

An investigation into the water infrastructure development financial allocation pathways in municipalities

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This report forms the essence of a comprehensive report undertaken in terms of the abovementioned project. The comprehensive report with appendices is available on the enclosed CD.

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EXECUTIVE SUMMARY

The water services sector has a number of attributes that determines its financing. Firstly, there are many decision-makers within the water services sector. Secondly, there are many sources of finance including the national equitable share, conditional grants, loans and tariff income. Thirdly, financial and human capacity within the sector varies considerably.

Because of the many institutions involved in all the processes, a complete picture of financing in the sector has not emerged. In order to analyse finances in the water services sector, this research project, following a well-known concept from business management, has postulated a 'value chain'. This envisages the adding of value through a number of sequential functions (or phases), as the technical and institutional arrangements change to match the challenges of each function. This also allows the examination of each function to determine the contribution of the institutions that lead it to overall efficiency and effectiveness. What is important in the context of regulated markets and prices is that "value", "cost" and "price" are not equivalent. (Theoretically they only come together in a perfectly open market.)

The purpose of this analysis is, on one level, to guide policy formulation in the water services and municipal sectors and on another level, to assist all decision-makers to be better informed in making financial decisions concerning matters such as financial grant allocations, tariffing, capital expenditure, operations and maintenance expenditure.

Chapter 3 of the report firstly describes the institutions that are involved in the delivery of water services. It notes that there are a number of institutional forms, namely national government departments, local government, a major public entity and national government business enterprises. They are administrated and regulated under several pieces of legislation and have different objectives and governance systems. Secondly, the chapter outlines the technical functions that have to be performed to deliver potable water to the ultimate consumer and receive back and process waste water. Finally the chapter describes the different supply models (or configurations of the value chain) that currently exist. There are four broad models which support the supply of water for municipal water services (all waste water functions are performed by the municipalities).

- Model 1: The municipality abstracts water itself directly from local sources;
- Model 2: The municipality sources water from schemes developed by national government;
- Model 3: The municipality sources water from a water board; and

- Model 4: The municipality sources water from a scheme implemented on behalf of government by a third party (TCTA).

Chapter 4 gives a broad overview of the main policies and related instruments that influence financing in the municipal water sector. These include policies related to finance of government institutions, local government management and water services sector policies.

Chapter 5 outlines the legislative framework for water services. Like that for policy, the legislation can be envisaged in three streams. Firstly, National Treasury administers legislation that regulates the financial affairs of all government institutions. In the context of this research, the Municipal Finance Management Act is probably the most important as it regulates the budgeting and tariff-setting processes of local government. Secondly, the Department of Cooperative Governance and Traditional Affairs (CoGTA) administers the suite of legislation that structures and administers the service delivery functions of local government. The most significant of these is the Municipal Systems Act that deals, inter alia, with the planning process through the IDP and the general service delivery functions. Finally the Department of Water Affairs (DWA) administers the National Water Act and the Water Services Act that are more sector specific.

Chapter 6 reports on the outcome of interviews with municipal officials and others directed at determining whether the budgeting and planning processes in local government followed the prescripts in the regulatory framework and at anecdotal level whether the process was regarded as effective. Interviews were conducted with role players in a sample of 22 municipalities, in all, representing about 36 percent of the South African population. Some of the outcomes are:

- overall the municipal budget and IDP processes were found to be aligned and effective at projecting community preferences;
- social or community desires, political motives, technical needs and financial sustainability can all drive the budgeting process;
- almost all of the interviewed municipalities cited backlogs on maintenance as a significant concern;
- revenue collection and debt management were found to be common issues across the municipalities;
- most municipalities have in place a local subsidy policy and practice for assisting indigent households;
- one of the main challenges identified in all of the cases is a lack of human capacity required to undertake key functions in the budget process;

- almost all the cases identified procurement processes (from tender to adjudication) as being complex, prescriptive and lengthy; and
- it was not clear whether the availability of finance was a limiting factor.

Chapter 7 describes international and national trends in financing the sector. It notes that, over the last decade, internationally the focus was originally on increasing the supply of financing, then on the demand side and finally settling on a balanced approach. The international debate on debt financing links innovation to the creation and stimulation of national capital markets, sub-national debt pooling and credit enhancement. An emerging theme is that of decentralisation in which the responsibility for service delivery is devolved to regional or local governments to realise the benefits of immediacy. The question of governance and its role in creditworthiness has remained in the centre of the debate. Frequent reference is made to the trilogy of tariffs, taxes and transfers.

The South African water services sector has access to a wide range of finance sources. No mechanisms were found in the international literature that could make a significant difference in the South African context. Moreover, it appears unlikely that attention to the supply side of financing will noticeably increase investment. Rather, attention will have to be paid to the demand side, i.e. the capacity of institutions to plan, prepare and implement projects and to effectively manage operations and maintenance. The research found nothing to suggest the water services sector is not receiving a reasonable allocation of total available funds either at the national government sphere or at the local government sphere.

Chapter 8 describes the financing instruments that are available to the water services sector. At the municipal level the equitable share and the conditional grants are the main external sources for most municipalities. Commercial debt and project lending by the DBSA is quite widespread and a few of the more empowered municipalities as well as the TCTA and some water boards have the financial capacity to make use of the bond market for capital. The MFMA prohibits municipalities from using long term debt for recurrent expenditure and the conditional grants such as MIG requires an applicant municipality to show that it has the resources for ongoing operation and maintenance. The equitable share is intended to finance those who are unable to pay for services so that the municipality must generally recover O&M costs from revenue.

Empirical research suggests that the demand side for debt is limited by capacity constraints, poor tariff collection, insecurity and lack of predictability over future functions and revenues and a legacy of a conservative approach to borrowing by municipalities. Nevertheless, in 2008 National Treasury suggested that there was significant scope for municipalities to leverage additional finance of around

R30 billion over the following three years from the private sector through instruments such as long term municipal bonds and bank loans.

Chapter 9 quantifies many of the financial figures but also makes the point that there is inconsistency between the sources of data. It has also not been possible in some cases to disaggregate the water services sector from other infrastructure or services.

The total amount of water sourced by water services authorities in 2007 was 3 667 Mm³/a. The metros delivered 61 per cent of all potable water and the “Top21” (B1) a further 21 per cent. Municipalities sourced 51 per cent of water from water boards. Revenue water amounts to 59 per cent of water sourced and of this 8 per cent is sold at zero tariff (the free basic water component). Indications are that around 35 percent of water sourced is lost in the system (i.e. non-revenue or unaccounted for water).

Tariffs lie at the core of sector financing. Tariffs are essentially set at three levels, viz. by the DWA for water resource management and the use of national infrastructure, by the water boards for purification and distribution and by the municipalities for final delivery. The national average tariffs for water services in 2010/11 were R0.018/kl for the water resources management charge; R1.19/kl for raw water from national infrastructure; R4.28/kl from water boards and R7.22/kl for the 20 to 60 kl block from municipalities.

The DWA Strategic Overview for 2008 estimated that about R22bn was available for operating expenditure in the water services sector in 2007/08. The estimated revenues of the major institutions in the water services value chain are DWA (R7.9bn by Parliamentary appropriation and R1.5bn by WTE tariffs), TCTA (R2.5bn), water boards (R7.7bn) and municipalities (R13bn). These figures cannot be simply aggregated because WTE revenue comes in part from other water user sectors, TCTA revenue comes from bulk users, water boards and municipalities and water board revenue comes from municipalities and other bulk users such as mines.

As far as expenditure is concerned, at the municipal level, the purchase of bulk water services makes up 37 per cent of operational expenditure, staff costs 16 per cent and repairs and maintenance 8 per cent. The last figure is low considering the poor state of municipal water infrastructure, particularly on the waste water side. The metros spend roughly twice **per capita** than do the Category B1 and B2 municipalities and roughly four times than does the remainder.

Estimated annual capital expenditures on water are R1.2bn by WTE, R5bn by TCTA, R 1.4bn by water boards and R8bn by municipalities. For municipalities this figure represents about 21 per cent of all sector capex.

A technical examination of the financial statements of water institutions reveals a range of financial positions. TCTA, the major water boards and a few municipalities are generally sound but the remainder including WTE are weak to parlous. The municipalities, because of low margins and the debilitating cash flow effect of bad debt, are unable to finance their expansion programmes and are increasingly reliant on subsidies and grants.

Chapter 10 examines the drivers of the value chain i.e. those characteristics that are likely to have an impact on financial efficiency. The drivers that have been identified are:

Tariffs

The South African water services sector has national government, a major state entity (TCTA), government business enterprises (water boards) and local government as important determinants of the composite price that the consumer must pay. Each of these institutions has different policy considerations in setting prices. All the price setters are generally driven by wanting some form of cost recovery although this research found that in some of the less capacitated municipalities the revenue collected from water services bore no resemblance to expenditure.

The WTE attaches considerable importance to historical costs and is only slowly moving to replacement cost concepts. The municipalities have to consider the free basic water policy in tariff setting. The DWA exercises some influence over tariffs, mainly with social objectives.

Other inefficiencies that creep in via the tariff process are related to the price inelasticity of tariffs, which simply result in costs being passed on to the end consumer, and collection inefficiencies, which either inflate the cost of service provision or result in a disjuncture between revenue collected and the expenditure budget.

A particular issue related to tariff setting is that municipalities have generally neglected waste water treatment; as the Green Drop Report attests. This implies that municipalities are externalising costs to the environment and downstream users. This runs counter to the widely-accepted principle and proclaimed government policy of 'polluter pays'.

Regulatory mechanisms

The water and sanitation sector is extensively regulated by legislation, regulations, standards, policy and guidelines. However enforcement remains weak. The legislation requires water services institutions to achieve many social, economic and financial objectives, most notably a balance between providing for the poor and financial sustainability. The DWA and municipalities have the structure and governance of traditional government, whereas TCTA and the water boards have the structure and governance of business enterprises. The result is that in DWA and the municipalities the emphasis is placed on extension of service areas and affordability whereas a far more business approach is adopted in TCTA and (most of) the water boards.

Institutional arrangements

The governance systems of the institutions in the water services value chain are substantially different and explain to a large degree the differences in financial capacity in the sector. The water boards and TCTA are shielded from the downward pressure on tariffs and the allocation of financial resources that is the hallmark of an electorate. Historically the major water boards have used their position as price givers to secure prices that allow them to build up the necessary human capital to fulfil their roles effectively. Municipalities on the other hand have been chronically underfunded and hence lack human capital.

Water services are subject to the trilogy of administration of National Treasury on finance, CoGTA on local government and DWA on the water sector. The epitome of this is that all three national departments administer separate legislation that impacts directly on tariffs.

The DWA sets itself the roles of “enforcer, enabler and supporter”. Many argue that these roles are conflicting and cannot be successfully achieved simultaneously. The call is for the establishment of an independent regulator, a position conditionally supported in the Parliamentary Portfolio Committee.

The natural monopolistic nature of institutions in the value chain also have an impact on their potential efficiency, as do the overlapping mandates of different government departments (human settlements, schools, clinics, and water provision).

Grant Financing

The MIG dominates the capital financing of municipal infrastructure but there are a number of concerns with grant funding, and its methodology and implementation. The first is that MIG and other grants are too focused on projects, without considering the broader needs of a municipality

(and the region). A second is that grants foster dependency. A third is that evaluation has been weak so that there is no certainty on what development has been achieved.

In the rural municipalities, the equitable share (an unconditional transfer) is significantly larger than tariff income and therefore plays a dominant role in service delivery. In the smaller municipalities especially there are indications that the reliance on grants is crowding out private sector investment as well as loans from dedicated institutions such as the DBSA and INCA.

The Physical flow of water

The largest cost on most municipalities' income statements is payments for bulk water – and yet studies show that only 50 to 70 per cent of this water is billed. One study indicated water losses of 25 per cent in the sector, with another 11 per cent distributed under the free basic water policy. This places significant pressure on how water is managed – both from a cost and conservation perspective.

Chapter 11 uses the prior analysis to assess potential inefficiencies in the value chain.

On water resource management it is noted that 12 years after the promulgation of the National Water Act, only two of the 19 CMAs have been established. This suggests that the trade-off of moving toward local participation as opposed to keeping a technical process centralised, is less favourable than had been envisaged. However in this context, the contribution of the WRM charge to the water services tariff build up is small.

The introduction of TCTA as the favoured mechanism for financing large water infrastructure has been successful in shifting the financial burden to the users. The TCTA has undoubtedly delivered effectively on its mandate but its efficiency is more difficult to assess.

As municipalities become less and less able to perform the purification and waste water treatment functions, the water board model appears more attractive. This study postulates above that the governance systems have allowed the water boards to capture adequate resources to be effective. However, National Treasury has pointed out that the water boards are not without problems and water boards with a preponderance of financially weak municipalities as customers have highlighted these problems. An institution cannot perform a highly technical function without financial resources and the ability to attract a threshold of technical skills.

The major players in the sector are able to access the bond market as the most efficient source of debt finance but generally the municipalities are too small. On the other hand the DBSA represents,

in a sense, a national bond pooling initiative with relatively low costs. The MIG and other conditional grants have the efficiency questions noted above and there is a case to be made that they and DBSA are “crowding out” other sources of finance including the private sector.

The inherent nature of the water services value chain as a monopoly brings inefficiencies. Inefficient behaviour in a competitive market is normally punished by reduced turnover and the threat of having to exit the market. Firms operating as a monopoly and without effective regulation do not face this threat and therefore inefficiencies are passed on to the end consumer through higher prices or reduced quality.

Institutional capacity is one of the most limiting factors across the water services value chain and causes major inefficiencies. Key functions such as budgeting, project management and the daily operations and maintenance functions are severely hampered. It limits the ability to adequately prepare projects that would be of interest to investors and introduces risk in the areas of revenue collection and debt management attracting risk premiums on interest rates.

Regulatory independence is a key discussion issue in the water sector value chain. Although some form of economic regulation is directed at particular institutions operating in the value chain, there is currently no formal regulator which undertakes rational economic regulation of functions from raw water abstraction to supply and eventually wastewater discharge. Many observers believe that regulatory independence is essential and that DWA has been unable to effectively reconcile its multiple roles.

Technical inefficiencies include a failure to plan adequately through mechanisms such as the water services development plans and failing to fully recognise the basic and added value of water services.

Chapter 12 concludes with recommendations and scenarios which it is suggested be read in full.

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ABBREVIATIONS AND ACRONYMS

| | |
|-------|---|
| CIP | Comprehensive Infrastructure Planning (a programme of CoGTA) |
| CMA | Catchment Management Agency |
| CoGTA | Department of Cooperative Governance and Traditional Affairs (Previously Department of Provincial and Local Government (dplg)) |
| DWA | Department of Water Affairs (Previously Department of Water Affairs and Forestry – DWAF) |
| IDPs | Integrated Development Plans |
| IWRM | Integrated Water Resources Management |
| LHWP | Lesotho Highlands Water Project |
| MFMA | Municipal Finance Management Act |
| MIG | Municipal Infrastructure Grant |
| MIIF | Municipal Infrastructure Investment Framework |
| MWA | Minister of Water Affairs (previously included Forestry) |
| NT | National Treasury |
| NWRS | National Water Resources Strategy |
| PFMA | Public Finance Management Act |
| PPP | Public Private Partnership |
| TCTA | Trans-Caledon Tunnel Authority |
| WMAs | Water Management Areas |
| WSA | Water Services Act (in context) |
| WSAs | Water Services Authorities (in context) |
| WSDP | Water Services Development Plan |
| WTE | Water Trading Entity (in DWA) |

1. INTRODUCTION

The Millennium Development Goals have established an international context within which South African macro socio-economic policies including RDP, GEAR and ASGISA have driven the rapid expansion of water and sanitation infrastructure over the past decade. Sectoral initiatives have been guided by the National Water and Sanitation White Paper, the National Water Strategy and the Strategic Framework for Water Services. A legislative framework has been established to regulate the process, and national goals have been set within the water sector and within other sectors, such as health and education, where water is a key element. Financing the water infrastructure that is needed for achieving these goals is an increasingly key issue.

The sector has unique attributes that determines its financing. Firstly, there are many decision-makers within the water services sector; located in national government departments, the water boards and local authorities. Secondly, there are many sources of finance including the national equitable share, conditional grants, loans and tariff revenue. Thirdly, financial and human capacity within the sector varies considerably.

Because of the many institutions involved in all the processes, a complete picture of financing in the sector has not emerged. Past initiatives have focussed on specific aspects and/or have been cross-sectoral with consequential generalisations. These include tariffing, routine decentralised budgeting, the Municipal Infrastructure Investment Framework (MIIF), and the feasibility studies undertaken to establish the financial viability of a national water resources infrastructure agency.

In order to analyse finances in the water services sector, this research project has postulated a value chain in water and sanitation services that envisages the adding of value through a number of sequential functions (or phases), as the technical and institutional arrangements change to match the challenges of each function. It regards “value” as a measure of the worth that is based purely on the utility derived from the consumption of a product or service. By value chain is meant the change in utility (expressed in monetary terms and partly as a tariff) as water services are delivered through the sequential processes from resource planning, abstraction, purification, distribution to reticulation and then through to waste water collection, treatment and discharge.

The purpose of this analysis is, on one level, to guide policy formulation in the water services and municipal sectors and on another level, to assist all decision-makers to be better informed in making financial decisions concerning matters such as financial grant allocations, tariffing, capital expenditure, operations and maintenance expenditure. This report is a condensed version of the full report with annexures prepared under the research contract.

2 THE VALUE CHAIN CONCEPT

The “value chain” or “value chain analysis” is a concept from business management. As originally introduced, it proposed separating a firm’s business into generic, discreet, value-generating activities and support functions that were to be analysed separately to better understand the firm’s core competencies and how each activity contributed to or determined the firm’s competitive advantage and shareholder value (Porter M., 1985). In due course the

What is important in the context of regulated markets and prices is that “value”, “cost” and “price” are not equivalent.

concept was expanded to include the firm’s upstream suppliers and downstream customers and more recently has been used in many fields. The central concept remains that each link in the chain is scrutinised to ensure that it is contributing optimally and is equally “strong” in the chain metaphor.

