

**ADDRESSING CHALLENGES WITH WASTE SERVICE PROVISION IN
SOUTH AFRICA**

WASTE SECTOR CHALLENGES AND VISION REPORT

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	Municipal Indigent Policy Review Report	Nhamo, G
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	Waste Sector Challenges and Vision Report	Oelofse SHH
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Executive Summary

Waste collection services backlogs are a reality in South Africa in 2009 while the objective of integrated waste management as adopted by the White Paper on Integrated Pollution and Waste Management (DEAT, 2000) and the National Waste Management Strategy (DEAT, 1999) is to improve the quality of life of all South Africans by minimising the risk that waste poses to the environment and human health. It is necessary to understand the challenges faced by the waste sector and municipalities in providing waste services, in order to address the backlogs in a sufficient and sustainable manner.

This report therefore provides some background on the national government goals and objectives for integrated waste management and highlights the key findings of the local government capacity assessment that was commissioned by DEAT in 2007. It further provides a summary of challenges faced by developing countries in the successful implementation of the internationally accepted waste management hierarchy. The similarities between studies in developing countries and the South African situation are significant.

The main challenges faced by the waste sector in meeting the goals and objectives of integrated waste management as envisaged by national policy, strategy and targets are identified as:

- Breaking the link between economic development and the environmental impacts of waste;
- Altering consumption patterns to reduce waste generation;
- Integrating waste recycling systems into the existing and future waste management systems;
- Changing behaviour to encourage waste separation at source; and
- Finding alternative waste treatment technologies to reduce the need for disposal at landfill.

The need for accurate and relevant data and information on waste volumes per waste stream is emphasised.

The report further discuss challenges experienced by municipalities in providing waste management services with increasing reports of failing waste management services in all categories of municipalities. Technology solutions to waste management problems only offer part of the solution to the provision of sustainable waste services to all South Africans. Research findings identified four broad themes of challenges faced by municipalities and these included:

- Financial management
- Equipment management
- Labour management and
- Institutional behaviour.

The challenges can be further broken down into:

- Technical waste management challenges relating to infrastructure and equipment; and
- Governance challenges relating to:
 - Political issues
 - Financial management
 - Planning
 - Capacity
 - Institutional
 - Procurement; and

- Legislation

Although all municipalities seem to be facing similar challenges, there may be slight nuances, or municipal specific problems noticed between municipalities. Identifying the root causes of the challenges in each municipality, will lead to the identification of specific interventions required to assist municipalities to overcome the challenges and improve current levels of services delivery and compliance to waste and environmental legislation.

The report also propose a vision for the waste sector not being specific about the service option to be adopted by the municipality, but providing direction as to the end result of the provision of the service.

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1 Background and Purpose

As with other municipal services, severe backlogs still remain in providing universal access to adequate municipal solid waste collection services (DEAT, 2002). Residents of core urban areas have relatively good access to refuse removal services while those in peri-urban and rural areas have limited access to formal services. The General Household Survey of 2007 (Stats SA, 2007) revealed that 39% of households, or 50% of the South African population (Fiehn & Ball, 2005), is not receiving a regular municipal waste collection service, with municipal waste collection having only improved by 2.7% between 1996 and 2001 (Fiehn & Ball, 2005).

The backlog in waste service delivery was confirmed by the assessment of the status of waste service delivery and capacity at local government level (DEAT, 2007). The distribution of the waste service backlogs per municipal category is summarised in Table 1.

Table 1: Service delivery backlogs by municipal category (DEAT, 2007)

Municipal Category	% Households with adequate waste management services	Number of households with inadequate waste management services	% of total backlog
A	89	543 821	25
B1	61	633 950	29
B2	59	272 093	13
B3	55	452 131	21
B4	20	272 093	13
Total		2 174 088	100

Non-collection of waste impacts negatively on the quality of life, the environment and human health. The main objective of the National Waste Management Strategy (NWMS) is to improve the quality of life of all South Africans by minimising the risk that waste poses to the human environment (DEAT, 1999). “Provision of waste services to all un-serviced areas, especially previously disadvantaged communities, is a priority.” (DEAT, 1999: 86). The priority initiative relating to waste collection and transportation specifically states that priority needs to be given to “establishing general waste collection services in un-serviced and poorly serviced residential areas” (DEAT, 1999: 17).

