



**Cooperative Governance, Local Government
and the Waste Planning System**
David Savage



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Disclaimer

Cooperative Governance, Local Government and the Waste Planning System

Prepared by David Savage

August 2009

This research paper has been commissioned as part of the process of preparing a National Waste Management Strategy for South Africa. The views expressed in this paper are those of the researcher only, and do not necessarily reflect the views of either the Department of Environmental Affairs or of the consultant team preparing the NWMS. This research paper has been prepared for the purposes of stimulating discussion and informing debate prior to the commencement of the drafting process. In order to comment on the issues raised in this paper, and for more information regarding the process of preparing the NWMS please visit www.deat.gov.za/waste/"

Table of Contents

Executive Summary	1
1 Introduction	3
1.1 Definitional issues and the focus of this document.....	3
1.2 Unpacking key policy objectives in the solid waste sector.....	5
1.3 A view from institutional economics	6
1.4 A note on data sources.....	7
2 Cooperative governance and planning.....	8
2.1 The formal assignment of solid waste functions in South Africa	8
2.2 Analysing functional assignments.....	10
2.2.1 Policy making functions	10
2.2.2 Service provision functions	15
2.2.3 Regulatory functions	17
2.2.4 Citizen oversight.....	18
2.3 Issues and incentives analysis.....	18
2.4 Recommendations.....	19
3 Enhancing the coverage and efficiency of waste management services	24
3.1 Current provision of solid waste services	24
3.1.1 Waste generation and minimisation	24
3.1.2 Domestic Waste Collection	25
3.1.3 Waste Recycling and Energy Recovery	28
3.1.4 Waste Transportation and Disposal	29
3.2 Institutional models for service delivery.....	31
3.2.1 The structural dimensions of municipal solid waste service delivery	31
3.2.2 The operational dimensions of municipal solid waste service provision	32
3.3 Issues and incentives analysis.....	34
3.4 Recommendations.....	35
4 Public financing of waste management.....	37
4.1 Current financing arrangements and trends.....	37
4.1.1 Solid Waste Revenues.....	37
4.1.2 Solid Waste Expenditures.....	42
4.2 Financing requirements	47
4.3 Issues and incentives analysis.....	49
4.4 Recommendations.....	50
5 Conclusion	52
5.1 Components of an approach.....	52
5.2 Implementation mechanisms	54
References.....	57
Annexure A: Key assumptions used in the MSFM for Solid Waste Services	58

List of Figures

Figure 1-1: The Waste Management Hierarchy	4
Figure 1-2: Core functions in accountable service delivery	7
Figure 3-1: Consumer service access levels by type and municipality, 2007	26
Figure 3-2: Licensed Waste Facilities by Type	30
Figure 3-3: <i>Relative growth in consumers serviced and unit costs (2005 to 2007)</i>	33
Figure 4-1: Solid waste operating revenues by source (2005/06 to 2007/08, R'000)	37
Figure 4-2: Current maturities of large city debt	41
Figure 4-3: Solid waste operating expenditures by item (2005/06 to 2007/08, R'000)	42
Figure 4-4: Current financing relative to Scenario 1	48
Figure 4-5: Current financing relative to Scenario 2	49

List of Tables

Table 1-1: General waste generation by province in 1997 (estimated) and 2010 (projected)	5
Table 2-1: Current functional unbundling of solid waste services in South Africa	10
Table 2-2: Levels of Domestic Waste Collection Service for Urban Areas in Gauteng	11
Table 2-3: Appropriate levels of services for settlement densities	12
Table 2-4: Municipalities performing solid waste functions, 2005 to 2007	16
Table 2-5: Proposed framework of national standards and relative targets	20
Table 3-1: Consumption and wastes by urban settlement type	24
Table 3-2: Access to services	25
Table 3-3: Consumers with inadequate access to services by municipal context	27
Table 3-4: Coverage of Free Basic Refuse Services	28
Table 3-5: Municipal Waste Fleets	29
Table 3-6: Cost implications of increased distance to disposal sites	30
Table 3-7: Operational data (2007)	33
Table 4-1: Operating revenue sources and shares by municipal types in 2007/08	38
Table 4-2: Budgeted user charges, 2002/03 to 2009/10	39
Table 4-3: Basic Refuse Tariffs and Subsidies in Metropolitan Municipalities	40
Table 4-4: Annual and average staff cost and employment (2005/06 to 2007/08)	43
Table 4-5: Operating expenditure items and shares by municipal types in 2007/08	43
Table 4-6: Use of subsidy mechanisms by type of municipality, 2007	44
Table 4-7: Capital to operating expenditure ratios for solid waste services	45
Table 4-8: MIG funding of solid waste infrastructure	45
Table 4-9: Capital expenditure on solid waste between 2005/06 and 2010/11 (R'000)	46
Table 5-1: Key implementation actions	55

Executive Summary

South Africa faces significant challenges in expanding, sustaining and improving solid waste management practices and services. These challenges strongly complement national policy priorities of supporting economic growth and reducing poverty, and indeed are critical pre-requisites for the achievement of these priorities.

The primary site of this challenge is at the level at which solid waste services are delivered. In South Africa, this means that municipalities are at the forefront of addressing the challenges of expanding and sustaining access to services by households, minimising waste generation, and leveraging investment in the sector to address the ongoing challenge of waste recycling and disposal. However municipalities must operate in conjunction with both other spheres of government, and with the non-state sector.

The analysis of the system of **cooperative governance and planning** identifies six key weaknesses. These are (i) in the performance of policy making functions, particularly by national government, (ii) a planning system whose purpose is poorly defined; (iii) overlap and confusion in the roles of district and local municipalities; and (iv) an inadequate distinction between the policy-making, regulatory and service provider roles across spheres of government, the introduction of inappropriate or duplicated economic and financial regulatory tools, and weak mechanisms for citizen engagement and oversight in service delivery. The net effect of these weaknesses is to significantly undermine the prospects for effective and accountable service delivery.

In this respect it recommends entrenching role separation as the basis of a stronger system of cooperative governance, including (i) the establishment of clear norms, standards and targets for the performance of solid waste functions at provincial and municipal levels; (ii) greater differentiation in the guidance offered on the development of IWMPs; (iii) a stronger regulatory framework, with Waste Management Officers performing key regulatory functions, that is clearly distinguished from policy-making functions; (iv) the development of regulatory instruments that are more appropriate to the current challenges facing the sector; (v) the introduction of clear contracting requirements for district and local municipalities that share service provision functions; and (vi) the introduction of specific mechanisms to encourage citizen oversight of service delivery.

The analysis of the **coverage and efficiency of service delivery** finds that significant progress has been made in expanding services, but problems remain in (i) current data on the quantity, character and location of solid waste is very weak; (ii) a lack of municipal focus on waste minimisation; (iii) the lack of differentiated targets on basic access to services that take account of varying municipal contexts and capacities; (iv) a conundrum faced by municipalities of rising unit costs and falling revenues associated with expanded access to services; (v) structural arrangements for service delivery that do not create strong incentives for improvements in the efficiency of operations; (vi) a lack of definition of the objectives and approach to financial ring-fencing: and (vii) significant opportunities to introduce incentives through the system of carbon credits and the “Cleanest Town” competition.

In this respect it recommends: (i) the establishment of clear, outcomes-focussed and differentiated targets for municipalities over a multi-year period. (ii) the “Cleanest Town” campaign should be restructured to provide incentives for municipalities to achieve targets

as well as pursue innovations in service delivery; (iii) accounting and budgeting practices should be clarified to provide guidance to financial ring-fencing by municipalities; and (iv) the stated policy preference for the regionalisation of solid waste services should be reconsidered and refined.

Finally, the analysis of the **system of public financing** of solid waste services finds that significant under-spending on capital and operating requirements for the sector is occurring, with price of services being set at levels that are far below the costs of service. Realistic strategies are needed to expand service delivery, improve operating efficiencies, manage subsidies effectively, and boost revenues. Although difficult to assess on a sectoral basis, it is clear that a failure to access source of private finance for this investment lies behind the shortfall. The growth in the operating deficit for solid waste services is a significant concern. Collectively, this situation is creating few incentives for waste minimisation.

In this respect it recommends that national government: (i) establish a solid waste project development fund; (ii) exercise greater oversight and guidance over user charge levels and structures used by municipalities; (iii) that restrictions on the use of income generated by user charges or recommend appropriate tariff levels not be introduced at present; and (iv) the focus of the subsidy system should be on expanding access to services.

1 Introduction

South Africa faces significant challenges in expanding, sustaining and improving solid waste management practices and services. These challenges strongly complement national policy priorities of supporting economic growth and reducing poverty, and indeed are critical prerequisites for the achievement of these priorities.

The primary site of this challenge is at the level at which solid waste services are delivered. In South Africa, this means that municipalities are at the forefront of addressing the challenges facing the solid waste sector. However municipalities must operate in conjunction with both other spheres of government, and with the non-state sector.

This document reviews the challenges facing municipal solid waste service delivery within the context of the system of cooperative governance. It looks specifically at the assignment and performance of solid waste functions across the public sector, the coverage and efficiency of municipal service delivery, and the appropriateness of arrangements for financing municipal solid waste services. Key issues are identified in each of these areas, and a number of core recommendations are put forward.

1.1 Definitional issues and the focus of this document

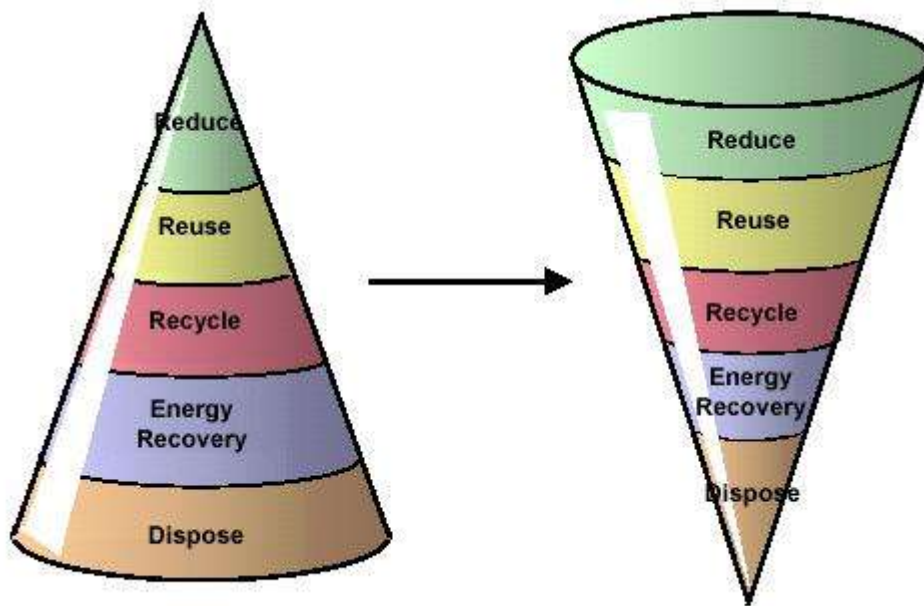
The Waste Act defines waste as “any substance, whether or not that substance can be reduced, re-used, recycled and recovered (a) that is surplus, unwanted, rejected, discarded, abandoned or disposed of; (b) which the generator has no further use of for the purposes of production; (c) that must be treated or disposed of; or (d) that is identified as a waste by the Minister by notice in the Gazette, including waste generated by the mining, medical or other sectors. However, (i) a by-product is not considered waste; and (ii) any portion of waste, once re-used, recycled and recovered, ceases to be waste” (Waste Act, 2008).

Waste is typically divided into two classes based on the risk it poses - general waste and hazardous waste.

- *General or Municipal Solid Waste* is defined as "waste that does not pose an immediate hazard or threat to health or to the environment, and includes domestic waste, building and demolition waste, business waste and inert waste. (Waste Act, 2008). The Act further defined domestic waste as meaning “waste, excluding hazardous waste, that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes;
- *Hazardous waste* is defined as “any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment” (Waste Act, 2008)

South Africa supports the waste hierarchy in its approach to waste management, by promoting cleaner production, waste minimisation, reuse, recycling and waste treatment with disposal seen as a last resort in the management of waste. The diagram below emphasizes the importance of waste minimisation, through inverting the hierarchy to minimise actual disposal of waste.

Figure 1-1: The Waste Management Hierarchy



Source: Fermanagh District Council website, U.K (www.fermanagh.gov.uk)

The waste hierarchy is strategically important when mapped to the structure of the waste industry. The waste industry is generally seen to have three components, namely collection, transportation and disposal. Emphasizing waste minimisation impacts on the volume of waste that enters the waste industry and where it goes once this occurs.

This document focuses on municipal (or general) solid waste management issues. While general municipal waste is not the largest waste category by volume in South Africa (the largest waste category is industrial and mining waste) it is the most significant in terms of both public financing and the impact that it has on the day-to-day lives of ordinary citizens.

South Africa has experienced rapid growth in waste volumes, associated with a prolonged period of economic growth. About 42 million cubic metres of general waste required collection and disposal in 1997. During the 13 years to 2010, general waste generation was projected to rise to nearly 67 million cubic metres, or by 62.5%. This represents an annual average growth rate of 4.8%, with higher growth rates projected for the Free State and Mpumalanga, as per the table below.

Table 1-1: General waste generation by province in 1997 (estimated) and 2010 (projected)

Province	1997		2010		Growth	
	m3	% of total	m3	% of total	Total %	Annual Average %
Eastern Cape	2 281 000	5.4%	3 105 989	4.5%	36.2%	2.8%
Free state	1 674 000	4.0%	3 877 380	5.6%	131.6%	10.1%
Gauteng	17 899 000	42.4%	26 085 304	38.0%	45.7%	3.5%
KwaZulu-Natal	4 174 000	9.9%	5 749 959	8.4%	37.8%	2.9%
Mpumalanga	3 831 000	9.1%	11 200 387	16.3%	192.4%	14.8%
Northern Cape	733 000	1.7%	956 369	1.4%	30.5%	2.3%
Northern Province	1 470 000	3.5%	2 374 864	3.5%	61.6%	4.7%
North West	1 625 000	3.8%	2 296 489	3.3%	41.3%	3.2%
Western Cape	8 543 000	20.2%	12 979 785	18.9%	51.9%	4.0%
Total	42 230 000	100.0%	68 626 526	100.0%	62.5%	4.8%

Source: DWAF, 2001 and own calculations

1.2 Unpacking key policy objectives in the solid waste sector

Solid waste management and service delivery systems can make critical contributions to public health, environmental sustainability, economic development and poverty eradication. Effective solid waste systems can contribute to improve public health outcomes through reducing opportunities for diseases and their animal hosts to spread, such as occurs at unregulated local dumpsites. They contribute to enhancing environmental quality, by protecting watercourses and preventing waste being strewn across public open spaces. They reduce the quantity of waste that can end up clogging public storm water and sanitation networks, thereby reducing flooding, service failures and the need for maintenance. Well-designed solid waste systems both support higher levels of economic activity and can contribute directly to poverty alleviation through offering opportunities for employment. Conversely, a failure to develop effective solid waste systems is felt most directly and severely by poor households in local areas that receive only partial services or none at all. Ultimately, however, these costs are borne by all South Africans, and reflected in additional demands for health services and rising utility costs.

South African policy-makers have long recognised the importance of developing effective, sustainable solid waste services. Waste management in South Africa is based on the principles of the White Paper on Integrated Pollution and Waste Management (IP&WM) and the National Waste Management Strategy (NWMS) published by the Department of Environmental Affairs and Tourism in 2000 and 1999. These principles included the importance of strengthening user accountability, cradle-to-grave management of waste (this concept has since evolved to the cradle-to-cradle concept), full cost accounting, good governance, integration, open information, participation, and ensuring that the polluter pays.

Government has emphasized the importance of a waste management hierarchy with a focus on waste minimisation, as well as the potential for job creation in the sector, focusing on previously disadvantaged communities. The National Waste Management Strategy (1999) defines the development objective of the sector as the “Reduced generation

and environmental impact of all forms of waste, so that the socio-economic development of South Africa, the health of its people, and the quality of its environmental resources are no longer adversely affected by uncontrolled and uncoordinated waste management". The Polokwane Declaration (2001) commits South Africa to reduce waste generation and disposal by 50% and 25% respectively by 2012 and develop a plan for zero waste by 2022.

1.3 A view from institutional economics

Institutional economics offers two important insights into arrangements for the governance, provision and financing of solid waste service provision:

Firstly, **solid waste services are generally regarded as merit goods** as they have characteristics of both public and private goods. Household level service provision can be both rival and excludable, and thus technically private goods, in that service users conventionally pay for services. Merit goods are typically charged on the basis of the ability of the consumer to pay. Raising charges above this level may result in free-riding or opting out of services, with negative externalities. However, other aspects of the provision chain, such as cleansing of public space and the regulation and operation of landfills have important public good dimensions related to the negative environmental and public health externalities associated with the unavailability of service. Landfills, in particular, are viewed by some as natural monopolies as well, given the very high cost barriers and growing regulatory costs associated with developing new sites. Collectively, this merit good status has traditionally justified a key role for the public sector in service provision, particularly at the local level.

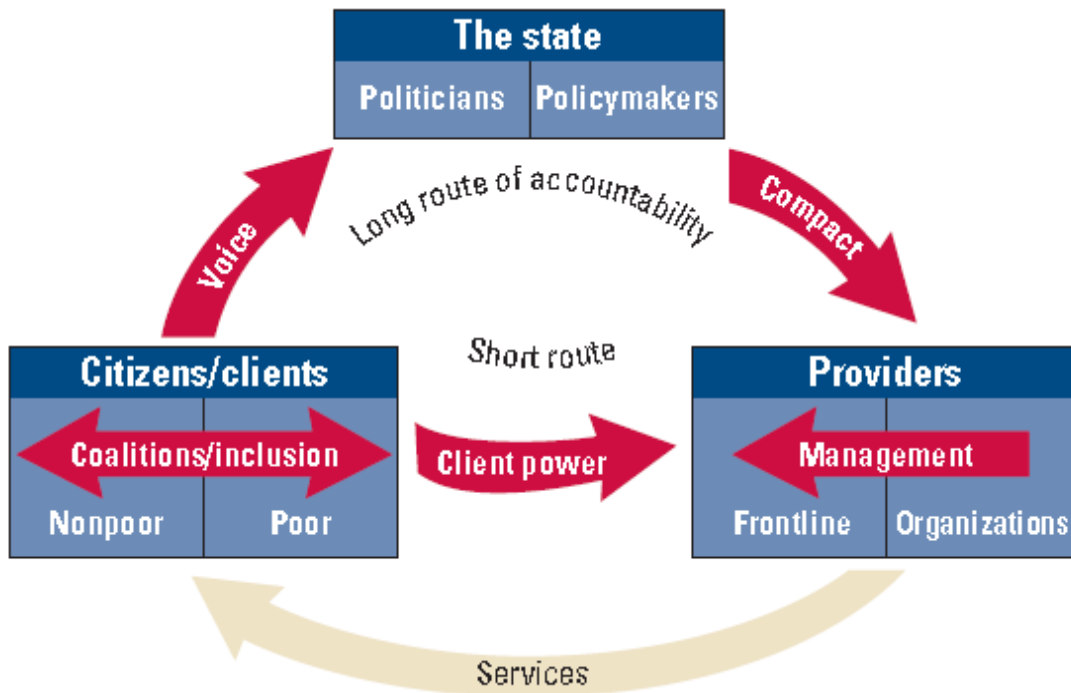
Secondly, institutional economics focuses on the **framework and incentives for accountability in service provision**. A recent global report on service delivery laid out a framework of accountability that provides a useful benchmark against which the functional alignment and performance of solid waste service delivery arrangements can be assessed. The framework is four by five. That is, a system of accountability has four possible links of accountability:

- i. From citizens to the state called voice (or more commonly, politics);
- ii. From the state to organizational providers (which could themselves be line agencies or wholly owned parastatals) called compact;
- iii. From organizational providers to front-line providers called management; and
- iv. From citizens directly to providers (both organizational and front-line) called client power.