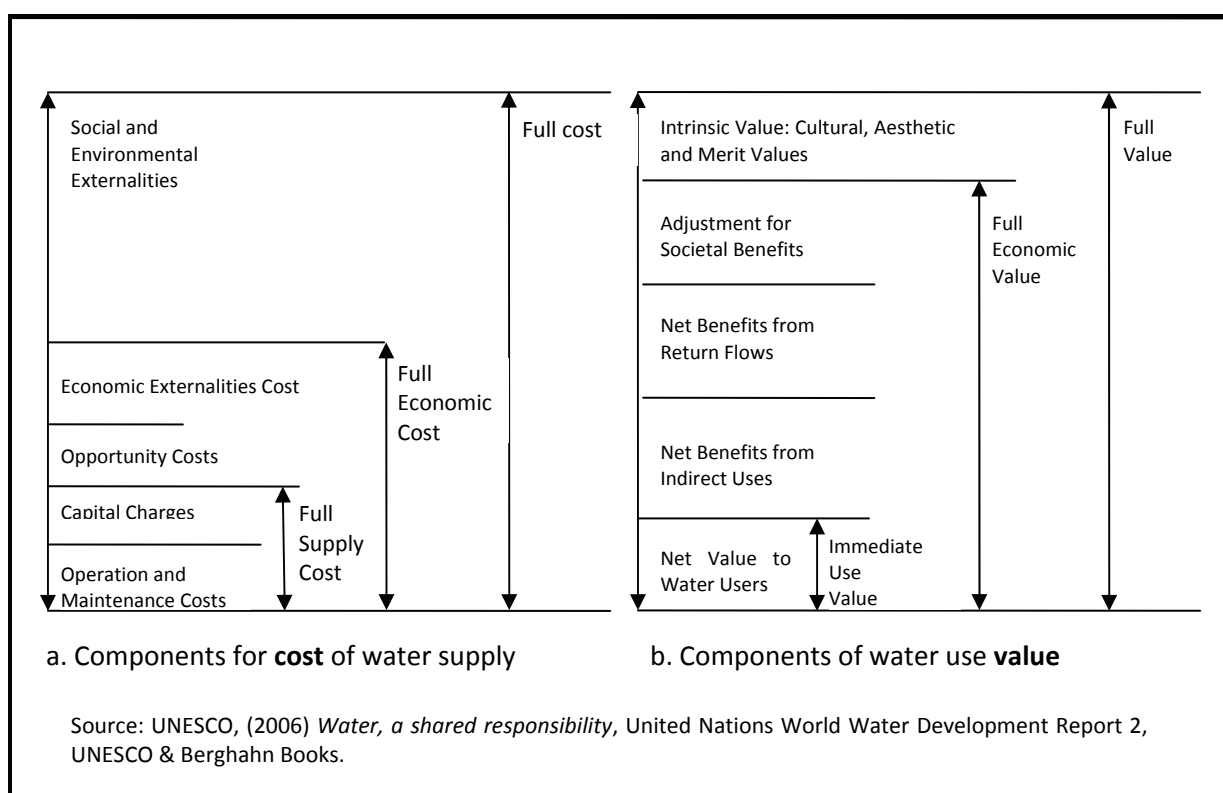
In the value chain concept postulated in this research the Department of Water Affairs adds value through water resources management and the implementation of national infrastructure. The Trans-Caledon Tunnel Authority (TCTA) adds value in some areas by financing, and more recently also by implementing, large infrastructure. The water boards add value in many areas by purifying and distributing potable water to municipalities that depend on the same source or river system. Finally, the municipalities add value by delivering water services to the end consumers and receive back waste water which they treat and return to the river systems. The metaphor is that the weakest of these phases or “links” determines the ultimate quality of the outcome namely water and sanitation services. (Note that this research deals with potable water that is supplied through municipal systems and does not consider water for agriculture or the direct delivery of raw water to mines, power stations and strategic industries).

In the water services sector, the **supply** side is driven by policy considerations and the price is largely set by administrative action that is strongly influenced by cost and social considerations rather than economics. The components of cost and value are shown in Figure 2.1. Similarly the **demand** side in the lowest income groups is driven by the essential nature of the good while at the same time the higher income groups have demonstrated high price **inelasticity** in the price range in which potable water services were traditionally supplied. All these considerations are captured in the international discourse around whether water services provide economic, social or merit goods. In economic terms there is said to be market failure and consequently a confusion of price signals inevitably leading to economic inefficiencies. The South African water services sector has national government, government business enterprises (water boards) and local government as important determinants of

the composite price that the consumer must pay. However, each of these institutions has different “drivers” or policy considerations in setting prices. The consumer however remains a price-taker.

The absence of a market price and the differing drivers implies, in an economic sense, that consumer and producer surpluses are masked and that consequently quantitative economic efficiencies or inefficiencies cannot be determined by disaggregating the value chain. Efficiencies would have to be determined at organisational level by using micro-economic techniques which is beyond the scope of this research. Nevertheless, there is value in analysing the value chain to provide indications of potential inefficiencies.

Figure 2.1: Relationship between cost and value



3 DESCRIPTION OF WATER SUPPLY MODELS/ARRANGEMENTS

Depending on the circumstances, there are several institutional sequences or models whereby raw water is sequentially managed, abstracted, distributed, purified, reticulated and delivered as potable water to the consumer. This section seeks firstly to describe the functions performed at identified stages in the water services value chain and secondly to describe the differing institutional models. Note that the focus is on the municipal supply of potable water.

3.1 Institutions

3.1.1 The Department of Water Affairs (DWA)

In terms of section 3 of the National Water Act (NWA), national government is the 'public trustee' of the nation's water resources. Acting through the Minister, DWA must *"ensure that water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner"*. DWA issues licences, constructs

National government is the 'public trustee' of the nation's water resources

and operates dams and other water works and generally administers water use. Through administering the NWA and the Water Services Act the DWA regulates and monitors the other institutions concerned with the delivery of water and sanitation services.

The DWA is funded from the national budget but also levies water use charges in terms of the National Pricing Strategy for Raw Water (MWA, 1999) (under review (DWA, 2010b)), which allows for charges for water resources management, infrastructure development and for achieving social equity and economic objectives. A draft companion strategy envisages charging for waste water discharges.

The DWA has created a Water Trading Entity (WTE) to manage charges for services rendered by DWA to water users. The WTE attempts to ring fence the costs of national infrastructure development, the costs of operating and maintaining the infrastructure, and the revenue received from charges. The WTE is meant to recover all costs, but deficits for the past three years have averaged R1.5 billion per annum. Whilst the infrastructure charge includes an element for depreciation as well as return on assets (ROA), the WTE has not been able to collect sufficient revenue to provide in full for the refurbishment or replacement of its assets.

3.1.2 Catchment Management Agencies (CMAs)

CMAs are provided for in the National Water Act and are intended to manage water resources in each of the 19 defined water management areas. Two CMAs have been established but are not fully operational and they currently have no influence on financing in the sector.

3.1.3 TCTA

The TCTA is established in terms of the NWA and classified as a ‘Schedule 2: Major Public Entity’ in terms of the PFMA. It is a specialised liability management institution which, under a specific directive by the Minister in terms of the NWA, finances and implements bulk raw water infrastructure. It owes its existence to the fact that government does not wish to finance some of the national water infrastructure from the national budget but rather that direct users should fund the project.

After the completion and handover of a project, the TCTA does not permanently own, manage or maintain the assets but reflects the value of the future income stream from the project as an intangible asset on its balance sheet (TCTA Financial Statements, 2009). There are indications that this is under review.

TCTA does not permanently own, manage or maintain the assets but reflects the value of the future income stream from the project as an intangible asset on its balance sheet

In order to ensure corporate sustainability, the TCTA tariff must, over the medium term, recover the full financing costs of each of its projects and its own administration costs. In this regard, the TCTA is required to annually consult with its major clients before setting the tariff and is subject to oversight by the Minister of Water and Environment Affairs.

TCTA receives its projects via a directive from the Minister. It does not operate the projects it finances and implements. In this arrangement there is little scope for operational inefficiencies. TCTA has no other revenue other than the charge that is levied to defray a project’s financing costs and TCTA’s administration costs.

3.1.4 Water boards

Water boards are established by the Minister of Water Affairs (MWA) in terms of the Water Services Act and are classified as ‘Schedule 3B: National Government Business Enterprises’ in terms of the PFMA. Water boards are included in the Water Services Act definitions for “water services institution” and “water services provider”. Water boards are established in a defined area. The core

reason for their establishment is to utilise a single perhaps remote water source for several municipalities and in some cases for other bulk users. Water boards are also the type of technically focussed organisations that are necessary for the complex purification and distribution function.

The water boards are regulated by the MWA through the provisions in the Water Services Act and the regulations on tariffs that require the submission of reports and plans. However, the reports, plans and tariff setting do not require approval but rather the Minister to intervene if she is dissatisfied.

The water boards are intended to be financially self-sufficient and should therefore set tariffs that ensure their medium and long term financial sustainability.

There are thirteen water boards in South Africa, which vary tremendously in size and institutional capacity. The water boards are intended to be financially self-sufficient and should therefore set tariffs that ensure their medium and long term financial sustainability. However, some water boards such as Bushbuckridge Water have received ongoing transfers from national government.

3.1.5 Local government water service authorities and providers

Section 158(1) of the Constitution states: *“A municipality has executive authority in respect of and the right to administer the local government matters listed in Part B of Schedule 4...”* These matters include *“Water and sanitation services limited to potable water supply systems and domestic waste-water and sewage disposal systems”*. In terms of section 154, national and provincial government must, by legislative or other means, support and strengthen local government capacity.

The allocation of service delivery powers and functions across local and district municipalities is made in terms of the Municipal Structures Act. Mechanisms for the practical delivery of services are primarily regulated by the Municipal Systems Act, which prescribes the process for establishing an integrated development plan (IDP) in terms of which all services are to be delivered. The budgeting process needed for providing resources for implementing the IDP is prescribed by the Municipal Finance Management Act (MFMA).

The setting of tariffs for municipal water services is largely governed by section 74 of the Municipal Systems Act, which imposes a number of principles, and states that, *“tariffs must reflect the costs reasonably associated with rendering the service, including capital, operating, maintenance, administration and replacement costs, and interest charges”*.

3.2 Functions in the water services cycle

In order to provide context for the financial analysis that follows, this section describes in outline the functions that have to be performed in the water services value chain.

3.2.1 Water resources management

Water resources management includes a number of functions, *inter alia* planning and implementing catchment management strategies; monitoring and assessing water resource availability and use; water use allocations; water quality management; water resource protection and conservation; and institutional development and the enabling of public participation.

3.2.2 Water research

The research commissioned by the Water Research Commission relates to all links in the value chain and is funded by a small charge against all raw water abstractions that is collected by the DWA.

3.2.3 Water resources infrastructure

Water resources infrastructure includes dams, weirs, canals, pipelines, reservoirs etc; in fact anything that is used to store, divert or control the water in rivers i.e. “raw” water. Apart from planning that generally falls under water resources management, the process will include establishment, operation and maintenance. Physical establishment is of a capital nature and includes design, social and ecological environmental management, construction and commissioning. Operation and maintenance has recurring income and expenditure. National government, through the WTE, owns and operates most of the major water resources infrastructure throughout the country. The water boards and local government have some projects that were implemented many years ago.

3.2.4 Purification and distribution

The first part of this function involves receiving raw water and treating it to create potable water that is safe for human consumption and complies with drinking water standards (SANS, 2005). The principal processes are clarification and disinfection. The second part of the function involves distributing the potable water to holding reservoirs closer to the consumers. Often this involves great distances and differences in height that use considerable energy.

3.2.5 Reticulation

Reticulation involves the pipeline system from the potable water holding water reservoirs to individual consumers. As the size of reticulation systems grows, so too does the complexity of their

management. Routine functions include secondary disinfection, pressure management, leak detection and repair, metering and meter reading.

Reducing non-revenue water (NRW) losses is an aspect of municipal water services management that is becoming increasingly critical to optimise available supplies and reduce avoidable financial losses. Some NRW is unmetered or unbilled; is used for internal purposes or goes to legitimate but non-revenue purposes. A high proportion is simply lost. This is a loss of the scarce resource from the supply system, the cost of purification and pumping, the opportunity cost of alternate uses and of unnecessary investment in additional capacity.

3.2.6 Sewer reticulation

Sewers are the inverse of potable water reticulation, commencing with small diameters at the individual household and increasing in diameter as the collection area increases. Challenges in avoiding and clearing blockages arise from the nature of sewage and the fact that sewers flow under gravity. This function therefore requires routine preventative maintenance and costly standby repair teams.

3.2.7 Waste water treatment

Waste water treatment consists of the reception of waste water and its treatment to a quality standard that is acceptable for the water course into which it is discharged. It is a complex technical process requiring considerable civil and chemical engineering skills.

3.3 Value chain models

This section describes the different supply models (or configurations of the value chain) that currently exist. Each stage is one of the functions described above and with financing added to complete the picture. Note that firstly, the DWA presently undertakes all water resources management. Secondly, the municipalities are constitutionally mandated to reticulate potable water to the ultimate consumers and provide all the waste water services in their jurisdictions (with a few exceptions). They may however contract with water services providers to do the actual work but they retain accountability. There are four broad models which support the supply of water services.

- Model 1: The municipality abstracts water itself directly from local sources;
- Model 2: The municipality sources water from schemes developed by government;
- Model 3: The municipality sources water from a water board; and
- Model 4: The municipality sources water from a scheme implemented on behalf of government by a third party (TCTA)

Table 3.1: Water services delivery model value chains

| Model | Water Resources Management | Financing | Storage and Abstraction | Purification and Distribution | Reticulation and Delivery | Waste Water Collection | Waste water treatment |
|-------|----------------------------|-----------|-------------------------|-------------------------------|---------------------------|------------------------|-----------------------|
| 1 | DWA | | Municipality | Municipality | Municipality | Municipality | Municipality |
| 2 | DWA | | DWA | Municipality | Municipality | Municipality | Municipality |
| 3A | DWA | | DWA | Water board | Municipality | Municipality | Municipality |
| 3B | | | Water board | Water board | | | |
| 4A | DWA | TCTA | DWA | Municipality | Municipality | Municipality | Municipality |
| 4B | | | | Water board | | | |
| 4C | | | Municipality | Municipality | | | |

Notes:

This diagram indicates the institutions that may be involved in the different functions in the value chain and which raise a charge/tariff for that function. This diagram relates to potable water services at household level. It does not apply to agriculture, mining, industrial or power generation supplies. In all cases DWA currently performs the WRM function but in future this will be devolved to catchment management agencies. DWA applies the infrastructure charge on a project specific basis. Currently the municipalities collect and treat waste water but in future this function may be taken over by water boards of joint municipal undertakings. Currently the TCTA charge applies in the Vaal River System and to the Berg Water Project but this will be expanded. Where water boards are involved they perform the purification and distribution function.

4 THE POLICY AND STRATEGY FRAMEWORK

This section gives a broad overview of the main policies and related instruments that influence financing in the municipal water sector. It focuses on the formal expression of government policy by way of white papers or other published documents.

4.1 Policy Framework for Municipal Borrowing and Financial Emergencies, 2000

This policy framework built on the Local Government White Paper, 1998 and formed the basis for the Municipal Finance Management Act, 2003. The vision included:

“Government believes that access by municipalities to private capital markets is an important element of ensuring an efficient system of local government. Ultimately government wishes to promote the emergence of a vibrant and innovative primary and secondary market for short and long term municipal debt.”

4.2 The White Paper on Water Supply and Sanitation, 1994

Current water policy evolved from a policy review process which commenced in 1994 with the White Paper on Water Supply and Sanitation. The White Paper included such principles as “Some for all rather than all for some”; recognising the economic value of water; the “polluter pays” principle and the view that basic services are a human right. The White Paper seeks to maintain environmental integrity, and acknowledges that development in the water sector is not possible in isolation from other sectors. It therefore acknowledges the necessity of full intra-governmental and stakeholder co-ordination, through integrated development.

4.3 Strategic Framework for Water Services, 2003

In 2003, the Strategic Framework for Water Services (SFWS) was published in order to capture, reflect and adapt to the changes in the water sector since the drafting of the 1994 White Paper and the Sanitation Policy. The SFWS puts forward a 10 year vision for the water services sector and sets

The Strategic Framework for Water Services puts forward a 10 year vision for the water services sector

out the framework for achieving this vision which includes a clear institutional framework; a financial policy framework; a planning framework based on a water services development plan (WSDP) which is informed by the relevant IDPs; and a regulatory framework which aims to protect consumer and public interest.

4.4 Tariff Policies

Tariffs are determined under the legislative framework and are briefly reviewed in paragraph 5.

4.4.1 Free basic water

The “Free Basic Water Policy” (FBW) is part of a broader government initiative to provide free basic services to those unable to afford them. It was to be funded *“using a combination of the equitable share of revenue of local government and internal cross-subsidies from appropriately structured water tariffs in a manner which best reflects the specific situation in the respective local government area”*. Most municipalities have provided the first 6 kl free to all consumers to avoid the administrative process and cost of determining who should receive the free allocation. The deficit this creates is meant to be made up in the rising block tariff (DWA, 2009a) where the increase probably has the added benefit of discouraging use.

4.4.2 Free basic sanitation

As with the free basic water policy, the national free basic sanitation policy is aimed at promoting affordable access by poor households to a basic level of sanitation service. Funding for free basic sanitation is also obtained from the equitable share and through cross-subsidisation. It is up to the individual municipality to determine the appropriate technical solutions and allocate subsidies accordingly.

4.5 Local Government Turnaround Strategy, 2009

In 2009, an assessment of local government revealed a range of problems and challenges that were placing the local government system in distress and preventing it from becoming fully functional. The core areas of concern were serious leadership and governance challenges; very poor financial management in many municipalities; the inability of

The Turnaround Strategy was adopted in an effort to stabilise local government and put municipalities back on the path of responsive and accountable service delivery.

many municipalities to deliver basic services; and inadequate human resource capital to ensure professional administrations, and positive relations between labour, management and councils (CoGTA, 2009b, 18). A Turnaround Strategy was adopted in an effort to stabilise local government and put municipalities back on the path of responsive and accountable service delivery.

