

# Environmental Management and Local Government

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# 1 Introduction

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Environmental governance is a complicated arena in South Africa, partly due to a fragmented and evolving legislative framework and a lack of clarity in the division of roles and responsibilities across the three spheres of government. Nevertheless, the dependence of the economy and human health and wellbeing on sustainable management of environmental resources, as well as the intrinsic value of natural resources, requires local government to support effective environmental governance.

There is no question that local government plays a vital part in the protection of the environment, although this is often not acknowledged or given the emphasis that it should be given. Whilst the Constitution provides our citizens with a far-sighted environmental right it fails to provide a clear role for local government in ensuring this right is fulfilled. In addition, national and provincial government are committed to wide-ranging goals for management and protection of the environment and for 'sustainable development', many of which will require action and implementation at the local level. Pressures to deliver vital services and to enhance opportunities for development at the local level are also sometimes seen as conflicting with custodianship of the environment. As a result, the environment is often seen as a confusing, complex and low priority area for local government and, as a result, performance of many municipalities in fulfilling their mandates in this area tends to be poor.

The purpose of this paper is to provide information and guidance to municipal officials, and others interested in the environmental field, on several key points that relate to the environment:

- What is the 'environment' and why is its management and protection important? How does it relate to the oft-quoted term 'sustainable development'?
- How does environmental governance work in South Africa – and what is the role of local government?
- How is environmental governance changing – what are the major trends local government should be aware of?
- What are the challenges to local government in fulfilling their environmental mandate – and what is the situation in practice in relation to the performance of this sphere of government?
- How can municipalities improve their performance in the face of other pressures and mandates? What are the principles that can be applied to improve performance – and what are the 'quick wins' that can be achieved.

## 2 Definition of the Environment<sup>2</sup>

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*"I came to understand that when the environment is destroyed, plundered or mismanaged, we undermine our quality of life and that of future generations"*

Wangari, Maathai 2005

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<sup>2</sup> Note: much of the information contained in this section was taken from the South African Environment Outlook (SAEO) – A report on the state of the environment. Published by DEAT in 2006

## 2.1 Legislated definition of the environment

The environment can be defined in many ways. . Albert Einstein said "The environment is everything that isn't me." A definition has been provided in South African legislation of the environment as:

- "...the surroundings within which humans exist and that are made up of –*
- i) the land, water and atmosphere of the earth;*
  - ii) micro-organisms, plant and animal life;*
  - iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and*
  - iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being"*

National Environmental Management Act, 1998

## 2.2 The importance of the environment and the pressures currently exerted upon it

*"South Africa's 46.9 million people require food, water shelter, sanitation, clothing, energy, transport, education, employment and provision for the future. These needs largely derive from or depend upon our environment"*

South African Environment Outlook, 2006

South Africa relies heavily on renewable and non-renewable natural resources and on the goods and services that ecosystems provide. The environment is essential for human survival, well-being, cultural diversity and economic prosperity. Environmental goods and services are the benefits that people derive from nature and they include air, water, food and other basics such as medicines and fuel wood. These services are essential for human livelihoods and well-being and are particularly significant in rural areas and for the informal sector, where the dependence of people on the natural resource base is more direct (SAEO, 2006).

Some examples of the dependence of South Africans on the environment are described below (SAEO, 2006):

- *South Africa's natural renewable water resource provides 1 156m<sup>3</sup> of water per capita per annum*
- *Biomass (wood, other plant materials) supplies 2.51 tonnes of oil equivalent per capita*
- *Rural South Africans depend on natural water supply from rivers and other sources, biofuels (trees, shrubs, cow dung) for cooking and heating, and marine and coastal resources and wild terrestrial plant and animal products for food and medicines.*
- *The environment provides substantial 'non-material' benefits, including recreational opportunities and aesthetic, cultural and spiritual value.*
- *Wildlife and ecotourism play a large role in the country's economy. In 2000, the revenue from nature-based tourism in South Africa was \$US1 436 million*
- *Many other important functions are provided by ecosystems living in and on the land. For example, climate regulation, water supply and regulation, erosion control, soil formation, food production, production of raw materials and so on.*

Whilst the environment provides people with important goods and services, people and society as a whole have impacts on the environment and create 'pressures' which can

lead to environmental change. In South Africa, a number of factors affect the condition of the environment, the most important of which are *population size and structure* and *economic development* (SAEO, 2006).

Natural population growth and urbanization have increased pressure on land, air, water and energy resources. Deteriorating environmental quality, characterised by land degradation, poor water quality, and poor air quality, has negative impacts on the health of many South Africans. It is also important to note that high levels of poverty and unemployment in South Africa contribute to a heavy reliance on natural resources whilst also making people and communities much more vulnerable to environmental change.

The economy of South Africa also has profound impacts on the environment. Whilst it is undergoing a transition from a primary-based economy to a tertiary one focused on manufacturing and financial services, primary sector activities like mining, agriculture and forestry still contribute substantially to environmental degradation. Economic growth, while crucial for the development of the country, has a consequent increase in demand for resources that results in unsustainable levels of consumption, particularly of energy and water, and has increased the generation of wastes and pollutants. In addition, the increased demand for housing, particularly in peri-urban areas, has seen the conversion of a significant expanse of natural areas into urbanized spaces across the country.

### **2.3 The link to 'sustainable development'**

*"The state of our environment will determine the level of our prosperity now and for future generations. As we strive to address social equity and economic development in the years to come, our ability to improve the state of the environment and secure environmental sustainability will shape our future"*

Martinus van Schalkwyk, Minister of Environmental Affairs and Tourism (SAEO, 2006)

The challenge posed by the above situation is expressed through the notion of sustainable development. South Africa, like other developing countries, is faced with the task of promoting economic development that meets the needs of its population, while ensuring that the environmental systems and services on which people rely are not seriously damaged or destroyed.

Sustainable development was originally defined in 1987 as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs"<sup>3</sup>. The *National Strategy for Sustainable Development* (NSSD, 2010) expands on this concept of sustainable development as follows:

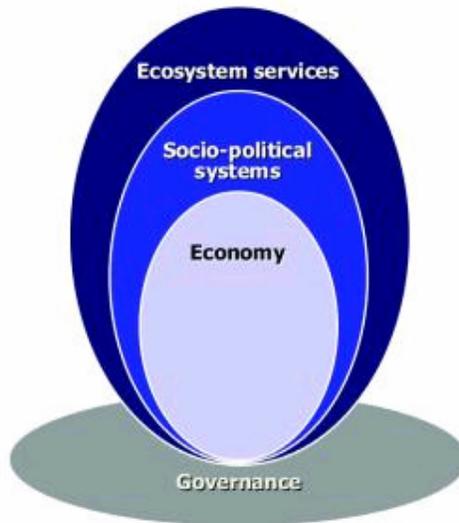
"Although definitions vary, an internationally accepted definition emphasizes the need for a long term planning horizon, and the adoption of a development path that improves the quality of life of current generations, while leaving future generations with at least the same capacity and options for development; the importance of enhancing horizontal linkages and promoting co-ordination across sectors, and in particular for recognizing synergies and tensions across sectors; the importance of vertical spatial linkages, so that local, provincial, national and global development efforts and governance are mutually supportive; and the role of partnership between government, business, non-government and community and voluntary organizations."

The NSSD states "In the first instance, sustainability (or a sustainable society) is seen as the overall goal of the NSSD, while sustainable development is the process by which we move towards that goal. Further, sustainability in this context, implies ecological

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<sup>3</sup> Defined in a report by the Brundtland Commission in 1987 entitled *Our Common Future*.

sustainability, which recognises firstly, that the maintenance of healthy ecosystems and natural resources are preconditions for human wellbeing, and secondly, that there are limits to the goods and services which they can provide. In other words, *ecological sustainability acknowledges that human beings are part of nature and not separate from it*. Sustainable development, then, implies the selection and implementation of a development option which allows for the achievement of appropriate and justifiable social and economic goals (based on meeting basic needs and equity) without compromising the natural system on which it is based." The NSSD represents this concept as shown below:



In June 2008 the *National Framework on Sustainable Development* (NFSD) was adopted by the Cabinet. The NFSD gives South Africa's vision of a sustainable society as: "South Africa aspires to be a sustainable, economically prosperous and self-reliant nation state that safeguards its democracy by meeting the fundamental human needs of its people, by managing its limited ecological resources responsibly for current and future generations, and by advancing efficient and effective integrated planning and governance through national, regional and global collaboration."

The concept of sustainable development has been integrated into many elements of governance in South Africa. For example:

- National government has committed to achieving the *Millennium Development Goals* (one of which relates to environmental sustainability).
- Sustainable development is a powerful theme throughout the Constitution and underpins all *environmental management legislation* developed since 1994.

Importantly, the Constitution and legislation places an obligation on local government to provide services in an environmentally sustainable manner.

- Local government has a duty to protect the 'environmental rights' of its citizens. The *Municipal Systems Act* states "The Constitution of South Africa envisages a robust local government system, which can provide democratic and accountable government for local communities; ensure the provision of services to communities in a sustainable manner; promote social and economic development; promote a safe and healthy living environment; and encourage

the involvement of communities and community organisations in the matters of local government.”

### 3 Constitutional and Legislative Framework

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When trying to understand the role of local government in managing and protecting the environment, the first place to start is with the Constitutional and legislative framework for both the environment and local government.

However, the difficulties faced by many municipalities when trying to identify their mandate for the environment stem specifically from the lack of clarity and guidance on this matter within the Constitution, local government legislation and environmental legislation. This confusion is well accepted but little has been done to try to unravel the complexities of environmental governance as they relate to local government.