Each of these four relationships of accountability (voice, compact, management, and client power) has five constituent elements:

- i. Delegation, a clear statement of the desired outputs and outcomes;
- ii. Finance, the provision of adequate sources of finance to reach the desired outputs and outcomes;
- iii. Information, on the quality of performance;
- iv. Enforceability, making the outcome for the agents dependent on how well they achieved the desired outputs and outcomes; and
- v. Performance, the agent chooses what actions to take based on incentives created through delegation, financing, information, and enforcement of the system.

Figure 1-2: Core functions in accountable service delivery



Source: World Bank, 2004

1.4 A note on data sources

High quality disaggregated data at a national level on solid waste services is difficult to come by. National and provincial governments do not report specifically on these expenditures, given their small contribution to total spending in these spheres. Economic data from Statistics South Africa does not present data on the industry in disaggregated form. Municipal data has historically been of low quality, and although it is now improving, does not present fully ring-fenced financial accounts.

This analysis uses a composite of three key datasets, drawn from the National Treasury Local Government Budget Database (which presents budgeted figures, rather than actual expenditures), the 2007 Community Survey and Statistics South Africa (StatsSA). Information from the latter source includes time series data on financial and non-financial indicators of municipalities, which are released annually. Demographic and service level data has been drawn from the 2007 Community Survey.

Where possible and useful, all datasets have been analysed on a disaggregated basis to illuminate differences between different types of municipalities, based on their vastly differing physical, economic and often social characteristics. This disaggregation has used a standard method that distinguishes between metropolitan (Category A) municipalities, district (Category C) municipalities and four types of Local (Category B1 through B4) municipalities, with the latter based on prevailing settlements types (secondary cities, large towns, small towns and largely rural municipalities). References to “large cities” refer to both metros and secondary cities.

2 Cooperative governance and planning

As noted earlier, solid waste services can usefully be evaluated within an accountability framework. This framework implicitly motivates for clear role definition and separation between policy-making, regulatory and service provider functions, as well as for placing the citizen and consumer at the centre of service delivery arrangements. Adequate role separation is critical for the emergence of an effective system of cooperative governance in the sector.

This section will review the respective roles and responsibilities of the three spheres of government, with respect to policy-making, regulation and service delivery. It focuses specifically on options and recommendations in relation to streamlining systems of intergovernmental management of solid waste services.

2.1 The formal assignment of solid waste functions in South Africa

Solid waste management is primarily a local government function in South Africa. Section 156 (1) (a) of the Constitution, read with Schedule 5, assigns responsibility for refuse removal, refuse dumps, solid waste disposal and cleansing to local government. This responsibility includes both the executive authority and the right to administer these functions. This assignment dovetails with the core objects of local government outlined in section 152, such as service delivery, social and economic development, and environmental health and safety.

Yet the Constitution also obliges municipalities to perform these functions in a co-operative manner with other spheres of government. In particular, solid waste is an area of exclusive provincial legislative competence (otherwise known as a Schedule 5 function), only to the extent that provinces must provide for monitoring and support of local government on solid waste matters. National government has more limited powers with respect to solid waste management, as this is outside of the legislative competence of Parliament. Thus it may only intervene when it is necessary to maintain national security, economic unity, or essential national standards, and to establish minimum standards required for the rendering of services, or to prevent unreasonable action taken by a province which is prejudicial to the interests of another province or to the country as a whole.

The National Environmental Management: Waste Act (No 59 of 2008) asserts the roles of both national and provincial government in waste management. National government's competence to legislate is established in line with section 44 of the Constitution on the grounds of the need to maintain essential national standards, establish uniform norms and standards, and to promote and give effect to the right to an environment that is not harmful to health and well-being. The Act establishes a national framework for waste planning, regulation and management with roles for all spheres of government, specifically:

- a) National government is tasked with establishing a national waste management strategy, including norms, standards and targets. National norms and standards may cover all aspects of the waste value chain, from planning to service delivery. Of particular importance from an intergovernmental perspective are the powers of national government with respect to norms and standards for:
 - The regionalisation of waste management services;

- Tariffs for waste services provided by municipalities, including providing for tariffs to be imposed to provide for waste management infrastructure or facilities and ensuring that funds obtained from the provision of waste services are used for the delivery of these services.
- b) Provincial governments are tasked with the implementation of the national waste management strategy and national norms and standards, and may set additional, complementary provincial norms and standards. The Waste Act notes that these norms and standards “must amongst other things facilitate and advance” regionalisation of waste management services.
- c) Local governments are required to ensure the universal and sustainable delivery of services, subject to national and provincial regulation. In particular, they are required to maintain separate financial statements, including a balance sheet of the services provided.

The primary innovation of the Waste Act on intergovernmental matters is the presumptive preference for the regionalisation of solid waste management services¹. This presumption is not specifically limited to any aspect of the waste value chain, though it would seem to apply most directly to transportation and disposal activities. Issues associated with regionalisation will be discussed later.

The Waste Act also places considerable emphasis on the development of an integrated waste planning system, through the development of interlocking Integrated Waste Management Plans (IWMPs) by all spheres of government and specified waste generators. This planning system is the primary tool for cooperative governance within the sector. While the requirement for these plans is new for national and provincial governments, and for waste generators, this is not the case for local governments who had been able to voluntarily prepare such plans within their Integrated Development Plans (IDPs). IWMPs are mandatory for national and provincial government and specified waste generators, but the situation for local government is made a little more ambiguous by the Constitutional assignment of concurrent powers to provincial and local governments in this respect, with only limited authority assigned to national government.

Other focal areas of the Waste Act include provisions for the development of norms and standards, tariffs and financial management systems. These powers all largely repeat existing national or provincial powers that are provided for in other legislation. The key change is that the Minister of Environmental Affairs now assumes these powers in terms of the Act, although concurrently with other authorised Ministers notably in Local Government and Finance portfolios.

In addition to the Waste Act, intergovernmental cooperation is currently pursued through a MinMEC on environmental affairs. The work of the MinMEC is supported by a Technical Committee comprising the Director-General of Environmental Affairs and the heads of provincial departments. This group is, in turn, supported by a Working Group that focuses on environmental quality and protection issues, including waste management.

¹ The Waste Act includes many other important achievements, but these are either not new (such as planning and regulatory tools) or not related to intergovernmental matters.

2.2 Analysing functional assignments

Pritchett and Pande (2006), in the context of primary education, outline a framework for the evaluation of intergovernmental functional assignments that is adapted in the table below, following the generic schema of waste management responsibilities outlined in DEAT (2007) and current practice. The key distinction implied in this approach to functional unbundling is the distinction between policy-making, regulatory and service provision functions.

Table 2-1: Current functional unbundling of solid waste services in South Africa

Component	Broad Function	Activity	Current assignment				Issue
			Nat	Prov	Local	Pvt	
Policy-making	Standard Setting	Norms and standards Access targets	X X	X	X		What is to be provided
	Planning	Plans for service expansion Plans for service improvement		X X	X X	X	Adequate facilities and services
Service Provision	Asset creation	Social capital Physical capital			X X	X	Adequate facilities and services
	Financing	Tariffs Subsidies to Consumers Grants to Service Providers	X		X X		Financial sustainability
	Operation	Consumer selection Recurrent expenditures - General area cleansing - Waste minimization - Waste collection - Waste transport - Waste disposal Maintenance Staffing			X X X X X X X	X X X X	Effective and sustainable services
Regulation	M&E	Economic Financial Operational Monitoring & Evaluation	X X X X	X X X X	X X X X		Quality of service delivery

This section of the report focuses on issues where functional assignments raise intergovernmental issues. It is not intended to assess all aspects of functional assignments, nor their actual performance.

2.2.1 Policy making functions

Policy making functions encompass both the establishment of norms, standards and targets, the system of planning for service expansion and improvement, as well as the coordination and policy activities. At present, all spheres of government perform these functions.

Standard setting

National policy-making on solid waste services has been weak to date. The attention of policy-makers has been on creating the overarching legislative framework, rather than on specifying norms, standards or access targets. For example, national government has not issued concrete national norms and standards on what constitutes access to a basic domestic solid waste service, nor set plausible targets for its achievement. Importantly,

however, the Waste Act now creates a comprehensive framework to address this and work is underway to address this gap.

Some provincial governments have developed non-binding service standards. In Gauteng, standards were issued in 2007 that specified waste collection service levels across consumer types (urban and rural households, businesses), free basic services, and issues such as waste separation, storage types and collection frequency. These standards are also extended to public cleansing standards (litter picking, illegal dumping and sweeping).

Table 2-2: Levels of Domestic Waste Collection Service for Urban Areas in Gauteng

Level of service	Service option	Explanation of service
Basic Level of Service	Community transfer to central collection points	Community appointed members collect the waste door-to-door at least once per week (or more frequently if required). They transport it to central collection points located within acceptable walking distance of the households serviced (200m). The municipality, or appointed contractor, then transports the waste from these secondary collection points to the landfill, on the same day as the primary collection.
Intermediate Level of Service	Organised transfer to central collection points	Local contractors are appointed to collect the waste door-to-door at least once per week (or more frequently if required). They transport it to central collection points, perhaps using hand or bicycle-carts. The municipality, or appointed contractor, then transports the waste from these secondary collection points to the landfill, on the same day as the primary collection.
Full Level of Service	Kerbside collection	Households put their separated waste out for collection once a week (or more frequently if required). The municipality or appointed contractors collect the recyclable and residual waste from each household in trucks, or with tractors and trailers, etc. and transport it to the landfill and or recycling handling facility.
Businesses	Kerbside collection	Minimum level of service for routine collected waste would be at least once per week, or more frequently in the case of highly putrescible wastes. Exceptions can be made in cases where the frequency can be determined by type and quantity, where a generator of small quantities of inert dry waste which does not pose a health, safety and environmental threat can safely be provided with a service not less than every two weeks. Bulk waste collection services can be provided to the business/commercial sector, in which case the bulk containers would be collected on call when full.

Notes: (1) Service levels would be similar in dense rural settlements; (2) In scattered rural areas and farms, on-site disposal may be appropriate if the composition of the waste is primarily organic and if households are sparsely settled (3) There are a number of waste collection services that are provided by the larger local authorities such as the Metropolitan Municipalities, which are not necessarily applicable in the smaller municipalities

Source: Gauteng Provincial Government (2007)

Municipalities, in the main, have self-defined these standards and in doing so have tended to rely on guidelines provided by the Municipal Infrastructure Grant. This frames a basic standard as a weekly communal collection service. Importantly, the Waste Act now provides additional regulatory guidance on the nature of standards that should be established by municipalities, including the collection, minimisation, re-use and recycling of waste.

Work underway by the Council for Scientific and Industrial Research (CSIR, 2009a) has sought to provide substantive guidance on the establishment of standards in the waste sector. The emerging approach recognises that there are “no existing standards that can be merely adopted for use as national standards. New, novel standards will have to be formulated based on existing good practices in municipalities providing flexibility for localised conditions.” Building on past work, the CSIR approach recognises differing service standards (from no service, to communal dumpsites, to household transfer to communal bins, skips, to kerbside collection) are appropriate in different settlement types. In this respect, the CSIR recognises the difficulties associated with establishing an objective and shared definition of what constitutes a particular settlement type.

Table 2-3: Appropriate levels of services for settlement densities

Settlement Density (Dwelling units/ha) ²		
< 10	10 - 40	> 40
On-site disposal and burning is adequate for lower densities, but communal disposal is required as densities increase	Communal collection and formal disposal of household refuse and litter is required, possibly within the settlement itself.	Frequent and reliable formal collection and disposal of solid waste to landfill is required.

Source: DWAF, 1999, quoted in CSIR, 2009a

Settlement density is not the only parameter to consider in setting standards. The CSIR (2009a) notes that a clear definition of what constitutes a domestic solid waste collection services is required. Moreover, issues of affordability, municipal capacity, the quality and nature of waste generated, climate, availability of storage, topographic conditions, road conditions (width and quality) all impact on the nature of the service that can be provided in an area. *Importantly, standards are not limited to collection services alone, but must also deal with waste regulation, minimisation, storage, transport and treatment.*

Perhaps the most important finding of the CSIR is that municipalities themselves must accept and take ownership of the appropriate set of standards for their areas. Although a single set of national standards is desirable, the interpretation of these standards will need to vary across different areas of the country.

Subsequently, the CSIR (2009b) has issued draft waste collection standards. These draft standards cover level of service, collection (including separation at source, recycling, containers and frequency), recycling drop-off centres, collection vehicles, health and safety, communication, and kerbside collection standards. These standards specify service delivery processes (such as collection frequency), rather than desired outcomes. As a result they have yet to reconcile appropriate standards with variations in municipal resource availability and context, leaving this up to municipalities themselves to determine. The draft standards have also yet to address the issues of measurability and enforcement, although it is recognised that this remains work in progress.

² At single dwelling densities or more than 75 dwellings per hectare, normal services tend to be inadequate, and such settlements require re-planning, including de-densification, multistory developments and/or well maintained high levels of services (DWAF, 1999 in CSIR, 2009AA).

Policy-makers have attached comparatively greater importance to the development of Integrated Waste Management Plans (IWMPs) by all spheres of government. The National Waste Management Strategy (1999) argued for a move away from fragmented and uncoordinated waste management to an integrated waste management approach that focuses on waste prevention, waste minimisation, and the extension of basic services to all communities. Planning systems were intended to guide this process, and ensure that waste management systems contributed to socio-economic development, public health and effective environmental management. Importantly, interlocking sets of IWMPs are seen as the primary tool to strengthen cooperative governance in the sector.

The Act requires national and provincial government departments that are assigned the waste management function to prepare integrated waste management plans. Although no such requirement is placed on municipalities³, the Act does require those municipalities who choose to develop such a plan to submit it to the MEC for approval and to incorporate it within its Integrated Development Plan (IDP). However, provincial approval powers are somewhat limited by the Act, with MECs only empowered to “request” amendments to plans on the grounds of substantive or procedural non-compliance with the Act or misalignment with the plans of other spheres. Conversely, provincial and national waste management plans are required to take into account the plans of a municipality. This implies, at least in the legislation, that a stronger regulatory framework exists for national and provincial planning than for municipal planning.

DEAT (2000) has issued a “Starter Document for Guidelines for the Compilation of Integrated Waste Management Plans” that emphasizes the importance of integrated and optimised waste management “in order to maximise efficiency and minimise the associated environmental impacts and financial costs, and to improve the quality of life of all South Africans”. These guidelines adhere to the conventions of a strategic planning process, taking users through the current situation, projections of future requirements, objective setting, institutional issues, plan development and monitoring and review processes. The Waste Act largely repeats this framework, requiring IWMPs to undertake a situational analysis and set out how national, provincial and local priorities will be addressed. This is required to include the establishment of priorities, objectives, targets and implementation and financing arrangements.

The Waste Act provides little guidance as to how the plans of various agencies will be coordinated or integrated. Although each plan must be submitted to national or provincial authorities for approval, incorporated within relevant national and provincial plans, and aligned with other plans, strategies and programmes, there is no guidance of what this actually means. The Act confines itself to defining when this is not the case, allowing the approval of a plan to be withheld when there is a conflict with, misalignment, or a negation of any relevant integrated waste management plan or the national waste management strategy

This generic approach to IWMPs does not take account of the varying contexts and capabilities of provinces and municipalities, reflecting the absence of clear national

³ Section 11(1) of the Act only requires national and provincial government to develop plans. Section 11(4) does not require this of municipalities, but should they do so, does require them to submit it, and incorporate it in their Integrated Development Plan. This subtle yet important difference possibly stems from legal concerns over the extent of national authority to regulate municipal action in the sector.

targets, norms and standards for solid waste service provision. As a result, the approach fails to provide guidance on key priorities and sequencing of interventions in differing contexts, nor does it accommodate issues surrounding the considerable resourcing constraints that face the sector. For example, some municipalities already provide access to basic services to a majority of their population, and have prepared a number of strategic perspectives and strategies to deal with a range of issues from environmental management to climate change. Many large cities have prepared State of the Environment reports. The challenge in these areas is to deal with issues of waste minimisation and operational efficiency improvements. Other, more rural municipalities still face the challenge of expanding access to services with only limited human and financial resources at their disposal, and varying demand for services across the settlement types in their jurisdictions. The current planning method offers little guidance to municipalities in dealing with these issues. Moreover, no clear linkage is made to the formal annual budgets of the relevant sphere of government, in terms of the timing of the planning process, the funding of identified activities, or the monitoring of financing proposals and financial performance. Finally, the approach has as yet failed to require integration between IWMPs and the Service Delivery and Budget Improvement Plans (SDBIPs) now prepared by municipalities in terms of the Municipal Finance Management Act.

The Department of Environmental Affairs reports that 177 municipalities have submitted Integrated Waste Management Plans. This accounts for 75% of municipalities authorised to perform solid waste functions. Municipalities based in small towns appear to struggle the most with submitting IWMPs, with only 52,7% doing so. Submission rates in largely rural municipalities are comparatively high, at 73%. Municipalities in the Free State, Mpumalanga and Easter Cape reported the lowest submission rates, at 15%, 29,4% and 53,8% respectively.

The quality of IWMPs is highly variable across municipalities. In some cases they are merely extractions of existing IDP's chapters on waste management. In other cases (e.g. Buffalo City Municipality) submitted IWMPs provide little insight into current conditions or strategies of the municipality, and appear to be purely compliance driven. In other instances, extensive data is provided without particularly robust analysis of its implications, although this may be appropriate given the early stages in the evolution of IWMPs.

This reflects some confusion as to what constitutes an IWMP. In some instances IWMPs appear to be framed as feasibility studies for alternative service provision mechanisms. In these instances there is evidence of a high degree of consultant involvement in their preparation, and a strong focus on institutional and financial models for service delivery. This appears to be appropriate given the significant technical requirements of these exercises and their often project-driven focus. In other instances a more traditional strategic planning approach is adopted, within the general framework of a municipal Integrated Development Plan (IDP). In these cases, while there is nominal compliance with the generic requirements of the waste management planning process, there is limited evidence of strategic integration of the issues, such as the impact of expanded access services on the volume of waste collected. Although these documents are typically descriptive (focussing largely on the situational analysis), they often lack even basic information on waste volumes and financial flows in the sector. Strategy setting is limited to general statements of objectives (often without establishing service standards or targets) and focussed on required additional capital investments. As a result, these plans offer little

evidence to suggest that real choices are being made in the selection of service delivery mechanisms, financing options and operational practices that would allow municipalities to meet the challenges that they face in the sector.