4.6 Draft National Water Services Regulation Strategy

DWAF has prepared a Draft National Water Services Regulation Strategy, which envisages DWAF as the sector “regulator” with a far more active role than has hitherto been the case. However, as part of the national budgeting process for 2010/11, the Financial and Fiscal Commission recommended that an independent water regulator be established, a recommendation that government, in presenting the explanatory memorandum to the Division of Revenue Bill to Parliament, accepted subject to cost and affordability (National Treasury, 2010c: p65). At the time this report was prepared the implications were still unclear.

5 THE LEGISLATIVE FRAMEWORK

This section reviews the legislative framework that guides financing in the water services

sector. Apart from the Constitution, there are three origin streams of legislation namely: the financial, local government and water sector streams.

The legislative framework for water services is complex but has its roots firmly in the **Constitution**

The legislative framework for water services is complex but has its roots firmly in the **Constitution**, which provides that everyone has a right to have access to sufficient food and water. The Constitution also establishes local government as a sphere of government with the executive authority and the right to administer the local government matters listed in Part B of each of Schedules 4 and 5, including *“water and sanitation services limited to potable water supply systems and domestic waste- water and sewage disposal systems”*.

Section 154 provides that *“national and provincial government by legislative and other measures must support and strengthen the capacity of municipalities to manage their own affairs, to exercise their powers and to perform their functions”*. While section 151 prohibits national and provincial government from compromising or impeding a municipality in the exercise of its powers or performance of its functions, section 139 provides under the supervisory role of provincial government that the provincial executive may in specified circumstances intervene. The other important element in the Constitution is the financial arrangements, which in part provide that revenue raised nationally must be equitably divided among the spheres of government. Finally, it can be noted that Parliament has enacted constitutional amendments in respect of sections 139 and 320 (in 2003 and 2001 respectively) to improve management of municipal financing.

The **Municipal Finance Management Act (MFMA)**, in respect of municipalities, and the **Public Finance Management Act (PFMA)**, in respect of other government institutions in the water services value chain, regulate the financial matters of all spheres of government including aspects of tariffing.

The MFMA and the PFMA regulate the financial matters of all institutions in the water services value chain, including aspects of tariffing.

These acts are administered by National Treasury including through regulations and National Treasury Circulars.

Water services are just one of the services that local government must deliver. Collectively these services are regulated by the **Municipal Systems Act** which is administered by CoGTA and mainly through the provinces, because of this being a functional area of concurrent national and provincial legislative competence. Of importance for water services are firstly, the mandatory procedures a municipality must go through to establish its IDP, which in turn guides the budgeting process for capital works. No project may be placed on the budget or receive Municipal Infrastructure Grant (MIG) funding unless it is in the IDP. Secondly, the MSA provides that every municipality must have a services tariff policy and provides the procedures, including participation, that must be followed.

The **National Water Act** (NWA), administered by the DWA, regulates the protection, use, development, conservation, management and control of water resources. The NWA, in the context of the value chain, prescribes a pricing strategy and standards for raw water use charges. It is the legislation that provides the framework for regulating the discharge of waste water from *inter alia* municipal waste water systems. It is also the legislation under which TCTA was established and is regulated.

The **Water Services Act**, administered by the Department of Water Affairs, regulates all aspects of water services. Regulations on norms and standards and on tariffs have been promulgated (MWA, 2001b and MWA, 2001c). The Water Services Act is also the legislation under which the water boards are established and regulated.

It is evident from this brief outline that all three legislative “streams” regulate tariffs to some extent.

6 ACTUAL MUNICIPAL PLANNING AND BUDGETING PROCESSES

This section presents an overview of actual budgetary decision-making processes, with special reference to water and sanitation services in South African municipalities, that is based on interviews conducted with various role players in a sample of 22 municipalities. In all, the sample municipalities represented about 36 percent of the South African population.

6.1 Introduction

In general, the municipal budget and IDP processes were found to be closely aligned. Budget processes are initiated by the chief financial officers (CFOs) through a budgeting department which prepares a timetable outlining key deadlines for budget preparation, approval and inputs from the IDP process.

The municipal budget and IDP processes were found to be closely aligned

6.2 The IDP process

The investigations found that in most cases, municipal technical staff who observe deficiencies or needs not captured in the IDP process, were able to add to the list before translating the expressed needs into project recommendations. However, the interviews did find one case where technical departments felt that prioritisation was politically based at the expense of real technical needs. Typically, projects are prioritised in line with the overall goals and objectives of the municipality which may be of a social or economic nature.

6.3 The budget process

The municipal departments draft their budgets based on the IDP and following budget instructions which are issued two months into the prior financial year. In some of the municipalities reviewed for this study, and the metros in particular, there was evidence of further sector planning where the IDP clearly informed a working WSDP and Master Plan with short-, medium- and long term horizons. This was coupled with reference to the National Strategic Framework for Water Services and a spatial framework for the municipality's development.

The municipal sector departments have latitude to motivate for prioritisation of infrastructure not identified in the IDP but which may be essential for service delivery (usually bulk services), and in

these cases the departments do make such motivations. However in most cases and certainly in most local municipalities the IDP is the chief reference in budget formulation.

The degree to which political interests influence allocations seems to be a function of the level of communication, interaction and trust between the political and administrative arms. Most of the stakeholders interviewed reported a good relationship between themselves and the political arm of the municipality, which meant that political influences remained in line with the statutory processes and did not negate the needs identified in the IDP. Several interviewees remarked that there had been a significant improvement in the process and compliance over the last few years.

6.4 Drivers of the budgeting process

Four primary drivers influence the budgeting process. These are social or community desires, political motives, technical needs and financial sustainability (of capital projects). The interviews found that the drivers or delivery objectives differed between the municipalities, although they were all prevalent to a greater or lesser degree. As expected, in smaller municipalities social imperatives were the key driver in the budgeting process. Financial sustainability of capital projects is a key concern for the metros, which was one of the reasons given for not always using the full MIG allocation (the resulting operating expenditure is not always sustainable).

Social or community desires, political motives, technical needs and financial sustainability drive the budgeting process

6.5 Sources of finance

Much of the municipal budgeting process is driven by the availability of finance and almost more importantly, its ability to access the sources. The sources of finance are described in paragraph 8.

Backlogs on maintenance are a significant concern

6.6 Maintenance backlog

Almost all of the interviewed municipalities cited backlogs on maintenance as a significant concern. The scale of outstanding work makes it difficult to fund out of operating revenues, but at the same time most of the work does not qualify as 'capital expenditure' and does therefore not qualify for most of the grant and donor funding that is available. It also does not generally result in additional revenue streams that can be isolated for use in paying back loans.

One of the municipalities stated that it had recently developed a tailored master plan specifically to address its maintenance backlog.

6.7 Credit control policies

Revenue collection and debt management were found to be common issues across the municipalities. As can be expected the problem of under-collection was most severe in the smaller municipalities. Authorities have addressed this by either instituting direct debt management measures or by undertaking programmes to educate consumers on the relevance of paying for services. A typical debt management measure is the (flow rate) restriction of water to non-payers.

6.8 Local subsidy and indigent policies

Most municipalities have in place a local subsidy policy and practice for assisting indigent households. These policies vary from municipality to municipality, and a challenge identified by one of the municipalities is the absence of ‘strict criteria’ for identifying and classifying indigent households. This has resulted in households that aren’t necessarily indigent being classified as such and benefitting from the policies, which in turn narrowed the revenue base.

6.9 Constraints and challenges

One of the main challenges identified in all of the cases is a lack of human capacity required to undertake key functions in the budget process. Some interviewees also noted a severe shortage of artisans to perform maintenance and operations.

One of the main challenges identified in all of the cases is a lack of human capacity

Almost all the cases identified procurement processes (from tender to adjudication) as being complex, prescriptive and lengthy, which posed additional challenges to the efficiency of service delivery.

Although stated in only one of the interviews, a noteworthy challenge with regards sourcing of MIG funds is that the process for application of MIG funds was claimed to be out of sync with the IDP process. The municipality has to submit its MIG requests at a time when it is still undertaking its IDP review, which means that needs are not captured in the MIG requests, until the next cycle for submission. Participants at the workshop contended that this is not the case. Municipalities were unanimous in their view that MIG funding was insufficient to meet pressing infrastructure needs.

Many expressed concern at what would replace the MIG when it is due to be phased out in 2013. At the same time, not all MIG funds are spent each year. In some cases this is due to the capacity issues raised above, although interviewees at municipalities that had failed to spend their allocation cited two main reasons. The first is the need to meet specific criteria – including the requirement for matched funding, and the second is the need to source funds to support the resulting operating and maintenance costs of the new infrastructure.

Municipal officials were ambivalent on whether they regarded the availability of finance as a limiting factor.

It was not clear whether the availability of finance was a limiting factor. When interviewing people from the finance side, their view was that additional finance for capital projects was constrained by the municipality's ability to meet the increase in costs (interest, depreciation, operations and maintenance). Moreover, even where a new project may demonstrate financial self-sustainability, the CFO is still required to assess the impact on overall risk to the municipality and the overall debt ratio. Taking on additional debt for a new water project may prevent the municipality from funding another project which has been accorded a higher priority by the IDP process – even though the source of funds to repay the projects will be different (e.g. electricity revenue versus water revenue).

A concern raised by some of the water services personnel interviewed was a lack of direct benefits to operations from increased revenue or reduced costs. For example, savings in bulk water purchases generated by water demand management activities (such as preventing pipe bursts) are not always passed on to the water services budget. Benefits from assisting with the collection of water tariffs (to achieve a lower bad debt ratio than that in the budget) are also often not passed on to the water services department.

7 FINANCING TRENDS

7.1 International trends

Following the International Decade of Water, in the early 1990s, a period ensued during which the developed countries promised much, including the guideline that developed countries should spend 0.7 percent of their GDP on development aid. This was destined not to happen easily and much of the debate of the early years of the new decade revolved around methods to increase the flow of aid. Initiatives included the Monterrey Consensus, the EU Water Initiative and the Camdessus Panel.

The latter hinted at the idea, later to be forcibly expressed by the Gurria Task Force, that the demand side of financing was as important if not more so, than the supply side. By the time of the Third World Water Report, the Fifth World Water Forum and the Doha Declaration, the international discourse had turned to a balanced approach.

The demand side of financing is as important if not more so than the supply side

Another emerging theme is that of decentralisation in which the responsibility for service delivery is devolved to regional or local governments to realise the benefits of immediacy. This in turn spurred initiatives in sub-national lending and the need for creditworthiness at this level. Intermediaries such as specialised development funds or banks have been topical as a means to reduce and spread risk to levels acceptable to international lenders. The encouragement of national capital markets has also been prevalent.

The question of governance and its role in creditworthiness has remained in the centre of the debate. It has now been joined by financial planning and management with a focus on optimising all sources of finance with frequent reference being made to the trilogy of tariffs, taxes and transfers.

7.2 South African trends

The South African water services sector has been largely atypical of the international trends linked to other developing countries. Notably it has already exceeded the internationally set water and sanitation supply targets in the Millennium Development Goals and has its own ambitious targets.

The South African water services sector has access to a wide range of finance sources. These include parliamentary appropriations, government grants, user charges at various stages in the value chain (raw water, bulk water, and municipal tariffs), donations, internal reserves, debt and off-balance

sheet financing. These funds are channelled through a number of sources, including National Treasury, CoGTA, DWA, the TCTA, Water Boards and Municipalities. The research has not found anything to suggest the water sector is not receiving a reasonable allocation of total available funds either at the national government sphere or at the local government sphere.

The research has not found anything to suggest the water sector is not receiving a reasonable allocation of total available funds

National Treasury's (2008) review of local government finance estimates that debt finance could be increased almost three-fold to just under R17bn. However, human and institutional capacity to implement and manage projects is increasingly identified as the limiting factor, rather than finance.

Whereas the international debate on debt financing links innovation to the creation and stimulation of national capital markets, sub-national debt pooling and credit enhancement, South Africa already has active institutions in these fields. The DBSA in the public sector and INCA in the private sector both use the capital market for raising funds for providing a number of financial products to municipalities for infrastructure development, including in the water sector. TCTA, Rand Water, Umgeni Water, Johannesburg, Ekurhuleni and Cape Town also use the capital markets.

South Africa already has active institutions in the fields of national capital markets, sub-national debt pooling and credit enhancement.

An increasing concern is that while the focus has been on capital financing for extending water and sanitation services, the operational finance needed for existing infrastructure has been neglected and the infrastructure is described as ageing, inefficient and vulnerable to major breakdowns. The South African Institution of Civil Engineers rates the condition of water services infrastructure as poor and the Blue Drop and Green Drop initiatives of DWA (2010a, 2010c), while celebrating excellence in some municipalities, have not avoided drawing attention to many deficiencies of municipalities that are unable to effectively deliver services, which is described as aggravated by a lack of technical, financial and managerial skills.

Financial management in local government is emerging from a difficult transition period. Firstly, the accounting system has changed to the system known as Generally Recognised Accounting Practice. Secondly, the MIG has replaced other

South African financing in the sector is sophisticated by developing country norms.

mechanisms for national financing of infrastructure in local government and the planning process in the form of the IDP has been introduced. The new systems require good governance in the form of accountability, transparency and so on.

A comparison of South African and international financing trends suggest that South African financing in the sector is sophisticated by developing country norms. No mechanisms were found in the international literature that could make a significant difference in the South African context. Moreover, it appears unlikely that attention to the supply side of financing will noticeably increase investment. Rather, attention will have to be paid to the demand side, which implies that potential borrowers will have to have their technical and financial management capacity strengthened to plan, finance and execute “bankable” projects. This is also a necessary condition to increasing financial flows through the national grant funding mechanisms.

8 FINANCING INSTRUMENTS IN SOUTH AFRICA

This section firstly looks at the supply side of financing as broad categories, or instruments, of funding that are available to institutions in the water sector. It then considers the demand side from DWA, TCTA, the water boards, and municipalities – to assess the sources of funds that are generally accessible to each. Finally it considers reconciliation between supply and demand.

8.1 The supply side

8.1.1 Equitable share

Part of general municipal financing and hence also of the water services sector is by the “equitable share”. The equitable share is constitutionally provided and is local government’s part of revenue raised nationally. Based on a formula, the Division of Revenue Act annually determines what the share of each municipality will be. The transfer to the municipality is unconditional. In FY2011 the transfer was R30bn out of the total appropriation of R818bn (Division of Revenue Act, 2010: Sch. 1)

The equitable share is constitutionally provided and is local government’s part of revenue raised nationally. The transfer to the municipality is unconditional.

8.1.2 Parliamentary appropriation

In FY 2011 the budget appropriation to DWA (Vote 37) was R8.0bn which included R1.9bn for infrastructure development and rehabilitation in the National Water Resources Infrastructure Programme. A further R1.3bn was in respect of transfers and subsidies (Appropriation Act, 2010: 64).

8.1.3 Government grants

Part of the national government’s share of revenue is allocated to the programmes that are promoted by national government. The funds are placed on a national department’s vote and that department administers disbursements usually by setting criteria and application procedures. The grants are conditional and there are complaints that satisfying the conditions is too onerous. By far the largest of these conditional grants for infrastructure is the Municipal Infrastructure Grant (MIG) administered by CoGTA and amounting to R9.9bn in 2010/11. The purpose is *“to provide specific capital finance for basic municipal infrastructure backlogs for poor households, to micro enterprises*

and social institutions servicing poor communities” (Division of Revenue Act, 2010). An example of a conditional grant administered by DWA is the Regional Bulk Infrastructure Grant amounting to R893m in 2010/11.

8.1.4 Debt

The SA Bond Exchange offers a mechanism whereby water services institutions can raise finance by directly issuing bonds. However, to be successful an issue has to be quite large and the issuing institution must have the confidence of the market. This rules out most and only TCTA (R23bn), Rand Water (R628m), Umgeni Water (R917m), City of Johannesburg (R9.2bn), City of Cape Town (R2.2bn) and Ekurhuleni (R815m in July 2010) are in the market.

For a bond market issue to be successful it has to be quite large and the issuing institution must have the confidence of the market.

The Development Bank of South Africa (DBSA) is the major public sector development finance institution (DFI) providing **soft loans** for infrastructure. The DBSA provides between R3bn and R5bn per annum in loans – over 80 per cent of which are targeted at municipal infrastructure. There has been a perception that DBSA is “crowding-out” the private sector (Liebig *et al.*, 2008).

Several commercial banks advance loans to water services institutions, particularly municipalities. Banks base their lending on a borrowing entity’s financial statements and its ability to service the debt. There are about 25 municipalities that have obtained an independent credit rating from a credit rating agency that enhances their attractiveness to lenders. However, the financial position of the great majority of municipalities is in a parlous state and their chances of significant borrowing are slim.

The consolidated financial position of municipalities (StatsSA, 2010) shows that at 30 June 2009, municipal long term loans amounted to R24bn of which half was from the DBSA. It has not been possible to separate how much of this went to the water services sector.

8.1.5 Public private partnerships (PPPs)

South Africa has had success with PPPs in other sectors notably transport infrastructure. There has also been instances in the water services sector of project or off-balance sheet financing at

PPPs in the water services sector have not met with much success in the sector regulatory environment.

Nelspruit, Dolphin Coast, Rustenburg and Roodeplaat. Special purpose vehicles have included trusts. However, the sector's regulatory environment, reinforced by resistance from civil society, has proved to be difficult and except for Rustenburg the special purpose vehicles, have been largely unwound.

8.1.6 Tariffs

The DWA WTE has the target of recovering all costs of the national water infrastructure but had a deficit of R1.5bn in 2009.

TCTA and the water boards are structured such that, to ensure financial sustainability all costs including debt servicing must be covered by revenue. Except for a few of the smaller boards this is generally the case. Overall in 2009, the water boards collectively made a surplus of R1.3bn on revenue of R7.7bn (DWA 2010e). The surplus is put into reserves and used to fund capital programmes.