Therefore, this section sets out to provide an interpretation of the environmental management role of local government– one which is designed to be practical and to provide municipalities with a basic understanding of the legislative and constitutional basis upon which they should be acting in relation to the environment.

#### 3.1 Constitution and the Bill of Rights

The starting point for understanding environmental governance is the Constitution and the Bill of Rights contained within the Constitution.

South Africa, along with more than 100 countries, includes an ‘environmental right’ in its Constitution. This environmental right is stated within section 24 of the Constitution:

*Everyone has the right*

- (a) to an environment that is not harmful to their health or well-being; and*
- (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that
  - i. prevent pollution and ecological degradation;*
  - ii. promote conservation; and*
  - iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.**

Section 24 of the Bill of Rights

All organs of state are required to take legislative and other measures to give effect to this environmental right.

In addition to the environmental right, the Constitution contains a number of objects of local government. Two of these objects, highlighted below, relate specifically to the role of local government in achieving sustainable development:

- a) to provide democratic and accountable government for local communities*
- b) to ensure the provision of services to communities in a sustainable manner**
- c) to promote social and economic development*
- d) to promote a safe and healthy environment**
- e) to encourage the involvement of communities and community organisations in matters of local government*

*Under section 152 (2) a municipality must strive, within its financial and administrative capacity, to achieve the objects above.*

Section 152 (1) of the Constitution: Objects of Local Government

It is important to note that the Municipal Systems Act reinforces the above when it spells out the rights and duties of municipal councils. It states that these include *inter alia* that the municipality (having regards to practical considerations) has the duty to strive to ensure that the municipal services are provided in an environmentally sustainable manner. Municipalities must also promote a safe and healthy environment. This role is reiterated in the section dealing with the executive and legislative authority of the municipality.

The South African Human Rights Commission has interpreted the above to mean that:

*"The Constitution further places an obligation in terms of section 152 (1)(b) and (d) on the part of local government as stipulated in sections 4(2)(d)3 and 4(2)(i), 4 73(1) and (2) of the Municipal Systems Act 32 of 2000 to ensure that the right to a clean and healthy environment is fulfilled."<sup>4</sup>*

So, it is clear that within these two sections of the Constitution, reinforced by the Municipal Systems Act and the Municipal Structures Act, local government has been given obligations to sustainable development and to the protection of the environment. This obligation is difficult to define in detail – but is present and provides a broad but strong mandate for local government to act to protect the environment.

### **3.2 Scheduled Functions of Local Government**

The Constitution also contains two schedules (Schedule 4 and 5) which allocate powers and functions across the three spheres of government. These schedules include a set of 'local government matters' – which are the various functional areas for which local government has responsibility.

It is important to note several characteristics of these schedules before attempting to understand how responsibility for the environment has been distributed:

- These schedules were drafted at the time of writing the Constitution and thus pre-date the on-going process of national environmental legislative reform which started with the National Environmental Management Act in 1998
- The schedules use terms, some of which are now outdated and have not been used in the updated environmental legislation – making it difficult to understand the 'fit' between schedules and relevant legislated arrangements (for example, the term 'refuse dumps' does not appear in national legislation)
- No definition of terms was provided. Thus makes interpreting the detailed composition of scheduled functions at times very difficult.

Despite the above it is possible to identify some clear allocation of roles and responsibilities. Overall responsibility for the environment was made a concurrent function of national and provincial government as were two elements of environmental management (*pollution control* and *nature conservation*). In addition a number of other functions which are clearly environmental in their nature were given to local government. These include:

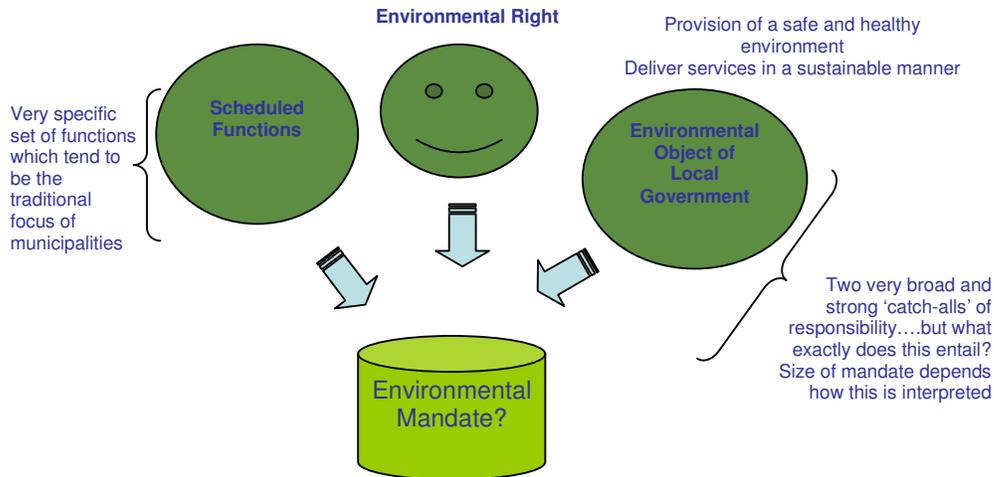
- *Air Pollution (Schedule 4B)*

<sup>4</sup> Environmental Rights Period April 2000 – March 2002. Downloaded from [http://www.sahrc.org.za/old\\_website/4th\\_esr\\_chap\\_8.pdf](http://www.sahrc.org.za/old_website/4th_esr_chap_8.pdf)

- *Noise Pollution (Schedule 5B)*
- *Refuse removal, refuse dumps and solid waste*
- *Cleansing*

These functions are related primarily to the 'brown' element of the environment i.e. to the management of settlements and of the pollution and waste impacts of people on the environment.

So, at this stage it is possible to identify three components of the 'environmental mandate' of local government which are without dispute.



**Figure 2. The core components of the 'environmental mandate' for local government**

However, the difficulty at this point is to understand what this means in practice for municipalities and how other scheduled functions and responsibilities within legislation relate to this basic mandate.

### **3.2.1 Provision of services in a sustainable manner**

The first consideration for local authorities should be the requirement in the Constitution and Municipal Systems Act to provide services in a sustainable manner. This means in essence that everything that a municipality does must be done in a manner which promotes the attainment of the environmental right.

Because there are no definitions for the scheduled functions, it is difficult to understand the detailed activities required for each functions to be carried out by a municipality. The sectoral legislation is beginning to provide increasing clarity on this matter and is discussed in more detail below, although it does not completely clarify the situation.

A particular example arises under the schedules which relate to the management of types of 'spaces' within a municipal area. For example:

- *Beaches and amusement facilities*
- *Local amenities*
- *Municipal parks and recreation*
- *Public places*

Because of a lack of definition for each, it is not immediately clear whether these functions should have an environmental component or not. This is open to interpretation and is of vital importance for the management and protection of the 'green' environmental issues (such as biodiversity, soil conservation, water quality protection) at the local level. Without agreement on what these functions entail, it remains unclear as to whether there is a recognised role for local government in the management of open spaces for biodiversity and other environmental benefits.

It is clear that some municipalities (particularly Metros) do carry out important biodiversity management activities, establish and maintain local nature reserves and so on. However, it is unclear whether they see this as part of a specific scheduled function or a broader responsibility for the environment provided by the environmental right or the environmental object of local government.

Given the responsibilities of local government in meeting the Constitutional environmental right it is argued here that the specific municipal responsibilities for the management of open spaces, settlement planning and design (as per the functions listed above) – *must* be carried out with the broader environmental right in mind in. This can also be said of the function of 'municipal planning' and a range of other municipal functions.

In addition to the over-arching responsibility, two recent pieces of legislation pertaining to biodiversity and conservation (the NEM: Protected Areas Act and the NEM: Biodiversity Act) see clear roles and responsibilities for local government in this area and contain specific obligations for municipalities (see Table 1 below for an overview of these responsibilities).

### **3.2.2 District and local municipality responsibilities**

In terms of local government legislation, the Municipal Structures Act No. 117 of 1998, as amended, assigns responsibility for scheduled functions between the tiers of local government. Section 84 of this Act specifies those functions and powers which are vested specifically with *District Municipalities* (and are thus excluded from the functions and powers of local municipalities). In terms of the 'environmental cluster' of functions identified so far in this chapter, this has the following implication:

District municipalities (Category C) are responsible for solid waste disposal sites, in so far as it relates to-

- the determination of a waste disposal strategy;
- the regulation of waste disposal;
- the establishment, operation and control of waste disposal sites, bulk waste transfer facilities and waste disposal facilities for more than one local municipality

Local municipalities (Category B) are responsible for all environmental functions not assigned to districts.

Metropolitan municipalities are assigned all environmental functions.

This approach to sharing responsibility between districts and local municipalities has been somewhat contradicted by the Air Quality Act (2004), which came into full effect in 2010, in that this Act provides for district municipalities to take responsibility for air quality regulation.

To conclude, it is important to reiterate, however, that *everything* the municipality does, regardless of its category, must be done in a manner that promotes the

attainment of the environmental right. Its obligations in rendering services must be done in an environmentally sustainable manner.

### 3.3 Environmental Policy and Legislation

Within the context of the Constitutional mandate, specific environmental sectoral legislation is then applied and adds detail in terms of the roles and responsibilities of local government. At this point, it should be noted that there was a concerted effort within the environmental legislative reform process to decentralize and delegate environmental management functions to the lowest possible level, as called for under Agenda 21<sup>5</sup>.