In general the planning methodology appears to require further differentiation, sequencing and specification across different types of municipal contexts. Past experience with the introduction of strategic planning systems in municipalities has tended to demonstrate that planning does not automatically result in behavioural or operational changes in administrative practices. In some measure this has been a result of adopting a “one-size-fits-all” standard as to what constitutes acceptable planning practices⁴, despite differences in municipal contexts, challenges and capacities. This has resulted in municipalities adopting a compliance-driven stance to planning, rather than using it as a tool to improve service delivery. Greater differentiation of what acceptable planning processes and outputs are, taking into account municipal contexts, appears to be required. This might involve variations in the specification of what constitutes an IWMP, how comprehensive such an exercise might be, and how it might evolve over time.

Policy Coordination

Cooperative governance is also intended to be pursued through the MinMEC on Environmental Affairs, and the requirement in the Act for the appointment of waste management officers in all spheres of government. The MinMEC has provided an important focus for coordinated policy-making between national and provincial governments, leading to significant policy developments such as the Waste Act itself. However, it has yet to include local government, despite its significant policy making and service delivery roles. This reflects the difficulty of incorporating the interests of such a broad stake-holder group in a workable forum. Section 10 of the Act requires that the national Minister, provincial MECs and each local government must designate in writing a waste management officer from its administration to be responsible for “co-ordinating” matters pertaining to waste management. This role appears to encompass both policy making roles (specifically in terms of planning and standard setting activities) and regulatory roles. Waste management control officers, with enforcement responsibilities, are also recognised in section 58 of the Act. This system is still in its infancy and thus, while explicitly intends to improve coordination between spheres of government, its performance cannot be assessed.

2.2.2 Service provision functions

Stats SA reports that 239 municipalities performed solid waste management functions in 2007, up from 226 in 2005. This growth reflects the assignment of solid waste functions to 13 District Municipalities, for all or some of the local municipalities in their areas. However, the data since 2005 suggests that solid waste functions are increasingly being assigned to, or performed by local municipalities even in predominately rural areas. This is in marked contrast to the stated policy preference for the regionalisation of solid waste service provision that is contained in the Waste Act.

⁴ Planning approaches appear to largely be modernist in orientation, focussing on describing the context (situational analysis), establishing priorities, and setting strategies. This approach tends to ignore pressures and risks emanating from external social, economic, political and institutional factors and their interplay with the demand for municipal solid waste services. Moreover, financing of strategies is typically regarded as an implementation concern, leading to expenditure-led assumptions about what can be achieved. Finally, incentives for performance in accordance with strategies are typically ignored.

Almost all municipalities which have been assigned solid waste functions report having infrastructure available to perform the function. Unsurprisingly, this figure is lowest in largely rural municipalities, with only 87% reporting that this is the case in 2007.

Table 2-4: Municipalities performing solid waste functions, 2005 to 2007

	2005				2006				2007			
	With function	With infra.	Provide services	Outsource services	With function	With infra.	Provide services	Outsource services	With function	With infra.	Provide services	Outsource services
Metro's	6	6	6	1	6	6	6	1	6	6	6	3
Secondary Cities	20	21	21	5	20	20	18	4	19	20	19	2
Large Towns	28	29	29	8	29	29	28	7	29	28	26	3
Small Towns	107	108	109	6	107	108	108	6	110	109	107	10
Largely Rural B's	55	49	51	9	55	53	51	7	63	55	59	8
Districts	10	12	10	1	13	13	11	2	12	15	13	5
Total	226	225	226	30	230	229	222	27	239	233	230	31

Source: StatsSA, P9115 (2007, 2008)

Municipalities spend the largest amount of all spheres on solid waste services, in both nominal and proportionate terms. This is in keeping with their operational responsibility for the provision of solid waste services. The vast majority of these resources are spent by metropolitan and local municipalities. Further details on the staffing and financing of solid waste services are provided in sections 3 and 4.

It is important to note that the Waste Act provides municipalities with an effective legal monopoly over the provision of solid waste services. The Act specifically requires that private waste service providers have the approval of municipalities prior to commencing any waste collection activities, and may also be required to register with national or provincial governments. This effectively results in municipalities being both service providers and service regulators, an issue that is taken up further in section 3.

The respective roles of District and Local municipalities pose the primary policy issue in the allocation of waste management responsibilities across the public sector. DEAT (2007) confirms that metropolitan municipalities and most secondary cities perform all operational responsibilities related to solid waste management, while these functions are shared outside of the metro areas. In large towns, waste minimisation, waste disposal and waste planning were typically shared with district municipalities. In small towns, there are a limited number of municipalities that share all functions with their districts, and two municipalities where district municipalities provide all waste collection services. In largely rural municipalities information is considerably more sketchy and variable, making trends difficult to discern from secondary sources.

Vagueness or overlap in the assignment of responsibilities can undermine accountability for service delivery. In instances where district and local municipalities share responsibilities, a clear contracting framework is required to ensure that a single authority remains politically and administratively accountable for solid waste outcomes. However, as this function is typically assigned by provincial MECs of local government, contracting arrangements are not the norm.

2.2.3 Regulatory functions

The Waste Act empowers the Minister to regulate economic, financial and operational aspects of municipal solid waste services. Economic regulation is focussed on the structure and size of municipal tariffs and charges for solid waste services. Financial regulation concerns the treatment of solid waste revenues and the financial ring-fencing of solid waste services. Operational regulatory powers include the declaration of priority wastes, the establishment of tests as to the desirability of recycling, and the licensing of certain waste management activities. The Waste Act requires that regulatory interventions are framed in a manner that seeks to support and strengthen a municipality's ability or right to perform its functions in relation to waste management activities.

Regulatory authority in the sector is diffused across spheres and vested in policy-makers. This considerably weakens regulatory power. The existence of multiple sites of authority creates opportunities for arbitrage by service providers and consumers, who at the margin will be able to choose their regulatory agency. Combining policy-making and regulatory functions is likely to weaken prospects of regulatory intervention, in favour of policy modifications that reduce compliance burdens. For example, access targets are likely to be renegotiated when unmet, rather than enforced, as is current practice in other unregulated sectors such as water services.

Economic and financial regulatory powers are effectively already held by national government, either in the Municipal Systems Act or Municipal Financial Management Act. To date, no specific solid waste management interventions have occurred, and as will be discussed in the discussion on financing, it is not clear that tariff regulation or revenue controls are necessarily desirable powers for the Minister to hold at this point.

The power to levy development charges is generally conferred on municipalities in terms of provincial land use ordinances. Although it could be argued that the Waste Act further embeds this municipal authority, there are as yet no cases of municipalities seeking to use the authority of the Act for this purpose. Moreover, it is not clear that the Act provides a sufficient regulatory framework to enable a successful application of development charges. This issue is discussed in more detail in Section 4.

Ring-fencing of service accounts is an issue that is typically pursued in the development of budgeting and accounting practices, as is the case in South Africa. The Act provides little guidance on this matter, although accounting practices are increasingly being adjusted to treat solid waste services as "trading" functions of municipalities.

Operational regulatory powers appear to overlap somewhat with the authority of municipalities. They overlap with the authority of a municipality to regulate solid waste service provision within their jurisdictions through the establishment of consumer categories.

National and provincial government waste management departments are required to prepare annual performance reports on their waste management plans and submit these to national government. Municipal annual performance reports prepared in terms of section 46 of the Municipal Systems Act must contain information on the implementation of the municipal IWMPs. There is little evidence that municipalities in particular are currently

complying with this provision. The efficacy of the national monitoring system is the subject of a related study, and is not covered here.

2.2.4 Citizen oversight

The performance of these functions, across spheres of government, is intended to strengthen the accountability of service delivery, particularly to end users. The framework used by Pritchett and Pande (2006) is intended to assist in the evaluation of the accountability framework, based on the (strong) premise that accountable service delivery systems are effective ones.

The Waste Act, assigns responsibilities to end users of services but very limited rights of recourse in the case of a failure of an organ of state to adequately perform a solid waste function. Waste holders are directed to manage, separate and pay for the collection of waste, but the Act provides little protection should service providers or regulators fail to ensure services are actually provided. Similarly, little space is created for citizen oversight of solid waste service delivery, such as the use of scorecards.

2.3 Issues and incentives analysis

This analysis has identified six significant procedural weaknesses in the current performance of solid waste functions across spheres of government. These include:

- a) ***Effective systems of cooperative governance are undermined by an inadequate distinction between the policy-making, regulatory and service provider roles*** across spheres of government. Without clear specification and performance of functions it is difficult for different actors across government to cooperate and collaborate. Opacity in this regard might also lead to intergovernmental conflict, as service providers seek opportunities for regulatory arbitrage and enforcement activities are weakened. Furthermore, a lack of adequate, dedicated regulatory capacity is likely to weaken the effectiveness of regulatory oversight across the broad range of public and private entities that fall within the domain of the waste management system.
- b) ***Limited performance of policy-making roles*** by national government, with little guidance provided on norms, standards or targets for service delivery, and little guidance provided on planning systems at sub-national level. The Waste Act now provides an important opportunity for this issue to be comprehensively and strategically addressed. The process being undertaken by the CSIR appears to hold the potential of developing settlement appropriate standards. Yet the development of differentiated and locally owned standards will remain a challenging process, if real measurement and enforcement of standards is to occur.
- c) ***A lack of clarity on the purpose of IWMPs***, leading to their interpretation as either feasibility studies or strategic planning tools. A “one-size-fits-all” approach appears to have been adopted for the development of IWMPs that does not take account of the differing contexts and capabilities of provinces and municipalities, fails to provide guidance on priorities and sequencing, and does not effectively allow resourcing challenges to be addressed.
- d) ***Overlap and confusion over the respective roles of district and local municipalities*** in service provision, which may disrupt accountability for providing

services in some cases. This entrenched by the apparent preference of the Waste Act for the regionalisation of services, despite their being little evidence that regionalisation would have benefits across all aspects of the value chain.

- e) **The introduction of inappropriate or duplicated economic and financial regulatory tools** for national and provincial governments, with inadequate specification as to how these tools might be used.
- f) **A system of Waste Management Officers** has been introduced with the apparent intention of improving intergovernmental coordination. This role is arguably mis-specified, through establishing these officers as both policy-makers (responsible for planning and standard setting) and regulators. These officers have the potential to play an important regulatory role, which is at least partially granted to them in section 58 of the Act.
- g) **Weak mechanisms for citizens and consumers to engage** with the management and performance of solid waste services.

The net effect of these weaknesses is to significantly undermine the prospects for effective and accountable service delivery. Weak policy-making and inappropriate regulatory tools give national government few meaningful levers with which to engage municipalities on improvements in solid waste services. The current reliance on under-specified planning tools compounds this problem. Inadequate separation of functions and inappropriate overlaps at municipal level, further weaken prospects for effective oversight of performance.

2.4 Recommendations

The implementation of the Waste Act could provide an opportunity to address these weaknesses in the current intergovernmental framework, through strengthening incentives for integrated waste management. The key to improving cooperative governance is to clearly specify roles and responsibilities across spheres of government. Doing so will require clear, strategic leadership in disaggregating and actually performing policy-making, regulatory and service provider roles. Key recommendations to improve current systems of cooperative governance and planning in solid waste service provision include:

Clarifying the policy framework

- a) **The establishment of clear, outcomes-focused norms, standards and targets for the performance of solid waste functions at national and municipal levels.** These standards should encompass both levels of service and waste generation and minimisation. They should account for significant differences in context and capability across municipalities and take clear account for the fiscal impact of both minimum levels of service and targets. Policy-making needs to increasingly distinguish between the challenges of large urban areas and their rural counterparts, in terms of priority issues, service standards and performance targets.

In order to give effect to a differentiated framework of standards while ensuring a basic minimum level of service is achieved, it is recommended that national government (reinforced by provincial government as necessary) establish:

- (i) Basic standard *definitions* on types of service by settlement type
- (ii) A categorisation of municipalities, based on their capacity, building on the framework of high, medium and low capacity municipalities promulgated in terms of the Municipal Finance Management Act.
- (iii) Define a *framework of standards* that covers issues of service delivery, waste reduction and recycling, waste planning and waste disposal. This framework should vary by both settlement type and category of municipality
- (iv) Adopt an outcomes-focussed approach to the development of standards that implicitly provides discretion to municipalities on how these outcomes are achieved.
- (v) Establish *targets* related to standards based on a quantifiable percentage improvement in waste management outcomes over the medium term.

Table 2-5: Proposed framework of national standards and relative targets

Outcome	Standard	Indicators	Measurement	Target variation
Universal access	Universal access to settlement basic appropriate services	Access to basic service, as defined by settlement type	% annual improvement	By municipal capacity and settlement type
Waste minimisation	Waste reduction and recycling	Waste volumes collected and disposed	% real annual growth	
Improved efficiency	Strategic Waste Management	Approved IWMP Financial Ring-fencing	IWMP with clear targets in place, not older than 5 years. Financial ring-fencing progressively introduced in accordance with guidelines	
	Waste storage and disposal	Available storage space Available landfill airspace	% growth in storage space per capita % growth in airspace available	
	Citizen accountability	Service satisfaction	% improvement in satisfaction	Uniform

It is further recommended that municipalities should develop standards and targets within this framework, adding indicators as appropriate, and establishing quantifiable baseline data and nominal targets per indicator for each year.

- b) **Alternative guidance should be provided on the development of IWMPs**, particularly at municipal level. In its present form, the conventional approach to strategic planning is likely to absorb significant municipal capacity while being of only limited use in the improvement and integration of waste management activities. Revised planning guidelines should consider the outcomes anticipated from the planning process (as they differ by context), rather than just specifying appropriate planning activities. Establishing differentiated sector targets and planning requirements that vary by municipality or category of municipalities would be an important start in this regard. This will create

scope to allow both feasibility studies and strategic plans to comply with requirements, provided they are responsive to the individual contexts. Alternative guidelines should thus promote:

- (i) The phased evolution of IWMPs over time, ensuring they are built on solid quantitative foundations. In the first phase IWMPs should focus on the establishment of standards by settlement type, and the calculation of baseline data. Over the medium term, alternative priorities for IWMPs may be introduced, allowing plans to focus on core national priorities on a sequential basis, rather than always attempting to be comprehensive.
- (ii) Differentiated planning requirements that account for the capacity of a municipality, allowing lower capacity municipalities to generate basic plans, while holding more capable municipalities to a higher standard. This can be at least partially achieved through the development of differentiated targets for municipalities.
- (iii) Broadening the definition of IWMPs to include plans that focus solely on the development of alternative service delivery mechanisms, if this can be established as a key municipal priority.
- (iv) Specifically require integration between municipal IWMPs and the Service Delivery and Budget Improvement Plans (SDBIPs) of municipalities. This will ensure that an embryonic link between planning and budgeting processes in the sector is established.
- (v) From an intergovernmental perspective, the improvement of the quality of municipal IWMPs, should be prioritised over their integration across spheres of government. It is premature to focus on integration of plans before robust individual plans actually exist. Initial coordination of the planning exercises can be driven by the establishment of specific targets, as discussed above.

Strengthening Regulation

- c) ***Waste Management Officers should form the basis of sector regulation and should be ring-fenced from policy-making activities.*** The regulatory framework for the sector should strengthen role separation and capacity for effective regulatory oversight. As noted above, the current institutional framework for regulation does not clearly distinguish regulatory matters from policy-making, creates opportunities for regulatory arbitrage, and is unlikely to result in adequate regulatory capacity being deployed in the sector. Regulatory failure in the sector is likely to have significant economic, social and environmental costs. It is recommended that consideration should be given to the establishment of a distinct regulatory function at the national level to which both national and provincial regulatory powers can be delegated, and where adequate dedicated capacity for regulatory oversight in the sector can be established. This function should be based on the system of Waste Management Officers, appointed as per the requirements of the Act, provided that:
 - (i) They are firewalled from day-to-day policy making activities (such as planning and standard setting);
 - (ii) They are separated from service provision activities, particularly at municipal level. Waste Management Officers should be appointed outside of existing solid waste departments or agencies, such as in the Office of the Municipal Manager. In non-metropolitan areas, district municipalities might provide appropriate homes for Waste Management Officers, provided services are operated by local municipalities; and

(iii) Coordination and reporting arrangements between Waste Management Officers in different spheres of government is clarified by regulations issues in terms of the Act. In particular, the regulations should specify the authority and powers of these officers, the requirement to firewall them from policy-making and service provision activities, and communication and management arrangements that will enable these officers to establish an effective regulatory system across the country.

d) ***The regulatory system should be designed to create incentives for the effective performance of priority activities.*** Remaining economic and financial regulatory tools available to national and provincial government add little to the regulatory “armoury” in their current form as they largely duplicate legislative provisions elsewhere, and do not necessarily address the key constraints facing the sector, such as expanding access to service, waste minimisation, and achieving compliance with waste disposal standards. Conversely, given the widespread under-recovery of service delivery costs outlined in Section 4, regulating the upper limits of prices may currently be an inappropriate regulatory tool. It is thus recommended that consideration should be given to the development of regulatory penalties and incentives for the achievement of key policy targets, related to national priorities:

(i) *Regulatory penalties* should offer a progressive range of sanctions. These should range from “naming and shaming” poorly performing service providers or municipalities (perhaps in a similar manner to the blue drop / green drop programme of the Department of Water Affairs), to a sliding scale of fines for non-compliance with legislative requirements and targets, to establishing lower price limits for landfill waste disposal by volume⁵, to interventions to remove the executive authority of municipalities based on section 139 of the Constitution. In this latter respect, the removal of the legislated municipal monopoly over the provision of solid waste services might be considered, not only to give regulators greater powers of intervention, but also to encourage greater efficiencies in the sector.

(ii) *Regulatory incentives* might include recognition, preferential treatment in regulatory applications (such as for licensing) and public statements of support for appropriate upward price adjustments in the case of identified well-performing municipalities.

(iii) *Specific mechanisms to encourage (or require) citizen oversight* over solid waste service outcomes should be introduced as a mechanism to bolster incentives for service delivery improvement. This will require both the introduction of targets for consumer satisfaction, as well as requirements for its independent measurement through surveys or citizen scorecards. A standard measurement system will be required to compare results across municipalities.

Clarify service provision responsibilities

e) ***Sharing of solid waste functions between district and local municipalities requires clear contracting to preserve accountability for service delivery outcomes.*** The current system of functional assignments can disrupt this accountability. The policy

⁵ This would be subject to adequate financial ring-fencing and activity-based costing of waste services.

preference for regionalisation of service delivery may further compound this situation. It is recommended that:

- (i) The authority over solid waste management services remain a local (Category B) municipal function, unless clear capacity constraints exist in this regard that have justified regulatory intervention. In cases where authority has been shifted to district municipalities, this should be regarded as a temporary arrangement.
- (ii) Where district municipalities undertake collection, transportation or disposal functions, this should be done in terms of a formal contracting arrangement, based on generic guidelines provided in this regard. In this approach district municipalities would play the role of regional service providers, based on the cost efficiencies that may occur in specific areas or contexts.

3 Enhancing the coverage and efficiency of waste management services

This section will review current access to solid waste services, using available data across the waste hierarchy including levels of service, backlogs and projected likely future needs. It will then consider key institutional issues associated with the delivery of waste services.

