (notwithstanding government investment in the sector). If water pricing is going to be based on the principle of full cost recovery, then those with an existing network connection, that can buy directly from water boards and that consume large volumes of water are cheaper to serve. The result is that mines and industrial consumers have water while households and businesses in low-income areas do not. Where pricing is based on the principle of the 'user pays' then consumption continues unabated for those that can afford it, while those that cannot are forced to rely on inadequate state handouts. The result is that inequality has become more entrenched while the provision of basic needs softens the edges of the sop.

For Ruiters (2014), an approach that targets poor households with a view only to meeting basic needs "tends to reinforce their exclusion from centres of power, public influence and culture." Indigent policies and other means tested benefits move away from universal provision towards targeted interventions which create a commodified framework. Access to safe water and other basic services cannot be considered in isolation from the spatial segregation of communities where residential location shapes access to cultural capital, social networks as well as differentiated public and private services in South Africa.

For the Government, one of the policy weaknesses has been the consideration of users as separate consumer groups. Bulk raw water infrastructure has been planned for the needs of a specific sector "to the exclusion of other water users" so that the planning of bulk water infrastructure has not taken account of the water needs of communities and rural households.⁶¹ The result has been the construction of infrastructure and distribution



networks that bypass these communities. Wealthy mineral production sits next to shack housing where residents lack basic services. Civil unrest has been the result with strikes such as that which preceded the shootings at Marikana.

However, inequality looks set to continue. Investment in the sector is urgently needed. The water strategy aims to secure private finance be used for the segments that are economically viable, via the TCTA. Meanwhile, Government transfers and grants will be used to finance the portion of the infrastructure investment required for supplying water for social development objectives, for example for new resource-poor farmers or the basic level of water for domestic use (DWA 2013b p.85). This means that private finance will be used to provide infrastructure for those that can afford it while state finance will be used to supply water to low-income areas and households. This then moves away from more traditional financing strategies based around taxation, redistribution and universalism to one where cream-skimming by the private sector is actively encouraged. The resources of the wealthy / economically viable go into servicing their needs directly rather than supporting sector-wide development. This strategic separation of the haves from the have-nots seems unlikely to make much of a dent in the level of inequality and looks set to create more, rather than less, exclusion.

The review of the sector in this paper suggests that the financing of water in South Africa rests on very shaky foundations, given that water is unaffordable for most households and municipal debts are rising. Yet the municipalities and WBs and financing agencies servicing wealthy areas seem to have no problem accessing capital markets. Their credit ratings do not seem to be tarnished by rising unpaid bills. We can only assume therefore that these water providers are doing well in their sales to non-domestic customers. The "high assurance" consumers continue to access water, unaffected by the deprivation faced by many in the country. Until these consumers are challenged to make a greater financial contribution to the sector as a whole, there is unlikely to be much improvement in equity, despite the rhetoric of the water strategy.

¹ <http://www.statssa.gov.za/publications/p0302/p03022013.pdf>

² The World Resources Institute rankings of baseline water stress (which measures total annual water withdrawals as a percentage of the total annual available blue water) ranks South Africa 65th in the world, falling into the category of "high water stress" (Gassert et al 2013).

³ For more on RDP and GEAR see: http://web.uct.ac.za/depts/ricsa/confer/me99/procs/pro_terr.htm

⁴ "The Struggle Against Water Privatisation in South Africa" Anti-privatisation Forum and Coalition Against Water Privatisation 13 January 2005. <http://apf.org.za/spip.php?article80>

⁵ See for example www.water-energy-food.org

⁶ "Finding solutions for South Africa's coal-fired water and energy problems" The Guardian 18 September 2014.

⁷ "Water paucity hampering South African mining industry" African Review of Business and Technology 16 October 2012.

⁸ "Finding solutions for South Africa's coal-fired water and energy problems" The Guardian 18 September 2014.

⁹ <http://www.bloomberg.com/news/2014-02-21/south-africa-s-illegal-mining-getting-out-of-control.html>

¹⁰ "Finding solutions for South Africa's coal-fired water and energy problems" The Guardian 18 September 2014.

¹¹ "Demand for Southern African coal set to increase" Creamer Media's Mining Weekly, 5th July 2013.