Within this document, it is not possible to provide the details of local government responsibility as contained in all pieces of environmental legislation. However, it is possible to identify some key areas of responsibility for local government and to highlight trends in the environmental governance approach in South Africa that have implications for the role of local government. Key pieces of national legislation and policy that have an impact on the local government mandate include:

- *National Environmental Management Act No. 107 of 1998 (and various amendments to this Act): establishes the concepts of participatory, cooperative and developmental environmental governance and provides for structures to facilitate these; deals with compliance and enforcement and provides for Environmental Management Inspectors (EMIs); deals with environmental impact assessment and provides other tools such as strategic environmental assessment*
- *National Environmental Management: Protected Areas Act (no. 57 of 2003) and Protected Areas Amendment Act (2004) provides for the protection and management of ecologically valuable areas*
- *National Environmental Management: Biodiversity Act (No. 10 of 2004) sets out mechanisms for managing and conserving biodiversity; protecting species and ecosystems; the sustainable use of indigenous biological resources; access to and sharing of the benefits arising from the use of biological resources, as well as bio-prospecting*
- *National Environmental Management: Air Quality Act (No. 39 of 2004) provides the basis for setting ambient air quality and emission standards*

*Two other important pieces of legislation are:*

- *National Environmental Management: Integrated Coastal Management Act (No. 24 of 2008) provides for the sustainable development of the coastal environment*
- *National Environmental Management: Waste Act (No. 59 of 2008) provides for waste management monitoring, management and control by all spheres of government.*

Although there is on-going revision of the legislative framework much of the large scale reform of national legislation is complete and the legislation above is the key framework legislation for the environment. Table 1 provides a very brief summary of the implications of this legislation for local government.

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<sup>5</sup> Agenda 21 is a comprehensive plan of action to be taken globally, nationally and locally by organizations of the United Nations System, Governments, and Major Groups in every area in which human impacts on the environment. (<http://www.un.org/esa/dsd/agenda21/>).

**Table 1. Implications of recent National Environmental Management legislation for local government.**

<b>Legislation</b>	<b>Overview of implications for Local Government</b>
<p>National Environmental Management: Protected Areas Act, No. 57 of 2003</p>	<ul style="list-style-type: none"> <li>• By-laws: existing and future by-laws should be consistent with the Act or any Notice/regulation issued in terms of the Act</li> <li>• Protected area managed by a municipality will continue to be regulated by provincial legislation</li> <li>• Municipalities will have to develop and manage local protected areas according to Norms and Standards determined by the Minister – and report to the Minister on indicators of compliance with these</li> <li>• Municipalities may have areas under their jurisdiction declared as: special nature reserves, national parks, nature reserves, wilderness areas, protected environments. Before the Minister or an MEC declares such an area he/she must first consult with the municipality (and community – if the land is held in trust on behalf of a community) in which it is situated.</li> <li>• Minister or MEC may assign responsibility for management of such an area to the municipality (which is then known as the 'management authority' for the area). This assignment can only be carried out with agreement from the municipality. Responsibilities of a 'management authority' include drafting of management plan for the area.</li> </ul>
<p>National Environmental Management: Biodiversity Act No. 10 of 2004</p>	<ul style="list-style-type: none"> <li>• By-laws: existing and future by-laws should be consistent with the Act or any Notice/regulation issued in terms of the Act</li> <li>• Municipalities who have duties to manage biodiversity will have to comply with Norms and Standards set by the Minister (and these may differ from municipality to municipality and for different categories of biodiversity)</li> <li>• Municipalities may have state land and/or private land under their jurisdiction declared as national botanical gardens</li> <li>• If municipalities draft environmental conservation plans, these must make reference to norms and standards set out in the National Biodiversity Framework</li> <li>• A municipality may draft a biodiversity management plan for approval by the Minister and the Minister may enter into an agreement with the municipality for the implementation of the plan.</li> <li>• Municipal IDPs must be aligned with the National Biodiversity Framework and any applicable bio-regional plan. SANBI will provide advice to municipalities on how to align their plans.</li> <li>• In drafting IDPs, municipalities must take into account threatened ecosystems that are listed by the Minister or MEC in terms of the Act</li> <li>• A municipality may be designated as a competent authority for the control of alien and invasive species and if so, will have to carry out relevant provisions within the Act such as permitting etc.</li> <li>• If a municipality is a management authority of a protected area, it must have a management plan for invasive species control and eradication and submit an invasive species status report to the Minister or MEC.</li> <li>• Municipalities must include invasive species monitoring, control and eradication plans into their IDPs.</li> <li>• A municipality may be designated as an issuing authority for the administration of permits in terms of the Act</li> </ul>

<b>Legislation</b>	<b>Overview of implications for Local Government</b>
<p>National Environmental Management: Air Quality Act No. 39 of 2004</p>	<ul style="list-style-type: none"> <li>• By-laws: existing and future by-laws should be consistent with the Act or any Notice/regulation issued in terms of the Act</li> <li>• Municipalities are bound by the National Air Quality Management Framework and must adhere to it when carrying out their responsibilities</li> <li>• Municipalities must comply with national standards in monitoring atmospheric emissions and their performance in implementation will be monitored by provinces</li> <li>• Municipalities may draft bylaws, identify substances or mixtures in the ambient air that may present a threat to health or the environment and set local emission standards for these (which may not be lower than national or provincial standards)</li> <li>• Each municipality must designate an air quality officer who must coordinate air quality management matters within the national framework</li> <li>• Municipalities must include an air quality management plan in their IDPs</li> <li>• Metros and districts must implement and administer the atmospheric emission licensing system and must carry out the duties stipulated in Chapter 5 of the Act. (But not all municipalities have this function: Provinces are charged with implementing the atmospheric emission licensing system if municipalities do not have the capacity).</li> </ul>
<p>National Environmental Management: Integrated Coastal Management Act No. 24 of 2008</p>	<ul style="list-style-type: none"> <li>• Each municipality whose area includes coastal public property must within four years of the commencement of the Act, make a by-law that designates strips of land as coastal access land in order to secure public access to that coastal public property.</li> </ul> <p><b>Responsibilities of municipalities with regard to coastal access land</b></p> <ul style="list-style-type: none"> <li>• A municipality in whose area coastal access land falls, must—             <ul style="list-style-type: none"> <li>○ (a) signpost entry points to that coastal access land;</li> <li>○ (b) control the use of, and activities on, that land;</li> <li>○ (c) protect and enforce the rights of the public to use that land to gain access to coastal public property;</li> <li>○ (d) maintain that land so as to ensure that the public has access to the relevant coastal public property;</li> <li>○ (e) where appropriate and within its available resources, provide facilities that promote access to coastal public property, including parking areas, toilets, boardwalks and other amenities, taking into account the needs of physically disabled persons;</li> <li>○ (f) ensure that the provision and use of coastal access land and associated infrastructure do not cause adverse effects to the environment;</li> <li>○ (g) remove any public access servitude that is causing or contributing to adverse effects that the municipality is unable to prevent or to mitigate adequately;</li> <li>○ (h) describe or otherwise indicate all coastal access land in any municipal coastal management programme and in any municipal spatial development framework prepared in terms of the Municipal Systems Act;</li> <li>○ (i) perform any other actions that may be prescribed: and</li> <li>○ (j) report to the MEC within two years of the Act coming into force on the measures taken to implement the section.</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• A municipality may make by-laws for proper implementation.</li> <li>• A local municipality within whose area of jurisdiction a coastal set-back line has been established must delineate the coastal set-back line on a map or maps that form part of its zoning scheme in order to enable the public to determine the position of the set-back line in relation to existing cadastral boundaries.</li> </ul> <p><b>Establishment and functions of municipal coastal committees</b></p> <ul style="list-style-type: none"> <li>• Each metropolitan municipality and each district municipality that has jurisdiction over any part of the coastal zone may establish a coastal committee for the municipality and subject to subsection (4). Any local municipality that has jurisdiction over any part of the coastal zone may establish a coastal committee for the municipality and subject to subsection (4).</li> </ul> <p><b>Preparation and adoption of municipal coastal management programmes</b></p> <ul style="list-style-type: none"> <li>• A coastal municipality must prepare and adopt a municipal coastal management programme for managing the coastal zone or specific parts of the coastal zone in the municipality</li> <li>• A municipality may prepare and adopt a coastal management programme as part of an integrated development plan and spatial development framework adopted in accordance with the Municipal Systems Act and if it does so, compliance with the public participation requirements prescribed in terms of the Municipal Systems Act for the preparation and adoption of integrated development plans will be regarded as compliance with public participation requirements in terms of the Act.</li> <li>• A municipality may administer its coastal management programme and may make by-laws to provide for the implementation, administration and enforcement of the coastal management programme</li> <li>• Subject to section 56(5), a coastal planning scheme of a municipality may form, and be enforced as part of, any land use scheme adopted by the municipality.</li> </ul>
<p>National Environmental Management: Waste Act No. 59 of 2008</p>	<p><b>Waste service standards</b></p> <ul style="list-style-type: none"> <li>• A municipality must exercise its executive authority to deliver waste management services, including waste removal, waste storage and waste disposal services, in a manner that does not conflict with section 7 or 8 of the Act.</li> <li>• Each municipality must exercise its executive authority and perform its duty in relation to waste services, including waste collection, waste storage and waste disposal services, by—             <ul style="list-style-type: none"> <li>○ adhering to all national and provincial norms and standards;</li> <li>○ integrating its waste management plans with its integrated development plans;</li> <li>○ ensuring access for all to such services;</li> <li>○ providing such services at an affordable price, in line with its tariff policy referred to in Chapter 8 of the Municipal Systems Act;</li> <li>○ ensuring sustainable services through effective and efficient management;</li> <li>○ keeping separate financial statements, including a balance sheet of the services provided.</li> </ul> </li> <li>• In exercising its executive authority a municipality may furthermore, amongst other things, set—             <ul style="list-style-type: none"> <li>○ local standards for the separation, compacting and storage of solid waste that is collected as part of the municipal service or that is disposed of at a municipal waste disposal facility;</li> <li>○ local standards for the management of solid waste that is disposed of by the municipality or at a waste disposal</li> </ul> </li> </ul>