Collectively municipalities had a small surplus on the water services current account in 2009. Because of accounting practice in municipalities this does not include debt servicing. However, the consumer debt position, including for water services, as reported elsewhere in this report, continued to deteriorate so that there was actually a negative cash flow on the service and no opportunity to fund capital works from this source. Finally, it is noted that a small part of municipal capex comes from development charges.

8.1.7 Donor funds

In 2009, foreign assistance for the sector that was channelled through DWA amounted to R446m of which R380m was for water and sanitation services in the Masibambane Programme (DWA Annual Report 2009: 228). No estimate was made of any other channels but these are believed to be small. (In 2009, total local and foreign aid assistance for South Africa totalled R1.3bn or about 0.2 per cent of national revenue (National Treasury, 2009c)).

8.2 Demand side analysis

The demand side of financing considers the capacity and desire of institutions to receive funding. DWAF reports on existing backlogs can give an indication of what the demand should be. We will then consider the capacity and desire for each of the sources of funds discussed above.

8.2.1 Backlogs in meeting the demand for water infrastructure

Cost modelling by the Municipal Infrastructure Investment Framework (MIIF) indicates that current budgets are insufficient to meet service demands as well as backlogs. They reach the following conclusion (PDG, 2008: 72):

“Considering only the financial parameters, the only way it will be possible to achieve the [service delivery] targets is by cutting down on service levels, rapidly increasing infrastructure grants to economically weak municipalities and creating a step change in the willingness of other municipalities to borrow.”

MIIF cost modelling indicates that current budgets are insufficient to meet service demands as well as backlogs.

8.2.2 Demand for government grants

Interviews, with municipalities reveal that in some the demand for MIG always exceeded what they were allocated, while in others they failed to spend their allocation – indicating an excess of supply. The National Treasury review of Local Government expenditure (2008) finds that municipalities are becoming increasingly dependent on grants, with average levels of dependence expected to rise to over 30 per cent by 2010.

8.2.3 Assessment of debt borrowing capacity

Empirical research (Liebig *et al.*, 2008) suggests that the demand side for debt was limited by capacity constraints, poor tariff collection, insecurity and lack of predictability over future functions and revenues and a legacy of a conservative approach to borrowing by municipalities. Nevertheless, according to the National Treasury (2008: 77) there is significant scope for municipalities to leverage additional finance of around R30 billion over the 2008 to 2011 period from the private sector through instruments such as long term municipal bonds and bank loans. This implies that the potential supply is more than double the current demand.

The demand side for debt is limited by capacity constraints, poor tariff collection, insecurity and lack of predictability over future functions and revenues and a legacy of a conservative approach to borrowing by municipalities.

The water boards have not been making significant investments in their infrastructure and have therefore not had much demand for finance. This aligns with the view of SALGA (2010) expressed to the Parliamentary Portfolio Committee that there had been capital under-expenditure.

8.2.4 Demand for donor funds

Donor funds make up a very small proportion of funding in the South African water services sector. It appears as if the demand for donor funding may be somewhat muted by the conditions placed upon it, as well as the restrictions put in place by National Treasury to prevent the development of unsustainable and non-integrated infrastructure.

8.3 Gap analysis between supply and demand

The analysis of supply above indicates that there are no significant shortfalls in supply. The backlogs that exist must therefore arise because of a non-alignment between supply and effective demand, or for other reasons.

DWAF and the TCTA are national bodies. They are therefore not generally affected by issues of geographic alignment between supply and demand. Water boards and municipalities, on the other hand, are significantly affected. Clear examples of this are urban water boards and municipalities, which tend to have a high proportion of funds receivable from charges or tariffs as well as debt finance for capital projects, as against their rural counterparts, which rely heavily on parliamentary appropriation and have low or non-existent levels of debt.

Another alignment issue relates to funds made available for specific types of projects – such as dams – but not for others – such as the replacement of existing reticulation systems. These areas of non-alignment are often caused by policy decisions, or by the lack of visibility of certain types of projects.

The demand side analysis above considered the demand for government grants, debt, and donations. Constraints relating to each are considered in more detail below, but first we consider constraints that are common to all. The most frequently mentioned constraint is the lack of human capacity. A second common constraint is the need to demonstrate sustainability.

8.3.1 Constraints in the utilisation of government grants

The analysis above revealed that there appear to be some demand-side constraints regarding the utilisation of government grants. These can be attributed to a lack of capacity to manage and implement the projects, and sometimes a lack of matching funding or the unsuitability of other conditions.

A key requirement for infrastructure funded by capital grants is that it is sustainable. Capital grants cover the initial construction cost, but the budget for operations and maintenance must come from

other sources – such as tariffs and equitable share. There may also be social and environmental consequences of projects that constrain the take-up of grant funding.

8.3.2 Constraints in the raising of external debt

One of the criticisms levelled against local government legislation is that it is viewed as imposing strict conditions for decision-making (Red tape, 2006). For example, the Municipal Systems Act requires municipalities to embark on complex multi-stage feasibility studies. Many municipalities lack the skills and capacity to do these studies. Supply chain management processes are also felt to be limiting. (However it is questionable as to why there should be a need for ‘quick decision making’ in the context of infrastructure planning and development.) There also

Supply chain management processes are felt to be limiting.

appear to be some issues related to the status of unsolicited bids. Here the private sector feels that there is no clarity on how local government receives and considers these notwithstanding section 113 of the MFMA and Regulation 37 on supply chain management (Minister of Finance, 2005) which discourage but in restricted circumstances, permit unsolicited bids.

A frequent concern, raised by private sector finance institutions, is what they feel is unclear policy on the role of development finance institutions in relation to private commercial banks in the municipal market. The criticism is that DFIs have a comparative advantage since they are able to offer lower priced credit. The track record of municipalities will also constrain their ability to access this potential source of finance. Most of the 257 municipalities that do not make use of external loans will have no track record to demonstrate their ability to repay loans.

9 QUANTIFICATION

9.1 Water volumes

9.1.1 National raw water withdrawals

A recent estimate is that abstractions for municipal water amount to 4371 Mm³/annum (DWA, 2010h).

9.1.2 Water board volumes

The total volume of water sold by all fifteen water boards in 2009 was 2130 Mm³/a (DWA, 2010f). The volume growth over the previous five years was just under two per cent.

9.1.3 Water distribution by municipalities

The quantity of water reported to be sourced and distributed by municipalities is shown in Table 9.1.

The metros delivered 61% of all water. Municipalities sourced 51% of water from water boards.

Table 9.1: Municipalities: Source and distribution of water

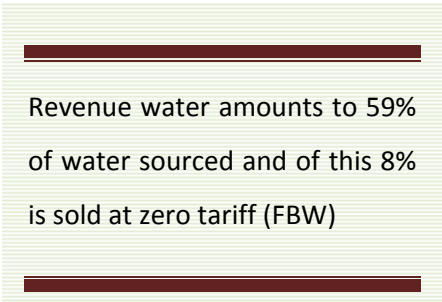
| SOURCES OF WATER IN 2007 | | | DISTRIBUTION OF WATER IN 2007 | | |
|--|----------------------|------------|-------------------------------|----------------------|------------|
| | (Mm ³ /a) | % | | (Mm ³ /a) | % |
| Own | 1 622 | 44 | Sold | 1 880 | 51 |
| Water Board | 1 885 | 51 | FBW | 311 | 8 |
| Other | 160 | 4 | Own | 30 | 1 |
| | | | Lost | 719 | 19 |
| | | | Not reported | 727 | 20 |
| Total | 3 667 | 100 | Total | 3667 | 100 |
| Source of data: DWA (2009c) (from StatsSA) | | | | | |

The metros delivered 61 per cent of all water and the “Top21” (B1) a further 21 per cent. The total amount of water sourced by water services authorities in 2007 was 3 667 Mm³/a (StatsSA, 2008a). The metros and “Top21” source 60 per cent of their water from water boards while the picture for other municipalities is mixed. However, the municipalities reported distributing only 2 940 Mm³/a or 727 Mm³/a less than they reported sourcing. Generally the municipalities sell around 60 per cent of the delivery, with the percentage delivered as free basic water increasing substantially as the

municipalities are more rural. This negative trend is also evident in the percentage of bad debts and indicates that there are substantial financial sustainability issues in the more rural municipalities.

9.1.4 Unaccounted for water

Based on the above distribution figures reported by the municipalities and adding the part reported as sourced but not distributed, then revenue water represents only 59 per cent of water distributed, 8 percent was distributed under the free basic water policy and 39 per cent of the total was lost. Seago and McKenzie (2007) estimated that of the 1150 Mm³ lost per annum, 500 Mm³ could be saved with the application of straightforward water conservation and demand management (WCDM) techniques. A more recent study suggests that non-revenue water in municipal systems amounts to 35 per cent (DWA, 2010h). The WRC has published tools to assist with the management of NRW (McKenzie R.S., Bhagwan J.N., 2005). (Note that following Seago and Mackenzie (2007), free basic water is regarded as revenue water at a zero tariff and is not “lost”.)



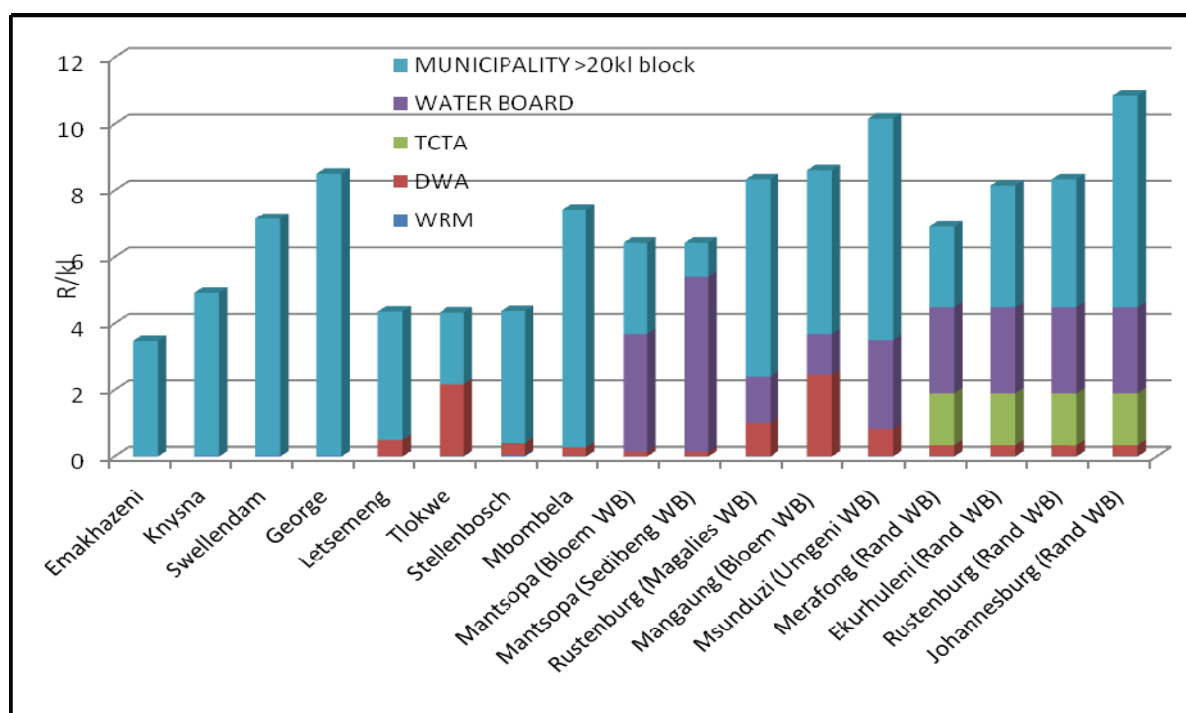
Revenue water amounts to 59% of water sourced and of this 8% is sold at zero tariff (FBW)

9.2 Water services tariffs

Tariffs lie at the core of sector financing. Tariffs are essentially set at three levels viz. by the DWA for water resource management and the use of national infrastructure, by the water boards for purification and distribution and by the municipalities for final delivery.

The build-up of indicative tariffs for selected municipalities is illustrated in Figure 9.1. (The selection was from municipalities interviewed during this research and for which consistent data was available (DWA, 2010g)). The municipalities are from each of the models described in paragraph 0.

Figure 9.1: Build-up of tariffs for selected municipalities



The national average tariffs for water services in 2010/11 are shown in Table 9.2.

Table 9.2: Average water services tariffs

| Average WRM charges, domestic | Average Raw Water Tariff | Average Water Board Tariff | Average Municipal Tariff 20-60 kl |
|-------------------------------|--------------------------|----------------------------|-----------------------------------|
| R 0.018/kl | R 1.190/kl | R 4.28/kl | R 7.22/kl |
| Source: DWA, 2010g | | | |

9.3 Revenue of water institutions nationally

The first step in quantifying the financial flows in the water services sector is to identify the total income available (for operations and repayment of debt), disaggregated to the level of the various water institutions. Each of these institutions is reviewed in turn, with an analysis of debtors included.

The DWA Strategic Overview for 2008 (DWA, 2008) estimated that about R22bn was available for operating expenditure in the water services sector in 2007/08 (Table 9.3).

Table 9.3: Revenue for operational expenditure nationally

| Annual Water Services OPEX (R million) | | | |
|---|----------------|---------------|------------------------|
| Source | Water Supply | Sanitation | Total 2007/2008 |
| Revenue from User Charges | R11,400 | R6,000 | R17,400 |
| National Conditional Grants | R720 | R380 | R1,100 |
| Equitable Share for Water Services | R2,290 | R1,210 | R3,500 |
| Total national funding | R14,410 | R7,590 | R22,000 |
| Source: DWA Strategic Overview 2008 | | | |

The DWA Strategic Overview also provides figures for national government's (budgeted) contribution to capital expenditure (Table 9.4).

Table 9.4: Budget for capital expenditure

| Programme (R million) | Water | | Sanitation | |
|---|---|---------------------------------|---|---------------------------------|
| | Projects 1994 to 2007/8 Budget | Projects 2008/2009 Budget | Projects 1994 to 2007/8 Budget | Projects 2008/2009 Budget |
| DWA | R7,131 | | R1,262 | |
| DPLG (MIG) | R7,568 | R2,161 | R3,695 | R2,161 |
| Housing | R2,280 | | R2,415 | |
| Dept of PW & Health (Schools & Clinics) | R110 | | R148 | |
| TOTAL SECTOR | R17,089 | R2,161 | R7,520 | R2,161 |
| Source: DWA Strategic Overview 2008 | | | | |

9.3.1 DWA Revenue from water services

DWA receives the bulk of its revenue from the parliamentary appropriation. The 2009 Appropriations Act states that, of the R7.9bn allocated to DWA (then still operating as DWAF), R795m was for administration, R3.9bn was for water resources management, R486m was for forestry, and the remaining R2.7bn (34 per cent) was for water services. The WTE reveals an additional R1.5bn in revenue – primarily from infrastructure and water resource management (WRM) charges. A large but unstated proportion of these charges are from agriculture and industry.

The R2.7bn for water services is partially allocated as:

- R611m – Bulk infrastructure: indirect grant;
- R350m – Backlogs in water and sanitation at clinics and schools: Indirect grant;
- R979m – Water Services Operating Subsidy Grant (for those municipalities where DWA is progressively transferring responsibilities over to the local authority); and

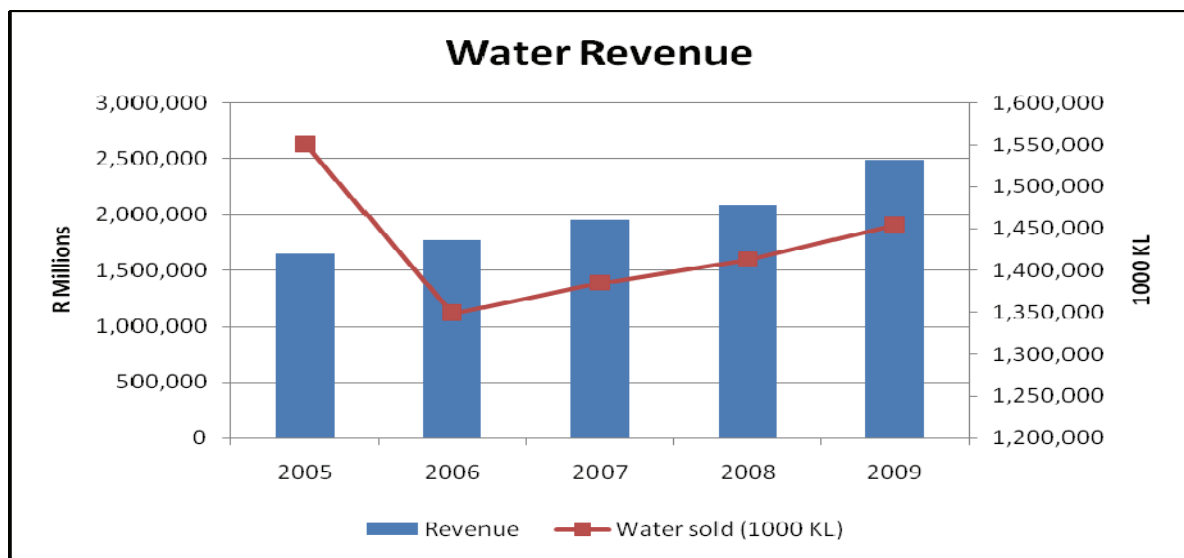
- R30m – Refurbishment of infrastructure.

This leaves R747m to fund the DWA’s own staff and other costs with respect to water services delivery. No breakdown is available for the split between capital and operations, although one would expect the bulk of the staff costs to be spent on operational matters.

9.3.2 TCTA revenue

Figure 9.2 below shows that TCTA’s revenue grew annually at 8.5 per cent from 2005 reaching R2.5bn in 2009.

Figure 9.2: TCTA water revenue



Of the revenue generated by the TCTA in 2009, 91 per cent was from water sold in the LHWP and Vaal River System and paid for by water boards, municipalities and other consumers and 8 per cent from the Berg Water Project (BWP), which was paid for by the City of Cape Town.