¹² Until very recently there were nineteen but these have been condensed into nine: Limpopo, Olifants, Inkomatie-Usuthu, Pongola-Umzimkulu, Vaal, Orange, Mzimvubu-Tsitskamma, Breede-Gouritz and Berg-Olifants.

¹³ For 2014/15 charges see: <http://www.dwaf.gov.za/Projects/WARMS/Revenue/WRI%20D&I.pdf>

¹⁴ <http://www.dwaf.gov.za/Projects/WARMS/Revenue/WRI%20Irr%202015-16.pdf>

¹⁵ "Blue Scorpions understaffed: water thieves walk free" Infrastructure News 3rd July 2012

¹⁶ <http://www.tcta.co.za/Aboutus/Pages/default.aspx>

¹⁷ <http://www.umgeni.co.za/services/bti.asp>

¹⁸ Mhlathuze Water Annual Report 2012/13

¹⁹ "Interaction with Water Trading Entity, Analysis of Water Boards: Input by Department of Water Affairs, SALGO and National Treasury" Meeting of Parliamentary Monitoring Group, 17 April 2013.

²⁰ "Prepare to pay more for services" IOL News 29 March 2012

²¹ Based on 1 Rand = \$0.12361 www.xe.com rate 30.12.2011

²² http://www.umgeni.co.za/projects/infrastructuremasterplans/docs/2013/vol1/IMP_2013_Vol1_Part3.pdf

²³

<http://www.randwater.co.za/WATERANDINFRASTRUCTUREMANAGEMENT/Pages/StorageSystemManagement.aspx>

²⁴ <http://www.global-rates.com/economic-indicators/inflation/consumer-prices/cpi/south-africa.aspx>

²⁵ <https://www.dwa.gov.za/IO/wsi.aspx>

²⁶ Sembcorp has an extensive utility portfolio including Bournemouth Water and Sembcorp Utilities in UK.

²⁷ <http://www.gov.za/issues/national-infrastructure-plan>

²⁸ "DWA to roll out R4.3bn interim water supply programme" Creamer Engineering News 21st May 2013.

²⁹ <http://www.treasury.gov.za/documents/mtbps/1998/5.pdf>

³⁰ <http://www.pmg.org.za/report/20130219-new-local-government-equitable-share-formula-briefing-national-treasu>

³¹ Commercial Paper is defined by Investopedia as "An unsecured, short-term debt instrument issued by a corporation typically for the financing of accounts receivable, inventories and meeting short-term liabilities."

³² <http://www.tshwane.gov.za/AboutTshwane/NewsandEvents/news/Pages/Tshwane-raises-R1.39-bn-in-debut-bond-issue.aspx>

³³

http://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/industries/infrastructure/subnational_finance/africa_sa_joburg_bond

³⁴ Excerpt from FS Series #1: enabling sub-sovereign bond issuances

³⁵ "Joburg to sell bonds in bid to raise funds for infrastructure" Bloomberg Business Day Live 24 April 2014.

³⁶ "South Africa mulls infrastructure bonds in debt-market expansion" Bloomberg 22 October 2014.

³⁷ EThekweni Municipality Borrowing Framework Policy and Guidelines, June 2014.

³⁸ joburg.or.za

³⁹

<http://www.joburg.org.za/images/stories/2013/March/Tariffs2013/water%20services%20and%20sew%20erage%20and%20sanitation%20services.pdf>

⁴⁰ http://www.durban.gov.za/Resource_Centre/Services_Tariffs/Water%20Tariffs/Forms/AllItems.asp

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https://www.capetown.gov.za/en/Budget/Budget%20201314/1314Budget_March2013CouncilMeetingb.pdf

⁴² Parliamentary Monitoring Group: Fiscal Challenges in Municipalities and Support/Interventions by COGTA and Auditor General, 16 July 2014 <http://www.pmg.org.za/report/20140716-fiscal-challenges-in-municipalities-and-supportinterventions-cogta-and-auditor-general>

⁴³ Parliamentary Monitoring Group: Fiscal Challenges in Municipalities and Support/Interventions by COGTA and Auditor General, 16 July 2014 <http://www.pmg.org.za/report/20140716-fiscal-challenges-in-municipalities-and-supportinterventions-cogta-and-auditor-general>

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http://www.durban.gov.za/City_Services/water_sanitation/Bylaws_Tariffs/Pages/Water_Insurance.aspx

⁴⁵ "Committee dismayed by large debt owed to municipalities" Parliament News Release, 17 July 2014.