	<p>facility owned by the municipality, including requirements in respect of the avoidance and minimisation of the generation of waste and the re-use, recycling and recovery of solid waste;</p> <ul style="list-style-type: none"> <li>○ local standards in respect of the directing of solid waste that is collected as part of the municipal service or that is disposed of by the municipality or at a municipal waste disposal facility to specific waste treatment and disposal facilities; and local standards in respect of the control of litter.</li> </ul> <ul style="list-style-type: none"> <li>• Whenever a municipality intends passing a by-law, it must follow a consultative process provided for in Chapter 4 of the Municipal Systems Act.</li> </ul> <p><b>Designation of waste management officers</b></p> <ul style="list-style-type: none"> <li>• Each municipality authorised to carry out waste management services by the Municipal Structures Act, 1998 (Act No. 117 of 1998), must designate in writing a waste management officer from its administration to be responsible for co-ordinating matters pertaining to waste management in that municipality.</li> </ul> <p><b>Certain organs of state to prepare integrated waste management plans</b></p> <ul style="list-style-type: none"> <li>• Each municipality must - (i) submit its integrated waste management plan to the MEC for approval; and (ii) include the approved integrated waste management plan in its integrated development plan contemplated in Chapter 5 of the Municipal Systems Act.</li> </ul> <p><b>Waste collection services are subject to—</b></p> <ul style="list-style-type: none"> <li>• the right of a municipality to limit the provision of general waste collection services if there is a failure to comply with reasonable conditions set for the provision of such services, but where the municipality takes action to limit the provision of services, the limitation must not pose a risk to health or the environment; and the right of a municipality to differentiate between categories of users and geographical areas when setting service standards and levels of service for the provision of municipal services.</li> <li>• Every municipality must, subject to the Act, and as far as is reasonably possible, provide containers or receptacles for the collection of recyclable waste that are accessible to the public.</li> </ul>
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At the core of environmental legislation is the *National Environmental Management Act No. 107 of 1998* (NEMA). NEMA is the primary piece of framework legislation for the environment and contains certain provisions which are of great significance to local government. Briefly, these include the following:

1. NEMA provides the definition of the environment and stipulates a number of key *environmental management principles* (Chapter 1) which apply to those activities of organs of state that 'may significantly affect the environment'. This includes local government. Importantly, these principles extend not only to NEMA itself but also to the 'interpretation, administration and implementation of [this Act] and any other law concerned with the protection or management of the environment' (Chapter 1(2) (e)). Note that this means that all spheres of government are bound to adhere to the principles which are comprehensive and far-reaching in terms of approaches to environmental management and sustainable development. Specifically in the case of local government, it places an obligation on all municipalities to ensure that their Integrated Development Plans (IDPs) comply with these principles.

A condensed list of the principles is provided below but all municipal officials should make themselves familiar with the list as quoted in NEMA Chapter 1.

**Synopsis of the most important NEMA Principles.**

- *environmental management must put people and their needs first*
- *development must be socially, environmentally and economically sustainable*
- *there should be equal access to environmental resources, benefits and services to meet basic human needs*
- *government should promote public participation when making decisions about the environment*
- *communities must be given environmental education*
- *workers have the right to refuse to do work that is harmful to their health or to the environment*
- *decisions must be taken in an open and transparent manner and there must be access to information*
- *the role of youth and women in environmental management must be recognised*
- *the person or company who pollutes the environment must pay to clean it up*
- *the environment is held in trust by the state for the benefit of all South Africans*
- *A risk averse and cautious approach should be used in situations of inadequate information about the consequences of decisions and actions.*

2. NEMA (as amended 2004) also makes provision for the designation of *Environmental Management Inspectors* (EMIs). EMIs (popularly known as the 'Green Scorpions') are compliance and enforcement personnel and can be employed at all three levels of government<sup>6</sup>. They can be designated with wide ranging powers related to the inspection and investigation of environmental non-compliance. These powers can be applied to any specific environmental

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<sup>6</sup> *Note:* DEA has established a central compliance and enforcement unit to develop protocols and procedures for inspection and investigation and to lead the training and designation in officials across the country. Municipal officials should check with DEA to identify where they can be of assistance in this area.

management legislation (as defined in NEMA), such as the NEM: Air Quality Act, the NEM: Protected Areas Act and the NEM: Biodiversity Act.

3. NEMA also contains a section (s46) which is concerned with *environmental management by-laws for municipalities*. Under this section the Minister or MEC may make 'model by-laws' aimed at establishing measures for management of environmental impacts of any development within the jurisdiction of a municipality<sup>7</sup>. A municipality can then adopt these as municipal by-laws. The model by-laws must include measures for environmental management which may include: auditing, monitoring, ensuring compliance, reporting requirements and the furnishing of information.
4. Section 30 of NEMA sets out procedures for the management and reporting of *Emergency Incidents* – among which is a role for local government as a 'Relevant Authority' overseeing and reporting on response to Emergency Incidents<sup>8</sup>.

Due to the fact that the environment is a concurrent competence of national and provincial government, each province also has pieces of provincial legislation designed to provide province-specific detail. However, legislative reform at the provincial level is lagging behind in many provinces, leading to an outdated and confusing layer of provincial legislation which is a mixture of old 'ordinances' and updated provincial legislation which is in line with the national policy and legislative framework. The onus is on individual provinces to continue to update their own environmental legislation.

In addition to environmental legislation, there is also an extensive raft of *environmental policy and strategy*, much of which also has an implication for local government and within which local government is seen as a key partner in delivery of effective environmental management. Notable documents include:

- National Waste Management Strategy (2011)
- White Paper for Sustainable Coastal Development in South Africa (2000)
- White Paper on Renewable Energy (2003)
- National Water Resource Strategy (2004)
- Climate Change Response Strategy (2004) and National Climate Change Response Policy Green Paper (2011)
- Energy Efficiency Strategy (2005)
- National Biodiversity Strategy and Action Plan (2005)
- National Framework for Sustainable development (2006) and the National Strategy for Sustainable Development (2010)
- National Biodiversity Framework (2007)
- National Framework for Air Quality Management (2007)

From the above it is clear that what is happening in practice is the gradual increase in the numbers of pieces of legislation, policy, strategy and programmes which include a

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<sup>7</sup> *Note:* Model by-laws may have been developed at a provincial level. So, as a municipality, it is worth checking to find out whether the relevant province has issued any model by-laws which may be of assistance.

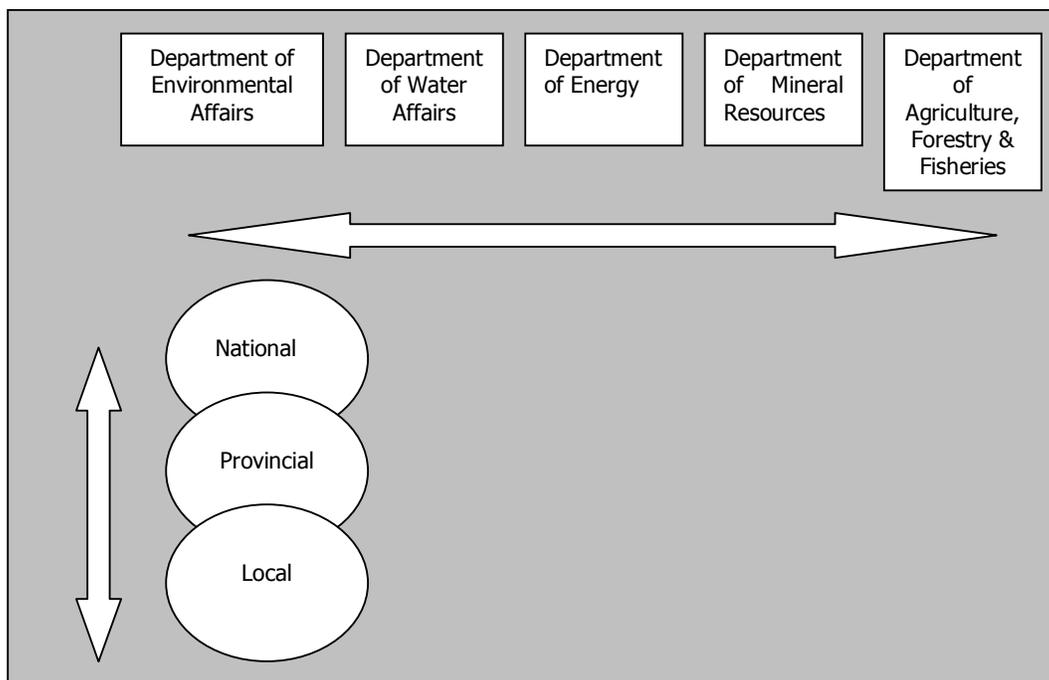
<sup>8</sup> *Note:* The DEA has developed guidance on the procedures for emergency incident response in order to clarify the arrangements set out in NEMA

role for local government and express a reliance on local government for delivery and implementation of specific measures. It is largely up to local government officials to keep abreast of these changes and to inform themselves of the implications for their day to day activities. This is a significant burden for many municipalities who have simply not been able to keep up with the complexity of this ever-changing legislative framework.