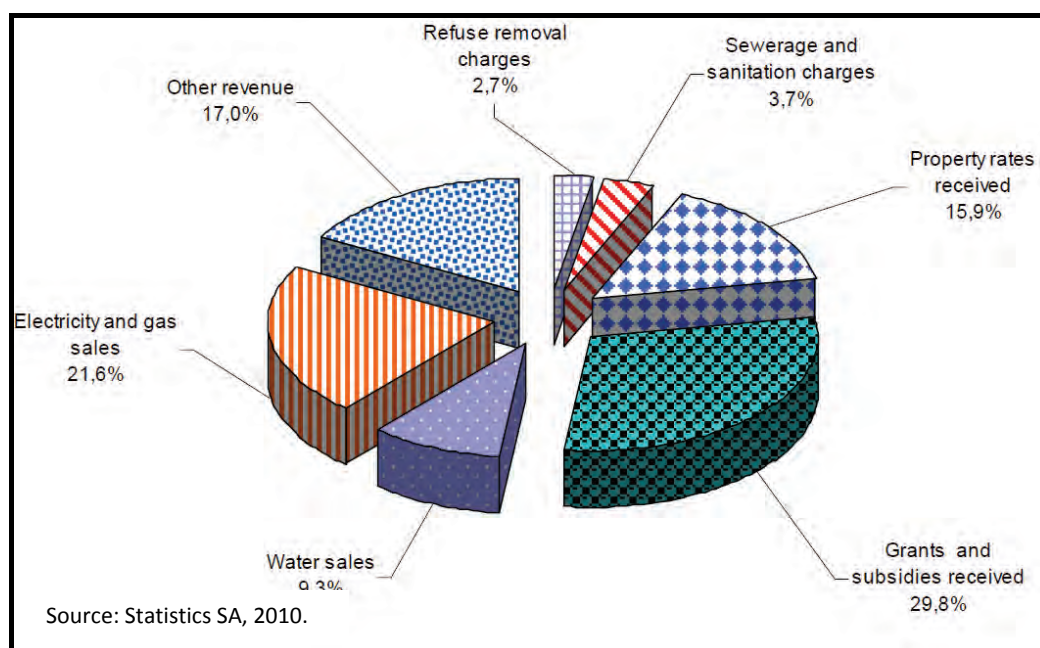
9.3.3 Revenue of water boards

In 2009, the gross revenue of all water boards was R7.7bn having grown at 6.8 per cent per annum from 2005 (DWA, 2010f). Over the same period, the volume sold grew at 2.9 per cent.

9.3.4 General revenue of municipalities

The break-down of municipal revenue for all sectors is shown in Figure 9.3. Water and sanitation services are 13 per cent of the total.

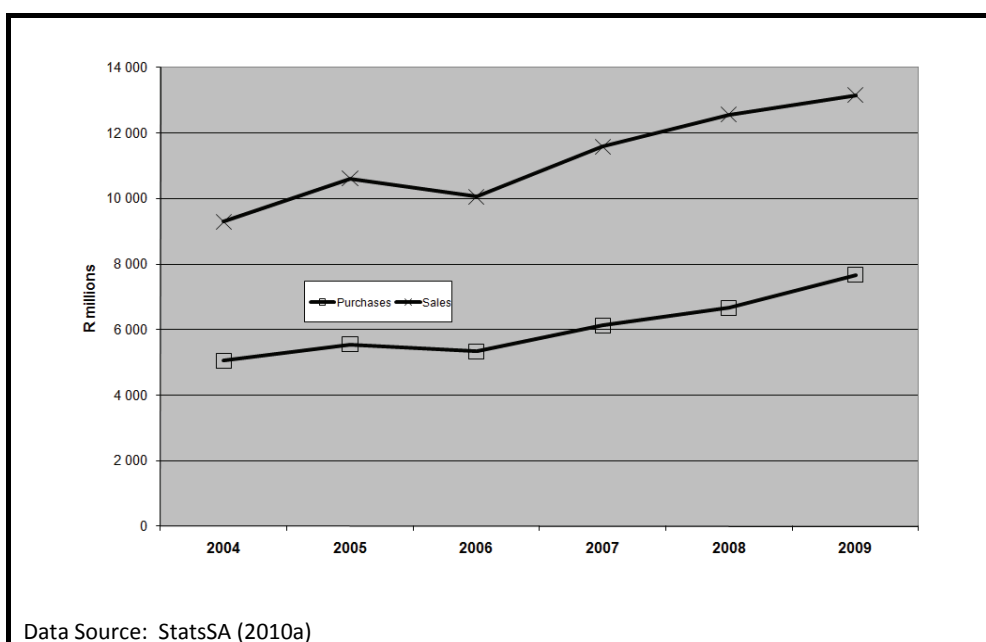
Figure 9.3: Municipal revenue by source (2009)



9.3.5 Water services revenue of municipalities

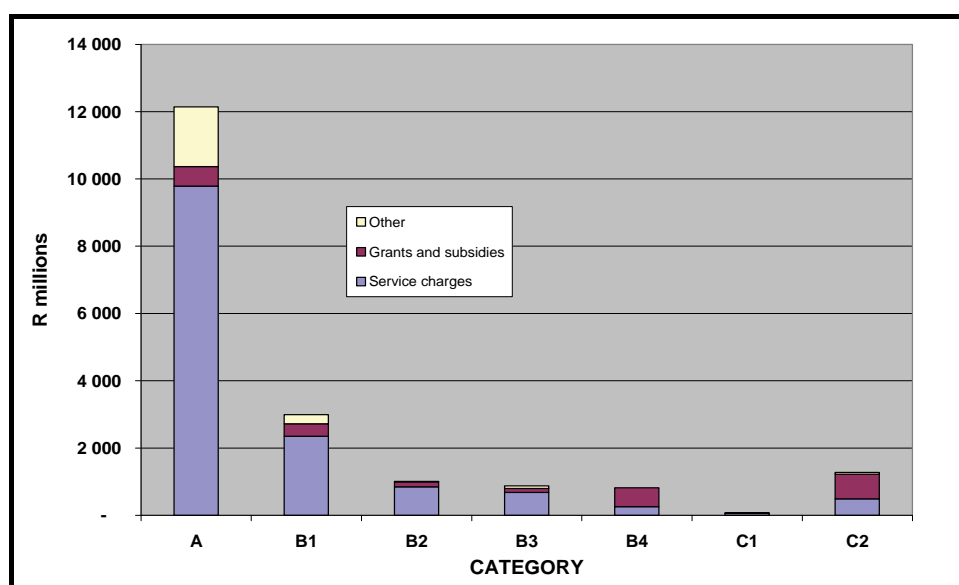
The purchases of bulk water and the sales of water to the consumer, in financial terms, for all municipalities in South Africa for municipal years ending in 2004 to 2009 are shown in Figure 9.4. Note that these figures are for tariffs and not other sources of revenue. The average compound growth rate in sales over the five year period was 11.7 per cent. Purchases grew by 5.7 per cent over the same period.

Figure 9.4: Purchases and sales of water (all municipalities)



National Treasury data disaggregates 'Operating Revenue' (for water) into service charges (sales), grants and subsidies and other. Figure 9.5 shows the source of revenue for each of the Categories of municipality. By far the major water revenue source for the metros is service charges with 'other' also significant while grants are low. Categories B4 (Rural) and C2 (districts that are water service authorities but also essentially rural) rely proportionately more on grants. In 2009, averaged over all municipalities, water service charges represented 75 per cent of water operating revenue. The metro's water charges yield 83 per cent of all municipal water revenue.

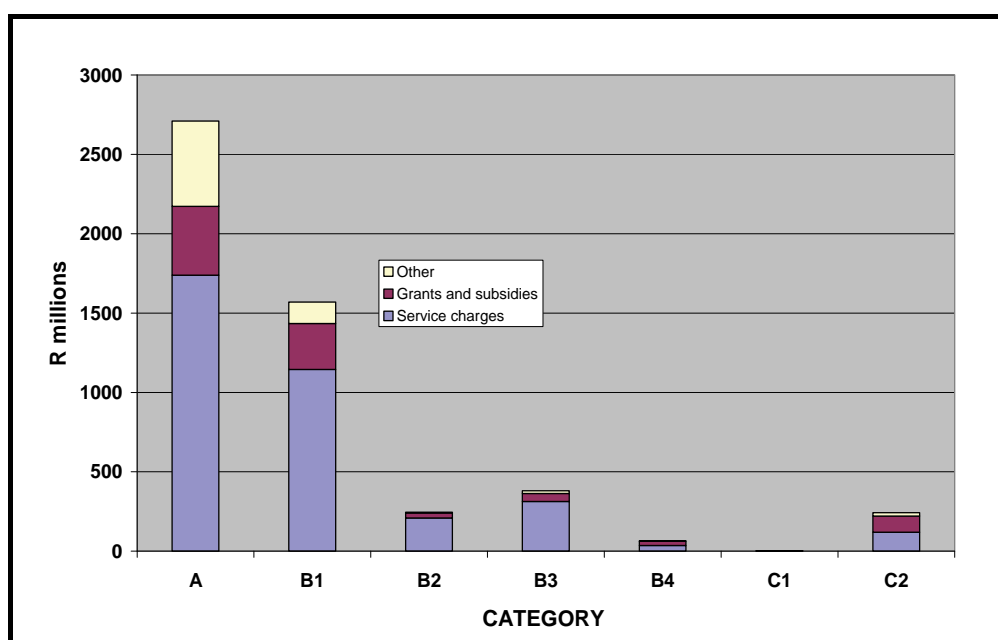
Figure 9.5: Municipal water revenue for 2009 by category



9.3.6 Municipal Revenue from waste water services (sanitation)

Figure 9.6 presents the revenue data for waste water (sanitation) which shows similar trends. In 2009, averaged over all municipalities, waste water service charges represented 68 per cent of waste water operating revenue. The metro's waste water revenue is 52 per cent of all municipal waste water revenue.

Figure 9.6: Municipal waste water revenue for 2009 by category



9.4 Operational expenditure (Opex)

The DWA (2008) has estimated that R22bn was available in 2007/08 for national operational expenditure for water and sanitation services from all sources including tariffs, conditional grants and the equitable share. At the municipal level, the purchase of bulk water services makes up 37 per cent of operational expenditure (Figure 9.4) and staff costs a further 16 per cent. At 8 per cent the expenditure on repairs and maintenance is low considering the poor state of municipal water infrastructure, particularly on the waste water side.

The analysis shows that there is no correlation between the size of the population in a municipality and its per capita operational expenditure except that the metros are on the higher end. However, when analysed in the categories used in the MIIF5, the metros spend roughly twice per capita than do the Category B1 and B2 municipalities and roughly four times than does the remainder. A similar trend is shown if the municipalities are grouped by COGTA class.

9.5 Capital expenditure (Capex)

9.5.1 DWA capex

At the national level, the DWA had a capital budget of R1.2bn in 2008/09. Increasingly the Minister has directed TCTA to finance the major national water projects.

9.5.2 TCTA capex

The current expected cost of the TCTA's future projects is approximately R16.4 billion of which just over R6 billion has already been committed until the end of the 2010/2011 financial year.

9.5.3 Water board capex

The actual capex for all water boards in 2009 was R1.46bn (Table 9.5). Rand Water (69.7 per cent of total) and Umgeni Water (16.7 per cent), as with other size indicators, overshadow all the rest.

Table 9.5: Water board capital expenditure

| WATER BOARD | ACTUAL 2009 (R'000) |
|------------------------|------------------------|
| Rand Water | 980 999 |
| Umgeni Water | 234 203 |
| Sedibeng Water | 21 459 |
| Lepelle Northern Water | 21 097 |
| Magalies Water | 19 992 |
| Bloem Water | 21 099 |
| Mhlathuze Water | 51 214 |
| Amatola Water | 48 643 |
| Bushbuck Ridge Water | 370 |
| Botshelo Water | 390 |
| Overberg Water | 4 022 |
| Namakwa Water | 2 269 |
| Albany Coast Water | 1 121 |
| Pelladrift Water Board | 0 |
| TOTAL | 1 406 878 |
| Source: DWA, 2010f | |

9.5.4 Municipal capex

The **sources** of municipal capital are difficult to disaggregate to sectoral level. Financing is generally undertaken at the corporate level and although funds may be "ear-marked" for the capital programmes at sectoral level, this is not always reported. Concessionary grants on the other hand are project specific but may include more than one sector.

The source of all municipal capex financing by source is shown for 2009 in Figure 9.7. Total capital financing amounted to R39.4bn. About half of all financing is in the form of grants and subsidies which seems to confirm the proposition that this form of financing is “crowding out” other forms.

Figure 9.7: Sources of municipal capex

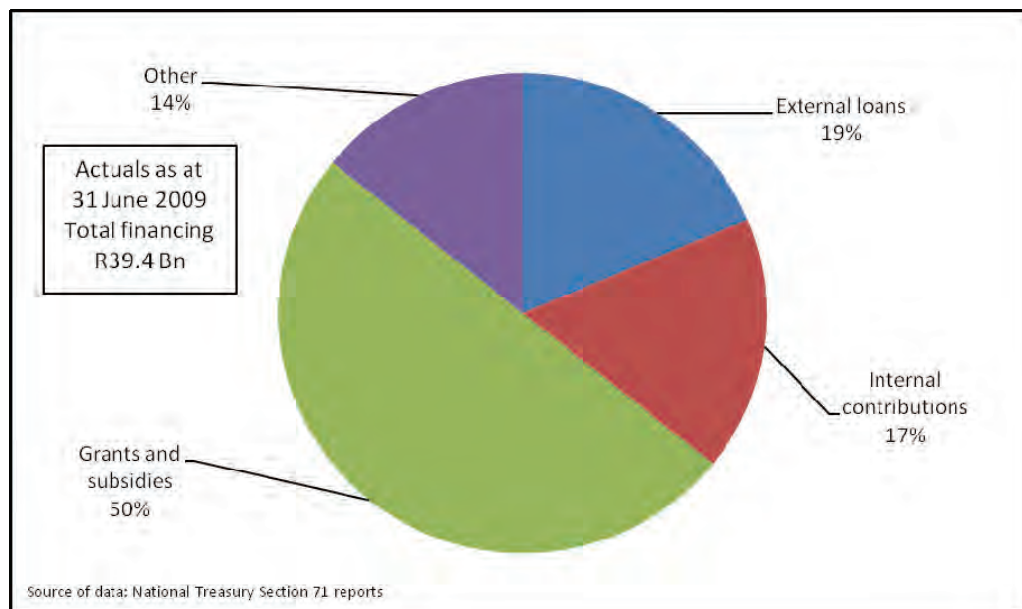
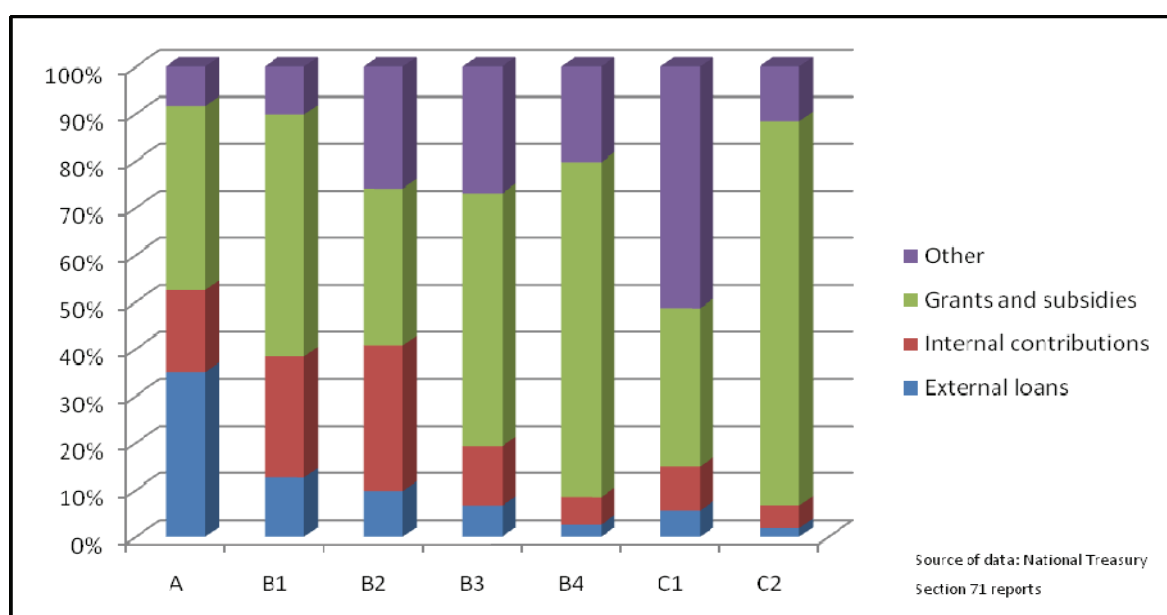


Figure 9.8 below shows the source of financing expressed as a percentage for each of the municipal categories. It is noteworthy that the metros use external loans for a third of their needs whereas all other categories get less than 10 per cent from this source. The dominance of grants and subsidies in the other categories is evident.