3.1 Current provision of solid waste services

3.1.1 Waste generation and minimisation

The growth in the volume of general waste produced and the number of consumers underlines the importance of waste minimisation strategies. In 1997, over 42 million cubic metres of general waste was generated every year across the country. Increased production and rising living standards associated with prolonged economic growth have resulted in significant additional amounts of waste being generated. Gauteng Province, which generated 42% of South Africa's waste, reported a growth in waste volumes of over 365% between 2004 and 2008, averaging 79% per year. It has been predicted that total general waste generation will amount to over 68 million cubic metres in 2010 (DWAF, 2001), although the Gauteng figures suggest that this prediction was a serious under-estimate.

Household waste generation characteristics vary considerably by settlement type and income. A comparison of the waste generated by urban residents in different settlement types demonstrates the point that wealthier consumers are predominantly located in low density suburbs.

Table 3-1: Consumption and wastes by urban settlement type

Settlement	Waste generation
Suburban	0.8 - 3kg per capita per day
Township	0.2 - 0.8 kg per capita per day
Informal settlement	< 0.2kg per capita per day

Sources: Mbande, 1996; Lombard in Palmer Development Group, 1996; Benting, 2000.

Economic growth and demographic change have quickened the pace at which waste is being generated. Urban residents typically not only generate more waste than their rural counterparts, but also generate more non-organic waste. Urban household waste is less conducive to on-site disposal, due to settlement density, and thus these households contribute greater volumes to the waste chain. Moreover, as more South Africans have joined the middle class, so they have contributed more waste to the system.

There have been few efforts to encourage waste minimisation by households. DEAT (2007) reports that 87% of municipalities lack capacity and infrastructure to pursue waste minimisation strategies. Some municipalities do provide incentives for waste minimisation, though this is neither widespread nor effective. The City of Johannesburg theoretically limits each household to two bags of waste per week, though for public health reasons this is not enforced. The City of Tshwane has recently introduced volumetric user charges that discriminate between households on the basis of the volume of waste produced. The City of

Cape Town reports that, in 2006/07, 14% of 'waste' was diverted from landfill sites, and was recycled or reused instead.

3.1.2 Domestic Waste Collection

StatsSA (2007 & 2008) reports that 64.5% of South African households had access to some form of solid waste management service in 2007. The number of served consumer units has risen at almost 10% per year since 2005, with 8,06 million units now served. Access to services is greatest in metro areas (92.5%) and small towns (73.5%), while it is lowest in rural municipalities (16%). Predictably, municipalities classified as high capacity also have the highest access levels (81.5%) while low capacity municipalities have the lowest access levels (29.5%). Access levels are lowest in Limpopo (25.5%), followed by the Eastern Cape (46.6%) and Mpumalanga (46.7%).

Table 3-2: Access to services

Category	Total h'holds (2007)	Consumers receiving services			% of all h'holds (2007)
		2005	2006	2007	
Metro's	4 714 022	3 421 122	4 029 732	4 358 630	92.5%
Secondary Cities	2 207 003	1 232 347	1 253 940	1 389 260	62.9%
Large towns	1 095 456	564 322	587 670	628 276	57.4%
Small Towns	1 637 412	983 981	1 066 597	1 204 108	73.5%
Largely Rural	2 824 259	493 226	413 560	453 061	16.0%
Districts*	22 482	6 357	28 906	29 531	
TOTAL	12 500 634	6 701 355	7 380 405	8 062 866	64.5%

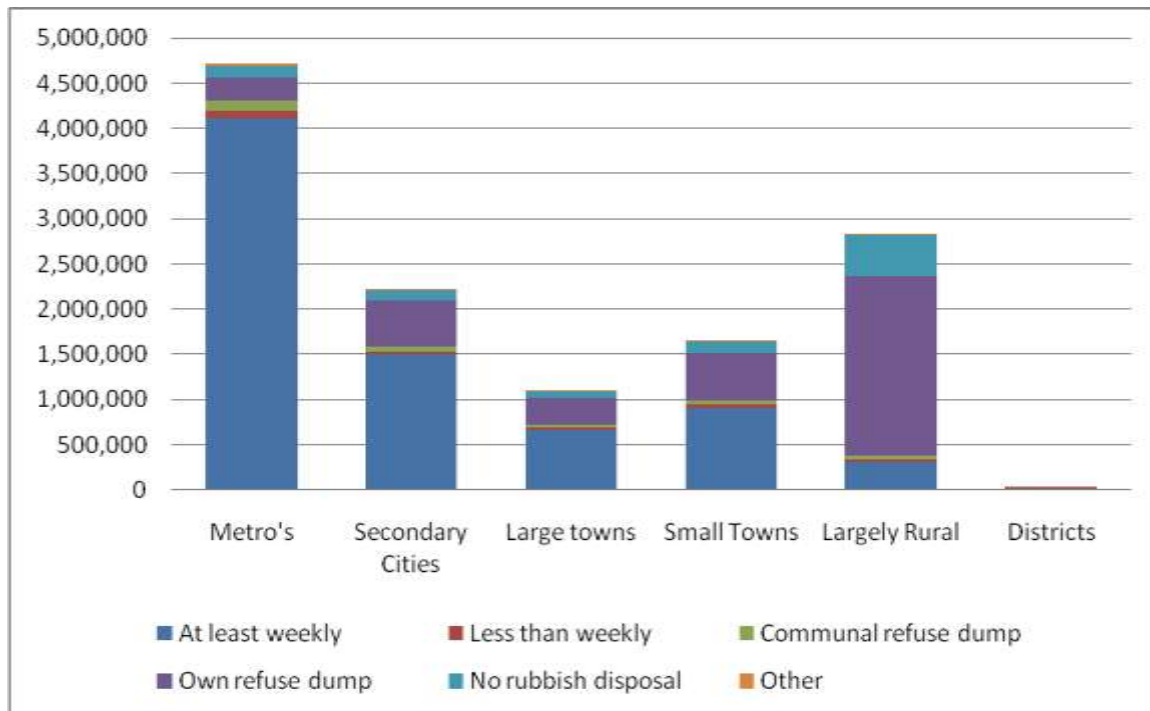
Sources; Stats SA 2007 and 2008

Note: District figures reflect only additional households served and DMA areas

Levels of service differ markedly by type of municipality. The bulk of those consumers with basic services are receiving at least a weekly collection service. Yet 19% (or 1,3 million) of households in metro's and secondary cities do not receive weekly refuse services, with 23% of households in secondary cities making use of their own refuse dumps. Outside of these areas, 12% (or 664 000) of households do not receive any refuse service or make use of on-site disposal.

Universalising and sustaining household access to services requires significant policy, fiscal and operational issues to be coherently addressed. Weekly kerbside refuse collection in dispersed rural settlements is neither appropriate nor viable, while on-site disposal in denser urban areas is likely to create public health and environment hazards.

Figure 3-1: Consumer service access levels by type and municipality, 2007



Source: Stats SA 2007

a) Universalising access to basic services

Although significant progress has been made in expanding access to basic solid waste services among households, significant challenges remain. Overall, around 35% of consumers still remain without access to a basic level of service provided by a municipality. Almost 4,4 million households receive infrequent or highly inadequate services of which some 2,2 million households do not receive any solid waste collection service at all.

Lack of access to services remains highest in rural municipalities, where consumers either dispose of waste themselves or dump it in an unregulated manner. But domestic solid waste collection services are often neither necessary nor viable in largely rural areas, with households producing largely organic waste that can be disposed of on site.

However an estimated 2.1 million households require and could obtain a higher level of service, based on a differential interpretation of basic service standards by type of municipality⁶. This includes improvements to the frequency and quality of service for households that are currently only partially serviced. The overwhelming majority of these households are poor.

⁶ This assumes basic service levels to be (i) a weekly collection service in metropolitan municipalities and secondary cities; (ii) that own refuse dumps in large and small towns and rural municipalities are predominantly used outside of urban settlements and thus constitute an appropriate basic level of service delivery; (iii) that less than weekly services and communal refuse dumps are found in urban areas of large and small towns, and do not meet basic service standards.

Table 3-3: Consumers with inadequate access to services by municipal context

	Less than weekly	Communal refuse dump	Own refuse dump	No rubbish disposal	Other	TOTAL	% of total h'holds
Metro's	81 558	113 496	255 026	133 474	17 861	601 415	12.8%
Secondary Cities	30 313	54 398	512 993	113 776	3 448	714 928	32.4%
Large towns	22 316	23 665		70 639	4 662	121 282	11.1%
Small Towns	41 947	39 372		124 337	4 418	210 074	12.8%
Largely Rural				449 004	9 130	458 134	16.2%
Districts				1 379	141	1 520	6.8%
Total	176 134	230 931	768 019	892 609	39 660	2 107 353	16.9%

Source: Community Survey, 2007, adjusted (see footnote above)

Universalising access to basic solid waste collection services remains a critical policy priority, even in large cities. Over 1,3 million households in large cities currently receive below basic levels of service. This amounts to 62% of the total number of underserved households. The failure to provide services in informal settlements and other under-served areas leads to the unregulated dumping of solid wastes, the volume of which is increased by home-based enterprises. The burning of wastes on communal and individual dumps is also relatively common, contributing to both air and soil pollution (Napier, Ballance and Macozoma, 2000). Where solid waste is removed from townships and informal settlements, it is often dumped at tip sites in the vicinity. It is estimated that littering alone costs the City of Johannesburg over R80 million a year, while illegal dumping may cost up to another R700 million (Sullivan & Frost, 2008).

Smaller municipalities can also make significant strides in improving access through encouraging and regulating appropriate on-site disposal. 645 000 households have no access to rubbish disposal in these areas, constituting over 30% of the total number of underserved households.

b) Sustaining access to basic services

Municipalities have shown a commitment to addressing backlogs in domestic solid waste collection services. The number of households receiving services has grown by an average of 10% a year between 2005 and 2007.

However, these efforts have themselves created a developmental conundrum that municipalities have struggled to address: As services have been expanded, average revenues per consumer have fallen as more poor households are serviced, averaging 5.4% a year between 2005 and 2007. This disjuncture between access levels and revenues has been most severe in metropolitan municipalities, who have expanded services most rapidly. Recent (and only initial) data thus points to a slowing in the pace of service expansion, particularly in metropolitan municipalities.

Most municipalities have introduced free basic refuse service subsidies. Only 30 municipalities (12%) reported that they do not have a policy in this regard in place, with an additional 7 municipalities (21%) indicating that they have such a policy but have not

implemented it. Adoption and implementation rates are lowest in largely rural municipalities, possibly due to the costs associated with the high take-up rate of subsidies in these areas.

Table 3-4: Coverage of Free Basic Refuse Services

	% consumers receiving FBS			% with policy	% implementing FBS
	2005	2006	2007		
Metro's	70.8%	54.9%	41.2%	100.0%	100.0%
Secondary Cities	33.8%	30.8%	25.2%	100.0%	100.0%
Large towns	25.4%	26.4%	33.2%	93.1%	82.8%
Small Towns	32.4%	47.6%	53.6%	90.9%	89.1%
Largely Rural	43.4%	43.1%	44.3%	71.4%	58.7%
Districts	25.4%	63.9%	76.9%	91.7%	66.7%
TOTAL	52.5%	46.8%	39.9%	87.4%	80.8%

Source: StatsSA, P9115

However, municipalities reported a declining number of consumers receiving basic service subsidies. 2,8 million consumers benefited from subsidies for the costs of receiving solid waste services in 2007. This represents a decline of over 10% since 2005, when over 3,1 million consumers were reported to have benefited. 70% of municipalities reported the use of self-targeting approaches in identifying subsidy beneficiaries, suggesting that beneficiaries are required to register to receive benefits. This may be limiting the overall fiscal exposure of municipalities to subsidies.

3.1.3 Waste Recycling and Energy Recovery

The historical reliance on landfills for waste disposal has resulted in little effort being put into trying to recycle waste materials. About 95% of all South Africa's waste is disposed of in landfill sites. This reliance on landfills has limited the incentive to devise alternative methods of dealing with waste. Large amounts of recyclable material are still found in mixed waste going to landfills. In Gauteng, it is estimated that only 2.2% of waste collected is sent for recycling.

However, DEAT (2007) reports that over 80% of local municipalities did pursue some form of recycling initiative. It is estimated that only approximately 20% of household waste is recycled in South Africa (presumably mainly prior to collection from households), despite national strategies for improved solid waste management through recycling (Crane & Swilling, 2007).

An estimated 18 recycling facilities have been permitted nationwide, ranging from the 5 Buyisa-e-Bag plastic bag recycling facilities in Gauteng to multi-purpose privately owned facilities. Many additional facilities appear to exist, although these are not recorded on the permit database. One large firm, the Reclamation Group reports collecting in excess of 1,5 m tons of recyclables each year, while an SMME, Molefi Recycling in Johannesburg, reported processing 37.65 tons in a single month in 2000.

Some municipalities have begun to pilot waste to energy schemes. These schemes recover energy, often in the form of methane, from waste bio-mass. eThekweni, for example, is extracting landfill gas and generating electricity from the Mariannhill and La Mercy landfills.

More recently, Johannesburg has piloted energy generation from the waste incineration process. Energy recovery schemes are strongly incentivised by the potential to generate carbon credits and their associated revenues.

3.1.4 Waste Transportation and Disposal

Very limited information is available on waste transportation activities in the solid waste sector. Current accounting practices do not record expenditures on the basis of component activities in service provision. Expenditures associated with waste transportation can be generated in collection, transport and disposal activities. Some waste is also transported long distances under contract, by both road and rail.

DEAT (2007) reports that the total municipal waste fleet amounts to 44 225 vehicles. Over 50% of these vehicles are owned by secondary cities, with another 29% stationed in large towns. Unsurprisingly, these municipalities also record the lowest productivity per vehicle in terms of consumers served, with secondary cities serving 62 consumers per vehicle and large towns 49. However, they also report the highest productivity per vehicle in terms of waste collected, averaging 22 522 tons per vehicle per year in secondary cities, and 12 925 tons in large towns.

Table 3-5: Municipal Waste Fleets

	Total Waste Fleet	Consumers per vehicle	Waste / vehicle / Year (Tons)
Metro's	5546	786	5546
Secondary Cities	22522	62	22522
Large towns	12935	49	12935
Small Towns	3208	375	3208
Largely Rural	14	32362	14
Total	44225	182	6149

Source: Calculated from DEAT (2007)

Significant costs are associated with waste transport. Annual capital expenditure on specialised vehicles in the refuse sector averages R127 million between 2005/06 and 2010/11, accounting for nearly 20% of total capital spending in waste sector. This spending grew at over 15% a year to 2007/08, with over 62% of expenditures generated by large cities. These trends, do not account for existing vehicles. Expenditures that can be associated with operating transportation activities account for less than 10% of sector operating expenditures. Yet these costs have also shown the most dramatic growth, with repairs and maintenance expenditure growing at an average of 92% between 2005 and 2007, fuel and oil costs at 43% and costs of hiring plant and equipment at 119%. This excludes depreciation and amortisation costs, which also include fixed assets.

This cost profile suggests that the volume of waste being transported is growing significantly. Again little data is available. Gauteng Province reported that over 155 400 tons a year was imported to Gauteng in 2008, significantly higher than the average of 81 000 tons a year imported since 2004. This does not account for waste generated within Gauteng, which is the largest waste generator in the country.

Industry experts estimate that transport costs amount to 45% of total operating costs. This estimate includes transport costs associated with collection and excludes disposal costs, and is composed of truck costs of 26% and fuel costs of 19%.

Transport costs are ultimately a function of the distance travelled between the point of waste collection and disposal. As distance rises, fuel and maintenance costs also rise, while additional staff and fleet are needed to accommodate expanded travel times. A conservative estimate of cost implications of expanding transport distances to disposal sites from 20km to 100km indicates that costs may rise by 50%, while costs to households may rise by over 25%. This suggests that regionalisation of waste services, and particularly disposal activities, requires careful cost-benefit evaluation.

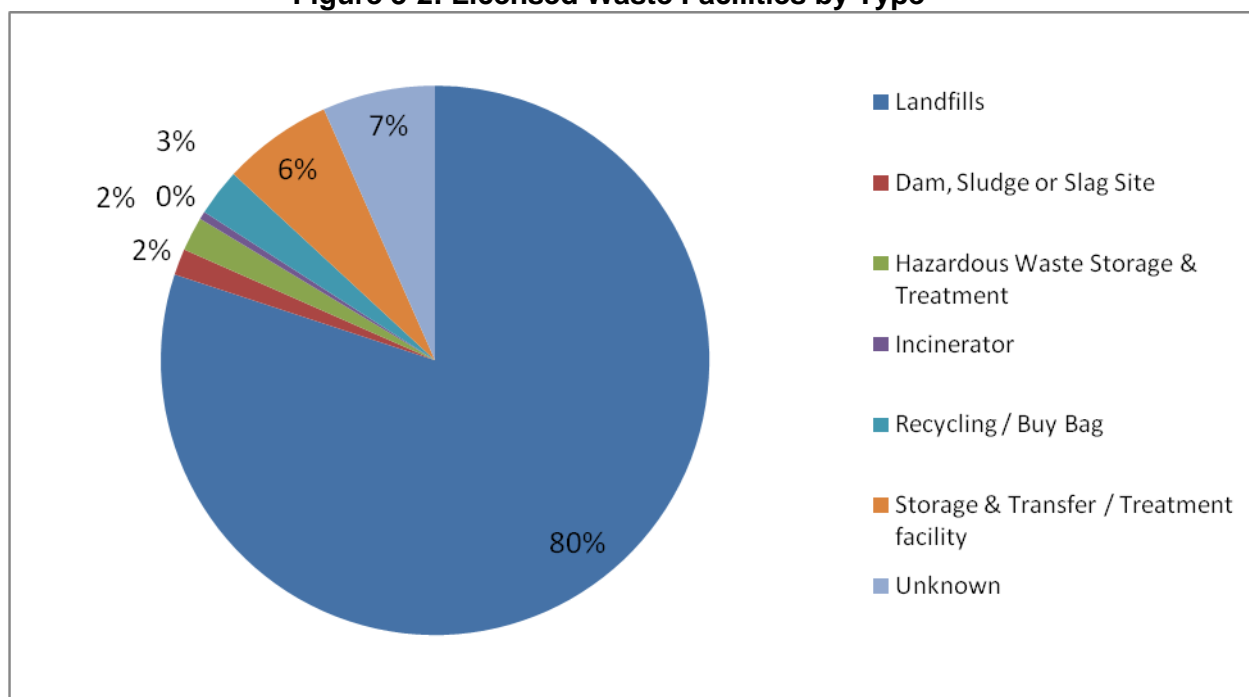
Table 3-6: Cost implications of increased distance to disposal sites

	20 km	100km	% change
Number of trips	3	2	-33.3%
Monthly km travelled	3140	13700	336.3%
Monthly bulk transport cost	R143 939	R215 909	50.0%
Monthly total cost per hh	R24.67	R30.96	25.5%

Source: Scenario's based on cost evaluation of Mafikeng domestic solid waste services pilot, based on service provision to 35 000 households

Waste management services rely heavily on landfills for the disposal of waste, which account for 80% of currently licensed waste facilities. In Gauteng, waste going to landfills comprises the vast majority of all waste disposed or recycled, and has grown at an average annual rate of 66% since 2004, while waste generated has grown at an average of 37% a year. This is despite the existence of a range of alternative disposal technologies, including waste incineration, compaction, recycling, and the use of disused mine-shafts. None of these alternatives have been taken up in a significant way to date.