### 3.4 Institutional Arrangements – Who Does What

At this point it is worth quickly clarifying some of the institutional arrangements for environmental governance in South Africa and how these relate to local government.

The legislative and institutional framework for the management and protection of the natural environment in South Africa is complex and has resulted in the fragmentation of responsibility 'horizontally' across various national departments, public entities and 'vertically' between the three spheres of government as shown in the schematic diagram below. A further complexity is that the horizontal institutional divisions are not necessarily the same at provincial level as each province has designed its institutional arrangements for the environment in a different way. So, for example one province may locate conservation with agriculture while another may locate conservation with environmental management and planning.



At the national level, the 'lead agent' for the environment is the national *Department for Environmental Affairs* (DEA). However, in addition to DEA, eight other national departments are responsible for legislation and activities which are directly related to environmental management or which may have an impact on the environment. A brief summary is contained in the table below.

In addition to national departments, there are three national agencies (which report to DEA) which have environmental responsibilities.

- South African National Biodiversity Institute (SANBI)
- South African National Parks (SANParks)

- South African Weather Services (SAWS)

Of these, SANBI is the one most likely to interact with local government as it has specific mandates for the management of biodiversity which require implementation at the local level.

**Table 2. National government department environmental responsibilities**

Department	Responsibility (as per legislation overseen by these departments)
Agriculture, Forestry & Fisheries	Agricultural resources, pests, regulation of fertilisers, farm feeds and agricultural remedies, GMOs, veld, forests and forestry
Arts and Culture	National Heritage (including World Heritage Sites)
Environmental Affairs	Air quality, pollution control and waste management, environmental impact management, biodiversity conservation, marine and coastal management
Health	Hazardous Substances
Rural Development and Land Reform	Development facilitation and principles governing land development, land use, animal breeding
Mineral Resources	Access to minerals, mine related health and safety
Energy	Access to petroleum resources, nuclear energy
Water Affairs	Water resources, water services, mountain catchments
Cooperative Governance & Traditional Affairs	Municipal planning, integrated development plans, municipal service delivery, disaster management
Transport	Maritime law movement of substances, harbours

At the provincial level, the main environmental functions undertaken include environmental impact assessments, conservation of provincial nature reserves, issuing and administering a range of environmental permits. Provinces are now also required to undertake bioregional planning<sup>9</sup> and may also have the powers to set provincial standards under various pieces of environmental legislation. NEMA also requires provincial government to prepare Environmental Implementation Plans (EIPs) and to ensure that municipalities adhere to these plans in the preparation of their IDPs. Also, Provincial Spatial Development Frameworks (PSDFs) may include environmental consideration. Provinces also have a role in ensuring that municipalities adhere to the NEMA principles in the preparation of municipal policy and programmes. National, provincial and local government may also develop coastal management programmes (CMPs) under the Integrated Coastal Management Act.

In terms of institutional arrangements, every province has a *provincial environment department* (PED) although a provincial environment department may also include other functions and often does. (e.g. economic affairs, development planning, tourism, agriculture or any other relevant function depending on how a province has decided to arrange its departments).

<sup>9</sup> land-use planning and management that promotes sustainable development by recognising the relationship between, and giving practical effect to, environmental integrity, human-well-being and economic efficiency within a defined geographical space, the boundaries of which were determined in accordance with environmental and social criteria (Source: Department of Environmental Affairs and Development Planning: Bioregional Planning in the Western Cape, October 2003, available at: <http://bio.natureproperties.com/4%20Main%20Report%20-13%20Oct.pdf>)

In terms of cooperative governance structures, there are few which work horizontally across the various national-level silos. The exceptions include the Inter-ministerial Committee on Climate Change and the National Committee for Climate Change, which is made up of stakeholders from government (national and provincial) and civil society.

Within the sector of government overseen by national DEA, vertical cooperative governance is limited to the Ministerial technical (MINTECH) and Ministerial political (MINMEC) structures. Local government does not participate in these structures and its involvement is limited to representation via SALGA.

## **4 Major Themes in Environmental Governance**

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There are several key themes in environmental governance – some of which are enshrined within policy and legislation while others are emerging as ‘best practice’. These are themes which municipalities should be aware of as they will be implemented and promoted by both national and provincial environment departments and will also have implications for municipalities.

### **4.1 ‘Mainstreaming’ the environment**

This involves integrating environmental issues and considerations into wider government policies, plans and programmes. This approach flows from the principles of the 1992 Rio Declaration on Environment and Development and is enshrined within the Millennium Development Goals and NEMA, and is recognised as necessary if sustainable development is to be achieved in practice.

In particular, DEA has emphasised the importance of integrating environmental considerations into planning, growth and development strategies such as provincial growth and development strategies, spatial development frameworks (provincial and local) and integrated development plans (local). SANBI is working with provinces to develop bioregional plans to ensure that each province has an understanding of location and nature of critical areas for conservation so that this information can then be integrated into provincial SDFs. Where bioregional plans have been produced for provinces, they are already being used by some municipalities to inform their SDF and IDP processes.

DEA has also worked with a selection of provinces and municipalities to develop IDP ‘toolkits’ to assist municipalities with the integration of environmental issues into their IDPs.

### **4.2 Environmental Impact Management – towards a strategic approach**

Linked to the above is the significant shift taking place in approach to environmental impact management. For many years, great emphasis has been placed on assessing the environmental impact of development on a case-by-case basis through the Environmental Impact Assessment (EIA) process. However, this process has been severely criticised in the past for the levels of backlog in assessing applications and long timeframes for approval, as well as with difficulties in addressing cumulative impacts.

As a result, DEA is driving a shift toward the greater use of strategic level tools for environmental impact management, such as Strategic Environmental Assessment (SEA) and Environmental Management Frameworks (EMF). These tools will allow strategic decisions about appropriate land use to be made at a larger geographical

scale and will involve the use of 'bioregional plans' to identify sensitive areas suitable or unsuitable for development. It is intended that these strategic level tools will reduce the need for EIAs in non-sensitive areas thus both protecting the environment and facilitating appropriate development. Municipalities are required to undertake a SEA as part of the process of preparing a Spatial Development Framework. This approach should be of great value to municipalities in their SDF processes.

### 4.3 State of Environment Reporting

DEA has been running a 'State of Environment Report' initiative since 1997 and significant progress has been made in the development of national and provincial State of Environment Reports. The national report was updated in 2006<sup>10</sup> and a report is also in place for each province. Some municipalities, primarily metros, have prepared reports as a means of informing communities, planners and decision-makers as to the condition of the municipal environment, identification of specific environmental assets and of pressures being exerted upon the local environment. DEA can provide guidance on how to prepare such reports<sup>11</sup> and their development is being seen as best practice at the municipal level both in South Africa and internationally. These reports provide invaluable information about the condition of the environment and will be of value for municipalities when developing their own environmental plans and IDPs.

### 4.4 Integrated Environmental Management Planning

Whilst preparation of Integrated Environmental Management Plans (IEMPs) by municipalities does not have a statutory basis at present, this practice is being adopted by a growing number of municipalities in South Africa as a means of understanding municipal environmental priorities and responsibilities. IEMPs, once prepared, provide invaluable guidance for municipalities and their communities and lead to the strengthening of environmental input into the IDP preparation processes. An IEMP is worth preparing particularly if a municipality has done significant work on environmental policies, programmes and by-laws but needs to pull these together into a coherent and integrated document.

### 4.5 Other Environmental Policy Trends

At national level, a range of policy processes have been underway addressing the interactions between the economy and the environment as a means of supporting sustainable developing in South Africa (SAEO 2006). At the time of writing, these include:

- Process of *environmental fiscal reform*. This is being led by National Treasury and is aimed at reforming government's revenue-raising approach to bring it into line with the principle of higher taxes for environmentally harmful activities.
- Development of *natural resource accounts* by Statistics South Africa. Natural resource accounting is an accounting system that deals with stocks and changes in stocks of natural assets, water and land with their terrestrial and aquatic ecosystems. Their purpose is to provide policy makers with an information base on natural resources and to contribute to awareness of environmental issues at each level of decision-making (SAEO 2006)

<sup>10</sup> South African Environment Outlook: A report on the state of the environment. DEAT 2006 (The Department of Environmental Affairs has now commenced a process to compile the 2012 National State of the Environment Report, which will build on the first two reports released in 1999 and 2006.)