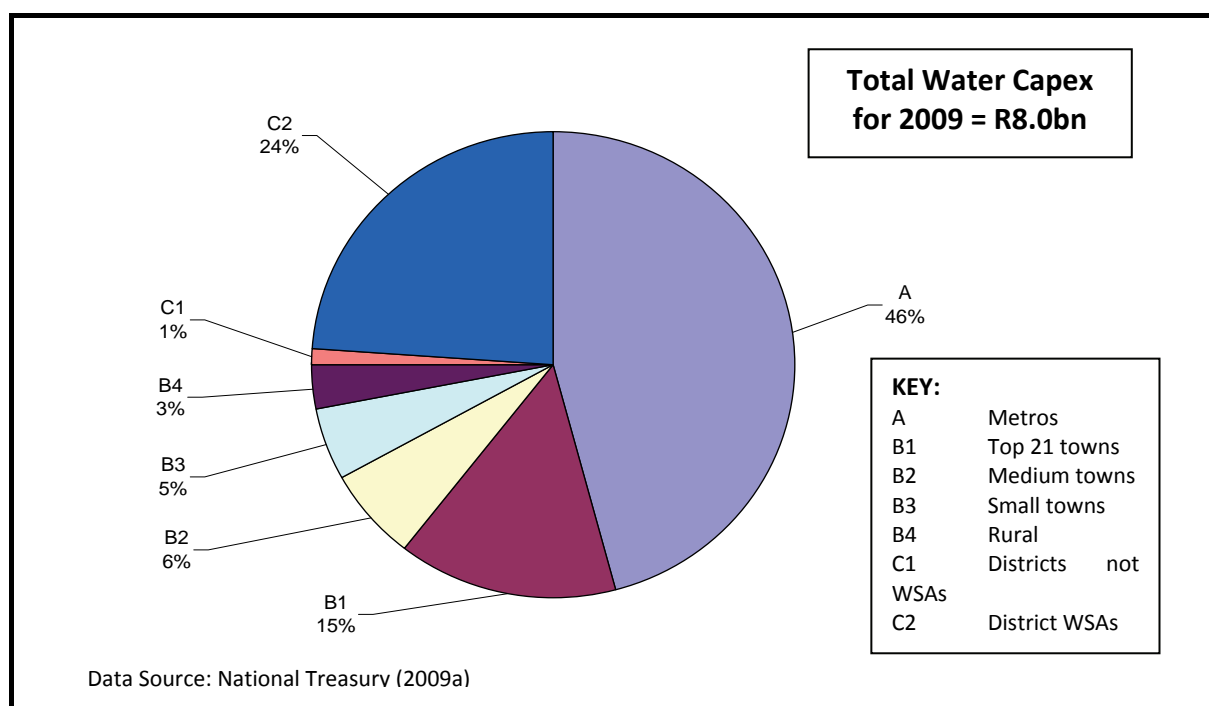
Figure 9.8: Sources of municipal capex by category (2009)



The total municipal capital **expenditure** on water services increased from R1.8bn in 2003/04 to R8.0bn in 2008/09. This is a compound annual growth rate of 34 per cent.

The division of water capex between the municipal categories for 2009 is shown in Figure 9.9. The percentage share between the categories varies from year to year but there was no consistent trend between 2003 and 2009.

Figure 9.9: Municipal water capex for 2009 by category



The percentage that water capex makes out of total municipal capital expenditure is detailed in Table 9.6. The average ratio over the six years is 21 per cent. There is no significant trend but one could say the share has declined marginally in percentage terms since 2007.

Table 9.6: Capex for water and all municipal functions

| Year | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|--|-------|-------|-------|-------|-------|-------|
| Water Capex | 1839 | 2925 | 4014 | 4957 | 5824 | 7984 |
| Total Capex | 10696 | 13323 | 17232 | 19740 | 27166 | 39577 |
| Water as per cent of total | 17% | 22% | 23% | 25% | 21% | 20% |
| Data Sources: 2004 to 2006 NT 2008 Local Government Budgets and Expenditure Review 2007 to 2009 NT Section 71 Reports | | | | | | |

9.6 Debtors

Bad debts and delays in collecting revenue place a serious burden on the ability of institutions to function. The WTE listed 32% of its debts as doubtful in 2008/09. The total debtors balance is 25% more than the WTE's annual revenue, implying that debtors are, on average, taking more than a year to pay their debts.

Municipal debt (all functions) amounts to more than one year's revenue

It is evident that there is a considerable variation in the ability of water boards to manage their debtors. The larger Water Boards (Rand and Umgeni) appear to have excellent control over their debtors' balances, whilst others (such as Bushbuckridge and Sedibeng) are in a critical position.

The extent of doubtful debtors in the municipal system has become an issue. Local government has set tariffs and budgeted to collect the revenue. However, there is a large non-payment of invoiced amounts and the municipalities have merely been accumulating the non-payment as debtors. This is not sector specific and the water services debtors are immersed by the accounting systems in the pool of municipal debtors of all forms. Moreover, the data sources for municipal debtors are not reconcilable. The StatsSA surveys (StatsSA, 2010) present the most favourable position with all sector municipal debtors at 90 days. The Section 71 reports to National Treasury indicate that it is twice this and data received from DWA suggest an even less favourable position for the water services sub-sector. Whatever the case, municipalities, while appearing to make a modest surplus on the water account, are in fact not collecting a substantial part of the revenue. The municipalities' expenditure in the water sector includes four per cent that is written off as bad debt. While the municipalities continue to accumulate debtors as assets on their balance sheets the National Treasury has recently issued a directive that municipalities should write off irrecoverable debt.

9.7 Financial statements

The WTE ring-fences the trading services that the DWA provides. The Annual Reports of the WTE demonstrate that the entity is not in good financial health and requires ongoing budgetary supplementation. The 2008/09 Annual Report states that there is a R10 billion backlog in infrastructure refurbishment, and that revenue is not adequate to cover this backlog, nor is it even adequate to cover the existing operating and maintenance requirements.

TCTA has special financial arrangements in which the future revenues from the projects it finances and implements were used to raise funds on the markets and from concessionary sources. On the

2009 balance sheet this is shown as an intangible asset. Government has provided explicit or implicit guarantees and regulates the TCTA tariffs to ensure that it stays liquid. TCTA manages its short term operations but its long term sustainability is determined by policy considerations of government.

The water boards are required by the Water Services Act and the PFMA to annually publish financial statements based on general business and accounting practice. The financial state of the water boards differs markedly ranging from Rand Water and Umgeni Water (although highly geared), which are assessed to be in good financial health to the smallest boards which only remain solvent because of government intervention. In 2009, a surplus of R1.3bn was made on gross income of R5.1bn and capital employed of R13.7bn.

The municipalities, because of low margins and the debilitating cash flow effect of bad debt, are unable to finance their expansion programmes and are increasingly reliant on subsidies and grants.

At the municipal level, a separate statement of financial position for the water services sector is not available. Municipalities had a modest surplus of R1.5bn on income of R52.1 for housing and trading services (this includes water services). A similar analysis of the rates and general services part reveals a surplus of R5.2bn on income of R57.3bn. In all, the statement of the financial position of municipalities reflects assets of R139.8bn. Further analysis indicates that municipalities, because of low margins and the debilitating cash flow effect of bad debt, are unable to finance their expansion programmes and are increasingly reliant on subsidies and grants. These can be said to be crowding-out other forms of finance even though the municipalities can be considered to be under-borrowed. The municipalities are not effectively managing debtors and appear to be relying excessively on creditors for short-term financing, a practice that inevitably leads to less than optimal procurement prices.

9.8 Financing cost

The WTE relies on budgetary finance to implement national water infrastructure and the financing cost is thus taken up in the general cost of the deficit financing of the state.

TCTA finances the implementation of national water infrastructure through the markets. TCTA is a specialist organisation that finances and implements but does not operate or maintain the infrastructure. In these circumstances the financing cost is 80 per cent of revenue (2009).

The cost of financing for the water boards varies considerably and is generally inversely proportional to size and period of establishment. Rand Water at the apex has a financing cost that is 5.8 per cent of operating expenditure. The figure for Umgeni Water is 40.6 per cent (in special circumstances) and that for Bloem Water, 19.3 per cent.

At the municipal level the minority of capacitated municipalities have made use of debt financing. There are only 14 municipalities that averaged more than R100m in debt in the three years to June 2008. Total municipal debt is R27bn of which the metros make up 75 per cent. Much of this is partially concessionary from the DBSA. The metros procure funding in the range 10 to 13 per cent per annum.

10 DRIVERS OF THE VALUE CHAIN

This section explores some of the key drivers, or important elements, of the value chain, its participants, and the models. Drivers are considered to be those characteristics that will have an impact on efficiency.

Five key drivers have been identified: tariffs, regulatory mechanisms, institutional arrangements, grant financing and transfers and the physical flow of water.

10.1 Tariffs

Each institution in the chain imposes tariffs or charges – primarily to recover costs. There are a number of reasons why tariffs are important in the value chain debate. Firstly, they are an indication of the ‘value add’ – the simplest indicator of how much financial value is added at each stage of the process (although this may be misleading if they include an element of subsidisation or have been influenced by other non-economic factors). Secondly, they are one of the primary influences of behaviour – both of the financial decision makers in the value chain, as well as of users of the water. Thirdly, the tariff setter may be attempting to fulfil more than one objective with the tariff and if so, how does this impact on the efficiency of the value chain? A fourth consideration is that, whilst cost recovery is the primary driver behind tariffs, what costs are being included in the calculation? How do externalities (e.g. downstream costs) and collection ratios impact on the value chain by being included or excluded from the tariff?

10.1.1 *Simple benchmarking*

The distillation of value added into a single figure – the tariff – allows financial decision makers to make comparisons. For example, whilst water suppliers (at a primary, bulk and reticulation level) are almost always natural monopolies, the imposition of a tariff allows the user to compare prices to water suppliers in other areas. This information does not allow them to switch to that other supplier (due to geographic restrictions) but enables them to argue more strongly for charges that are aligned with suppliers facing similar cost models. However our analysis of comparative water tariffs indicates that this comparison is not always useful (or used). A primary reason appears to be the lack of information allowing users to compare like with like. For example, in 2010/2011, users of Umgeni Water paid R3.47/kl whereas most users of Amatola Water pay over 50 per cent more (R5.37/kl). Should users of Amatola claim that there is inefficiency or can the higher charges at Amatola be legitimately put down to unavoidably higher costs?

10.1.2 Influence on decision-making

At a capex level, where financial sustainability is a significant concern, expected income from tariffs (and whether this meets the ‘required rate of return’) can determine whether new infrastructure is built or not. With respect to O&M, the level of tariffs (and amount collected) may determine the resources allocated to maintenance. The level of tariffs may also influence consumer behaviour – impacting on the demand for water.

The demand for domestic and industrial water is relatively **inelastic**. An increase in price will therefore not result in a commensurate (but opposite) drop in demand. Therefore an increase in tariffs (over and above that required for cost recovery and future investment needs) will result in an inefficiency whereby more funds are channelled higher in the value chain. Institutions lower in the value chain will then simply have to charge more (i.e. pass these additional costs onto the end consumer) or will have less income to spend on their needs. In practice, it seems that costs are always passed on to the end consumer. From a water services perspective, therefore, it does not appear that mixed motives will necessarily create financial inefficiencies (i.e. alter financial decision making to create a less than optimal use of resources) – merely an increased cost for the downstream user.

10.1.3 The objectives driving the tariff-setters

How are tariffs calculated? Ideally they should be as simple as possible, allowing for cost recovery (both past and future costs of asset replacement). However in practice there may be other motivations for tariff levels – including a desire to influence behaviour.

The South African water services sector has national government, a major state entity (TCTA), government business enterprises (water boards) and local government as important determinants of the composite price that the consumer must pay. Each of these institutions has different “drivers” or policy considerations in setting prices.

All the price setters are generally driven by wanting some form of cost recovery, albeit with some differences. The TCTA and water boards operate simply on the basis of cost recovery – their mandates require them to be concerned with financial efficiency and sustainability and they are less driven by the issues of free basic water, social tariffs or water conservation.

All the price setters are generally driven by wanting some form of cost recovery

The DWA considers at least two drivers not related to cost recovery. The first is subsidies, which are currently directed mainly at forestry and agriculture (especially resource poor farmers), with urban and industrial users paying the full cost. A second driver on the DWA tariff is the consideration of future development of infrastructure. A portion of the DWA infrastructure charge is called the 'Return on Assets' element, and is meant to provide for the future replacement and development of infrastructure. The reality on many schemes is that the historical charge is so low, that the ROA element is not being set aside for future projects.

Local government has to utilise more than just the 'cost recovery driver' when setting tariffs because it has to provide free basic services, and often a low tariff just above that, to meet social objectives. Most step their tariff ('block tariffs') in a way that heavy users will cross subsidise those paying little or nothing. This has the added advantage that it encourages efficient use by the high volume users. Although the new accounting standards require separate accounts for each municipal function this research found that this did not necessarily lead to an effective 'ring fencing' of water services in low capacity municipalities. The result was that in some of the less capacitated municipalities revenue collected from water services bore no relation to expenditure. The tariff structure was therefore generally based on what had been charged the year before, rather than on a coherent strategy that incorporates financial sustainability. Some of the complexities affecting municipal tariffs include poor collection ratios, a lack of ring-fencing, the dominance of equitable share, and implementation of the Free Basic Water Policy.

In some of the less capacitated municipalities revenue collected from water services bore no resemblance to expenditure.

10.1.4 What costs are included in the tariff calculation?

10.1.4.1 Externalising environmental costs

Section 24 of the Constitution provides everyone with the right to an environment that is not harmful and to have the environment protected. *"The state must respect, protect, promote and fulfil the rights ..."* (section 7(2)).

The legislative provisions in respect of water are contained in the NWA and the NEMA and the regulations promulgated in terms thereof. Collectively these place an obligation on all spheres of government to actively take measures to prevent the pollution of rivers and the broader environment by waste water discharges and solid waste disposal. Notwithstanding a matrix of

responsibilities, the evidence disclosed in the Green Drop Report (DWA, 2010c) indicates that all spheres of government have failed dismally to protect the environment against waste water discharge flows.

It is apparent that municipalities expend insufficient funds on the operation and maintenance of waste water treatment plants and by necessary extension that tariffs are inadequate for recovering costs as a minimum strategic position. From a water services value chain perspective it is clear that there is

Unlawful discharge of inadequately treated waste water has the effect of creating health hazards and externalising costs to downstream users and the environment.

an externalising of costs to other users and to the environment. This manifests in an increase in treatment costs downstream, reduced agricultural productivity, the loss of ecosystem functioning, biodiversity, livelihoods and ecosystem services of all forms including the intangible such as cultural and spiritual meaning. Based on the widely accepted “polluter pays” principle the water tariffs should be set such that sufficient financial resources are available to treat the waste water to the regulated quality before it is discharged to the rivers.

10.1.4.2 Collection inefficiency

This research has found that there is a high level of debt owed to some of the smaller water boards and to municipalities in general. Nationally, in 2008, municipal water service debtors represented 119 per cent of annual municipal water revenue and this was increasing annually. National Treasury has since required that debt that cannot be recovered must be written off. Clearly unless debt is collected there will never be the cash flow to support operations or capital formation. The national practice seems to be that invoicing and debt collection are centralised in the municipality so that the department that provides the service and reads the meters is not responsible for collecting the charges. This reflects that the service departments are only partially “ring-fenced”.

10.2 Regulatory mechanisms

The water and sanitation sector is extensively regulated by legislation, regulations, standards, policy and guidelines. There is no independent regulator and the DWA has taken up the multiple roles of regulator, supporter, enabler and implementer in the water resources management arena. As a consequence enforcement remains weak. DWA has however stated its intention to establish an independent economic regulator (subject to affordability). This may go some way to improving the current lack of enforcement.

The legislation requires water services institutions to achieve many social, economic and financial objectives, most notably a balance between providing for the poor and financial sustainability. The DWA and municipalities have the structure and governance of traditional government, whereas TCTA and the water boards have the structure and governance of business enterprises. At the municipality and in part at DWA, political influences pull the approach towards social objectives while at the water boards and TCTA the controlling boards take the requirement of financial sustainability as the more weighty. The result is that in DWA and the municipalities the emphasis is placed on extension of service areas and affordability whereas a far more business approach is adopted in (most of) the water boards and TCTA where importance is placed on financial management, maintenance, quality of service and human capital. The outcome of these factors is that institutional capacity is out of balance along the value chain.

10.3 Institutional arrangements

With the direct participants in the value chain having been described in paragraph 3, this section describes these and other institutions that influence the value chain and examines their inter-relationships. All of these relationships are informed by the fact that water and sanitation services are a natural monopoly that is reinforced by the policy and legislative framework. At the same time one needs to consider the impact of overlapping mandates (human settlements, schools, clinics, water provision).

10.3.1 The National Treasury

The National Treasury is mandated by section 216 of the Constitution and is part of the finance system. It manages the National Revenue Fund and in this capacity has control over all the financial matters of public institutions through the legislation it administers. In the value chain its main influence is exerted through the MFMA. It also establishes government procurement procedures.

10.3.2 The Department of Cooperative Government and Traditional Affairs (CoGTA)

“CoGTA is the leader of the municipal sector and thus the custodian department of municipal infrastructure. CoGTA fulfils an overall municipal infrastructure policy making and implementation support role (including administering the MIG programme), which involves all those activities related to policy development, facilitating cross sectoral coordination, and ensuring collaboration across the spheres of government. It is also responsible for putting in place the necessary structures and systems to ensure efficient and effective monitoring, identification of interventions needed, reporting, and auditing” (CoGTA, 2008b).

CoGTA has oversight over all municipalities through administration of the Municipal Structures Act and the Municipal Systems Act. The latter is the prime legislation that deals with municipal services. CoGTA also coordinates implementation of the National Government’s Free Basic Services Policy.

10.3.3 The Department of Water Affairs (DWA)

The DWA describes itself as “*sector leader and national water policy maker*” (DWA, 2003b, p8). It has described its functions as “enforcer, enabler and supporter” (DWA, 2005, p6). These multiple roles are not always reconcilable.

As far as the value chain is concerned DWA administers regulations on tariffs (MWA, 2001b) promulgated in terms of section 10 of the Water Services Act. It routinely monitors water services tariffs and publishes them annually (DWA, 2009a).

The Constitution requires national government to support and strengthen the capacity of local government

10.3.4 Other national departments

Other national departments that have a large role in the sector value chain are:

- The Department of the Environmental Affairs (currently in the same Ministry as the DWA), which administers the suite of environmental legislation;
- the Department of Health, which monitors matters affecting health; and
- the Department of Human Settlements, which is responsible for the establishment and maintenance of a policy and legislative framework required for the facilitation of a sustainable national housing development process.

The Constitution requires national government to support and strengthen the capacity of local government through legislative and other measures. The relationship between national, provincial and local government is further regulated by the Constitution in Chapter 3: Cooperative government and by the Intergovernmental Governmental Relations Framework Act (Act 13 of 2005) and the regulations promulgated in terms thereof. The principal provisions of the Act are the establishment of liaison and coordination forums and the establishment of a dispute resolution mechanism.