Figure 3-2: Licensed Waste Facilities by Type



DEAT (2007) reports that there are over 2 000 waste handling facilities nationally, of which 530 are permitted. Permitting is lowest in largely rural municipalities and secondary cities, at 13% and 68% respectively. Landfills differ markedly in size, with larger landfills typically operating in large cities (DEAT, 2007).

3.2 Institutional models for service delivery

Krugell, Otto and Van der Merwe (2009) evaluate the predictors of improvement in access to basic services across municipalities between 2001 and 2007. They find that institutional factors are a greater contributor to the relative improvement in access than external variables such as economic growth rates, levels of urbanisation or settlement density. They comment that these factors relate to municipal capacity, and may include issues such as staff vacancy rates, resource availability and so on. This section considers two dimensions of the institutional model for solid waste service delivery, namely the structural and operational dimensions of service provision.

3.2.1 The structural dimensions of municipal solid waste service delivery

The structural dimensions of municipal solid waste service provision refer to the scale at which services are provided and the scope of participation in service delivery. Scale refers to the level of elected government that has functional responsibility for the provision of service, while the scope of participation considers the extent to which non-state actors (such as private firms or community structures) are involved in service provision.

Solid waste services outside of metropolitan areas are currently assigned predominately to the lowest sphere of government, namely local (category B) municipalities. In only limited instances are district municipalities involved in service provision, and in these cases it is seldom across the whole value chain or for all local municipalities in their areas. This situation reflects the historical assignment of solid waste functions in South Africa.

Only 13% of authorised municipalities report having outsourced or commercialised service provision activities in 2007. Outsourcing and commercialisation are predominately used by metropolitan and district municipalities, with 50% and 41,7% reporting such arrangements. The vast bulk of municipalities thus deliver services in-house.

Similarly, the utilisation of community-based delivery mechanisms has been limited, despite the potential for this mechanism to contribute significantly to job creation. National government has begun piloting labour intensive approaches to the expansion of solid waste services but these have yet to be rolled out at scale. Initial estimates suggest that this approach has the potential to create over 3 000 permanent, non-public sector jobs in waste collection.

The Waste Act expresses a presumptive preference for the regionalisation of solid waste service provision, presumably on the grounds of improving the efficiency of service delivery. Regionalisation holds the prospect of reducing unit overhead costs (through shared disposal facilities, management costs, etc). However, this is offset by the significant rise in transport costs associated with regional disposal (as discussed above) and at the same time

reduces local accountability for service delivery due to the greater scale at which decisions are taken.

Arguments for the regionalisation of service delivery are strongest for waste disposal activities. This is because scale economies are strongest in industries that are capital intensive. High levels of capital intensity create barriers to entry due to the lumpiness of required expenditures. Yet only waste disposal is a capital intensive function, due to the nature of the infrastructure required. Collection and transportation activities are operating cost intensive, due to large labour requirements and (in the case of collection) the interaction-intensive nature of the service. Moreover, while specialised vehicles are utilised in both collection and transportation activities they are only able to provide a fixed amount of service per unit, and thus quickly require additional vehicles to be procured at even a local level. Given the cost implications of increased transport distances associated with regional disposal, careful consideration of its benefits is required.

Policy remains vague on the nature of regionalisation that will be pursued. Regionalisation of waste disposal authority is distinct from regionalisation of service provision. Economic regionalisation of disposal activities can occur when local municipalities collaborate to finance and develop a regional disposal site in order to collective benefit from reduced costs. Political regionalisation would involve the reassignment of disposal functions to district municipalities. However, political regionalisation would result in the separation of the authority for waste disposal from other aspects of service provision. This may compound incentives for waste generation, unless specifically countered by the pricing system.

3.2.2 The operational dimensions of municipal solid waste service provision

Municipal arrangements for solid waste management tend to follow a bureaucratic model. Expenditure functions are undertaken by a line department of a municipality while revenue and financial management functions are undertaken by a centralised treasury function. In this model the council sets policy (often with assistance from the solid waste department), while municipal managers have final say over operational decisions of the department. These limits to operational discretion replace retrospective forms of regulatory oversight. Exceptions to this arrangement do exist, such as Pickitup in the City of Johannesburg, which is an autonomous company that is wholly owned by the municipality.

10% of the municipal workforce, or 25 450 people, were employed in solid waste management activities in 2007, of which 34% were employed in metropolitan municipalities and 25% in small towns. Over 75% of personnel were in full-time positions, although municipalities have reported a decline in both full-time and part-time staff between 2006 and 2007, with a rise in vacancies to 20,9% of established posts in the sector. Over a quarter of vacant posts (2 259 positions) are reported in metro municipalities. Vacancy rates are highest in KZN (28,9%), Gauteng (25,6%) and the Free State(21,1%).

Municipalities employ on average 2,5 staff per 1000 consumers. This figure varies significantly between municipalities, with metro's employing on average 1.5 staff per 1000 consumers, and rural municipalities employing 6.8 staff. Indeed, a strong negative correlation exists between the size and density of settlement and the number of staff employed, as shown in the table below.

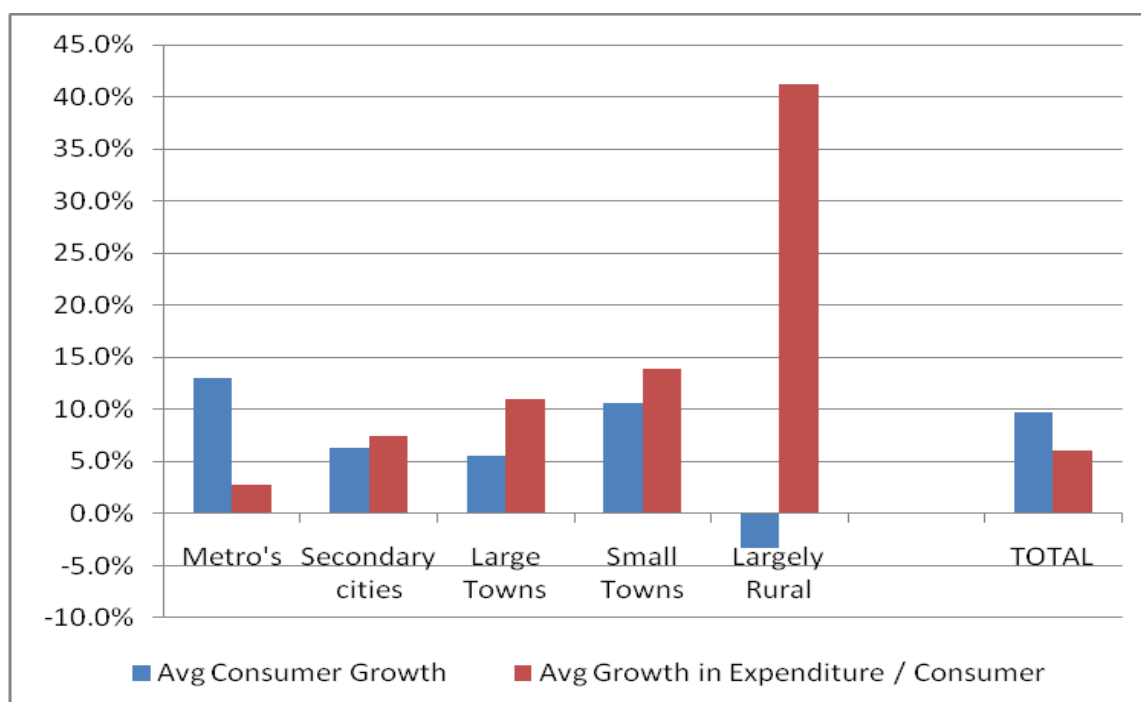
Table 3-7: Operational data (2007)

	Staff / 1000 consumers	Expenditure per consumer			
		2005	2006	2007	Average
Metro's	1.5	R 873.31	R 790.85	R 909.12	R 857.76
Secondary Cities	1.9	R 701.22	R 863.90	R 791.43	R 785.52
Large towns	3.5	R 673.62	R 697.68	R 826.27	R 732.52
Small Towns	4.6	R 459.93	R 536.19	R 596.68	R 530.93
Largely Rural	6.5	R 232.91	R 434.32	R 416.49	R 361.24
Districts	10.5	R 2 971.21	R 948.07	R 888.15	R 1 602.48
Average	2.5	R 719.00	R 739.68	R 807.97	R 755.55

DEAT (2007) notes that local municipalities tend to have much smaller “intermediate” staff complements than metros, and that the proportion of labourers in the total staff complement rises as settlements become more dispersed. While differing operational requirements may partially explain this trend, the absence of adequate managerial capabilities in smaller municipalities is a significant concern. Moreover, it varies significantly from international best practice.

Expenditures are rising faster than consumer numbers in most municipalities. Although expenditure per consumer has grown by over 6% a year this is largely a result of greater efficiencies achieved in metropolitan municipalities, where consumer growth rates have outstripped cost growth. This indicates they are achieving greater unit cost efficiencies. However, all other types of municipalities are becoming less efficient as consumer numbers grow. This may be an indicator of the costs associated with reaching less densely populated areas.

Figure 3-3: Relative growth in consumers serviced and unit costs (2005 to 2007)



Note: Districts excluded as data is off a low base and distorts results

Source: StatsSA (P9914 & P9115)

Financial ring-fencing of solid waste function is likely to provide greater insight and control over service provision, but its parameters require clearer definition. Larger municipalities in particular are pursuing the ring-fencing of the solid waste accounts, as proposed in the Waste Act. At present there is no requirement that components of the waste hierarchy are separately accounted for, nor is their clarity on how this ring-fencing will be reconciled with generally recognised municipal accounting practices (GRAP) and municipal budget formats.

Financial ring-fencing itself does not create incentives for efficiency improvements. Ultimately, organisational changes that give service providers greater control over and accountability for both expenditure and revenue management are required.

The “Cleanest Town Competition”, led by DEAT since 2001, has played an important role in encouraging municipal innovation in solid waste service delivery. Assessment criteria include: (a) the physical condition of a municipality (70% weighting), including general cleanliness of residential and commercial areas and urban green spaces, and (b) support systems (30% weighting), including clean and green initiatives, waste management practices, budgetary support, monitoring and enforcement mechanisms, awareness and education, and equipment. The competition is run at both provincial and national levels and has generated significant municipal attention and community interest. Small cash prizes, are funded by the private sector, are awarded to Category A, Category B and “most improved” municipalities.

3.3 Issues and incentives analysis

This analysis has identified six significant issues in the current efforts to enhance the coverage and efficiency of waste management services. These include:

- a) **Current data on the quantity, character and location of solid waste is very weak.** Available data is generally outdated, partial and varies widely between sources. This severely limits analysis of the challenges facing the sector, and is generally regarded as a critical initial step in enhancing solid waste management. Other background documents in this project consider waste information systems in more detail.
- b) **Municipalities currently do not place significant attention on waste minimisation.** This impacts on their operating and capital cost structures associated with collection, transport and disposal. It also mitigates against the achievement of the waste minimisation targets of the Polokwane Declaration. The introduction of volumetric user charges by eThekweni, however, offers some prospect of reversing this situation.
- c) **There is a need to establish differentiated targets on basic access to services that take account of varying municipal contexts and capacities.** Greater differentiation and improved specification of the targets for municipal service provision will provide an important focus to their strategies to universalise and improve the quality of service delivery.

- d) ***Municipalities are facing conundrum of rising unit costs and falling revenues associated with expanded access to services.*** This has the potential to generate a number of undesirable outcomes, including a slow-down in the pace that services are expanded to all, a growth in uncontrolled dumping and littering that will inflate operating costs for municipalities or exacerbate environmental damage, or a search for cost reductions through mechanisation that may reduce the scope of employment in the sector. Already there is evidence that larger municipalities have largely mechanised their operations. Additionally, a drop in the number of subsidy beneficiaries indicates that municipalities are actively seeking to reduce subsidy leakage through improved targeting.
- e) ***Structural arrangements for municipal service delivery do not create strong incentives for improvements in the efficiency of operations.*** Few municipalities employ non-traditional or non-bureaucratic organisational arrangements. Policy on regionalisation of service delivery remains vague and confused implementation has the potential to weaken accountability and create incentives for additional waste generation.
- f) ***Ring-fencing of solid waste financing is an important but insufficient step in improving efficiencies in the sector.*** Clear guidance is required on the nature of financial ring-fencing, in line with GRAP and municipal budget formats. Accounting for costs and revenues in each stage of the waste hierarchy (and particularly collection, transport and disposal) will be critical requirements of this reform. Additional organisational reforms to combine revenue and expenditure authority and accountability in municipal solid waste functions may also be required.
- g) ***The system of carbon credits and the “Cleanest Town” competition provide powerful incentives for municipalities to address their challenges.*** CDMs have already gained traction in large municipalities, while national and provincial Cleanest Town competitions are well-subscribed. Appropriate focus and targeting of these initiatives holds the potential of inducing further access and efficiency improvements at municipal level.

3.4 Recommendations

Key recommendations for steps that national government can take to enhance the coverage and efficiency of municipal waste management services include:

- a) ***The establishment of clear, outcomes-focussed and differentiated targets for municipalities over a multi-year period.*** The establishment of targets that place emphasis on policy priorities such as waste minimisation and expanding access to services will need to vary by municipality, as outlined in section 2.4, above. This variation should be based on the nature of the key challenge they face, as well as their institutional and fiscal capacity to effect improvements. Targets should ideally be set on a multi-year basis, with indicators reviewed every 3 to 5 years. This approach allows municipalities to graduate to “second generation” targets once they have achieved “first generation” targets such as access to service.

For example, municipalities with comparatively low levels of access to services should only have targets sets in relation to universalising services. Municipalities with

high levels of access and high waste generation volumes should have targets set in relation to waste minimisation, while large cities should have targets set in relation to both these priorities and for improvements in service delivery efficiency.

- b) *The “Cleanest Town” campaign should be restructured to provide incentives for municipalities to achieve targets as well as pursue innovations in service delivery.*** Specific recommendations include:
- i. The “Physical Condition” window of the competition should include an indicator of progress relative to national and provincial norms, standards and targets (access to service, waste minimisation and delivery efficiency);
 - ii. The Support Systems window should be reframed as an “Innovation Window”, with indicators associated with the ring-fencing of solid waste services, the use of carbon credits, the quality of data collection and the introduction of waste minimisation innovations such as volumetric tariffs;
 - iii. The weighting of each window should be altered to a 60:40 basis in order to further encourage institutional innovations;
 - iv. Awards should be expanded to the top ten municipalities in each rank of the competition (for example, the top ten local municipalities) through the introduction of “silver” and “bronze” award categories. This will assist in expanding incentives for improvement to a broader range of municipalities; and
 - v. Awards associated with this programme should be provided on a matching basis proportional to user charge revenues (including development contributions) received by a municipality in that year. The proportion should attempt to provide an award of between 3% and 5% of total revenues in order to provide an adequate incentive. It is thus likely that public money will be required to supplement current private sector contributions to this programme.
- c) *Accounting and budgeting practices should be clarified to provide guidance to financial ring-fencing by municipalities,*** specifically with respect to data availability across the waste hierarchy. This will require negotiation with the Accountant-General, National Treasury and the Accounting Standards Board. Ring-fencing will need to be progressively accomplished, expanding from basic cost and revenue accounting to identification of costs associated with each element of the waste hierarchy, and eventually to associated institutional issues of revenue management.
- d) *The stated policy preference for the regionalisation of solid waste services requires reconsideration and refinement.*** There is no evidence, for example, that waste collection is best conducted regionally. Similarly, while regional collaboration may be appropriate in disposal activities in some circumstances, this does not always make economic or financial sense, nor does it imply that a mandatory reassignment of functions to a larger sphere (e.g. districts) is a sensible or effective way to achieve this end. Other options, such as regulatory or fiscal incentives for local level partnerships may be more effective.

4 Public financing of waste management

This section considers the existing intergovernmental fiscal systems and budgets for waste, focusing particular attention on solid waste management and the role of local government. It highlights major issues in the financing of municipal solid waste infrastructure and services and considers the scope for new intergovernmental fiscal interventions around waste management. Specific consideration is given to mechanisms to enhance sources of capital finance within a system of sustainable financing for waste management, and on the use and regulation of user charges for services.

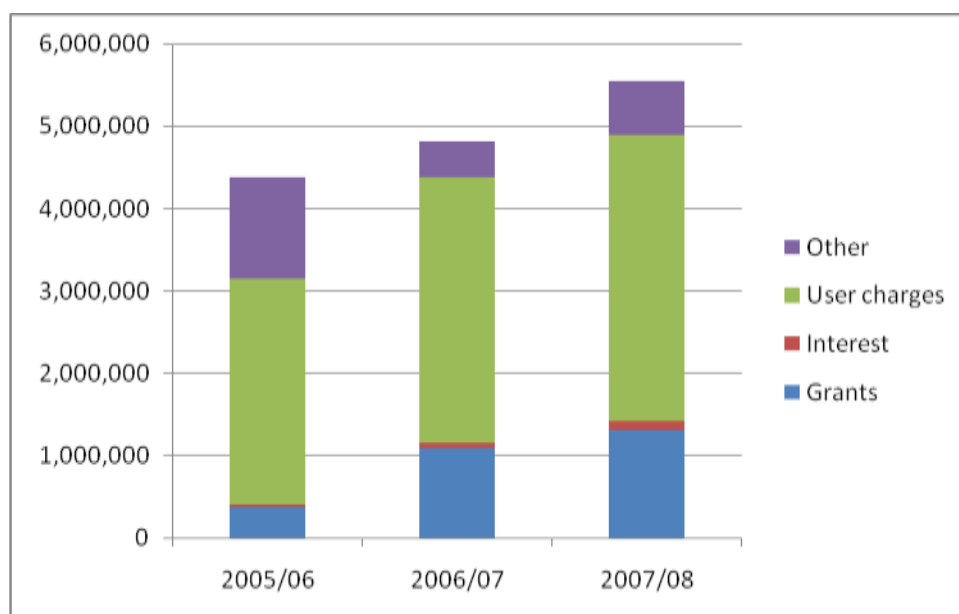
4.1 Current financing arrangements and trends

4.1.1 Solid Waste Revenues

StatsSA (P9114) reports that municipalities received income of R6,5 billion in 2007/08. The National Treasury estimates this amounted to 3% of total operating revenues. 62.7% of solid waste revenues were derived from user charges, while 23.7% (or R1,3 billion) was received in grants predominately from national government (including the equitable share).

Grants have been the fastest growing large revenue item for municipal solid waste services, averaging 105% per year since 2005/06, while user charges have grown at an average of 12.5%. Although refuse income as a whole has grown at an average of 7.8% since 2003/04 its proportion of total operating revenue has decline slightly over the period. This trend is similar to that of other tariffs, largely due to the growth in national transfers to municipalities that has not been associated with similar own revenue effort by municipalities.

Figure 4-1: Solid waste operating revenues by source (2005/06 to 2007/08, R'000)



Source: StatsSA, 9114 (2008)

Metropolitan municipalities and secondary cities are the largest recipients of grants, taking 80.6% of all grants reportedly allocated into the sector. However, this may reflect municipal preferences in the allocation of grant resources. It should also be noted that these

municipalities also account for over 75% of all sector revenues, including user charges. In addition, secondary cities are the most reliant on user charges to fund their operations, amounting to over 80% of all revenues. Metropolitan municipalities have the lowest reliance on user charges, using grants and other income to fund operations as well.