<sup>11</sup> See [http://soer.deat.gov.za/State\\_of\\_the\\_Environment.html](http://soer.deat.gov.za/State_of_the_Environment.html)

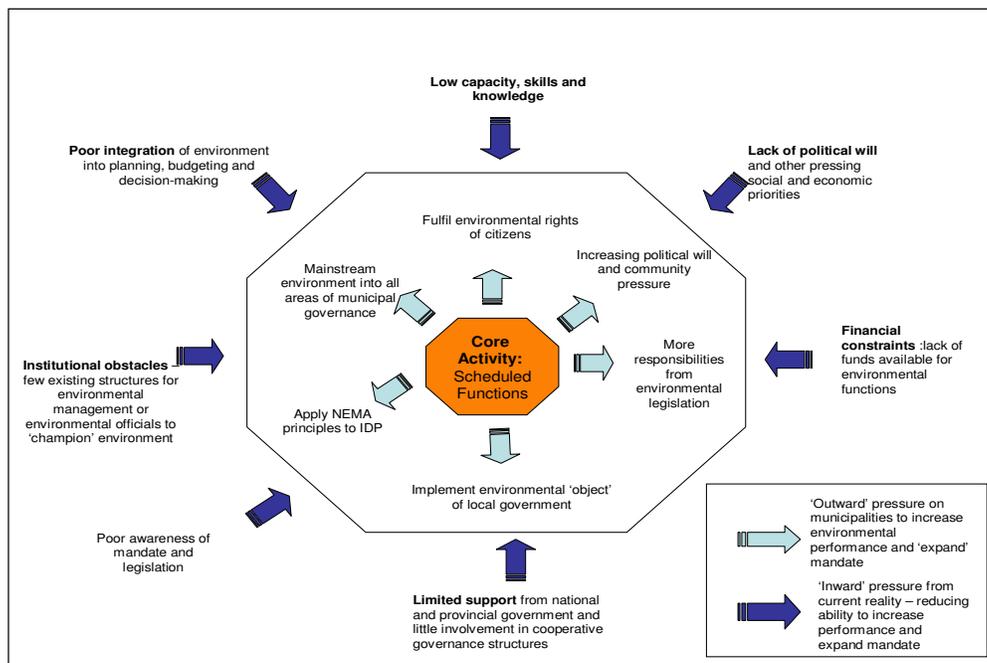
- Increasing focus on the used of *environmental economic instruments* for natural resource management and environmental protection – for example, the use of charges and/or taxes.

## 5 The current reality – a spectrum of environmental performance at the local government level

The previous sections have illustrated the complexity of the Constitutional, legislative and institutional framework for the environment as it pertains to local government.

While there are increasing expectations on local government to take custodianship of the environment this is within a municipal climate where funding, skills and capacity are under severe pressure across all areas of municipal functions. The environment has long been a secondary priority in the face of extreme poverty and the need for development and economic growth. Thus the push for local government to achieve greater performance in this sector is countered by many opposing pressures. However, it is important to emphasise that development and economic growth that is achieved at the expense of the environment (i.e. that results in environmental degradation) is not sustainable and impoverishes future generations by reducing their options and ability to meet their own needs.

Some of the pressures faced by local government are illustrated in the diagram below which represents the various forces pushing towards expansion of the environmental activity of a municipality – and those constraining this expansion. For many municipalities, the overwhelming forces result in constrained performance in this area - resulting in poor levels of performance in environmental functions, low levels of integration of environmental issues into IDPs, small/no budget allocations for environmental functions and little in the way of environmental capacity or skills.



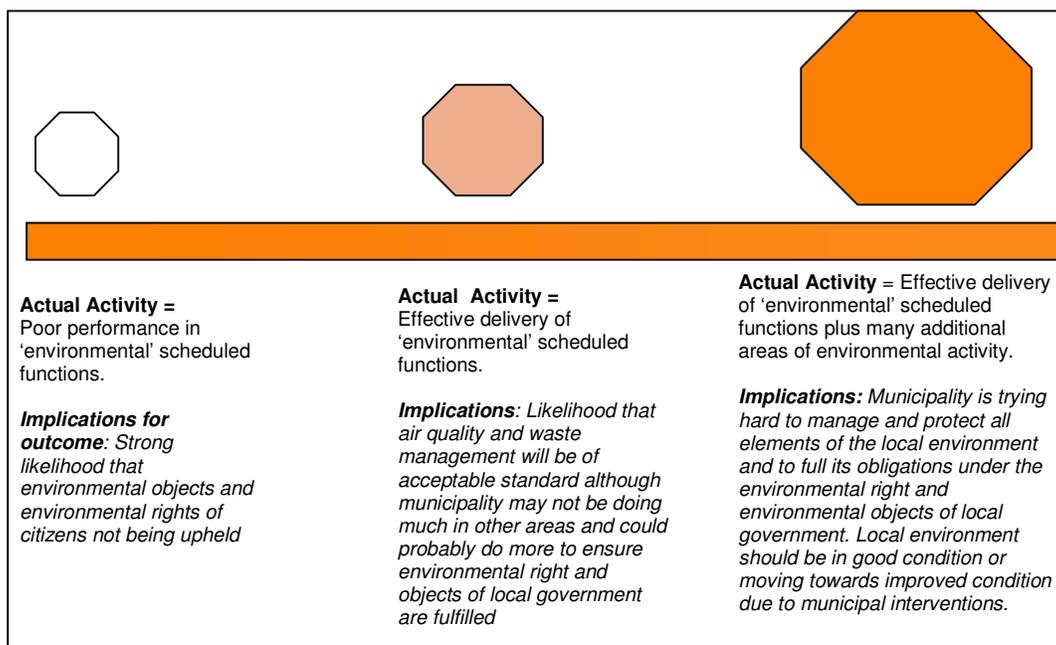
**Figure 3: Positive and negative pressures on municipal environmental performance**

In many cases where funds, capacity and skills for environmental activity are low, the actual environmental activity in a municipality does not even cover the delivery of the

core environmental scheduled functions (Air Pollution (Schedule 4B), Noise Pollution (Schedule 5B), Refuse removal, refuse dumps and solid waste (Schedule 5B) and Cleansing (Schedule 5B). In contrast, others (particularly Metros and some small towns) are providing real leadership in tackling environmental problems and improving local environmental quality in areas beyond the boundaries of the traditional functions of local government as stated in the Schedules to the Constitution.

So, in practice, what exists in South Africa at local government level is a spectrum of levels of environmental activity which ranges from non-delivery of basic scheduled functions related to the environment at one extreme, to an ever-expanding environmental role such as that demonstrated in many Metros.

In practice, this spectrum of activity is of course related to the ability of a municipality to unlock resources, skills, capacity and political will needed to promote and drive environmental activity. This explains why Metros are able to fulfil core scheduled functions related to the environment and then move into other environmental activities, which are less to do with strict fulfilment of scheduled functions and more to do with broad management and protection of the environment as per the environmental objects of local government.



**Figure 4: Spectrum of performance by municipalities in environmental activities**

Unlocking resources relates primarily to finding funds and capacity to implement environmental actions. This is obviously related in some measure to the socio-economic characteristics of the municipality – its size, wealth of residents, geographical location and so on. However, for many of those implementing environmental measures effectively there are also characteristics of:

- good awareness of environmental issues (within officials and politicians),
- high priority given to management of the environment,
- environmental activities integrated into the IDP and the municipal budget.

These steps are fundamental to achieving increased environmental performance and will be noted in more detail later in this chapter.

So, for any individual municipality a conceptual starting point towards improved performance is to appraise where they are in the spectrum: are they struggling to fulfil basic scheduled environmental functions or have these been achieved and is the municipality now ready to broaden their environmental management scope.

Critical for the environment of South Africa and the well being of its population, is for those municipalities struggling to fulfil basic functions to improve their performance and move slowly to the right on the spectrum above.

## **6 Where to start – steps for improving environmental performance**

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It is acknowledged that the environmental mandate of local government is not always clear. However, within the current framework, it is possible to develop a strategy to improving the performance of a municipality in terms of the environment. Broadly, this involves implementation of the following steps.

**Step 1 – Self Appraisal:** Understand current municipal environmental activity and identify where the municipality sits on the spectrum described above.

**Step 2 – Understand the State of the Environment:** Understand the state of the environment of the municipality i.e. its condition and the source of pressures upon it – then use this to identify priority areas for intervention. Where resources and capacity are scarce it will not be possible to carry out a wide range of environmental activities. Rather activity should be focused on a small number of urgent priorities.

Where funds and capacity exist, a State of Environment Report will be useful in this case. Where these are not evident, a brief identification of the most pressing environmental issues will suffice. As time goes on, the municipality should make an effort to expand its understanding of its environment with each revision of the IDP that takes place.

**Step 3 – Address Core Scheduled Functions:** If underperforming in delivery of core scheduled functions – this is where the municipality must start. To reach effective delivery in each of the main environmental scheduled functions is a first target.

At this point, it is important to consider the characteristics of the municipality and to determine which of the scheduled functions is most critical for environmental protection and for the health and well-being of the community. For example, in a largely rural municipality, air quality may not be an issue of any concern and providing regular refuse collection to residents to prevent dumping and damage to natural areas may be much more important.

**Step 4 – Mainstream Environmental Management:** Start to 'mainstream' the environment into governance processes. Most important is to ensure that environmental issues are included on the agenda for IDP review processes and are also considered in a cross-cutting way when discussing all other economic and developmental initiatives. Part of this process should be analysis of whether the municipality is fulfilling the two Objects of Local Government which relate to the environment to the best of its ability i.e., to ensure the provision of services to communities in a sustainable manner, and to promote a safe and healthy environment.

If funds and capacity allow, consider developing an Integrated Environmental Implementation Plan or specific policies or by-laws to support the municipality in the tackling of key environmental issues.

At the political level, identify whether specific structures can be created to consider environmental issues and provide support for these throughout municipal governance procedures.

Seek guidance from provincial environmental departments as to how to align municipal actions with national and provincial strategic environmental policies, programmes and plans. It is an obligation of provincial government to ensure that municipalities align their activities in this way.