In addition, greater emphasis must be placed on implementing the internationally accepted waste management hierarchy (Sakai et al, 1996) that was adopted by the White Paper on Integrated Pollution and Waste Management (DEAT, 2000), the National Waste Management Strategy (DEAT, 1999) and converted into national goals by the Polokwane Declaration (DEAT, 2001). The waste management hierarchy as depicted in Figure 1, is aimed at preventing waste where possible, re-using, recovering and recycling to reduce waste volumes, treating the waste to render it less toxic or harmful to the environment and disposing of unavoidable waste to landfill as a last resort. The successful implementation of the waste hierarchy largely depends on its translation into policy, strategy and legislation (including municipal by-laws). However, one of the main obstacles to successful implementation appears to be the mere definition of waste and its legal interpretation by both authorities and industry (Oelofse and Godfrey, 2008a). There are currently at least two legal definitions of waste as outlined in, the Environment Conservation Act, 1989 (RSA, 1989 and the National Water Act, 1998 (RSA 1998). A third definition is soon to be enacted under the Waste Management Bill (RSA, 2007).

Cleaner Production	Prevention
	Minimisation
Recycling	Re-Use
	Recovery/Reclamation
	Composting
Treatment	Physical
	Chemical
	Destruction
Disposal	Landfill

Figure 1. Waste Management Hierarchy (Oelofse and Godfrey, 2008a)

The objectives of the National Environmental Management: Waste Bill (RSA, 2007) are amongst others to:

- minimise the consumption of natural resources,
- avoid and minimise the generation of waste, reducing, re-using, recycling and recovering waste and
- promote and effectively deliver waste services.

In terms of the South African Constitution (Act 108 of 1996), waste management service delivery is a local government function (RSA, 1996). The current status of waste management in South Africa is therefore an indication of how well municipalities succeed in performing this function (Nhamo et al, 2009). The ability of local government to recover the costs of waste service delivery is becoming increasingly compromised, especially for local authorities with a smaller revenue base. Poor households often do not have the means to pay for services while local government is responsible for the provision of waste services and thereby directly ameliorates the worst deprivations of poverty. One must consider the absolute value of investing in waste management, for example, well maintained and operational services reduce inevitable health costs and may be considered the most effective way to promoting human security and development (Oelofse et al, 2008).

The purpose of this report is therefore to identify the challenges faced by the waste sector that contributes to the waste collection services backlog and to formulate a clear vision of expected outcomes for the waste sector.

2 Methodology

This report was compiled based on a desktop study. The main methodology used was a detailed literature search and review of available research papers and reports. Additional insights emerged from personal experiences of the project team based on previous research projects relating to service delivery in South African municipalities. Both theoretical and empirical publications with in depth insights on challenges facing municipal solid waste management were reviewed. To this end the author identified a whole host of research projects that were undertaken in the recent past to identify challenges experienced with solid waste management in municipal areas of developing countries (Yhdego, 1995; Bai and Sutanto, 2002; Pokhrel and Viraraghavan, 2005; Yuan et al, 2006; Vidanaarachchi et al, 2006;

Jin et al, 2006; Henry et al, 2006; Moghadam et al, 2009; Hazra and Goel, 2009). The similarities in the reported challenges are significant.

Other focussed research reports highlighting key challenges faced by South African municipalities in solid waste management were identified and these include, amongst others:

- Background research on integrated waste management towards the National State of the Environment report (Fiehn and Ball, 2005)
- An assessment of the status of waste services delivery and capacity at local government level (DEAT, 2007)
- Unpacking governance opportunities and challenges for integrated municipal waste management in South Africa (Nhamo et al, 2009)

3 Characteristics of waste management in developing countries

There are seven general characteristics that, as a rule, are commonly associated with waste management in developing countries (Ball, 2006). The characteristics indicate some of the causes of problems associated with waste management that needs to be addressed. The seven characteristics as identified by Ball (2006) will be discussed in more detail.

