



Climate Change and the effect on Municipal Infrastructure

Briefing note to participants

The Infrastructure Dialogues comprises a series of monthly dialogues dealing with relevant topics and issues within the infrastructure sector to create a high level platform for discussion and a sharing of views and perspectives between senior government, private sector and civil society stakeholders in the sector. While the number of participants attending the dialogue has been targeted at about thirty, a wider group of interested stakeholders will be able to engage indirectly by receiving the input documents and summaries of the dialogues electronically.

The Infrastructure Dialogues are hosted jointly by the Support Programme for Accelerated Development (SPAID) and the Development Bank of Southern Africa (DBSA) and will be covered by Engineering News.



The **Development Bank of Southern Africa** (DBSA) is one of several development finance institutions in South and Southern Africa. Its purpose is to accelerate sustainable socio-economic development by funding physical, social and economic infrastructure. DBSA's goal is to improve the quality of life of the people of the region. For more details see www.dbsa.org.



The **Support Programme for Accelerated Infrastructure Development** (SPAID) combines the resources of business and government to accelerate the achievement of the government's infrastructure development targets. In addition SPAID provides a platform to improve understanding and dialogue between senior public and private sector stakeholders in the infrastructure sector. SPAID is an initiative of the Business Trust in partnership with the Presidency of the South African government. For more details see www.spaid.co.za.



The **Business Trust** combines the resources of business and government in areas of common interest to accelerate the achievement of national objectives. It focuses on creating jobs, building capacity and combating poverty. For more details see www.btrust.org.za



In conducting its work, the **South African Cities Network** secretariat is guided by a programme framework that encourages cities to define city development strategies that adopt a long term view on urban challenges. SACN promotes an inter-governmental approach to planning; and a strategic focus on mobilizing city partners. The objective of any city development strategy is to ensure an integrated approach to development and economic growth in SA cities. For more details see www.sacities.net

Each Infrastructure Dialogue will produce a topic based report of the seminar, available electronically to all participants and any other interested stakeholders. An online forum is available whereby individuals can make comment and input into the discussions.



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Please visit www.infrastructuredialogues.co.za for more information or to have your say.

Introduction

The topic for this dialogue is **Climate Change and the effect on Municipal Infrastructure**. We have three background documents for you to review prior to the dialogue and which will form the basis of the discussions. These are summarized below.

Purpose of the Dialogue

The topic of this dialogue is '**Climate change and the effect on Municipal Infrastructure**'. The focus of the dialogue is to understand the *challenges that Municipalities face in adaption to and mitigation of the effects of climate change and the impact that this will have on their Infrastructure*.

Governments from around the world met in December to discuss policy and the way forward in dealing with the affects of Climate Change (Conference of the Parties -15 of the United Nations Convention on Climate Change in Copenhagen). Negotiations at the Summit closed without reaching a legally binding agreement. South Africa had sought amendments to the Kyoto Protocol setting up a second commitment period, and a legally binding agreement under the convention to bring in the United States (US), secure finance for adaptation and mitigation for developing countries as well as their commitment to implement both mitigation and adaption programmes. At the conclusion of the conference, a total of 28 nations including South Africa signed a political agreement, committing to the continuation of negotiations in 2010.

The South African Government has outlined its response to the climate change challenge. The intent is to balance mitigation and adaptation responses in designing a policy for the transition to a climate resilient and low carbon economy and society.

The national climate change response policy will address six key themes:

1. Greenhouse gas emission reductions and limits
2. Build on, strengthen and/or scale up current initiatives
3. Implementing the 'business unusual' call for action
4. Preparing for the future
5. Respond to vulnerability and the need for adaption
6. Alignment, coordination and cooperation

South African cities are in the process of determining and developing their own responses to the issues of Climate Change.

As part of the global local government climate roadmap process, a declaration at the African Local Government Summit states that local government will be responsible for 'national disaster management, the use of the development planning regime to guide the mitigation of greenhouse gas emissions, and adaptations to manage or minimize the impacts of climate change, including climate proofing of infrastructural development'.

Given that local governments approve and implement development frameworks across the country, this is a critical role and could provide the necessary stimulus for change. Spatial development, which prioritises energy efficiency, the development of activity routes, densification, the enforcement of urban edges, and the priority of public transport over private, could all contribute significantly to the reduction of greenhouse emissions. Local governments are therefore strategically positioned to be the front line in tackling climate change and are expected to respond to, and implement the objectives of the national climate change response policy.

Input documents

Three input documents are provided for the dialogue:

- **The National Climate Change Response Policy**, discussion document for the 2009 National Climate Change Response Policy development Summit, March 2009
- **Sustainable Cities 2009**, produced by the South African Cities Network, 2009
- **Developing a Municipal Adaptation Plan (MAP) for climate change: the city of Cape Town**, produced by Pierre Mukheibir and Gina Ziervogel, published in Environment & Urbanisation, Vol 19, No 1, April 2007

The National Climate Change Response Policy

This document was prepared as a discussion document for the 2009 Climate Change Response Policy development Summit held in March 2009. The document summarises a set of information and policy proposals that underpinned the debate at the conference. In addition the document formed one input into the Green Paper to be published for public comment in April 2010.