10.3.5 TCTA

TCTA is a specialist financing organisation, focussed on national water infrastructure. It owes its existence to the fact that government does not wish to carry the entire national water infrastructure on the national budget but rather that the direct users of national water infrastructure should fund the project that serves them.

TCTA and the water boards are generally price givers and the municipalities are price takers

TCTA's relationship with other institutions in the value chain is that of price giver although in its Annual Report 2009 (at p23) it states *"Following negotiations between TCTA, the Department of Water Affairs and other stakeholders, an increase of 6,00% for the 2009/10 Vaal River raw water tariff was agreed upon"*.

10.3.6 Water boards

Water boards are required to deliver services in terms of a contract, and the terms of delivery, including the tariff, are open to negotiation. However, the water board mostly has a supply monopoly and the municipality few choices. Historically the major water boards have used their position as price givers to secure prices that allow them to build up the necessary human capital to fulfil their roles effectively. The fact that water boards offer advisory services to

The historically strong position of water boards manifests in a generally conservative approach to financial matters

institutions outside their areas and even internationally and are currently actively seeking entry into the waste water sector, suggests that they have exploited the position and drawn more resources than are actually needed for their core function.

The historically strong position of water boards also manifests in a generally conservative approach to financial matters and most boards have a surplus of revenue over expenditure, suggesting that there is scope for inefficiencies. In Rand Water's case, the board has also generally followed a conservative financing policy and most projects are funded from internal sources. However, this does not pertain to Umgeni Water which is relatively highly geared. A major factor is that water boards are "shielded" by the municipalities and are not directly exposed to a price-sensitive electorate.

10.3.7 Municipalities

The process of prioritising projects under the IDP consultations is subject to some degree of political interference. This was expressed as an issue in a few of the interviews. While political interference did not reach the extent of deviating the decision-making processes from statutory requirements, a concern is that political motives tend to be short-term, whereas water infrastructure requires long-term strategic thinking. The maintenance or replacement of reticulation systems, for example, is below the radar in that the public are generally not aware that a system is about to reach the end of its useful life, or is losing water to regular pipe bursts. The absence of water in a newly populated area is much more visible and therefore achieves higher political or social priority.

The municipalities are price takers from DWA's WTE, TCTA and the water boards. For decades many would argue that national government has "captured" the tax base and passed inadequate financial resources on to local government. Many municipalities are under-resourced, and have weak financial management (Auditor General, 2010), while some are entirely dependent on national government transfers. In these circumstances most do not have the human capacity or political will to effectively negotiate prices in the water services value chain. Some rely heavily on support from SALGA (the South African Local Government Association) to negotiate on their behalf and lobby sector role-players. At the governance level the elected municipal officials are exposed to an extremely price sensitive electorate and the inevitable tradeoffs are in the quality of service, neglect of maintenance and the externalising of costs such as by discharging inadequately treated waste water to the rivers. The relationship of the municipality to other institutions in the value chain is thus largely one of price-taker.

10.4 Grant financing and transfers

10.4.1 Conditional grants

The most significant source of funds for capital expenditure in the water services sector by municipalities is currently government grants – especially the Municipal Infrastructure Grant (MIG). The MIG is meant to accelerate local government's response to infrastructure backlogs and is only meant to support projects which can demonstrate their sustainability in terms of continued operations and maintenance. Studies indicate a number of concerns with grant funding, and its methodology and

MIG is the most significant source of funds for capital expenditure in the water services sector by municipalities

implementation. There is a concern, for example, that MIG and other grants are too focused on projects, without considering the broader needs of a municipality (and the region). This can lead to weak coordination between programmes.

A second concern, supported by interviews, is that municipalities have become dependent on grants, thus weakening local democratic accountability. Whilst the grants are conditional, these conditions often become the focal point for municipalities, to the exclusion of standard local oversight of municipal performance.

A third concern relates to the implementation of the smaller grant programmes. They are implemented in response to a need, but their success is unclear because evaluation is weak.

It therefore appears that there is a need to improve grant methodology to include regular evaluations of programmes, which should include an assessment of the programme's integration with the existing programmes and strategies of the recipients, as well as the governance impacts.

There is a need to improve grant methodology to include regular evaluations of programmes

There are significant backlogs in the provision of water services infrastructure – especially on the waste water side. Government's strategy to address this has primarily been through the implementation of the MIG. The nature of MIG (its prevalence and dominance) raises three concerns:

- Is it making municipalities 'lazy' to find alternative sources of capital funds?
- Is it distorting decision making?
- Is the MIG leading to unsustainable solutions in terms of O&M costs?

This research does not provide definitive answers to the above, but there are indications that all of the above have happened.

There are a number of mechanisms through which funds are transferred to water boards and municipalities in the water services value chain. Financial transfers from national government to water boards only involve some of the smaller boards which find themselves in particularly difficult circumstances and for the purposes of this research these will not be pursued further.

10.4.2 The “Equitable Share”

For practical reasons the equitable share has become formula-based, including the use of general poverty parameters such as income levels and sectoral parameters such as households without piped water. Notwithstanding the manner of its calculation, the transfer remains unconditional and can be used at the discretion of the local government (subject to legislated procedural, budgeting and financial management requirements). In 2010 it amounted to R30.1bn (Schedule 3 to DORA, 2010). In the rural municipalities, equitable share is significantly larger than tariff income and therefore plays a dominant role in service delivery.

10.4.3 “Crowding out” other financing

In order to ensure that MIG funds are used effectively and for their intended purpose, extensive procedures have been developed. These require significant human capacity at local government level (although probably no more than a thorough preparation for submission to a financial institution). In the smaller municipalities interviewed for the first deliverable of this research, the limits of human capacity to plan and implement were reached before the limits of financial capacity. Naturally, since grants are free, they are the preferred financial source. As government expanded the MIG programme this inevitably reduced the sector lending demand. Even dedicated institutions such as the DBSA and INCA have noted a decline in applications for loan funding from local government.

10.5 Physical flow of water

Available data indicates that municipal water demand is growing faster than in any other sector. This has significant implications for national water security, loss management, wastewater management and effective collection of return flows.

Indications are that revenue water from municipalities represents only 64 per cent of water distributed, 11 percent was distributed under the free basic water policy and 25 per cent of the total was lost.

11 POTENTIAL INEFFICIENCIES IN THE VALUE CHAIN

Inefficiencies can be described as the failure of a mechanism to achieve desired and effective results and failure to maximise benefits from resources. This report chooses to first assess inefficiencies from the perspective of the functions in the value chain, and then reviews them from the perspective of categories of drivers (financial, regulatory, institutional and technical).

11.1 Functional inefficiencies

Chapter 3 above has described the functions that must be performed in the value chain and the models or combinations of the institutions that are used to deliver water services. The question remains whether these models are effective. The range of variables inherent in each model is too diverse to allow for direct comparison of a quantitative nature. For example, there are differences in volume of water, quality of water, distribution distances and terrain, and concentration of users. This report therefore undertakes a qualitative analysis.

11.1.1 Water resources management

This function is presently undertaken by the DWA but the intention of the NWA in providing for water management areas and catchment management agencies (CMAs) is clearly that it should be largely devolved to the latter institutions. The current arrangement is aligned with the concept that water is a national resource and should be managed in the national rather than the local or catchment interest. Moreover, the technical part of the function requires a relatively few but highly specialised skills which suggests that centralisation within the national department is cost effective. Devolution, on the other hand, would bring the advantage that a more direct input could be made by the affected people. It would also, in theory, allow for some differentiation of charging (both for the water resource management charge as well as the water demand charge) – CMAs that require higher levels of management (due to size and complexity) could impose higher charges. Likewise the water demand charge would also allow improved targeting of charges (better allocation of the user pays principle). However, this necessarily brings additional institutions and the overhead costs of their establishment. The difficulty that the DWA has had in establishing catchment management agencies and their demand on resources suggests that catchment management agencies in all water management areas may be unattainable. Ultimately, from a water services value chain perspective the contribution of the function to the tariff build up is quite small.

11.1.2 Water resources infrastructure

Although historically municipalities were able (often subsidised by national government) to implement their own major water infrastructure works, from human and financial capacity perspectives, this no longer appears possible. There is apparently no option other than national government or one of its agencies to implement major water resources infrastructure.

The introduction of TCTA to some value chains was necessary because government made the policy decision that the projects should not be financed from the national budget but rather that users of large water infrastructure should pay directly for the benefits through tariffs. As an agency outside of a government department, TCTA was able to assemble the specialised skills needed to raise large funds from the financial markets and to operate a treasury. The TCTA has

The introduction of TCTA to some water services value chains results from the policy decision that users should pay directly for the services.

undoubtedly delivered effectively on its mandate. Its efficiency is more difficult to assess. Although the Chief Executive's Report (TCTA, Annual Report, 2009, p12) says that *"Where possible, we benchmark our funding performance against corresponding and appropriate government debt instruments"*, the benchmarking is not reported. Moreover, the costs that TCTA incurs in its financing function as opposed to its implementation or operating functions are not separable. A review of sector participants in the bond market (paragraph 11.2.1) shows that TCTA has the highest credit rating and corresponding will attract the lowest interest rates. An examination of the income statement suggests that apart from the royalties on the LHWP¹, the expenses incurred in running TCTA in 2009 amounted to 12 per cent of revenue.

11.1.3 Purification and distribution

Purification and distribution of water is a technically complex function that can only be effectively and efficiently performed by an organisation that has a threshold of technical and professional skills that act synergistically to carry out the function. Without resources, and the management systems to deploy them effectively, this cannot happen. In the purification and distribution segment of the value chain the function is performed either by the municipality or by a water board. According to DWA's Blue Drop Certification Programme (DWA 2010), in 2010, the drinking water quality in 55 per cent of municipalities was characterised as "good" or better, 21 per cent were "needs attention" and

¹ Royalties are paid to the Government of Lesotho in accordance with the Treaty for the benefit of receiving water from the LHWP.

24 per cent were “needs urgent attention”. (Note that actual water quality (i.e. compliance with SANS 241) is just one of six parameters assessed in the Blue Drop certification system, and counted for 30% of the total score in 2010).

All the water boards share the characteristic that their governance systems do not have a direct interface with an electorate. As national government business enterprises they are only subject to the supervision of the executive authority of the Minister. Although one needs to be mindful of the disparate size of the water boards when generalising, the larger water boards have used these circumstances to secure adequate resources through

The water boards and TCTA are generally shielded from direct contact with consumers and the resulting downward pressure on prices.

funding and tariff levels that allow them to carry out their mandate effectively. In the case of Rand Water, with three metropolitan and 15 local governments and 12 million people in its supply area and with an average water delivery of about 3 700 Ml per day (which essentially all comes through Vaal Dam), there does not seem to be an alternate institutional model. This also pertains to most of the medium-sized water boards. Where several municipalities depend on a single water resource the alternatives to a water board of multiple schemes for each municipality, a multi-jurisdictional municipal entity or providing for the largest municipality to provide services to the others, all appear less attractive. Water boards such as Ikangala and Bushbuckridge that have been established in areas where a preponderance of customer municipalities are financially weak, have been failures.

Apart from the failed water boards, the local governments that the smaller water boards serve appear to be in a far more precarious financial and institutional capacity position than the boards indicating that they are not a viable alternative. This even before the complexity of cross-jurisdictional cooperation is added.

The Water Services Act mandates water boards to provide water services to other water services institutions. The well-established water boards view this as an opportunity to offer advisory and consulting services and to partner in public-public partnerships. The contrast with the under-resourced local governments that are their customer base is stark. This suggests that the institutional power relationships in the value chain are unequal because of the differing governance systems. In the absence of an effective

The institutional power relationships in the water services value chain are unequal because of the differing governance systems.

regulator in the sector and the overlap in mandate between the national departments of DWA (regulating water boards) and CoGTA (regulating local government), this looks set to persist. Proposals that financial and human capacity in the water boards should be used to support local government could only be implemented if the overall resource base is increased otherwise it will only lead to a dilution and a fall below the threshold essential to maintaining technical excellence or even mere competence.

Section 19 of the Water Services Act and section 80 of the Municipal Systems Act allows local government to appoint water boards to provide services without the use of a tender process and hence competition with the private sector. This effectively defeats the emphasis by National Treasury on competition in the procurement process in order to obtain price efficiency.

The water boards are themselves not devoid of efficiency and sustainability problems. National Treasury (2010) has reported the following:

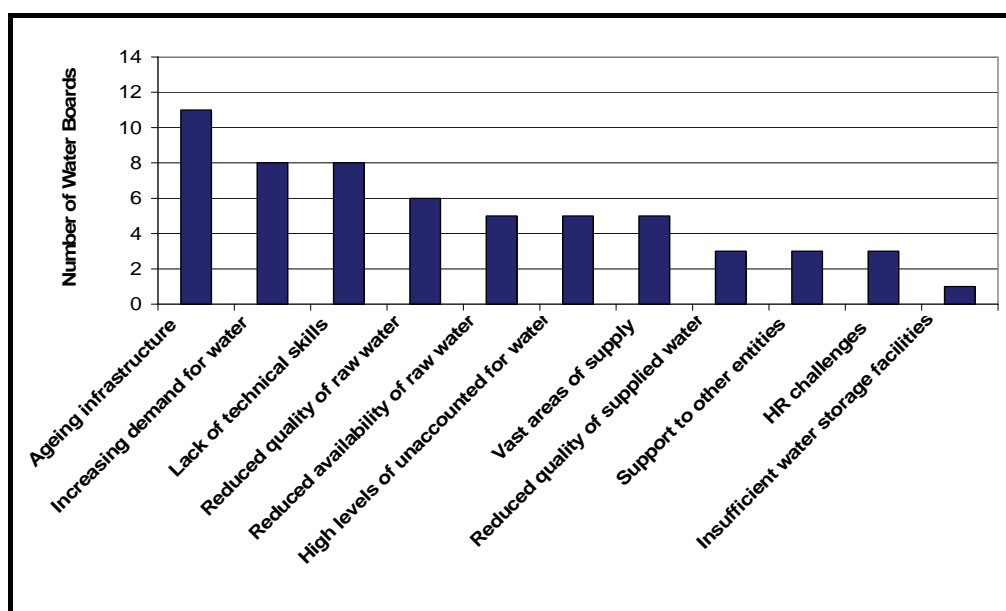
- *“There is declining profitability caused by:
Costs are growing more than revenue;
Tariffs are not cost reflective;
Increasing bad debts; and
Modest volume growth.*
- *The difference between the gross profit margin and the net profit margin indicates high expenditure on costs other than cost of sales*
- *Significant Capital Expenditure required in the next 5 years by the Water Boards, however declining profitability, low reserves and weak cash flows suggest the majority of the Water Boards cannot sustain high debt levels.”*

The water boards are themselves not devoid of efficiency and sustainability problems.

National Treasury’s concerns are supported by the expectation that future water sources will be more expensive (“the lower hanging fruit has already been picked”), for example future water sources will require longer pipelines, higher pumping costs, etc. Also water treatment costs will increase with the deteriorating quality of raw water sources and compounded by the expected climate change related impacts such as increased temperature, droughts, floods, etc.

The challenges faced by water boards that are identified in the same National Treasury report are depicted in Figure 11.1. National Treasury (2010) concludes that increased support from national departments and improved oversight are required which implies that most water boards are hardly well placed to assist with the water services functions of local government.

Figure 11.1: Operational challenges facing water boards



11.1.4 Water and sewer reticulation

Reticulation is currently carried out by municipalities. Apart from the fact that this is a fundamental part of the Constitutional mandate to provide services, the municipalities are best placed to deal with the function. As with purification the municipality can contract with water services providers to actually deliver the services without avoiding their responsibilities in terms of the Constitution, the Water Services Act and Municipal Services Act. Although water boards with encouragement from government and organised labour, are increasingly offering their services for this function, it is a fundamentally different retail business from the wholesale business of the water boards because of the nature of the customer base.

11.1.5 Waste water treatment

Waste water treatment is currently carried out by the municipalities in terms of their Constitutional mandate. The general condition of the infrastructure and the effluent quality is very poor (DWA, (2010c); SAICE (2006)). The operation of many of the country's waste water treatment plants is seriously compromised by poor maintenance and ineffective operations (DWA 2010d). These trends highlight poor alignment across the value chains of different sectors – notably housing delivery, water supply and wastewater treatment, with the provision of over 2.6-

The operation of many of the country's waste water treatment plants is seriously compromised by poor maintenance and ineffective operations.

million houses for low income households not being matched by comparable investments in wastewater collection and treatment infrastructure.

On-going low levels of investment, routine expenditure and poor technical skills are no match for the increasingly complex chemicals and organisms that find their way into the sewers. The failure of a municipality to adequately purify its sewage not only creates health and environmental risks but also externalises costs and loss of amenities to the downstream users such as a municipality that must spend more on its purification than would otherwise have been the case. The necessary regulations have been promulgated but in a weak regulatory environment, low municipal financial and human capacity, it not being directly in the municipalities' own interest and the absence of a waste discharge charge system, the prospects for improvement are bleak (but see recent attention by national government to the problem (MWA,2010)).

Very poor effluent quality from WWTWs is tolerated by a weak regulatory environment

By contrast (and without contradicting the discussion in paragraph 11.1.3) the water boards, most of which suffer the financial consequences of upstream pollution, have a greater interest in good river water quality and seem to be better placed to deal with waste water treatment. Moreover, waste water treatment is even more technically complex than water treatment and the water boards at least have the basis of the required technical and professional competencies. There are a number of instances where water boards have contracted with water services authorities to operate wastewater treatment plants on their behalf.