3.1 Priority standing

Society has basic needs that include water, food, shelter, roads, electricity, sanitation and waste management systems. These needs have been prioritised by various people in various systems; however, waste management seldom has a priority of higher than fifth place. Consequently, waste management is usually relegated to a relatively low priority with regards to the attention it receives (Ball, 2006). This is also evident in the Integrated Development Plans of many South African municipalities, where waste management is not afforded a high priority (for example: Mbombela Local Municipality, 2007; Emalahleni Local Municipality, 2007).

3.2 Political will

Given the relatively low priority afforded to waste management, there is generally little political will to initiate improvements in waste management (Ball, 2006). This situation is also reported in the South African situation (Nhamo et al, 2009).

3.3 Lack of resources

Lack of resources in the waste management context, refer to staff, know-how, infrastructure and finances dedicated to developing and executing waste management services (Ball, 2006). This situation was also reported in the South African context (DEAT, 2007; Godfrey and Oelofse, 2008b and Nhamo et al, 2009).

3.4 Local factors

Local factors may vary significantly and thus bring about a variation in conditions, however local culture and politics are significant in determining the attitudes towards existing waste management, or the lack of it and the need for change (Ball, 2006).

3.5 Systems and information

On account of the general lack of resources allocated to waste management in many developing countries, it can be expected that there are a few, if any reliable systems in place. This leads to one of the most frustrating characteristics of waste management in developing

countries, which is a general lack of relevant or reliable information and statistics on waste (Ball, 2006). Although the national waste information system has been developed as part of the national waste management strategy Implementation project, the information and data gap in South Africa is still significant.

3.6 Unacceptable waste management practices

In many instances the objectives of waste management is not achieved because of the factors described above (Ball, 2006). Illegal dumping is common practice in many unserved areas in South Africa and only 44% of the known public and private landfills in South Africa is authorised by landfill site permits (DEAT, 2006).

3.7 Donor funding

Developed countries, touched by the unacceptable waste management practices in developing countries, often provide donor funding to improve poor practice and contribute significantly to addressing the associated problems. Sometimes, however, the donor funding is accompanied by consultants from the developed countries who promote sophisticated developed country approaches which are seldom sustainable in the long run (Ball, 2006).

4 Key findings from the local government capacity assessment

The assessment of the status of waste services delivery and capacity at local government level (DEAT, 2007) revealed that:

- The waste services function is often not accounted for in small rural towns;
- Staffing is often skewed towards labourers with little middle and top management in rural areas;
- There is a shift towards outsourcing of the recycling function to small community contractors;
- A total of 87% of municipalities do not have capacity or infrastructure to pursue waste minimisation;
- More than 80% of municipalities are initiating recycling but projects are struggling due to a lack of capacity;
- Metros and secondary municipalities provide the highest percentage of weekly collection services within their areas of jurisdiction; and
- Metros and secondary municipalities have to deal with 54% of the national waste management services backlogs.

5 Challenges

The challenges that have to be overcome to address the waste services backlogs and to successfully implement the waste management hierarchy are common amongst developing countries and include issues of:

- Increasing quantities of waste (Yhdego, 1995; Bai and Sutanto, 2002; Yuan et al, 2006; Henry et al, 2006; Moghadam et al, 2009)
- Financing and charges for waste services (Yhdego, 1995; Bai and Sutanto, 2002; Vidanaarachchi et al, 2006; Yuan et al, 2006; Jin et al, 2006; Moghadam et al, 2009; Hazra and Goel, 2009; Oelofse and Godfrey, 2008b; Nhamo et al, 2009)
- Institutional issues (Yhdego, 1995; Vidanaarachchi et al, 2006; Oelofse and Godfrey, 2008b; Nhamo, et al, 2009)