The document notes that South Africa is a signatory to both United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. As such, South Africa recognises the grave risks posed to our planet by global warming and is committed to playing its part as a global citizen to take necessary action to respond to the challenge of climate change. In particular South Africa finds itself in a situation in which it is both a high emitter of greenhouse gases, as well as a country predicted to experience the impacts of climate change in a severe manner.

Over the past few years, the profile and significance of climate change issues has increased globally and in South Africa. Within Government, Climate Change is regularly discussed at a Cabinet level and an Inter-Ministerial Committee on Climate Change is supported by an Inter-governmental Committee on Climate Change at an official level. In addition there is a National Committee on Climate Change (NCCC) which is a multi stakeholder forum where work around climate change is discussed and information shared. It is accepted that Climate Change is a national priority of a cross cutting nature, with implications for a wide range of ministries across government and across all spheres of Government. Government's work on Climate Change is an action item on the Government Programme of Action.

In October 2005 a national Climate Change Conference was held that was attended by a large number of Ministers. At this conference it was agreed that a participatory climate change policy development process would take place. This follows the conclusion of a detailed scenario building process to map out how South Africa can meet its UNFCCC Article 2 commitment to greenhouse gas stabilisation whilst sustaining its priorities of poverty alleviation and job creation. In line with these agreements, the Long-term Mitigation Scenario (LTMS) process was initiated in 2006 and was concluded in July 2008. The LTMS was a participatory, research based scenario building process that focused on identifying South Africa's emissions trajectory and formulating a range of potential strategies that would allow South Africa to reduce its emissions over time in a way that is appropriate to its national circumstances and its capabilities. The LTMS conclusions were taken to Cabinet in July 2008. Following this a number of decisions were taken that provide an overarching framework for the development of a Climate Change Response Policy for South Africa.

These decisions include the following:

- **Greenhouse Gas Emission Reductions and Limits.** South Africa will follow a peak, stabilisation and decline Green house gas trajectory over the next 60 years. This will mean that emissions will peak during the period 2025 to 2035, will stabilise until the 2050 to 2060 period and will then decline.

- **Build on strengthen or scale up existing initiatives.** Existing initiatives around energy efficiency, renewable energy, the development of “green” industries, on-going research into climate friendly ways of doing business should be deepened, extended and scaled up to achieve a greater impact.
- **Implement the Business Unusual Call for Action.** South Africa must prioritise investment in research and technology development that would make a major impact on greenhouse gas emissions. This would include investments in R+D for electric and hybrid vehicles, new solar technologies, clean coal technologies, carbon capture and storage and participation in a range of other national and international initiatives that could achieve breakthroughs in achieving low carbon ways of doing business
- **Vulnerability and Adaptation.** South Africa’s vulnerability to the impacts of climate change means that across government and society, we need to understand the potential impacts of climate change and be prepared to meet the resultant challenges.
- **Preparing for the Future**

The report outlines:

- A background and introduction to Climate Change including the challenge of Climate Change and its science, the international climate change regime and the United Nations Framework Convention on Climate Change (UNFCCC) negotiations and climate change and Africa.
- A more detailed review of Climate Change in South Africa including outlining climate vulnerabilities, impacts and adaptation and Greenhouse gas emissions and South Africa’s mitigation potential
- Proposals as to South Africa’s climate change response.

Sustainable Cities 2009

This report provides an overview and analysis of sustainable city learning outputs produced by the South African Cities Network (SACN) and its partners during 2009. This work was undertaken as part of the SACN Sustainable Cities programme which focuses on the need for cities to develop strategies that carefully consider the sustainable use of finite resources in the creation and delivery of infrastructure. The programme looks beyond the green issues and also examines a number of areas that impact on the quality of life and cost of living in urban centres. In 2009, the priority themes included renewable energy and waste-to-energy strategies, biodiversity, green building standards, sustainable public transport and climate change.

The report indicates that municipalities are poised to play a significant role in achieving more sustainable development outcomes. Collective climate action, more assertive regulation of what is built and the way it is built, and massive investments in public transport infrastructure should result in cities that work quite differently in the future.

The report covers the following topics:

- Sustainable public transport in the cities
- National climate change response policy
- Renewable energy tour
- Green building standards
- Growing the green economy
- Waste-to-energy through biogas
- Landfill gas recovery
- Sustainable living
- Urban biodiversity
- Indicators of sustainability

In respect of the topic on the National Climate Change Response Policy the report indicates that the Climate Change Summit declaration (2009) states that local government will be responsible for ‘national disaster

management, the use of the development planning regime to guide the mitigation of greenhouse gas emissions, and adaptations to manage or minimise the impacts of climate change, including climate proofing of infrastructural development'. Given that local governments approve and implement development frameworks across the country, this is a critical role and could provide the necessary stimulus for change. Spatial development, which prioritises energy efficiency, the development of activity routes, densification, the enforcement of urban edges, and the priority of public transport over private, would impact significantly on a modal shift towards public transport - a key area in the reduction of greenhouse emissions.