Table 4-1: Operating revenue sources and shares by municipal types in 2007/08

	Grants	Interest	User charges	Other	OWN REVENUES	Deficit	Total Income
Revenue share by municipal type (2007/08)							
Metro's	71.1%	94.1%	53.6%	73.4%	60.8%	60.8%	60.8%
Secondary cities	9.5%	3.8%	21.7%	8.8%	16.9%	16.5%	16.9%
Large Towns	4.5%	1.1%	9.1%	4.7%	7.3%	11.5%	8.0%
Small Towns	11.2%	0.7%	12.9%	12.0%	12.2%	4.4%	11.0%
Largely Rural	3.4%	0.3%	2.5%	0.8%	2.4%	5.5%	2.9%
Districts	0.3%	0.0%	0.2%	0.3%	0.2%	1.3%	0.4%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Revenue source contribution by municipal type (2007/08)							
Metro's	27.6%	3.1%	55.2%	14.1%	85.1%	14.9%	100.0%
Secondary cities	13.2%	0.4%	80.3%	6.0%	85.4%	14.6%	100.0%
Large Towns	14.6%	0.3%	77.6%	7.5%	78.4%	21.6%	100.0%
Small Towns	21.8%	0.1%	66.6%	11.5%	94.0%	6.0%	100.0%
Largely Rural	32.6%	0.2%	63.2%	3.9%	71.9%	28.1%	100.0%
Districts	30.3%	0.2%	56.7%	12.9%	52.8%	47.2%	100.0%
TOTAL	23.7%	2.0%	62.7%	11.6%	85.1%	14.9%	100.0%

Source: StatsSA, 9114 (2008)

User charges have grown at levels that have considerably outstripped inflation for both small and large households. The National Treasury database records average annual increases of 64.8% and 44.3% for these two categories of consumers respectively since 2002/03. Smaller households pay a larger share of their total municipal bill in refuse charges. A structural adjustment in tariff levels appears to have occurred in 2006/07, with growth of 465% and 251% for each consumer group.

Yet this growth in user charges has not translated into a growth in their overall contribution to solid waste revenues. This suggests that revenue collection rates have declined, and may constrain the ability of municipalities to raise further revenues from this source.

Table 4-2: Budgeted user charges, 2002/03 to 2009/10

	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	AVG
Refuse - Large HH	R 43.44	R 37.37	R 41.44	R 41.95	R 236.92	R 185.24	R 204.76	R 209.07	
TOTAL BILL	R 809.68	R 874.98	R 1 285.71	R 1 000.39	R 4 732.18	R 3 680.20	R 3 563.69	R 3 592.94	
% of total	5.4%	4.3%	3.2%	4.2%	5.0%	5.0%	5.7%	5.8%	4.8%
% increase		-14.0%	10.9%	1.2%	464.8%	-21.8%	10.5%	2.1%	64.8%
Refuse - Small HH	R 51.97	R 35.59	R 35.44	R 36.86	R 129.44	R 224.74	R 251.17	R 254.69	
TOTAL BILL	R 1 059.50	R 503.33	R 799.53	R 531.11	R 827.33	R 5 704.66	R 5 402.33	R 5 435.18	
% of total	4.9%	7.1%	4.4%	6.9%	15.6%	3.9%	4.6%	4.7%	6.5%
% increase		-31.5%	-0.4%	4.0%	251.2%	73.6%	11.8%	1.4%	44.3%

Source: National Treasury LG Database

A striking feature of municipal solid waste revenues is that they do not cover the operating costs of service provision, resulting in a deficit that averages almost 15% of all expenditures across municipalities. This under-recovery of costs requires subsidies from the municipal rates account, but may also impact of less visible expenditure items, such as repairs and maintenance. Deficits are particularly prevalent in small municipalities, although the bulk of the national deficit is held in metros and secondary cities due to the size of their operations. The trend in deficits has been volatile, with a decrease reported in 2006/07 that was wiped out in 2007/08.

This means that, on aggregate, municipalities are under-pricing their solid waste services. This under-pricing is likely to be significantly higher than the reported operating deficit of 15%, as the full costs of service delivery are not necessarily properly recoded for the sector due to current accounting practices, nor are current or historical capital costs necessarily fully apportioned to the sector, nor are the costs of environmental externalities necessarily accounted for. The effect of this under-pricing is to send inappropriate signals to waste generators about the cost of their activities, resulting in limited incentives for waste minimisation.

Most municipalities charge for solid waste services through a fixed monthly rate. This is based either on the nature of the service, property values or property sizes. At the households level this direct charge to consumers does not vary by the amount of waste generated. This system is both historical and administratively easy to manage.

These tariff structures provide no incentives for waste minimisation by consumers, as they rather seek to reflect the cost of service. Property-based tariff structures are based on the assumption that the size and / or value of a property influences the amount of waste produced. Service based tariff structures vary by the size of bin, but typically without encouraging households to reduce bin sizes

The City of Tshwane has recently introduced a volumetric charge for refuse services. This is intended to provide strong incentives for consumers to reduce the amount of waste set out for collection. Volumetric charging is administratively more complex, requiring recording and billing of individual household waste disposal. This scheme is new, and its

impacts on household waste management behaviour (in particular their sensitivity to price) remains to be evaluated.

Table 4-3: Basic Refuse Tariffs and Subsidies in Metropolitan Municipalities

City	Level of Service	Tariff structure & monthly rate	Subsidy
Cape Town (2009/10)	Weekly 1 x 240L bin	Based on nature of service: R63.93	Free rudimentary service in informal settlements. Indigent bin subsidy based on property values below R300 000 (25% rebate) with properties below R100 000 receiving 100% rebate
	Weekly 85L Bin/Bag : 1 x 85L bin or 3 bags	R55.65	
Johannesburg (2009/10)	Weekly 2x 85L bin or Weekly 1 x 240L bin	Based on property value: R60 for properties valued up to R150 000, to R159 for properties values at more than R1,5m	100% subsidy to all residential properties valued under R100 000, rising thereafter
	Non—Domestic	City cleaning levy of R90 to R330 pm based on property values above R2m	
	Business: - Weekly 240 litre bin - 1100 litre bin (per lift) - Daily Putrescible Waste	R178 R238 From R417 to R1129 depending on bin size	
Tshwane (2009/10)	Weekly 85ℓ, 240ℓ, 1100ℓ containers / bags 2x week 85L container (including city cleansing charge)	Based on waste volume (litres): R0,3126 / litre R0,6252 / litre	No subsidy for refuse services in indigent policy
Nelson Mandela Bay	Formal households in medium to high-income areas are serviced through a weekly kerbside black bag service.	Not available	100% credit granted to households receiving social grants on application
	Formal households in low-income areas are serviced through a fortnightly 240 litre wheelie bin service.	Not available	
eThekweni (2009/10)	Weekly collection service	Collected through property rates, with separate charge being introduced in 2009/10 based on property values	Subsidy to be applied through staggered rates applied on property value
Ekurhuleni (2009/10)	Weekly single residential	Based on size of property: ranging from 300m ² (R53.57) to >2000m ² (R111.22)	Informal settlements free of charge
	Weekly from flats / townhouses	R 58, 93	
	Business: - Weekly 3x85L bin - Weekly 1 x 240L - Cleansing levy	R126.30 R160.74 R 0, 02 per m ² at all business and industrial zoned areas where a scheduled litter picking service is provided at least once per week	

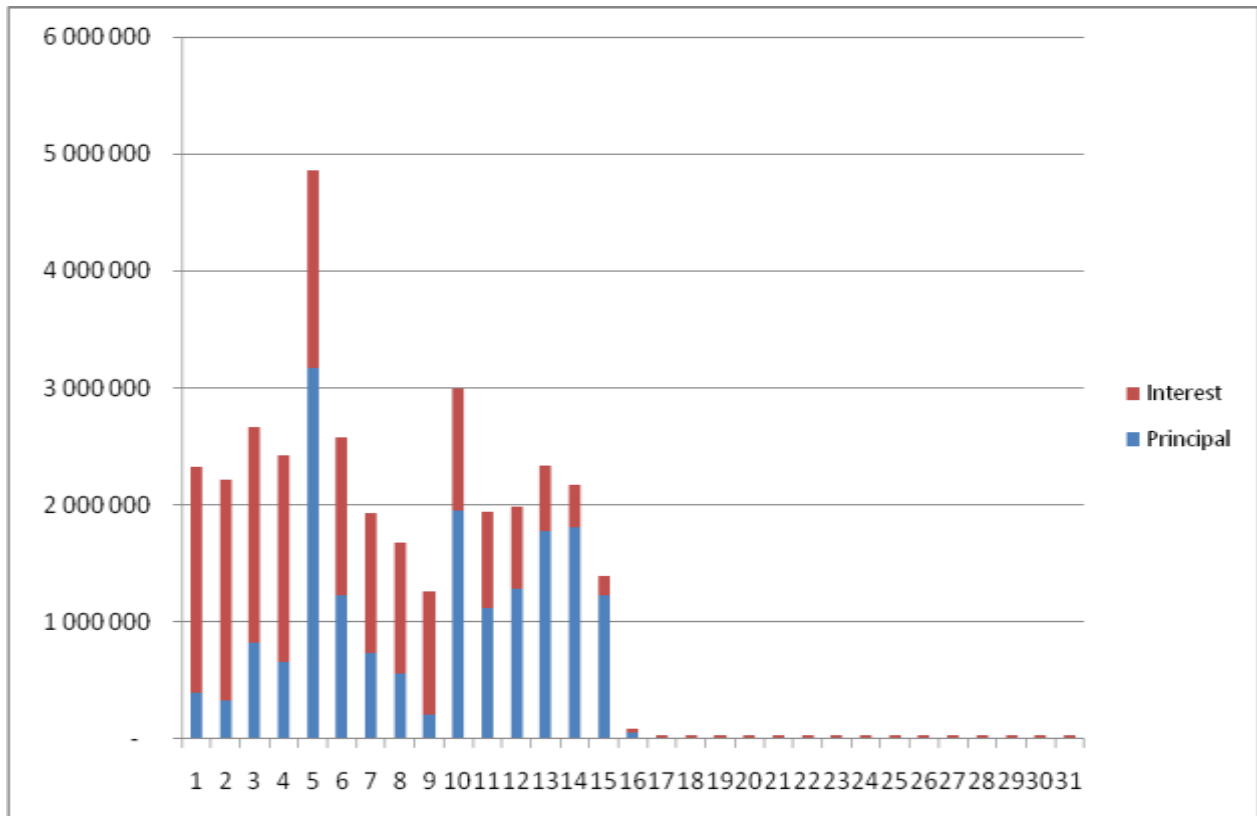
Sources: Various municipal websites (downloaded 9 July 2009)

Sources of capital finance are less easy to analyse, as municipalities keep no specific record of debt associated with solid waste services. It is likely that a portion of overall municipal borrowing is allocated to the sector. In addition, expenditures associated with

contracted out services may, in some cases, include payments for infrastructure installed or assets acquired under public-private partnership agreements.

Global data on municipal debt reveals that there is substantial scope for additional borrowing by creditworthy municipalities, particularly through extending the maturities of debt instruments. This may present an option for municipalities seeking to finance long-lived solid waste assets, such as refuse sites which typically have an operating life in excess of 30 years.

Figure 4-2: Current maturities of large city debt



Source: World Bank / National Treasury infrastructure assessment, 2009

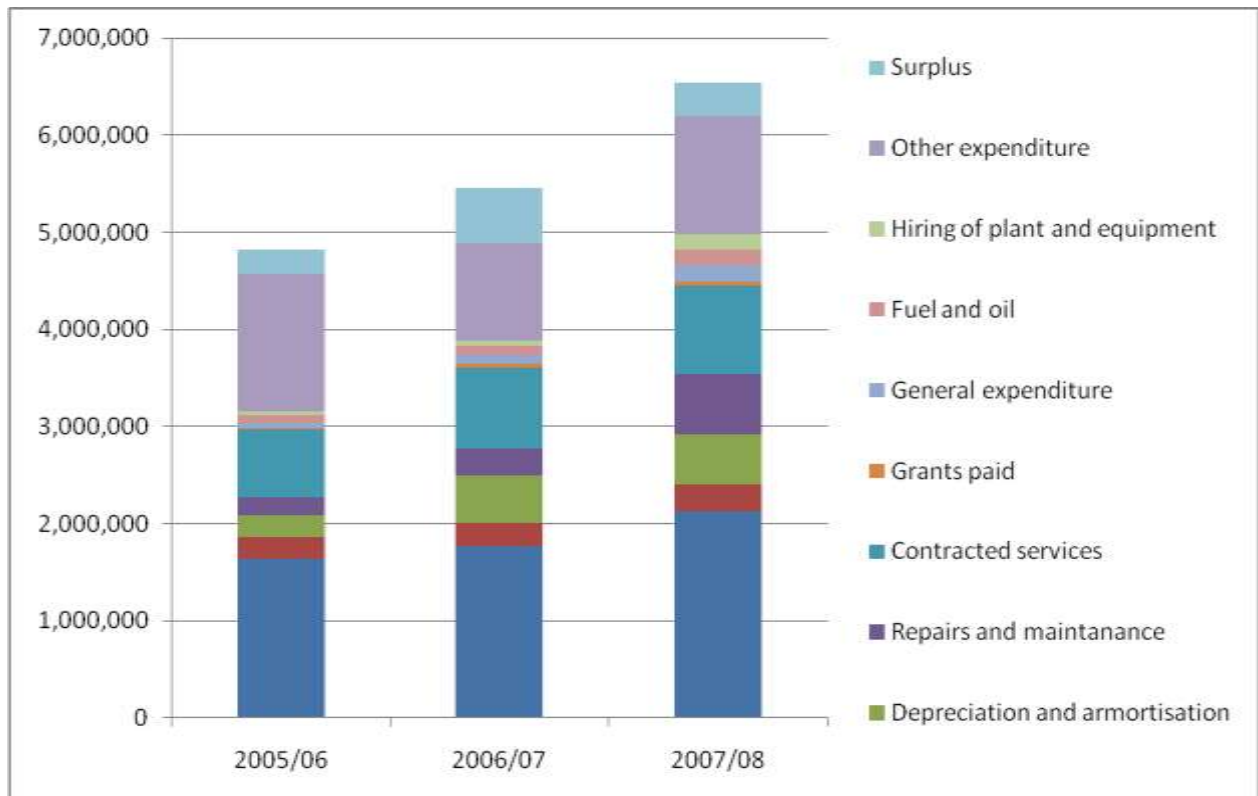
One additional source of capital finance is development charges levied on property developers during an intensification of land use. Although charges associated with solid waste services are very small, they have also been volatile, ranging from R6 million in 2006/07 to R1,5 million in 2007/08. Interestingly, no metros reported finance from this source, while secondary cities only reported income in 2006/07.

A final source of finance for municipalities is the production of energy from landfill gas, in order to generate both revenue sales and carbon credits. eThekweni Metro estimates that its Bisasar Road Landfill has the capacity to generate a potential sale of Certified Emission Reduction (CER) credits that would amount to R100 000 per day, or R36,5 m per year (eThekweni, 2006). Eskom estimates that landfill energy plants can have a capacity of between 20 and 50 megawatts, with a life-of-plant of 30 years (Engineering News, May 15, 2009). Energy generation from waste incineration (such as in Johannesburg) also appears to hold important financing opportunities. Carbon credits, in particular, appear to hold significant capacity to incentivise waste to energy schemes by municipalities.

4.1.2 Solid Waste Expenditures

Labour costs, depreciation, and repairs and maintenance expenditures appear to have driven expenditure growth in the sector. As a result, the average annual rate of expenditure growth (16.3%) has outstripped revenue growth. These items account for over 46% of expenditures, and have grown at rates of 14.6%, 61.1% and 90.4% respectively.

Figure 4-3: Solid waste operating expenditures by item (2005/06 to 2007/08, R'000)



Source: StatsSA, 9114 (2008)

The growth in labour costs has been associated with a decline in reported employment in the sector. Average wage levels are rising, as a result of the 9.6% growth in cost per employee, while the number of employees has only grown by 5%. Staff costs absorb the largest proportion of expenditures all types of municipalities, with this being most pronounced outside of the metros and the highest in secondary cities and large towns.

While metropolitan municipalities have contained staff costs despite staff growth, the reverse has been true elsewhere. Secondary cities have reduced staff numbers by 11% while increasing average staff costs by 71%. Rural municipalities have dramatically expanded both personnel numbers and costs.

Table 4-4: Annual and average staff cost and employment (2005/06 to 2007/08)

Category	Cost per employee			Average cost growth	Average staff growth
	2005	2006	2007		
Metro's	R 216 063	R 136 595	R 171 946	-5.4%	13.8%
Secondary Cities	R 63 022	R 74 118	R 166 597	71.2%	-10.7%
Large towns	R 58 136	R 94 389	R 100 895	34.6%	10.7%
Small Towns	R 26 833	R 50 346	R 48 093	41.6%	16.1%
Largely Rural	R 10 404	R 44 864	R 23 744	142.1%	37.8%
Districts	R 3 548	R 5 440	R 9 624	65.1%	235.6%
Average	R 88 974	R 85 514	R 105 305	9.6%	5.0%

Sources: StatsSA, P9114 and P9115

Metros dedicate the largest portion of their expenditures (18.9%) to contracting out services to private providers, and account for 83% of total expenditure on this item. It remains a small proportion of expenditure, however, accounting for under 14% of total spending, and has declined since 2005/06. This suggests that municipalities are increasingly moving away from outsourcing solid waste service provision.

Strong growth has been witnessed in repairs and maintenance expenditures, which now account for 9.7% of total operating expenditures. Expenditures on this item have increased by an average of over 90% a year since 2005/06. As this growth has been led by the metros it suggests that municipalities are increasingly introducing modern asset management practices into their operations.

Table 4-5: Operating expenditure items and shares by municipal types in 2007/08

	Staff costs	Admin & financial	Deprec. & amort	Repairs & maint.	Contracted services	Grants paid	General	Fuel & oil	Hiring plant & equip.	Other	Surplus	Total
Expenditure share by municipal type (2007/08)												
Metro's	52.4%	36.4%	65.7%	77.9%	83.3%	0.0%	48.1%	67.3%	88.1%	63.3%	27.2%	60.8%
Secondary cities	21.3%	46.6%	14.6%	9.4%	8.6%	3.7%	20.6%	14.2%	9.6%	15.4%	13.6%	16.9%
Large Towns	10.3%	5.5%	4.4%	4.3%	4.7%	21.8%	20.8%	7.3%	0.5%	8.5%	8.9%	8.0%
Small Towns	12.6%	8.6%	11.1%	5.8%	1.3%	74.5%	8.5%	9.9%	0.6%	10.2%	39.5%	11.0%
Largely Rural	3.3%	1.7%	3.0%	1.7%	2.0%	0.0%	1.7%	1.1%	1.1%	2.3%	10.4%	2.9%
Districts	0.1%	1.3%	1.2%	0.9%	0.1%	0.0%	0.3%	0.2%	0.0%	0.4%	0.4%	0.4%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Expenditure contribution by municipal type (2007/08)												
Metro's	28.0%	2.5%	8.6%	12.4%	18.9%	0.0%	2.1%	2.7%	3.5%	19.4%	2.3%	100.0%
Secondary cities	41.0%	11.8%	6.8%	5.4%	7.0%	0.2%	3.3%	2.1%	1.4%	17.0%	4.2%	100.0%
Large Towns	42.2%	2.9%	4.4%	5.3%	8.2%	1.9%	7.0%	2.2%	0.2%	19.9%	5.8%	100.0%
Small Towns	37.0%	3.3%	8.0%	5.1%	1.6%	4.6%	2.1%	2.2%	0.1%	17.2%	18.7%	100.0%
Largely Rural	37.1%	2.5%	8.2%	5.8%	9.3%	0.0%	1.6%	0.9%	0.9%	14.8%	18.8%	100.0%
Districts	11.4%	13.6%	23.7%	21.3%	4.2%	0.0%	2.1%	1.4%	0.0%	16.8%	5.6%	100.0%
TOTAL	32.5%	4.3%	7.9%	9.7%	13.8%	0.7%	2.7%	2.4%	2.4%	18.6%	5.2%	100.0%

Source: StatsSA, 9114 (2008)

Little information is available on the scale of subsidies being provided to consumers to access solid waste services. Subsidies can take a number of forms, including (a) through explicit policy choices (such as free basic services); (b) be provided through the delivery of a free or reduced cost service, or be provided in cash; (c) be for access to infrastructure or to reduce the ongoing costs of services to the consumer.