- Political commitment (Yhdego, 1995; Vidanaarachchi et al, 2006; Henry et al, 2006 ; Nhamo et al, 2009)
- Data and information (Pokhrel and Viraraghavan, 2005; Vidanaarachchi et al, 2006)
- Separation at source (Pokhrel and Viraraghavan, 2005; Yuan et al, 2006; Vidanaarachchi et al, 2006 ; Jin et al, 2006; Moghadam et al, 2009 ; Hazra and Goel, 2009)
- Scavenging at landfills (Yhdego, 1995; Henry et al, 2006; Yuan et al, 2006)
- Lack of land for additional landfills (Yuan et al, 2006; Jin et al, 2006)
- Ineffective collection systems and fleet management (Yuan et al 2006; Vidanaarachchi et al, 2006; Jin et al, 2006; Moghadam et al, 2009 ; Hazra and Goal, 2009)
- The role of the private sector in providing waste management services (Yhdego, 1995; Pokhrel and Viraraghavan, 2005)
- Legislation and Enforcement (Yhdego, 1995; Pokhrel and Viraraghavan, 2005; Vidanaarachchi et al, 2006; Jin et al, 2006; Moghadam et al, 2009; Nhamo et al, 2009)
- Illegal dumping and littering (Pokhrel and Viraraghavan, 2005; Vidanaarachchi et al, 2006; Henry, et al, 2006; Hazra and Goel, 2009)
- Education and awareness (Yhdego, 1995; Vidanaarachchi et al, 2006; Jin et al; 2006; Moghadam et al, 2009)
- Labour and poor working conditions (Hazra and Goel, 2009)
- Waste minimisation (Bai, and Sutanto, 2002; Vidanaarachchi et al, 2006; Jin et al, 2006 ; Henry et al, 2006)
- New waste streams from new products and processes (Bai and Sutanto, 2002)

The challenges facing the waste management sector, that includes municipal waste management departments, are universal (Coetzee, 2006). This observation is supported by global population growth, funding, resource and land scarcity factors that directly influence the level of and the need for waste minimisation as part of waste management (Coetzee, 2006). These challenges also increase the need for improved environmental management and increased resource protection, at an integrated level. Collectively, this requires constant innovation in terms of waste management technology, waste minimisation approaches and resource management to keep the costs (direct or indirect) to society, to service providers and the impacts on the environment in balance with the need for sustainable development (Coetzee, 2006).

5.1 Waste management sector challenges

The Polokwane Declaration (DEAT, 2001) sets ambitious goals for the minimisation of waste and the reduction of waste disposal to landfill (stabilisation of waste generation and a 50% reduction in disposal by 2012 and a plan for zero waste by 2022). Meeting these goals is a huge challenge in itself as is clearly illustrated in Figure 2. A conservative growth rate of between 2% and 3 % were taken (compared to the 6% economic growth rate set out in ASGISA (DPLG, 2007)). The 2005 recorded recycling and composting quantities were taken into account in determining realistic and optimistic waste reduction as illustrated. It is thus unlikely that waste disposal to landfill will realistically be reduced to below 15 million tons per annum (Fiehn and Ball, 2005).

The challenges faced by the waste sector can therefore be summarised as:

- Breaking the link between economic development and the environmental impacts of waste;
- Altering consumption patterns to reduce waste generation;
- Integrating waste recycling systems into the existing and future waste management systems
- Changing behaviour to encourage waste separation at source; and

- Finding alternative waste treatment technologies to reduce the need for disposal at landfill.