Begin to think more holistically about how specific municipal functions are carried out. This involves developing a deliberate and conscious culture of always considering environmental issues in planning, management and decision-making. For example, are there ways in which parks and open spaces currently used for recreation can be managed for environmental benefits, such as biodiversity, water quality, prevention of soil erosion and so on? Are there ways in which the environmental impact of infrastructure projects can be minimised by good design or location? Section 7 below provides some suggestions on types of environmental interventions for a range of municipal activities.

Aim for 'quick wins' i.e. look for ways to include environmental issues into existing municipal projects and programmes. These 'quick wins' are often very easy to implement as in the majority of cases they are related to resource efficiency and thus will save resources and money – such as water loss reduction through improved maintenance of water infrastructure. Other examples are included in the list of environmental actions which can be implemented by municipalities discussed in section 7 below.

**Step 5 – Expand Available Resources:** Try to unlock some resources for environmental functions. Once in the IDP, environmental activities should be included in the municipal budget in a prioritised fashion. DEA and Provincial Environment Departments are also tasked with supporting municipalities in their environmental functions and can be approached for guidance and support. Many environmental initiatives at municipal level are currently funded through external funding sources, such as international environmental programmes, donor funding and so on. If unsure how to access these funds or projects, provincial and national spheres may be able to help. Alternatively there are some municipal networks in the environmental arena which may be able to assist in this matter, mostly involving Metros at this stage.

## **7 Making the Most of Opportunities - integrating environmental actions into municipal activities**

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As noted in the principles above, one of the ways in which a municipality can make great strides in improving its environmental performance is to start to mainstream or integrate environmental considerations into its day-to-day activities. One of the most effective ways to do this is to identify opportunities for environmental activities within existing municipal plans, programmes and projects.

This may take several forms, including:

- minimisation or mitigation of environmental impacts of municipal activities
- inclusion of positive environmental benefits into plans, programmes and projects

- reduction in the need or demand for a resource (e.g. water, electricity) thus conserving the resource, providing security of supply and/or reducing the need for expensive infrastructure to provide more of the resource

For example, many infrastructure projects provide opportunities for this sort of integration. Such as to:

- reduce pollution (of air and water) which may be caused by the infrastructure
- encourage conservation of scarce resources (e.g. water, soil) in the development and future use of the infrastructure
- reduce emissions of carbon (which contribute to global warming) from the development and use of infrastructure
- minimise the impacts on biodiversity created by the location, construction and on-going management of the infrastructure
- to incorporate environmental gains into the design and implementation of the infrastructure

One of the most persuasive reasons to seek environmental opportunities in any programme, plan or project is the frequent link between environmentally driven actions and cost savings. The primary reason for this is the concept of resource efficiency: a sound environmental approach is one in which resources are used wisely and waste is minimised. Often, the costs of any capital outlays for environmental purposes are paid back over time through the resultant increases in resource use efficiency.

These are the 'quick wins' referred to in section 6 above – actions which make environmental, practical and financial sense. These are the easiest actions to gain support for and are often the first place to start when trying to demonstrate the need for and the benefits of environmental actions.

The table below provides some specific examples of areas of municipal activity where environmental opportunities arise. Some of these will be easier and simpler for municipalities to provide than others, depending on circumstances and relationships with industries and communities.

As mentioned above, not all examples will be relevant to all municipalities, and the key is to identify those issues which are of highest priority and to then apply approaches which will be effective and practical in the specific municipal context.

**Table 3: Options for inclusion of environmental considerations into municipal activities**

<i>Municipal Activity</i>	<i>Explanation/ Comments</i>	<i>Options for Environmental Action</i>
Waste Management	<p>The new Waste Act shifts emphasis from 'end of pipe' treatment of waste to a more integrated approach to waste management which includes waste minimisation, cleaner production, recycling and waste disposal. Section 11 of the Waste Management Act requires municipalities to produce integrated waste management plans as part of their IDPs.</p> <p>Waste minimisation: This is about avoiding or reducing the production of waste at source and places a heavy reliance on provision of information on how to minimise waste and development of a culture of waste minimisation among citizens and industries.</p> <p>Cleaner Production. This is a term which encompasses processes which result in reduced waste generation.</p> <p>Recycling is the collection and reprocessing of materials. This also relies on the provision of information but can also be facilitated through the development of recycling facilities and services.</p>	<ul style="list-style-type: none"> <li>• Inclusion of these principles/ approaches in integrated waste management planning processes</li> <li>• Development and dissemination of educational and awareness raising campaigns on waste minimisation and recycling – for residents, schools, industries and businesses</li> <li>• Support, facilitation and participation in establishment of waste management 'clubs' in local areas for use by industries (WM Clubs are groups of companies working together to reduce waste and save money)</li> <li>• Adoption of permitting schemes which place emphasis on implementation of cleaner production practices within industry</li> <li>• Support for the establishment of industry-based initiatives for recycling and reuse of materials</li> <li>• Promotion and support for small-scale recycling venture</li> <li>• Promotion of composting as an approach to organic waste recycling</li> <li>• Promotion of waste-stream separation at source (by households) or collection and separation of recyclable waste by SMMEs</li> <li>• Promotion and establishment of community based collection and disposal initiatives</li> </ul>
Waste Disposal	<p>Waste disposal is a scheduled function of municipalities (particularly district municipalities) and as such should be considered as one of the fundamental environmental targets for implementation by a municipality.</p> <p>There are three ways in which waste disposal performance can be improved:</p> <ul style="list-style-type: none"> <li>• Improvements in design and management of existing sites – with a particular emphasis on expenditure required to bring un-permitted sites up to a standard at which they can be permitted.</li> <li>• Closure and remediation of old sites</li> <li>• Extraction of landfill gas</li> </ul>	<p>Improvements in design and management of existing sites</p> <ul style="list-style-type: none"> <li>• There is a strong correlation between illegal operation of a site and its environmental impact. Many sites remain un-permitted due to the need for additional funds to upgrade infrastructure to meet national minimum standards.</li> <li>• Most environmental impacts are caused by poor site management and design specifications – particularly in terms of leachate control. Most impacts are related to contamination of surface and ground water, uncontrolled littering/dumping causing odour; uncontrolled burning of waste causing release of toxins (VOCs) and providing a nuisance to local residents.</li> <li>• A set of minimum requirements for waste disposal sites have been developed by DWA to provide guidance on how sites should be designed and managed. Regulation of waste disposal sites is now overseen by national DEA and</li> </ul>

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		<p>provincial environment departments.</p> <p>Closure and remediation of old sites</p> <p>Many old sites in South Africa have not been properly closed or rehabilitated and continue to cause environmental problems (such as leachate/ odour and so on). Opportunities exist for SMMEs to complete the necessary work – which not only provides employment but also improves the quality of life of local residents.</p> <p><i>Extraction of landfill gas</i></p> <ul style="list-style-type: none"> <li>• Landfills emit methane which is a large source of greenhouse gas (GHG) emissions to the atmosphere. Methane’s global warming impact is about 23 times more powerful than CO<sub>2</sub>.</li> <li>• Technology is available for collecting the methane produced from both operating and closed landfill sites. If produced in large enough quantities this methane can then be used as an energy source.</li> <li>• There is an additional benefit in this respect as carbon credits can be obtained through international carbon exchanges and this generates an additional revenue stream for a municipality..</li> <li>• This approach has been applied in eThekweni and Ekurhuleni and is being investigated in Johannesburg, City of Cape Town and other large cities in the country.</li> </ul>
Waste Water Discharge	The primary environmental responsibility of municipalities with regard to waste water discharge is to ensure that its discharge into the sewerage system is effectively regulated – and that the sewerage system/ infrastructure is designed, operated and maintained in a manner which will ensure that the waste water does not have an impact on the environment once discharged.	<ul style="list-style-type: none"> <li>• Water conservation (which can be influenced through water demand management campaigns) <ul style="list-style-type: none"> <li>– Using less water leads to less wastewater.</li> </ul> </li> <li>• Control of stormwater ingress into sewer systems. <ul style="list-style-type: none"> <li>– Typically this occurs on private properties where down-pipes discharge into sewers.</li> </ul> </li> <li>• Rehabilitation or replacement of old sewers where groundwater ingress is taking place.</li> <li>• Improved solid waste management to reduce discharge of solids into wastewater systems.</li> <li>• Industry focus: <ul style="list-style-type: none"> <li>– Incentive-based tariffs.</li> </ul> </li> </ul>