The number of consumers reported to be receiving free basic refuse services has declined by 12.6% since 2005. This is due to a reduction in the number of reported beneficiaries in large cities, particularly metros. In turn, this may be a result of a change in the targeting mechanism for delivering subsidies to consumers.

Most municipalities report using a self-selection system for targeting solid waste subsidies for consumers. This typically involves either a tariff-based subsidy or a beneficiary applying for access to the subsidy on a means-tested basis. The effect of this latter approach is typically to reduce leakage of the subsidy outside of the target group, whereas tariff based approaches can generate significant subsidy errors.

Table 4-6: Use of subsidy mechanisms by type of municipality, 2007

	Technical	Geographic	Broad-Based	Self Targeting
Metro's	0.0%	20.0%	0.0%	80.0%
Secondary Cities	13.3%	0.0%	20.0%	66.7%
Large towns	8.7%	0.0%	13.0%	78.3%
Small Towns	15.3%	1.0%	12.2%	71.4%
Largely Rural	14.6%	9.8%	14.6%	61.0%
Districts	0.0%	14.3%	14.3%	71.4%
TOTAL	12.8%	4.1%	13.3%	69.9%

Source: StatsSA, P9115

Metropolitan municipalities report the use of varying subsidy systems. Geographic targeting effectively occurs in informal settlements in both Ekurhuleni and Cape Town. Tariff-based systems, based on staggered tariffs relative to property values, are applied in Cape Town, eThekweni and Johannesburg. Nelson Mandela Bay operates an application based system, while Tshwane does not offer any subsidies for refuse services.

Recent draft recommendations by the CSIR (2009c) suggest that municipalities should adopt a mixture of geographic (zonal) targeting and self-targeting approaches in the implementation of their free basic refuse services. It suggests that efforts should be made to limit subsidy leakage to non-poor consumers, subsidies limited to domestic waste services, and level of service varied by settlement type. It also suggests that subsidisation of poor consumers should include both regular service provision and the provision of waste receptacles. The proposals do not, as yet, assess the efficacy of various financing instruments or the overall financial viability of the proposals.

An additional infrastructure subsidy appears to operate in addition to free basic service subsidies. For developers, this occurs in the form of a failure to levy development charges associated with intensification of land use, which essentially means that existing consumers subsidise the access of new consumers to solid waste infrastructure and assets. In addition, municipalities fund some portion of their capital spending through the national

Municipal Infrastructure Grant (MIG), which provides poor consumers with access to solid waste infrastructure and assets.

Overall, municipalities place little priority on solid waste investments in their capital budgets. They budgeted to spend only 1.6% of their capital budget on refuse sites and specialised refuse vehicles in 2007/08, or R631,9 million. Between 2005/06 and 2007/07 they spent an average of 10.1% of total solid waste expenditures on capital investment, and this has declined over the period.

Table 4-7: Capital to operating expenditure ratios for solid waste services

	2005/06	2006/07	2007/08	Avg
Metro's	8.8%	10.5%	8.6%	9.3%
Secondary cities	10.4%	7.9%	7.7%	8.7%
Large Towns	11.9%	11.1%	10.0%	11.0%
Small Towns	13.1%	11.1%	12.9%	12.4%
Largely Rural	15.3%	16.0%	14.8%	15.4%
Districts	95.6%	50.4%	129.3%	91.8%
TOTAL	10.2%	10.5%	9.7%	10.1%

Solid waste capital expenditures growth is also projected to be lower than that for capital expenditure as a whole. From 2005/06 to 2010/11 the average annual projected growth in solid waste capital spending is 7.2%, lower than the projected average growth in capital spending as a whole of 8.5%. This implies that the share of capital spending is unlikely to change dramatically over the medium term. Metros and small towns allocated slightly greater than average proportions of the capital budgets to solid waste, while secondary cities and largely rural municipalities did the opposite.

Only 2.2% of MIG projects were allocated to the solid waste sector in 2005/06. The MIG management information system, operated by Department of Cooperative Governance and Traditional Affairs (DCGTA), reveals that large cities undertook 60.7% of the funding for solid waste projects in this year, and together with large towns, these larger municipalities all allocated above average shares to solid waste services investments. The bulk of MIG funded investments have been in solid waste sites as opposed to other service delivery infrastructure such as trucks or skips, as these expenditures are restricted by MIG programme rules. The bulk of investment has also been allocated to new infrastructure, as opposed to rehabilitation.

Table 4-8: MIG funding of solid waste infrastructure

	Actual 2003/04	Actual 2004/05	Actual 2005/06	Actual 2006/07	Projected 2007/08	AVG
% removal	10.0%	17.6%	12.6%	6.1%	13.5%	12.0%
% refuse sites	77.9%	65.3%	53.4%	85.4%	86.5%	73.7%
% unknown	12.1%	17.0%	34.0%	8.6%	0.0%	14.3%
% new	80.6%	77.9%	82.0%	75.6%	54.6%	74.1%
% rehab	19.4%	22.1%	18.0%	24.4%	45.4%	25.9%
Total (R)	61 204 749	82 691 849	109 883 867	70 031 353	36 867 866	

Source: MIG MIS, DCGTA

Table 4-9: Capital expenditure on solid waste between 2005/06 and 2010/11 (R'000)

		Secondary Metro's	Large cities	Large Towns	Small Towns	Largely Rural	Districts	TOTAL
2005/06	Refuse Sites	234 508	56 453	31 695	42 617	10 044	18 056	393 372
	Specialised Vehicles	28 272	33 524	13 543	16 571	7 558		99 468
	Total SW capex	262 780	89 977	45 238	59 188	17 602	18 056	492 840
	SW % of total exp	2.0%	2.3%	2.9%	2.6%	0.8%	0.6%	1.9%
	TOTAL CAPEX	12 976 928	3 839 513	1 575 417	2 255 033	2 158 355	2 945 164	25 750 410
2006/07	Refuse Sites	296 331	65 777	33 518	28 320	20 793	13 800	458 539
	Specialised Vehicles	39 636	19 623	12 123	35 419	7 985		114 785
	Total SW capex	335 967	85 399	45 641	63 739	28 778	13 800	573 324
	SW % of total capexp	2.5%	1.8%	2.3%	2.3%	1.1%	0.4%	2.0%
	TOTAL CAPEX	13 249 259	4 852 659	1 988 718	2 786 305	2 664 016	3 485 526	29 026 483
	Annual growth (SWM)	27.9%	-5.1%	0.9%	7.7%	63.5%	-23.6%	16.3%
Annual growth (Total)	2.1%	26.4%	26.2%	23.6%	23.4%	18.3%	12.7%	
2007/08	Refuse Sites	296 702	45 126	36 303	68 326	18 660	33 725	498 842
	Specialised Vehicles	44 200	39 302	15 800	24 316	9 200	200	133 018
	Total SW capex	340 902	84 428	52 103	92 642	27 860	33 925	631 860
	SW % of total capexp	1.8%	1.4%	2.1%	2.4%	1.0%	0.7%	1.6%
	TOTAL CAPEX	19 329 595	6 116 653	2 522 992	3 922 866	2 697 194	5 077 013	39 666 314
	Annual growth (SWM)	1.5%	-1.1%	14.2%	45.3%	-3.2%	145.8%	10.2%
Annual growth (Total)	45.9%	26.0%	26.9%	40.8%	1.2%	45.7%	36.7%	
2008/09	Refuse Sites	331 598	135 961	31 867	66 013	17 959	4 900	588 298
	Specialised Vehicles	87 970	46 050	16 855	25 250	11 940	1 645	189 710
	Total SW capex	419 567	182 012	48 722	91 263	29 899	6 545	778 009
	SW % of total capexp	1.9%	2.4%	1.7%	2.5%	1.0%	0.1%	1.7%
	TOTAL CAPEX	22 470 621	7 629 890	2 904 757	3 702 756	2 981 310	6 478 798	46 168 132
	Annual growth (SWM)	23.1%	115.6%	-6.5%	-1.5%	7.3%	-80.7%	23.1%
Annual growth (Total)	16.2%	24.7%	15.1%	-5.6%	10.5%	27.6%	16.4%	
2009/10	Refuse Sites	447 078	46 779	16 689	55 867	29 751	300	596 464
	Specialised Vehicles	64 639	32 199	21 792	17 825	14 300	1 200	151 955
	Total SW capex	511 718	78 978	38 481	73 692	44 051	1 500	748 419
	SW % of total capexp	2.5%	1.1%	1.5%	2.1%	1.5%	0.0%	1.8%
	TOTAL CAPEX	20 447 024	6 878 225	2 547 511	3 504 398	2 862 772	4 980 915	41 220 844
	Annual growth (SWM)	22.0%	-56.6%	-21.0%	-19.3%	47.3%	-77.1%	-3.8%
Annual growth (Total)	-9.0%	-9.9%	-12.3%	-5.4%	-4.0%	-23.1%	-10.7%	
2010/11	Refuse Sites	428 585	40 756	16 181	44 766	12 434		542 721
	Specialised Vehicles	69 542	18 110	16 226	15 817	10 730	1 256	131 681
	Total SW capex	498 126	58 866	32 407	60 582	23 164	1 256	674 402
	SW % of total capexp	2.7%	1.0%	1.5%	2.2%	1.0%	0.0%	1.9%
	TOTAL CAPEX	18 184 110	5 810 914	2 123 224	2 692 664	2 405 335	4 764 140	35 980 386
	Annual growth (SWM)	-2.7%	-25.5%	-15.8%	-17.8%	-47.4%	-16.2%	-9.9%
Annual growth (Total)	-11.1%	-15.5%	-16.7%	-23.2%	-16.0%	-4.4%	-12.7%	
Summary	Avg share	2.2%	1.7%	2.0%	2.3%	1.1%	0.3%	1.8%
	Avg annual growth (SWM)	14.3%	5.5%	-5.6%	2.9%	13.5%	-10.4%	7.2%
	Avg annual growth (Total)	8.8%	10.4%	7.9%	6.0%	3.1%	12.8%	8.5%

Source: National Treasury Local Government Database

4.2 Financing requirements

Financing requirements for the provision of solid waste services at municipal level have been estimated using the Municipal Infrastructure Investment Framework (MIIF) model, otherwise known as the Municipal Services Financial Model (MSFM), version 4.

The model projects capital and operating costs associated with the provision of municipal services. This helps to assess the appropriateness and affordability of addressing municipal infrastructure investment needs, such as extending services or rehabilitating assets.

The model results are sensitive to a range of assumptions and not only to the baseline backlog data. The time-frames selected for meeting the backlog and the service level aimed at, as well as assumptions about future demographic changes all impact significantly on projected costs (and revenue). DEAT (2007) provides a summary of the features of the model that is not repeated here, other than the proviso that the model should be seen as indicative rather than definitive” (DEAT, 2007). The model was populated using data from the 2007 Community Survey that has been discussed above, using the 2006/07 financial year as a base year and projected to 2016. Key assumptions used are provided in Annexure A. It should be noted that the model has been extensively used in support of national infrastructure investment analyses for the DBSA, National Treasury, DCGTA and others.

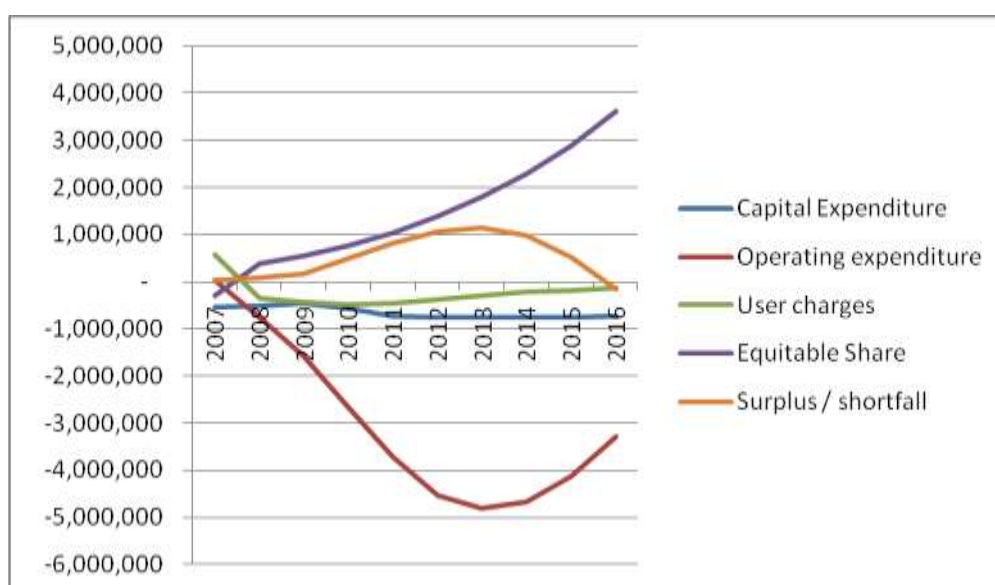
Two scenarios have been modelled, and compared to current financing arrangements, based on historical average growth in revenues and expenditures. Scenario 1 models the achievement of realistic, differentiated basic service targets by 2014, and accounts for a continued slowdown in rates of economic growth. Scenario 2 projects a significant economic recovery, and efforts to provide the majority of households with weekly, kerbside collection services.

Scenario 1 projects an average annual capital expenditure requirement of R1,4 billion, or a total of R14,2 billion over the ten year period. The bulk of this expenditure (95%) should be allocated to waste disposal sites and transfer stations. Capital expenditure should grow in real terms at an average annual rate of 4.8% to meet the sectors investment requirements. An average of 78% of capital expenditures is projected to occur in metropolitan municipalities and secondary cities. Strong growth in operating expenditures are projected, particularly those associated with waste disposal costs. The model estimates that the bulk of the financing for capital investments should be drawn from a mix of development charges (53%) and borrowing (36%). Finally, the scenario projects a growing operating deficit for solid waste services, amounting to a total of R25 billion over the period.

Scenario 2 projects an average annual capital expenditure requirement of R1,63 billion, or a total of R16.4 billion over the ten year period. Capital expenditure should grow in real terms at an average annual rate of 8% to meet the sectors investment requirements. Even stronger growth in operating expenditures are projected, particularly those associated with waste disposal costs. Even greater reliance is placed on development charges (60%) for financing these investments, with slightly less requirement on borrowing (30%). Finally, the scenario projects a massive operating deficit for solid waste services, amounting to a total of R43,7 billion over the period.

Both scenarios project considerably higher levels of capital expenditure than are currently being allocated by municipalities. This amounts to an average of nearly R660 million a year in Scenario 1, and over R875 million a year in Scenario 2 (or R6,6 billion and R8,8 billion of under-investment over 10 years). A comparison of sources of capital finance is not possible due to municipal data limitations, but it is clear that a far greater portion of capital financing will need to be met from development contributions and borrowing than is currently the case. Under-investment in asset creation, particularly landfills, is likely to result in growing environmental damage. This low level of capital investment is at odds with the significant regulatory pressure for environmental compliance in the sector. It possibly reflects the low overall priority attached to solid waste infrastructure by municipalities.

Figure 4-4: Current financing relative to Scenario 1

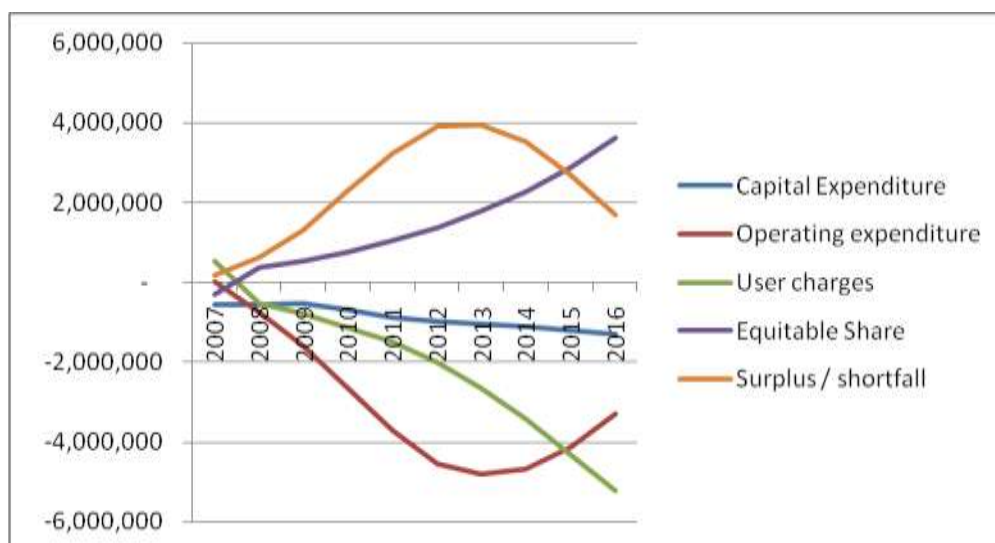


Both scenario's project that operating expenditures will rise dramatically. Municipalities will need to budget for considerable increases in this regard, far exceeding their historical allocations. Continuing with current trends in operating expenditure will result in under-expenditure on operating costs of almost R30 billion over 10 years, or over R3 billion a year. This is likely to threaten the sustainability of service delivery, unless municipalities are able to significantly and structurally reduce their operating costs.

At current rates grants are projected to grow in excess of need. This is likely to offset pressure for tariff increases, but reflects a misallocation of operating grant resources to the benefit of non-poor households. Only a slight under-recovery in user charges is projected relative to needs in Scenario 1, while this under-recovery expands to over R2 billion a year in the more aggressive Scenario 2.

Alarmingly, both scenarios project a large and growing shortfall on the solid waste operating account. On current trends, municipalities will generate a deficit totalling R20 billion on solid waste services over the next 10 years. Scenario 1 projects this deficit reaching R25,3 billion (or an average of R2,5 billion a year), while Scenario 2 projects a total deficit of R43,7 billion (or an average of R4,4 billion a year).

Figure 4-5: Current financing relative to Scenario 2



These scenarios highlight the critical state of financing in the solid waste sector, relative to policy intentions. Capital and operating expenditures are both far lower than required levels. The structure of capital finance is most probably inappropriate. The current reliance on grant financing is resulting in subsidy leakage to non-poor consumers, and user charge revenues are too low. The sector appears to be heading towards a fiscal crunch, with operating deficits ballooning to the point at which the sustainability of service delivery will be threatened.