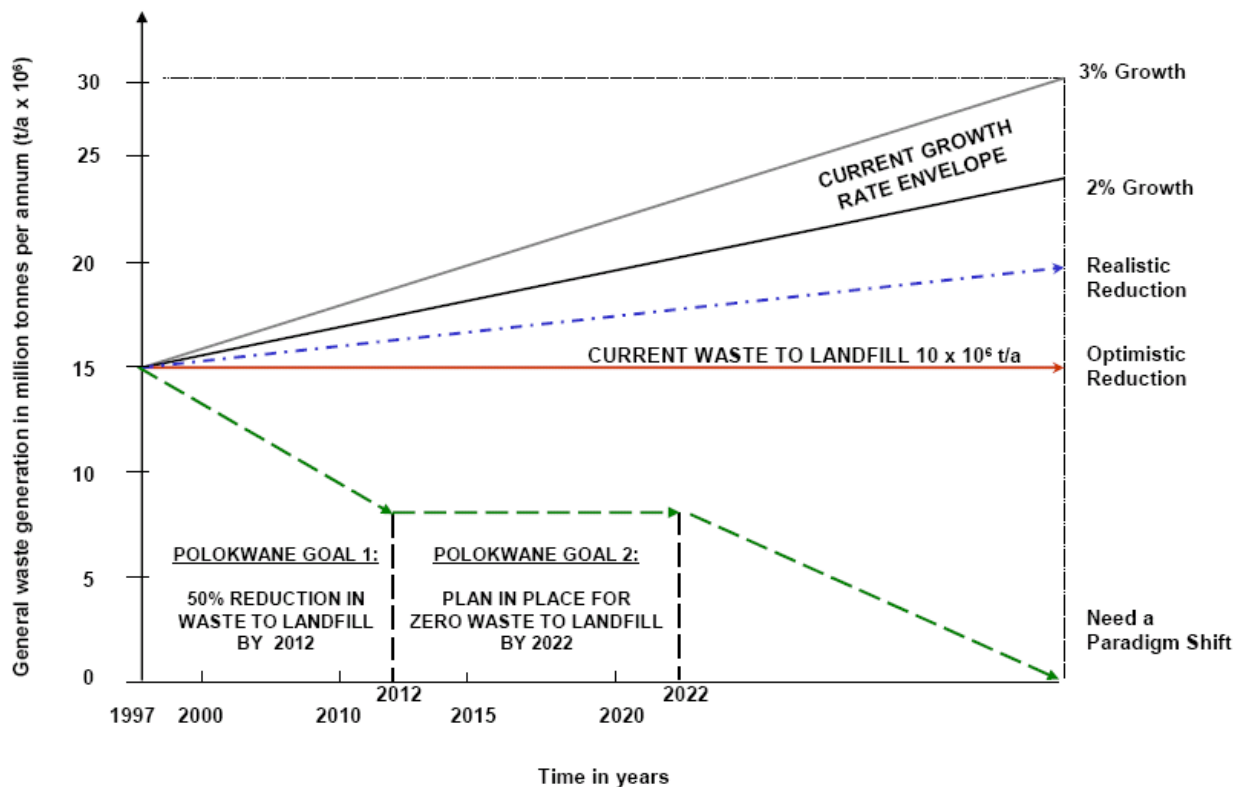


Figure 2: Generalised waste generation trends and the Polokwane Declaration goals (Fiehn and Ball, 2005).

In order to address these challenges there is a need for accurate and relevant data and information on volumes and types of waste generated

5.2 Challenges faced by municipalities in South Africa

Municipalities in South Africa are known to face challenges such as insufficient budget, capacity and equipment (DEAT, 2007; Godfrey and Oelofse, 2008; Oelofse and Godfrey, 2008b; Nhamo et al, 2009).

The main challenges can be summarised as:

- Financial Capacity relating to:
 - Revenue arrangements and budgets;
 - Capex funding ;
 - Tariffs and rates collection; and
 - Free basic services.
- Institutional Capacity relating to:
 - Institutional structure; and
 - Integrated Waste Management planning.
- Technical Capacity relating to:
 - Cleansing;

- Waste minimisation;
- Waste collection;
- Waste transportation; and
- Waste disposal.

- Support from national and provincial government to municipalities.