⁴⁶ This includes borehole on site, rainwater tank on site, neighbour's tap, public/communal tap, water carrier/tanker, borehole off site, flowing water, stagnant water, well, spring and other SSA 2014, p. 42.

⁴⁷ "Mabeskraal: Our water troubles still run deep" Mail and Guardian, 14 February 2014.

⁴⁸ <http://nu.org.za/wp-content/uploads/2014/09/Social-Audit-report-final.pdf>

⁴⁹ The term "indigent" means "lacking the necessities of life".

⁵⁰ The Free Basic Services Policy commits to the following as well as the provision of FBW: at least a VIP latrine; solid waste management; and 50kWh of electricity per household per month.

⁵¹ http://www.joburg.org.za/index.php?option=com_content&task=view&id=3432&Itemid=168

⁵² "The Struggle Against Water Privatisation in South Africa" Anti-privatisation Forum and Coalition Against Water Privatisation 13 January 2005. <http://apf.org.za/spip.php?article80>

⁵³ "EThekuni owed R1.7bn in debt arrears" iol news 17 January 2014.

⁵⁴ <http://sanews.gov.za/south-africa/gauteng-education-bails-out-disconnected-schools>

⁵⁵ "Water Policy" www.durban.gov.za

⁵⁶ See court ruling, *Mazibuko and Others v City of Johannesburg and Others*, www.saflii.org

⁵⁷ "Water amnesty policy pays off for Durban" IoL Property 5 February 2014.

⁵⁸ "Thousands stealing water" The Witness, 19 June 2014.

⁵⁹ The NWRS2 provides a list (DWA 2013b, p.86): Unacceptably high water leakages; Failure to meter water supplied and other form of unaccounted for water; Poor infrastructure planning and poor investments; Poor operation and maintenance; Pollution of the resource leading to unnecessarily high water treatment costs; Corruption, tender fraud, maladministration and lack of governance; Failure of local government to ring-fence the water sector finances and the diversion of funds allocated to water to non-essential purposes; Inefficient institutional performance; Poor revenue and debt management; Inefficient water pricing that results in under-recovery of costs; A misunderstanding of the free basic water policy and the neglect to manage the quantity of water supplied in terms of the policy and the poor maintenance of indigent registers.

⁶⁰ "Carolina's water woes indicate large structural problems" Mail and Guardian, 19 July 2012.

⁶¹ Department of Water Affairs General Notice, Notice 888 of 2013, No.36790

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THE ABSTRACT OF THE PROJECT IS:

The research programme will integrate diverse levels, methods and disciplinary traditions with the aim of developing a comprehensive policy agenda for changing the role of the financial system to help achieve a future which is sustainable in environmental, social and economic terms. The programme involves an integrated and balanced consortium involving partners from 14 countries that has unsurpassed experience of deploying diverse perspectives both within economics and across disciplines inclusive of economics. The programme is distinctively pluralistic, and aims to forge alliances across the social sciences, so as to understand how finance can better serve economic, social and environmental needs. The central issues addressed are the ways in which the growth and performance of economies in the last 30 years have been dependent on the characteristics of the processes of financialisation; how has financialisation impacted on the achievement of specific economic, social, and environmental objectives?; the nature of the relationship between financialisation and the sustainability of the financial system, economic development and the environment?; the lessons to be drawn from the crisis about the nature and impacts of financialisation? ; what are the requisites of a financial system able to support a process of sustainable development, broadly conceived?'

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3	School of Oriental and African Studies	UK
4	Fondation Nationale des Sciences Politiques	France
5	Pour la Solidarite, Brussels	Belgium
6	Poznan University of Economics	Poland
7	Tallin University of Technology	Estonia
8	Berlin School of Economics and Law	Germany
9	Centre for Social Studies, University of Coimbra	Portugal
10	University of Pannonia, Veszprem	Hungary
11	National and Kapodistrian University of Athens	Greece
12	Middle East Technical University, Ankara	Turkey
13	Lund University	Sweden
14	University of Witwatersrand	South Africa
15	University of the Basque Country, Bilbao	Spain

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