The scenarios serve to focus attention on the critical fiscal challenges facing the sector. These include the need for realistic strategies to expand service delivery, improve operating efficiencies, manage subsidies effectively, and boost revenues.

4.3 Issues and incentives analysis

The scenarios serve to focus attention on the critical fiscal challenges facing the sector. These include the need for realistic strategies to expand service delivery, improve operating efficiencies, manage subsidies effectively, and boost revenues.

- a) **Significant under-pricing of the capital and operating costs of municipal solid waste services is sending inappropriate incentives for additional waste generation to consumers.** On the capital side (although difficult to assess on a sectoral basis), it is clear that a failure to access source of private finance for this investment lies behind projected under-investment in infrastructure. While overall levels of MIG financing of solid waste project amount to only 50% of projected grant financing needs, it is the use of development charges and borrowings that fall far behind. In general, this is driven by the benefits of solid waste infrastructure largely accruing to non-poor households and firms. A failure to effectively utilise these two financing instruments leads to a significant mis-apportionment of the costs of solid waste infrastructure relative to its benefits. In the both instances, current ratepayers

are financing benefits that accrue to new and future residents. In the case of development charges, this may result in a windfall profit for developers. Significant additional revenue opportunities exist in the form of carbon credits, with strong incentives attached to the development of schemes in this regard. On the operating side, the reported current deficit is likely to under-record the full scale of under-recovery of operating costs due to current accounting treatment and a lack of full cost accounting.

This under-pricing of solid waste services is a challenging matter to address, though not dissimilar to challenges facing other municipal utility sectors. Regulatory tools are typically not designed to set lower price bands, while political pressure to keep prices low remains strong.

- b) ***The ongoing growth in the operating deficit is a significant concern.*** This is likely to be driven by declining productive efficiencies in the sector (particularly in labour costs), own revenue shortfalls, and subsidy leakage. Specific attention is required in each of these areas to ensure that municipalities develop and adopted appropriate fiscal responses that remain in line with national development priorities. For example, reducing employment in the sector, failing to collect waste, or removing subsidies to poor households would fly in the face of key national policy commitments.
- c) ***The current programme rules restricting the use of the MIG on transport assets requires review.*** Solid waste services, particularly to households, require extensive investment in transportation assets such as trucks and skips. This is similar to the requirement for pipes or wires in the water or electricity sector. There is little justification for excluding these items from eligibility for MIG funding, as they form part of the capital budgets of municipalities, and are critical for basic service delivery.

4.4 Recommendations

Key recommendations for steps that national government can take to secure the sustainable financing of solid waste services by municipalities, in line with national priorities, include:

- a) ***Incentives for effective and sustainable financial management should be incorporated in the “clean Towns” Campaign,*** as outlined in Section 3.4.
- b) ***Amendment of the MIG programme rules*** to allow financing of all solid waste assets funded on the capital budgets of municipalities, including trucks and skips.
- c) ***The establishment of a solid waste project development fund.*** This fund would part finance the costs of capital project preparation in the solid waste sector. The objective of the fund would be to ensure that capital expenditures in the sector increase, that a robust pipeline of municipal projects is created, and that an appropriate capital financing mix is developed. It is proposed that the fund would have two windows:
 - i. ***Universal service:*** this window would assist municipalities to develop labour intensive projects that expand services to poor households, while obtaining capital financing from the Municipal Infrastructure Grant. The objective of this window would be to assist municipalities to make greater use of MIG for

financing solid waste infrastructure. This suggests that the efficacy of the window can be measured by the proportion of total MIG funding allocated to solid waste infrastructure.

- ii. *Private financing:* this window would support municipalities to develop projects that would be financed through development contributions, carbon credits, private equity or borrowing.

There is potential for this fund to be financed by the private sector (perhaps with seed funding from government), and for it to be managed through an autonomous public / private entity, subject to regular performance evaluation.

- d) ***Greater oversight and guidance is required over user charge and subsidy levels and structures used by municipalities.*** Although there is currently significant under-recovery of user charges, it will be politically difficult to increase rates in the midst of a recession. In the short term municipalities will require guidance on the introduction of appropriate tariff structures that encourage waste minimisation. In the longer term the case will have to be built for above inflation increases in user charge rates, both within national and local government, and with consumers. Specifically, government may wish to commission a guideline and workshops to assist municipalities in evaluating their current tariff structures and rates. Additionally, it may wish to commission an evaluation of the impacts and implications of the introduction of volumetric tariffs in the City of Tshwane. Specific regulatory attention needs to be paid to analysing tariff levels and subsidy costs in the sector, in addition to the development of policies on the provision of free basic services.
- e) ***At present, national government should not consider placing any restrictions on the use of income generated by user charges or recommend appropriate tariff levels,*** despite the power granted to do so in the Waste Act. Solid waste services are currently heavily subsidised by the municipal rates account. Imposing restrictions on the user of user charge revenues may have the perverse effect of encouraging municipalities to withdraw this subsidy before tariff levels have been adjusted, resulting in further expenditure cuts. Similarly, it will be unwise to impose tariff increases on consumers in the short term, given the current economic downturn.
- f) ***The focus of the subsidy system should be on expanding access to services.*** National government should avoid encouraging municipalities with a large number of unserved households from providing operating subsidies, as this will divert resources from households with greater needs. However, in municipalities with high levels of access, government should encourage careful subsidy management to reduce leakage to non-poor households. Guidelines to municipalities will be important in this respect, to assist municipalities to determine the appropriateness of intra-sector cross-subsidies (such as rising block tariffs or other mechanisms that distinguish between consumer types) or external subsidies (from the rates account or equitable share allocations). In addition, ring-fencing guidelines (for budgeting and accounting practices) should require a greater degree of transparency in subsidy levels relative to the cost of service delivery, in order to assist regulators in exercising greater oversight in this area.

5 Conclusion

This review has identified important institutional and fiscal constraints facing the municipal solid waste sector. These have the potential to severely limit the efficacy of service delivery systems. It has suggested a number of strategic interventions to improve intergovernmental coordination, expand access to services and secure adequate financing for the sector.

5.1 Components of an approach

The Waste Act offers important opportunities to pursue these interventions, yet they cannot be seen in isolation from one another. Across all sections of this review the primary recommendations can be summarised within three components as follows

Component 1: Creating a framework for cooperative governance

The key to improving cooperative governance is to clearly specific roles and responsibilities across spheres of government. Doing so will require clear, strategic leadership in disaggregating the major roles in the sector, and then actually performing them. In this regard it has been recommended that:

- a) **Policy-making activities** should focus on the establishment of clear, outcomes-focused norms, standards and targets for the performance of solid waste functions at national and municipal levels. Given that these targets should differentiate between contexts, they will play an important role in guiding and coordinating strategic planning activities across the sector. Moreover, a target driven approach to coordinating plans allows each planning agency the opportunity to focus on the development of a high quality, locally owned waste management plan;
- b) **Regulatory roles** should be subject to significant clarification, with consideration given to the establishment of a single national regulator, built on the foundations of the system of Waste Management Officers provided for in the Act;
- c) **Service provision roles** should be clearly separated from regulatory roles, with municipalities being encouraged to outsource service provision, and being prevented from appointing Waste Management Officers within their existing solid waste functions. To facilitate the regulation of service provider activities, accounting and budgeting practices will need to be clarified to provide guidance to financial ring-fencing by municipalities, specifically with respect to data availability across the waste hierarchy. The respective **roles of district and local municipalities** should be clarified to strengthen accountability for outcomes, specifically through requiring contractual arrangements to guide the provision of services by district municipalities.

Component 2: Focusing all actors on improving service delivery

Four measures have been recommended to strengthen incentives for improved solid waste service delivery. These are:

- a) Developing **regulatory tools** that penalize poor performance by municipalities, and reward success. The document identifies a range of both sanctions and incentives are available, from “naming and shaming” and fines, to preferential treatment. Some experimentation will be required to determine the most effective set of tools at a particular point in time.
- b) Strengthening **citizen oversight** of solid waste services, through the introduction of community scorecards and satisfaction surveys that are undertaken independently and measured both comparatively and objectively.
- c) Refocusing and expanding the “**Cleanest Town**” **Campaign** to encourage municipalities to reach targets that have been set, and to pursue service delivery, waste management and financing innovations
- d) Establishing a **solid waste project development fund** to part-finance the costs of capital project preparation, with the explicit intention of increasing the capacity of the sector to attract both grant and private sector finance.

Component 3: Clarifying residual policy issues

Some aspects of national policy require further investigation and articulation to ensure they are consistent with the overall framework for cooperative governance and effective service delivery. In particular:

- a) ***Greater oversight and guidance is required over user charge and subsidy levels and structures used by municipalities.*** The solid waste sector is currently significantly under-pricing its services, and expanding access to subsidies will further exacerbate this situation. National government needs to provide clear guidance on the importance of cost recovery, and of focusing subsidies to those most in need. A failure to effectively price for and subsidize services remains perhaps the greatest fiscal and environmental risk facing the sector.
- b) ***Alternative guidance should be provided on the development of IWMPs,*** particularly at municipal level. A target led planning process, rather than extensive procedural, coordination and content requirements, appears to hold a greater possibility of generating compatible, high quality and locally owned IWMPs. IWMP guidelines should be reconsidered to reflect the emerging institutional framework for the sector, adopting a phased approach to the development of an “integrated” planning outcome.
- c) ***The stated policy preference for the regionalisation of solid waste services requires reconsideration and refinement.*** There is no evidence, for example, that waste collection is best conducted regionally. Similarly, while regional collaboration may be appropriate in disposal activities in some circumstances, this does not always make economic or financial sense, nor does it imply that a mandatory reassignment of

functions to a larger sphere (e.g. districts) is a sensible or effective way to achieve this end. Other options, such as regulatory or fiscal incentives for local level partnerships may be more effective.

- d) ***The MIG programmes rules should be amended*** to enable the financing of all capital assets from MIG resources, including trucks and skips.

5.2 Implementation mechanisms

Key actions required to pursue each of these components are provided in the table below.

Table 5-1: Key implementation actions

	Recommendation	Action	Capacity required	Outputs	Responsibility	Indicative Cost
Cooperative governance	Establish clear norms, standards and targets that differentiate between municipalities	Develop strategy paper on approach and proposed targets	Policy specialist	Strategy Paper	MinMEC	R150,000
		Gazette notification of targets by category of municipality	Legal expert	Notification / Regulations	Department of Environmental Affairs	R300,000
	Appointment of Waste Management Officers	Regulate and guide appointment of WMOs, including date of appointment, location, delegations of powers from provincial to national government, and powers of WMOs	Legal Specialist	Regulations at national and provincial level	MinMEC and respective spheres	R150,000
	District / Local contracting	Requirement for formal contracting between district and local municipalities	Legal expert	Regulations requiring formal contracting	Department of Environmental Affairs	R150,000
			Legal expert	Generic contract for adaptation by municipalities	Department of Environmental Affairs	R150,000
Enhancing service delivery	Clean Town Campaign	Revision of programme guidelines	Policy specialist	Revised programme guideline	MinMEC	R150,000
		Expansion of programme funding		Budget submission	Department of Environmental Affairs	R10 million
	Regulatory tools	Development of penalties and incentives	Legal expert	Regulations specifying application relative to targets and assignment of regulatory functions to WMOs	Department of Environmental Affairs	R150,000
			Regulatory specialist	Guideline on "soft regulations"	Department of Environmental Affairs	R150,000
			Policy specialist	Guidelines on citizen oversight	Department of Environmental Affairs	R150,000
	Project Development Fund	Development of strategy paper with financing options	Policy specialist	Strategy paper for consultations	MinMEC	R150,000
		Establishment of Fund	Legal expert	Fund established	Department of Environmental Affairs	R20 million
	Financial Ring-fencing of solid waste services in municipalities	Review and propose specific standards	Municipal accounting specialist	Recommendations paper	Department of Environmental Affairs	R150,000
		Negotiate standards with ASB / National Treasury	Dept / specialist	Amendments to GRAP	ASB	R50,000
		Issue guidelines on new standards	Municipal accounting specialist	Guidelines	Department of Environmental Affairs	R150,000

	Recommendation	Action	Capacity required	Outputs	Responsibility	Indicative Cost
Residual policy issues	MIG rules	Review restrictions of MIG financing of solid waste assets		Revised MIG guidelines	CGTA / Department of Environmental Affairs	-
	Review of user charges and subsidies	Development of guidelines on pricing, tariffs and subsidies	Policy specialist / economist	Guidelines	Department of Environmental Affairs	R150,000
		Pricing and Subsidy Workshops with municipalities	Specialist training team	9x provincial workshops	Department of Environmental Affairs	R350,000
		Assessment of user charge innovations in City of Tshwane	Policy specialist / economist	Assessment report	Department of Environmental Affairs	R150,000
	Regionalisation of services	Review policy preference	Policy specialist / economist	Policy paper	Department of Environmental Affairs	R150,000
	Alternative guidelines on IWMPs	Issue IWMP regulations establishing sequenced and differentiated requirements by category of municipality	Policy & legal specialists	Strategy paper on sequencing and targets	Department of Environmental Affairs	R300,000
			Legal specialist	Regulations	Department of Environmental Affairs	R150,000
		Revise and re-issue guideline clarifying outcomes focused method for planning, differentiating by category of municipality	Planning specialist	Guidelines	Department of Environmental Affairs	R150,000
		Pilot approach in three municipalities	Support to selected municipalities	Three IWMPs adopted by municipalities	Municipalities	R450,000

References

Crane, W. & Swilling, M. (2007) From LED to SLED? Local Government and the Politics of Sustainability. Briefing Number 6.

CSIR, (2009a) Addressing Challenges With Waste Service Provision In South Africa: Comparative Assessment of Existing Domestic Waste Collection Standards, Final Document, March 2009.

CSIR, (2009b) Addressing Challenges with Waste Service Provision in South Africa: National Domestic Waste Collection Standards. First Draft, June 2009

CSIR, (2009c) Addressing Challenges with Waste Service Provision in South Africa: Policy on Free Basic Refuse Removal. Draft, June 2009

DEAT (2007) Assessment of the status of waste service delivery and capacity at the local government level. Directorate: General Waste Management, August 2007, Draft 3

DWAF, (2001) Waste Generation in South Africa (Baseline study in preparation for the National Waste Management Strategy for South Africa). Department of Water Affairs and Forestry.

Engineering News, May 15, 2009. Downloaded from <http://www.engineeringnews.co.za/topic/biomass-conversion> on 9 July 2009

eThekwini Metropolitan Municipality, eThekwini Cleansing And Solid Waste Report For Executive Committee: 2006-06-12. Downloaded on 9 July 2009.

Gauteng Provincial Government (2007) General Waste Collection Standards For Gauteng, Version 3, February 2007

Krugell, W. Otto, H and Van der Merwe, J. (2009) Local Municipalities and Progress with the Delivery of Basic Services in South Africa, Economic Research Southern Africa, Working Paper 116 (<http://www.econrsa.org/wp116.html>)

Napier, M., A. Ballance and D. Macozoma (2000). Predicting the impact of home-based enterprises on health and the biophysical environment: observations from two South African settlements. Conference on Housing, Work and Development: the Role of Home Based Enterprises, University of Newcastle upon Tyne. 26-28 April 2000

National Treasury Local Government Database. Data obtained from National Treasury Database via email on request on 13 July 2009

Pritchett, L and Pande, V (2006) Making Primary Education Work for India's Rural Poor: A Proposal for Effective Decentralization. World Bank, Social Development Papers Series, Paper No. 95/ June 2006.

Statistics South Africa

2007 Community Survey data

2007/8 Annual financial indicators of municipalities (Release P9114)

Annual non-financial indicators of municipalities (Release P9115)

World Bank (2004) Making Services Work For Poor People. World Development Report, 2004. World Bank: Washington DC.

Annexure A: Key assumptions used in the MSFM for Solid Waste Services

The annexure outlines the basic assumption used in the Municipal Services Financing Model projections used in this report.

a) Economic assumptions

1. ECONOMIC GROWTH				
	2005	2010	2015	2020
Urban-Formal	3.5%	0.0%	3.5%	3.5%
Urban-Informal	1.5%	0.0%	1.5%	1.5%
Rural-Informal	1.0%	0.0%	1.0%	1.0%
Rural-Formal	2.0%	0.0%	2.0%	2.0%

b) Service assumptions

1. ACCESS TO SERVICE LEVELS IN BASE YEAR (% of Cus)						
		No or inadequate service	On-site disposal	Communal dumping sites	Communal bins	Kerbside Min
Urban-Formal	2006	2%	6%	1%	0%	34%
Urban-Informal	2006	11%	28%	5%	0%	9%
Rural-Informal	2006	20%	75%	1%	0%	1%
Rural-Formal	2006	12%	67%	5%	0%	11%
Total		11%	39%	2%	0%	48%

2. SETTING TARGETS FOR SERVICE PROVISION						
Years to reach target	8					
Method to reach target	s where s = S-curve and e = equal annual instalments					

Access to service level (% of CUs)							
		No or inadequate service	On-site disposal	Communal dumping sites	Communal bins	Kerbside low inc	Kerbside high inc
Urban-Formal	2006	2%	6%	1%	0%	56%	34%
	2014	0%	0%	0%	5%	60%	35%
	2016	0%	0%	0%	5%	57%	38%
Urban-Informal	2006	11%	28%	5%	0%	47%	9%
	2014	0%	0%	0%	50%	12%	38%
	2016	0%	0%	0%	50%	9%	41%
Rural-Informal	2006	20%	75%	1%	0%	3%	1%
	2014	0%	27%	63%	5%	4%	1%
	2016	0%	27%	63%	5%	4%	1%
Rural-Formal	2006	12%	67%	5%	0%	5%	11%
	2014	0%	25%	54%	5%	1%	15%
	2016	0%	25%	53%	5%	0%	17%

	Urban-Formal	Urban- Informal	Rural- Informal	Rural- Formal
Percentage of waste generated that is recycled	10%	0%	0%	0%

Non-residential percentage of total solid waste to landfill sites

36%

c) Cost assumptions

	On-site disposal	Communal dumping sites	Communal bins	Kerbside, low income	Kerbside, high income	Non-residential
	Operating costs for storage and collection (R per CU pm)					
Urban-Formal		10	19	37	50	200
Urban-Informal		10	24	48	65	260
Rural-Informal		10	56	112	150	600
Rural-Formal		10	37	74	100	400
<i>Average</i>		10	-	42	55	
	Amount of waste produced (kg per CU per week)					
Urban-Formal	20.0	16.7	16.7	20.0	36.0	
Urban-Informal	13.4	11.2	11.2	13.4	36.0	
Rural-Informal	11.2	9.3	9.3	11.2	30.0	
Rural-Formal	11.2	9.3	9.3	11.2	30.0	
<i>Average</i>	11.7	9.4	12.8	19.2	35.6	
	Waste disposal costs (R per ton)					
		Capital	Operating			
Urban-Formal		100.0	63.5			
Urban-Informal		100.0	63.5			
Rural-Informal		76.9	48.8			
Rural-Formal		76.9	48.8			
<i>Average</i>		94.0	59.2			
	Recycling costs (R per ton)					
	100.0					