The report indicates that Local Governments can also play a key role in adopting and promoting more efficient waste disposal and sanitation methods that provide alternative energy sources, through, for instance biogas generation and promotion of wind and solar energy.

The report notes that Local Governments are strategically positioned to be the front line in tackling climate change and are expected to respond to, and implement the objectives of the national climate change response policy. Both mitigation and adaptation strategies are needed.

Mitigation strategies include for example:

- Actively sourcing local energy supplies from renewable sources and increasing municipal targets for renewable energy consumption.
- The use of renewable energy technologies in the building industry, through town planning and building plan approval processes.
- Providing or requiring the use of solar water heaters (SWH), and providing support for the emerging local SWH manufacturing industry.
- Setting mandatory standards for energy efficiency, including standards for commercial, residential and government buildings.
- Implementing a green purchasing strategy that considers sustainability and environmental impact when municipal purchasing decisions are made.
- Investing in sustainable public transport services, and encouraging passenger modal shifts towards public transport.
- Implementing waste reduction and recycling programmes at source to ensure that recyclable waste does not go to landfills.

The adaptation strategies include for example:

- Accelerating the development of the Risk and Vulnerability Atlas to inform adaptation responses and planning.
- Increasing public awareness of climate change.
- Making amendments to spatial development plans to take climate change impacts into account.
- Pooling the buying power of municipalities to procure green technologies in a cost-effective way.

The report notes that there are many other strategies that local governments can use to reduce greenhouse gas emissions, and increase their capacity to adapt to the impact of climate change. Larger metros have already made strides in developing credible mitigation and adaptation strategies. For example:

- In a bid to popularise the use of SWHs, the City of Johannesburg developed a solar-water system project in Cosmo City whereby solar water heaters were installed in low-income households. Similarly, the City of Cape Town plans to scale up renewable energy use by having 10 per cent of all city-owned housing and public buildings equipped with SWHs by 2010. To further its goal to source 10 per cent of its energy from renewable sources by 2020, the city plans to purchase 'clean' electricity produced by the Darling Wind Farm.
- Moving beyond the use of solar power, eThekweni municipality has developed a landfill gas to electricity project which will utilise landfill gas from three municipal sites. The sites are expected to yield 10 megawatts of power annually. eThekweni also plans to amend its spatial development plans to account for climate

change impacts, and respond accordingly to improve the resilience of the city's natural and built environment to climate change.

- The public transport system, which is heavily dependent on petroleum, is a key focus area for cities. Reducing cities' carbon footprints requires changing the mode of transportation from private vehicles to public transportation, such as buses and rail. The introduction of the Bus Rapid Transit system is an opportunity for local governments to mitigate climate change by providing a more efficient bus system that will result in a modal shift from private vehicles to public transportation.

The report notes further that climate change response policy is set to become an overarching policy that impacts on the activities of every sphere of government. The development of a national climate change response policy means that local governments have national support in undertaking local climate change strategies. The options are endless, and every facet of local government's work can be transformed to prepare for and mitigate the impact of climate change. In order to do this successfully, local governments have to integrate the climate change response policy into their normal planning and implementation practices. The policy must guide all areas of development and local government is in a unique position to do this, through development planning and approval processes, and large scale implementation activities.

In his recently released book, *Cleaner Energy, Cooler Climate*, Harold Winkler summed it up well when he said *'the starting point for both energy and mitigation policy is sustainable development. Climate change mitigation policy, specifically, should start with local sustainable development rather than with goals set in climate terms.'* Winkler argues that developing nations like South Africa can see the greatest benefits if they focus their attention on changing development paths. He states that although the residential sector may not deliver the largest absolute energy savings, it is critical for social development. This is the arena in which local government operates; it sets the development pathways of cities and of the residential sector. It can redirect public spending into activities that ensure thermally efficient buildings are built, that SWHs become the norm, and that cities are densified, thus making public transport a reality. Winkler suggests that this is where the real gains will be found – the integration of climate change strategies into social development goals, thus providing the means to achieve goals set by the climate change response policy.

Developing a Municipal Adaptation Plan (MAP) for climate change: the city of Cape Town

This paper argues that climate change increases the likelihood of extreme weather events such as droughts, floods and heat waves, as well as more gradual changes in temperature and precipitation. The city of Cape Town is at risk from projected climate-induced warming and changes in rainfall variability. This makes resource management and infrastructure planning more challenging and increases the urgency of the need to adapt city-level operations to both current climate variability and future climate change. To date, however, the main focus of adaptation planning has been at the national level, and has not adequately addressed municipal-scale adaptation.

The paper presents and discusses an overarching framework that would facilitate the development of a Municipal Adaptation Plan (MAP). The example of the city of Cape Town illustrates some of the sector-level assessments and potential climate threats, as well as resource mobilization issues that need to be addressed during the development and implementation of a MAP. In conclusion, a number of barriers to developing a MAP are discussed.