11.2 Financial inefficiencies

11.2.1 The bond market

A review of the Bond market reveals that there is a financial efficiency to be gained by centralising the provision of major water resource infrastructure. The nature of large dams and other schemes are that they are beyond the capacity of parliamentary appropriation and grants such as the MIG and the Regional Bulk Infrastructure Grant (RBIG). Debt finance

The bond market only presents opportunities for larger institutions in the value chain.

is therefore required, and is now typically raised on the Bond market. The cost of this debt is determined by the rating of the institution required to pay back the debt. TCTA has an AAA rating from two premier rating agencies, CA and Fitch. Umgeni and Rand Water have an AA rating and will

therefore pay a higher rate. The City of Cape Town was given an Aa2 rating by Moodys whilst Johannesburg Metro has received a number of ratings on its different bond issues ranging from an A+ from CA to AA-, A+ and AA+ from Fitch. eThekweni's rating is AA-. These lower ratings would imply that their cost of debt is higher than that of TCTA. Other municipalities would need to approach commercial lenders, since the bond market is only appropriate for large sums. Typically, they would be incurring a higher cost, since their ratings will be lower than that of the Metros if at all they could acquire a credit worthiness rating.

11.2.2 The Municipal Infrastructure Grant

Although the MIG grant is focussed on capital provision, there is the belief that the grants are sometimes not used for this purpose (although our research did not attempt to identify these instances). It was evident from our interviews that small municipalities feel that their MIG allocations are often insufficient for the required capital works and consequently,

There are mixed messages about the effectiveness of MIG.

funds are either transferred and employed elsewhere (on non-capital works) or funds are unspent. High capacity municipalities are able to supplement their MIG funding with other sources of finance, but the low capacity municipalities rely almost exclusively on MIG for capital funding. Whilst their proportional allocation is much higher than the high capacity (and generally larger) municipalities, the actual amount is often less than what is required for major projects such as water and waste water treatment works and reticulation systems.

Even where MIG is utilised for its intended purpose, a consequence is that municipalities take on long-term O&M commitments which are not necessarily catered or planned for. This means that in the long term, these infrastructure investments are rendered unviable. The heavy commitments also impact on their ability to raise funding for infrastructure outside of low income areas or that does not target basic services.

In theory, capital projects should only be undertaken when supported by a full business plan demonstrating the long-term viability of the proposed infrastructure. This should include a financial plan showing how ongoing O&M costs will be covered. However in practice these business plans are often prepared by consultants, or the PMU team, without the full understanding or support of the LM executive management (particularly the treasury office). The result is that funds which should have been earmarked for future O&M costs are instead spent elsewhere in the municipality. Alternatively, the business plans may provide for recovery of expenditure from user charges, without taking into account the history of poor collection in many municipalities, or the absence of plans on

how to turn this around. In addition, the professional and managerial skills required to run the facilities properly are not understood; all too often, inadequately experienced or unqualified people are appointed to run complex new infrastructure.

The professional and managerial skills required to effectively operate water services facilities are often not understood

11.2.3 Water income not ring-fenced

Another inefficiency which is evident relates to inadequate budgeting processes and the competition for funds within municipalities. In smaller municipalities particularly, notwithstanding the requirements of the MFMA and the Municipal Systems Act, water is often not effectively ring-fenced as a service and as a result there is potential for cross subsidisation with other services. Experience shows that apart from MIG funds, all other funds (service fees, rates, equitable share) are collected into one account and allocated on a priority basis with little or no sector ring-fencing.

11.2.4 Crowding out of commercial lenders

National Treasury's 2008 Local Government Budgets and Expenditure Review suggested that there was room to increase local government debt finance (by R30bn over the following three years). It is evident that there is under-utilisation of debt financing (debt service levels are only 1% of annual revenue) and most critics attribute this to the 'crowding out' of commercial lenders by government grants and transfers. If MIG is so 'freely available' then why would a water services authority bother with the complexity and investment of time required to initiate and complete a long term debt or PPP agreement?

11.2.5 Project management capacity

Another hindrance is the apparent lack of capacity to structure and apply for the appropriate finance. Possible evidence of this is provided by the private financier, INCA, whose total advances have declined steadily from R6.5bn at 30 June 2005 to R4.6bn at 30 June 2008. INCA was launched in 1996 to test whether a private-sector development fund could contribute to the Reconstruction and Development Programme. It focused its investment on the municipal sector; with the result that 61 per cent of the loan book represents loans to local government (more than half is to the metros). It is suspected that the main reason for the decline is the inability of local government to jump through the hoops required to access commercial debt. INCA's 2006 Annual Report points to the capacity constraints in local government and the lack of decision making ability. It also mentions the '*limited number of projects to invest in*' and how new legislation has introduced procedures which have impacted on the ability to provide funds for municipal infrastructure projects. A

participant at the stakeholder workshop for this study from another bank mentioned that banks do not always tender for municipal projects, given the intensive investment that is often required, and how projects are often stalled due to lack of decision-making by the municipal officials.

11.3 Institutional inefficiencies

11.3.1 Monopoly nature of the value chain

The nature of the water services sector value chain is such that it and the value chain participants (DWA, TCTA, Water Boards and local government water service authorities) are monopolies. The absence of rival institutions with which to compete for market share means that these institutions require significant oversight in order to guarantee that they operate effectively and sustainably whilst still meeting the terms of their mandates.

Water services are a near natural monopoly and therefore strong regulation, particularly of prices is desirable.

Two types of inefficiency may arise from this monopoly position. The first is the additional oversight costs required to ensure effective operation. These include the costs incurred in setting tariffs (Portfolio Committee, stakeholder engagement, etc.), which require intense scrutiny (as opposed to relying on competitive market forces to set a fair market price). The second inefficiency is the ‘laziness’ that may occur from lack of competition. Inefficient behaviour in a competitive market is punished by reduced turnover and the threat of having to exit the market. Firms operating as a monopoly and without effective regulation do not face this threat and therefore inefficiencies are passed on to the end consumer through higher prices or reduced quality.

11.3.2 Institutional capacity

One of the most prevalent limiting factors is the lack of institutional capacity across the water services value chain. This is most evident at the local government level, which has serious consequences, this being the ‘service delivery end’ of the value chain. In turn this means that key functions such as budgeting, project management and the daily operations and

Institutional capacity is one of the most limiting factors across the water services value chain.

maintenance functions are severely hampered. As a solution to this, CoGTA has proposed the ‘*Local Government Turnaround Strategy*’ (CoGTA, 2009b), which identifies the root causes for some of the problems as systemic factors (i.e. linked to the model of local government); policy and legislative

factors; political factors; weaknesses in the accountability systems; capacity and skills constraints; weak intergovernmental support and oversight; and issues associated with the inter-governmental fiscal system. As part of government's initiative to counter this state of affairs, the Minister, MECs and representative mayors have, as a public commitment, signed an undertaking to work towards the creation of a responsive, accountable, effective and efficient local government (Minister of CoGTA, 2010). One of the outputs would be to improve municipal financial and administrative capability.

One of the inefficiencies in the process is the apparent paucity of sector planning or use of sector plans in drafting budgets. It appears the WSDP is considered largely a function of the technical departments and hence not directly influential in budgeting decisions. There is some suggestion that WSDPs are too technical to be of use at corporate level.

A further challenge and potential inefficiency in the budgeting process is that notwithstanding National Treasury Guidelines to the contrary, it was said by an interviewee during this research that tariffs at which the municipalities purchase water are revised after the municipality has concluded its budgeting process. If this is the *de facto* practice, it has obvious implications for net revenue collection.

11.3.3 Separation of billing and tariff setting functions

In the local government setting, tariff setting and billing are commonly managed as separate functions. In most cases, meter reading, billing and revenue collection are functions of the finance department. Bad debts are reflected on the water services budget in spite of it having no control over debt management. It has also been found that several municipal billing systems are either ineffective or outdated or in some instances altogether absent. This means that tariffs are frequently not set to at least recover the costs of water services provision.

The separation of operations, billing and collections confuses accountability and seems to create inefficiencies that lie at the core of the debtor crisis.

Inefficiencies are also created by the duplication of systems. For example, residents of Matatiele receive three separate accounts which they need to pay at three separate venues. They receive a rates bill from the local municipality, a separate water bill from the district municipality (since it is the WSP), and an electricity bill from Eskom. Attempts by the local municipality to take over the revenue collection function from the District Municipality have been rejected by the DM.

11.3.4 Overlapping institutional mandates

One of the drawbacks of current institutional arrangements arises from the overlapping mandates of the DWA, CoGTA and Department of Human Settlements. For instance, the responsibility for implementation of the Sanitation policy has recently been transferred from DWA to the Department of Human Settlements although sanitation has obvious linkages with water services provision. This prevailing lack of clarity is believed to create room for inefficiencies in the delivery of both water and sanitation services. The split between district municipalities and local municipalities is problematic for the same reasons.

Many observers believe that regulatory independence is essential and that DWA has been unable to effectively reconcile its multiple roles.

11.4 Regulatory inefficiencies

Water services are delivered within a comprehensive regulatory system of legislation and regulations. In addition to water sector-specific legislation, there are regulatory frameworks in the municipal, environmental and health sectors that impact on water and sanitation services. The multiple sources of legislation and regulations create a compliance cost in the value chain.

Regulatory independence is a key discussion issue in the water sector value chain. Although some form of economic regulation is directed at particular institutions operating in the value chain, there is currently no formal regulator which undertakes economic regulation of functions from raw water abstraction to supply and eventually wastewater discharge. The DWA, which participates in- and is a key driver of costs in the value chain also plays the role of regulator and has significant influence in the setting of bulk and retail water tariffs. In addition, although DWA is effectively the shareholder of each of the thirteen water boards in South Africa, DWA is also a regulator of these water boards. This confuses governance and regulation and has brought about questions with regards to whether DWA can and should play the dual role of “player and referee” in the value chain.

Some local authorities have expressed the view that because they have no input in the investment decisions of water boards, they are often vulnerable to unreasonable tariff increases from water boards. This disjointed approach to regulation has led to several role-players calling for the establishment of a formal, independent economic regulator. It is not clear whether this additional layer of costs would provide sufficient benefit to warrant it. Another issue is the capacity of sector institutions to respond to independent regulation.

11.4.1 Inadvertent consequences of policies

Policies and strategies that directly impact on municipal financing are the WSDP, the free basic services policy, water services tariffs and credit control policies. Although these policies attempt to account for the full financial and economic cost of water they are also cognisant of the need to provide poor households with access to an acceptable level of service. An unfortunate consequence of some of these policies however is that they have reduced the attractiveness of water services to the private sector financial institutions. The free basic water policy for instance is widely blamed for having entrenched a culture of non-payment which in turn has compromised revenue flows for local authorities.

At the same time, in terms of implementation of the Division of Revenue Act, a study by CoGTA on a small sample of municipalities suggests that equitable share provisions are insufficient particularly because the cost of service provision in rural areas is higher than for urban areas.

11.5 Technical inefficiencies

11.5.1 Inadequate budgeting

One of the inefficiencies in the local government budgeting process is the apparent lack of sector planning or use of sector plans in drafting budgets in some municipalities. It has been found that the WSDP is largely considered a function of the technical departments and hence the WSDP is not directly influential in budgeting decisions.

It has also been found that due to inadequate budgeting, infrastructure and assets are not properly operated and maintained resulting in the physical loss of water through distribution systems. The issue of non-revenue water is compounded by the absence of concerted efforts in water conservation and demand management across the value chain and municipalities in particular. NRW is an important measure as it is indicative of both the efficiency of the provider in metering, billing and revenue collection, as well as technical efficiency in the maintenance and repair of infrastructure. This is concerning particularly as recent studies estimate the total NRW for the country as 35 per cent of total municipal water usage (Seago and McKenzie, 2007; DWA, 2010h).

The separation of the billing function from the planning and water provision function again proves a further problem as it creates room for metering and billing inconsistencies which in turn can reflect as administrative losses and therefore non-revenue water. This current anomaly provides further motivation for the consolidation of the service provision and billing departments.

11.5.2 Recognition of the full value of water

An increasingly recognised approach in the management of water resources takes the view that water is not an isolated resource but a crucial part of the ecosystem from which a multitude of services are derived. If an upstream wastewater treatment works discharges non-compliant effluent into a watercourse, the implication is that downstream water users eventually have to carry the costs in some way. This can either mean increased treatment costs for downstream abstractors or more devastatingly, this can also mean biodiversity loss and loss of livelihoods.

12 RECOMMENDATIONS AND SCENARIOS

The range of variables inherent in each of the models described in paragraph 3 is too diverse to allow for direct value chain model comparison of a quantitative nature. For example there are differences in volume of water, quality of water, distribution distances and terrain, and concentration of users. This report has therefore relied on qualitative analysis. The format of this section is to consider recommendations in each of the four categories of potential inefficiencies that have been identified and scenarios that could lead to better efficiency in the value chain.

At the broadest level a comparison of South African and international financing trends suggest that South African capital financing in the sector is sophisticated by developing country norms. No mechanisms were found in the international literature that could make a significant difference in the South African context. Moreover, it appears unlikely that attention to the supply side of capital financing will noticeably increase investment. Rather, attention will have to be paid to the demand side, which implies that potential borrowers will have to have their technical and financial management capacity strengthened to plan, finance and execute “bankable” projects. This is also a necessary condition to increasing financial flows through the national grant funding and private sector mechanisms.

12.1 Addressing financial inefficiencies

Increase project management and other human capacity in municipalities. This will allow municipalities to better access existing financial mechanisms, as well as successfully pursue new avenues.

Increase the accuracy and ‘ring fencing’ of the recording of water services expenditure in order to ensure that ‘true costing’ is achieved. This should include a life-cycle approach to replacement costs and asset management. The general prevalence of under-recovery is highlighted by the fact that often when municipal water services functions are outsourced, consumers complain about higher tariffs. Unless sufficient revenue is raised to cover all costs, current usage creates a financial burden on future usage through under-capacity and early failure of infrastructure.

Reduce non-revenue water. In this way costs would be decreased (NRW still incurs treatment costs), and any extra water could be sold to consumers. International or national benchmarks or cost-benefit analysis can be used to determine optimal target levels.

Increase revenue and debt collections along the entire value chain, but particularly in municipalities, in order to increase revenue from services already being provided. This would also facilitate better planning efficiency through an emphasis on ‘actual money collected’ rather than on ‘invoiced but outstanding payments’. Instilling a culture of payment (through enforced collection) also helps make debt a more feasible source of infrastructure finance, since it helps to reassure potential investors.

Increase funding of local government through encouraging increased debt finance, particularly from private sector institutions and investors. This will require addressing the audit qualifications of the majority of municipalities’ financial reporting.

Increase and restructure the Municipal Infrastructure Grant to allow for larger project developments as well as for a portion to be used for operational expenditure on a project during its inception years. This would lead to an increased use of the grant, allow for larger municipal projects, and ensure that such projects are sustainable in terms of municipalities having the funds to operate and maintain the infrastructure. The restructuring should include the implementation of increased financial controls and planning, and mechanisms to ensure that the MIG does not ‘crowd out’ private sector financial institutions that are willing to operate in this sector. More extensive monitoring and evaluation are necessary.

Discourage the tendency to use services to cross subsidise other municipal functions. Maximum financial efficiency is achieved when all the costs of a service are recovered from the users but no more.

Include an adequate return on assets component in all WTE tariffs. This should provide for the future replacement of water infrastructure. It will have the added benefit of moderating demand.

Implement the proposed waste water discharge charge in order to increase revenue flows and introduce ‘true costing’ and the ‘polluter pays’ principle to the waste water sector.

Leverage the conservative financial position of water boards in order to take advantage of additional funding through debt. Debt could provide a ‘cheaper’ source of capex, which would lower development costs and provide increased efficiencies through greater economies of scale.

Remove procurement advantages held by public sector entities to introduce competitive efficiencies.

12.2 Addressing institutional inefficiencies

Improve municipal administration and project management capacity. This will counter the fact that many municipalities are unable to contract adequately and take excessive time to get basic uncontested agreements completed, meaning that there are delays in complex projects.

Implement staff retention policies and increase funding in order to decrease staff turnover and skills loss, which would help to address capacity shortages.

Increase long-term and strategic thinking by municipalities in terms of water and sanitation service provision in order to increase service delivery and system sustainability. This implies that the WSDP should be restructured to a more strategic document of greater use to other functions in the municipality.

Reduce the ‘shielding’ of the water boards from the end consumer. Increased transparency and stakeholder participation could introduce the downward influence of consumer involvement on water tariffs, thereby promoting greater efficiencies. Reducing this ‘shielding’ would also address the institutional power imbalance between water board and municipalities. Municipalities are price takers, but are also exposed to the downward forces of consumer interaction, resulting in reduced margins, a lack of sustainability, and potential conflict between social and economic mandates.

Increase coordination of overlapping national departmental mandates. This is especially relevant to overlaps between the Department of Human Settlements and DWA.

Promote private sector investment and support. The present sector policy and legislation favour public sector water services providers, mostly water boards and particularly in the area of procurement. But these institutions are in the ‘wholesale’ rather than the ‘retail’ market and lack sufficient financial and institutional capacity to make a meaningful contribution to overall needs at national scale.

12.3 Addressing regulatory inefficiencies

Establish an independent water services regulator in order to address the conflicting role of DWA, and increase stakeholder participation in water infrastructure development. This would address such problems as municipalities not being involved in water board infrastructure development decisions but being subjected to ‘unreasonable’ tariff increases. A regulator would also improve governance in the sector.

Increase and strengthen punitive measures against municipalities in order to improve water quality and reduce polluting discharges. This would contribute to an overall increase in water quality, and thus translate into reduced water treatment costs. Publicise these measures more extensively to increase the deterrent effect.

Strengthen governance in the sector in order to shift priorities from short-term, unsustainable extension of water services to a combination of long-term proper maintenance and sustainable expansion of infrastructure. This, coupled with increased transparency and accountability, would decrease repair and replacement costs, while still providing for measured and sustainable extensions.

Introduce competition (private or otherwise) along the value chain in order to reduce oversight costs and compel service providers to increase value creation/decrease tariffs through the pressure of competition.

12.4 Addressing technical inefficiencies

Improve asset management in order to address the challenges posed by ageing infrastructure that has not been adequately maintained.

Improve technical tariff setting along the value chain by:

- The use of benchmarking based on service provision;
- Fully understanding the mechanisms and processes of water service delivery;
- Establishing full cost-driven pricing as a threshold but also incentivise efficiencies in water use and provision; and
- Basing water charges on end-user value.

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