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		<ul style="list-style-type: none"> <li>- Greater emphasis on pre-treatment and recycling.</li> <li>- Better monitoring of industrial effluent quality.</li> <li>• User education to reduce blockages and promote responsible use of waster water and sewerage systems.</li> </ul>
Waste Water Treatment	<p>The issue with waste water treatment is to ensure that this is done effectively and that an acceptable quality of treated water is produced. With this as a starting point – there are then options of different technologies which may reduce other impacts on the environment, such as energy use, use of sludge remaining after treatment and so on. All these options can be considered and trade-offs made – to ensure that the appropriate balance of quality and other environmental gains is achieved.</p>	<ul style="list-style-type: none"> <li>• Improved management of wastewater treatment works aimed at better effluent discharge.</li> <li>• Aligning sludge treatment processes with local options for beneficial use of sludge.</li> <li>• Applying anaerobic processes for sludge treatment as far as possible:               <ul style="list-style-type: none"> <li>- Using less energy and producing less waste.</li> </ul> </li> <li>• Treated effluent recycling with industrial use of effluent and irrigation (golf courses particularly) being the most likely options.</li> <li>• Sludge digestion processes give off GHGs (carbon dioxide in the case of aerobic processes and methane in the case of anaerobic processes). The methane can be captured and used as an energy source which also reduces GHG emissions.</li> </ul>
<p><i>Waste Water Discharge: Examples of Environmental Programmes</i></p> <p>The eThekweni Municipality Sustaining the Waste Water Education Programme seeks to create a more efficient sewerage system and eradicate blockages by educating people about the link between good sanitation and health. It has helped reduce vandalism and sewer blockage rates considerably. <a href="http://www.ethekwini.gov.za">www.ethekwini.gov.za</a></p> <p>A parallel programme (Sewage Disposal Education Programme) aims to create a better understanding of the workings of the sewerage system amongst all communities, with a focus also on first time users of these services. This is done through a number of innovative educational interventions which encourage interactive and participative learning. In considering that blockages throughout the Metro area have reduced by one third over a 12 month period, an attitudinal and behavioural shift has occurred as a result of this ongoing educational programme.</p>		
Water Services	<p>The key measure of success in terms of environmental impact is the total amount of bulk water coming into the system which is driven by:</p> <ul style="list-style-type: none"> <li>• Use on residential properties.</li> <li>• Use by non-residential customers with industries often being a major contributor.</li> <li>• Unaccounted-for water with physical losses being the greatest concern.</li> </ul>	<p>By far the most important area to focus on - is on reducing the level of unaccounted-for water. Expenditure on this aspect is almost always justified by increased revenue (more customers paying) and decreased expenditure (less payment for bulk water). It can be done by:</p> <ul style="list-style-type: none"> <li>• Improved metering and meter reading.</li> <li>• Locating and repairing leaks and breaks.</li> <li>• Rehabilitating old pipelines.</li> <li>• Use of pressure control to reduce losses</li> </ul> <p>Another key strategy is water conservation through demand-side management i.e. getting households and non-residential users of water to be careful with respect to water use. This can be done through:</p>

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		<ul style="list-style-type: none"> <li>• direct use of a 'stick' e.g. increasing tariffs and/or penalties.</li> <li>• demonstration of the benefits to the householder (e.g. the bills will come down).</li> <li>• use of information and awareness –raising campaigns to encourage activities such as water-wise gardening &amp; grey-water recycling.</li> <li>• Provision of assistance to householders to locate and repairs leaks on their properties</li> <li>• Work with large industrial users to promoting water recycling options.</li> </ul> <p>This suite of approaches is about thinking beyond the traditional 'engineering solution' for water supply (i.e. 'this is how much we need....so this is amount of infrastructure we will design') – to thinking about other ways in which water losses can be reduced and the demand for water influenced.</p> <p>However, it should also be acknowledged that there are limits to what demand-side management can achieve. At some point, expanding supply requirements must be addressed. The key to informing this is to build a profile of consumers and their consumption patterns at a household level (by residential area and by income group) and for non-residential consumers. Models can be used to project growing consumer demand and to indicate the limits of demand management through tariffs and other measures. Beyond that point, new sources of water supply must be found.</p>
<p><i>Example: Khayelitsha Pressure Management Project, City of Cape Town</i></p> <p>The Khayelitsha Pressure Management Project includes the largest advanced pressure control installation in the world and has been recognized as a "World's Best Practice" by numerous respected international experts. It has been hailed as a great success by the City of Cape Town, not only for its technical excellence, but also for its contribution to improving the levels of service and environmental sustainability.</p> <p>The project which cost R2.5 million to construct is already saving more than R18 million per year through reduced leakage, and saves approximately 10% of the water to be supplied by the new Berg River Scheme (to cost R2 billion). This result was achieved by quite simple means: by installing a time-modulated pressure control system (i.e. the pressure varies over time and depending on actual water use) the pressure is reduced at night time and mid-afternoon, when the demand is low, and thus greatly cut losses through leaking pipes and open household connections. Through these means, average daily flow was reduced from 2 500 m<sup>3</sup>/hr to 1 500 m<sup>3</sup>/hr and night flow from 1 600 m<sup>3</sup>/hr to 750 m<sup>3</sup>/hr. (Source: Water Demand Management in Southern Africa K Sandstrom &amp; M Singh 2004. SIDA)</p>		
Electricity and Energy	Global warming, caused by the greenhouse effect, is caused by the emission of greenhouse gasses into the atmosphere. This emission takes place from both natural and man-made sources. In terms of man-made sources – one of the greatest contributors to carbon emissions is the release of	Production and adoption of a municipal 'climate change and sustainable energy strategy'. Several Metros and large towns have developed such strategies supported by an organisation called 'Sustainable Energy Africa' <a href="http://www.sustainable.org.za">www.sustainable.org.za</a> These documents include detailed and specific strategies for energy efficiency, demand-side management, use of alternative energy sources by residents and the municipality itself.

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	<p>CO<sub>2</sub> (carbon dioxide) from the burning of fossil fuels for energy. A key environmental strategy being adopted by many municipalities across the world and within South Africa at present – is the quest for ‘sustainable use of energy’ as a means to both reduce financial costs and reduce the emission of CO<sub>2</sub> to the atmosphere.</p>	<p>They provide context within which more specific electricity plans and planning/budgeting for electricity related infrastructure take place.</p> <ul style="list-style-type: none"> <li>• Reduction in the amount of bulk electricity entering the municipal system. Analysis of the areas in which electricity is used – it is helpful to think in terms of:               <ul style="list-style-type: none"> <li>○ Unaccounted-for electricity.</li> <li>○ Residential use.</li> <li>○ Non-residential use.</li> </ul> </li> <li>• Unaccounted-for electricity. This is an area where real savings can be made through:               <ul style="list-style-type: none"> <li>○ Reducing non-technical losses via improved metering and meter reading.</li> <li>○ Reducing theft (illegal connections).</li> <li>○ Locating and repairing damaged cables.</li> </ul> </li> </ul> <p>Residential demand management: this is probably the key strategy and centers around reducing consumption of grid electricity (either through achieving wise use of electricity – or substitution with ‘cleaner’ forms of electricity generation). Specific approaches include:</p> <ul style="list-style-type: none"> <li>○ Influencing use of grid electricity through tariff based measures (peak charges, time of use charges etc).</li> <li>○ Encouraging energy efficient house design e.g. improving thermal properties of housing; encouraging use of insulation</li> <li>○ Promotion of technologies (such as solar water heaters) which provide an energy service in a way which significantly reduces the use of electricity.</li> </ul> <p>Reduction in municipal demand. The municipality itself can lead the way in the area of demand-side management by reducing its own use of electricity. This can be done in many ways – for example, investing in energy efficient lighting and appliances (such as air conditioners), increasing awareness of the need for energy efficiency within municipal buildings, encouraging energy-efficiency and use of ‘clean’ energy sources in housing and in municipal buildings, switching to energy efficient forms of street lighting and so on.</p> <p>This has been the strategy employed in many of the cities and large towns in South Africa – where the first energy saving activities taken by the municipality were in their own municipal buildings and street lights.</p> <p>Analysis done by SEA indicates that in an average South African City, 50% of municipal electricity consumption goes on street lighting; 39% on buildings (heating, lighting, AC units, etc) and 11% of bulkwater supply and treatment.</p>

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<p><i>Examples of energy saving approaches by municipalities</i></p> <p>Example: through its Energy Strategy Process City of Cape Town has identified R12.8 million of annual energy savings through implementing efficiency measures in its waster water management system, lighting in its buildings and fleet management – the maximum payback period of these is 5 years (source SEA 2003)</p> <p>Example: The eThekweni Buildings Energy Efficiency Project incorporated energy audits which uncovered potential energy savings of more than 15 percent through 'no cost or low cost' interventions. By trimming the controls for air conditioning plants at the municipality's two audited buildings, the city is looking at saving 128 tonnes of carbon dioxide a year.</p> <p><a href="http://www.ethekweni.gov.za">www.ethekweni.gov.za</a></p>		
<p>Transport</p>	<p>The primary impact on the environment caused by transport – is carbon emissions through the use of fuel. Probably less important at present is the impact on biodiversity, landscape etc. from transport infrastructure.</p> <p>However, trying to reduce the impact of transport on the environment through increased use of public transport links the two, as this will not only reduce the use of fuel (and thus emissions) – but should also reduce the need for additional road infrastructure.</p>	<ul style="list-style-type: none"> <li>• Achieve a 'modal shift' from private to public transport</li> <li>• Often there is a need to increase density, e.g. by enforcement of an urban edge.</li> </ul>
<p>Air quality</p>	<p>Air quality management is broader than just regulating individual polluters. However the licensing, and therefore control, of specific activities that cause air pollution is an important regulatory tool which is assigned to local government. In this regard, the national Minister must, or an MEC may, publish a list of activities which result in atmospheric emissions and which causes or may cause devastating harm not only to the environment, but also to the health, social conditions, economic conditions, ecological conditions or cultural heritage. The notice must also establish minimum emission standards for the emissions resulting from a listed activity. This list provides the basis for the Municipal licensing and control of emissions.</p>	<ul style="list-style-type: none"> <li>• The primary activity for metros and districts currently is to work together with provinces to set up emissions licensing systems, in terms of the Air Quality Act. This requires developing the required internal capacity and information to effectively license activities and to enforce these licenses.</li> <li>• Municipalities will need to take into account a range of factors in the licensing process, including: applicable ambient and minimum emission standards; the pollution to be caused and the effect on the environment; the best practicable environmental option; whether the applicant is a fit and proper person; and any other relevant submissions and national guidelines.</li> <li>• This requires considerable information on local air quality, as well as technical resources, or the ability to procure required specialist advice when needed.</li> </ul>