The research by Godfrey and Oelofse (2008) revealed that the challenges summarised above manifest within municipalities as ineffective utilisation of municipal resources (financial, equipment, capacity); non-compliance with environmental legislation; no or poor levels of service delivery; and potential environmental and human health impacts. These broad challenges were found to contain further primary, secondary, etc. root causes, both internal and external to municipalities (Godfrey and Oelofse, 2008). Insufficient budget for example could be related back to (Oelofse and Godfrey, 2008):

- Capping of municipal budgets (year on year growth) by National Treasury;
- Ineffective cost recovery for disposal at landfills (many municipalities do not charge for disposal to landfill, due to a lack of capacity or fear of increased illegal dumping);
- Delays in finalising municipal budgets (up to three months delays were reported);
- Theft of infrastructure, e.g. fencing around landfill sites increasing opportunity costs; and
- Reducing operational waste budgets by senior managers (without consulting those whose functions are impacted by the changes).

Further research (Nhamo et al, 2009) revealed that the challenges faced by municipalities can be categorised into 1) technical challenges and 2) governance challenges. The main technical challenges relate to reliability of equipment, provision of required infrastructure and vandalism of equipment. The root causes of these challenges could however be embedded in governance challenges (Nhamo et al, 2009).

The main governance challenges that emerged from the research (Nhamo et al, 2009) include:

5.2.1 *Political challenges*

Political challenges manifest as low priority afforded to waste management in municipalities. This has direct implications in terms of budget allocations and long term planning. Budget allocations are informed by political agendas and priorities. The term of office of a political appointee is at best five years between elections and therefore long term planning at municipal level is problematic (Nhamo et al, 2009).

5.2.2 *Financial challenges*

Perhaps the most potent argument for the non-payment for municipal services is widespread poverty and high costs to the poor of municipal services (CASE, 2003).

Lack of finances to perform waste management services does not necessarily indicate a shortage of financial resources within a municipality as a whole. Access to and allocations of available financial resources are more important aspects requiring attention in municipalities. The expressed need for guidelines on how to access available funding sources is a clear indication in this respect (Nhamo et al, 2009).

Waste management services have the potential to earn valuable revenue for the municipality. If managed effectively, waste management services can become self sufficient (Nhamo et al, 2009). A major draw back in this respect is the lack of full cost accounting for waste management services and therefore the income potential of the waste services are not realised. Municipalities are faced with financial constraints outside of their control, but have to act on those issues over which they have control (Nhamo, et al, 2009).

5.2.3 *Planning*

Lack of infrastructure and equipment as well as large service backlogs are symptoms of inadequate planning at municipal level (Nhamo, et al, 2009). The process of realigning municipal operations with the increasing demands and expectations on service delivery is complicated by poor planning (Oelofse, et al, 2008). A survey in 2005 highlighted that only 61.5% of local municipalities had completed integrated waste management plans at the time (Godfrey and Dambuza, 2006). Integrated planning creates the opportunity to influence town planning decisions to also cater for waste management services on equal level as water and sanitation services.

The absence of appropriate and audited data may be one of the root causes of this problem. Accurate data is required to proactively determine the need for additional infrastructure and equipment to deliver much needed services. An understanding of the demographic characteristics of communities within a local authority is vital for delivery of accessible, affordable, relevant, acceptable and effective waste collection services (Poswa, 2004).

International experience has shown that citizen and community participation is an essential part of integrated planning and effective governance at local level. One way to achieve citizen participation is through the establishment of structured and institutionalised frameworks for participatory local governance. This principle has been recognised in South Africa and adopted by local government, however, many community initiatives are still scattered and sporadic (Oelofse et al, 2008).

5.2.4 *Capacity*

Capacity issues can be grouped into three clusters (Nhamo et al, 2009):

- Skills/training
- Awareness creation and
- Human resources/recruitment

Identified skills shortages can be rectified through training initiatives as well as alternative options including: mentoring and coaching programmes, internship programmes and on the job training. Awareness creation programmes should target politicians, councillors, and municipal staff and community members. Payment for waste management services will likely improve with increased awareness (Nhamo et al, 2008).

Appointment of key personnel to top managerial posts has been slow and some allegations are levelled against practices where unqualified or inexperienced people are appointed to key positions (Nhamo, et al, 2009). The lack of qualified engineers in many local municipalities is a case in point.

5.2.5 *Institutional*

Administrative arrangements in municipalities are variable and not all municipalities have dedicated sections dealing with waste management. Service delivery often suffers as a result of inadequate coordination between different departments. The result of institutional issues are delays in decision making, lack of accountability by municipal officials and the lack of public private partnerships in waste service delivery (Nhamo et al, 2009).

5.2.6 *Procurement*

A general lack of understanding of procurement processes at municipal level is of grave concern. This manifest in municipalities providing services which could be

outsourced with benefits to the municipality and the community (Nhamo, et al, 2009). Outsourcing could augment skills and staff shortages and release the pressure on already stressed municipalities. In addition, outsourcing could contribute to job creation in the community assisting in poverty alleviation.

5.2.7 Legislation

By-laws are essential tools for municipalities to control what is happening in their areas of jurisdiction. A total lack of by-laws or when enforcement of by-laws are lacking, often result in illegal dumping (Nhamo et al, 2009). A municipality then has to find equipment and finances to clean the illegal dumping.

5.3 Challenges requiring urgent attention

The DEAT assessment (DEAT, 2007) identified the following challenges as requiring urgent attention:

- Budget restrictions;
- Imbalances between income and expenditure;
- Funding for non-income generating and zero-rated tariff services;
- Illegal dumping;
- Basic service backlogs;
- Insufficient public awareness;
- Unsatisfactory levels of recycling;
- Lack of effective/enforced by-laws; and
- Supply chain management systems and contract management

6 Vision

The proposed vision of the waste sector is:

To develop, implement and maintain an integrated waste management system which contributes to sustainable development and a measurable improvement in the quality of life of all people including the poor. This will be achieved through:

- The provisioning of appropriate waste collection services to all households in urban areas and dense settlements;
- The provision of free basic waste collection services to households identified as indigent;
- The formulation of national waste collection standards;
- The provision of user friendly, practical guidelines and assistance for safe waste disposal in all areas not classified as dense settlements or urban areas;
- The development of a Waste Sector Plan for addressing backlogs in waste service delivery; and
- Adopting a continuous improvement approach to waste collection services in South Africa that incorporates the ‘Plan-Do-Check-Act’ fundamentals.

7 Concluding remarks

Problems faced by the waste sector in South Africa are universal and relates to global population growth, funding, resource and land scarcity factors that directly influence the level of and need for waste minimisation as part of waste management. At an integrated level, these challenges also increase the need for improved environmental management and resource

protection. Collectively, this requires constant innovation in terms of waste management technology, waste minimisation approaches and resource management to keep costs to society, to service providers and the impacts on the environment in balance with the need for sustainable development (Coetzee, 2006).

The challenges faced by the waste sector can therefore be summarised as:

- Breaking the link between economic development and the environmental impacts of waste;
- Altering consumption patterns to reduce waste generation;
- Integrating waste recycling systems into the existing and future waste management systems
- Changing behaviour to encourage waste separation at source; and
- Finding alternative waste treatment technologies to reduce the need for disposal at landfill.

The challenges faced by municipalities are complex and interrelated. The root causes of the challenges are both internal and external to the municipalities (Godfrey and Oelofse, 2008). Identifying the root causes of the challenges in each municipality, will lead to the identification of specific interventions required to assist municipalities to overcome the challenges and improve current levels of services delivery and compliance to waste and environmental legislation (Godfrey and Oelofse, 2008).

One key aspect to the success of waste service delivery at municipal level is community involvement and participation in the planning and design of the waste service. This approach will contribute towards waste management services to the community by the community including creating much needed job opportunities, raising awareness and meeting the demands of the community (Oelofse et al, 2008).

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