

Greening Infrastructure

Roundtable held on
9 September 2011

Development
conversations

“ People were planning for a future that was not going to happen because climate change was shredding the assumptions ”





Published by

Development Planning Division
Development Bank of Southern Africa
PO Box 1234
Halfway House 1685
South Africa

Telephone: +27 11 313 3911
Telefax: +27 11 313 3086
Email: dpdpublications@dbsa.org

Intellectual Property and Copyright

© Development Bank of Southern Africa Limited

This document is part of the knowledge products and services of the Development Bank of Southern Africa Limited and is therefore the intellectual property of the Development Bank of Southern Africa. All rights are reserved.

This document may be reproduced for non-profit and teaching purposes. Whether this document is used or cited in part or in its entirety, users are requested to acknowledge this source.

Legal Disclaimer

Development conversations capture the output of Roundtables organised and hosted by the DBSA to integrate areas within its mandate. The Roundtables are run on a Chatham House basis and views expressed are not ascribed to individuals or organisations.

In quoting from this document, users are advised to attribute the source of this information to the participants concerned and not to the DBSA.

In the preparation of this document, every effort was made to offer the most current, correct and clearly expressed information possible. Nonetheless, inadvertent errors can occur, and applicable laws, rules and regulations may change. The Development Bank of Southern Africa makes its documentation available without warranty of any kind and accepts no responsibility for its accuracy or for any consequences of its use.

Participants:

Chairperson:

David Jarvis Development Bank of Southern Africa

Presenters:

David Hollowes Consultant
Jeff Manuel South African National Biodiversity Institute
Kristal Maze South African National Biodiversity Institute
Llewellyn van Wyk Council for Scientific and Industrial Research

Participants:

Thierry Giordano Development Bank of Southern Africa
Saguna Gordhan Development Bank of Southern Africa
Glenn Havemann Development Bank of Southern Africa
Colleen Hughes Development Bank of Southern Africa
Elsa Kruger-Cloete Development Bank of Southern Africa
Saphira Patel Development Bank of Southern Africa
Kate Rivett-Carnac Development Bank of Southern Africa
Ingrid Verwey Development Bank of Southern Africa

Table of Contents

1. Introduction	4
2. Issues	4
2.1 Natural infrastructure - our asset	4
2.2 Integrated landscape land-use choices and development	5
2.3 Implications for the built environment	5
2.4 Spatial location of the built environment, transport and transit oriented development	6
2.5 The economy and environmental justice	6
2.6 Policy shifts	7
2.7 Participation and behaviour changes	7
2.8 Practical initiatives	7
3. Conclusion	8

“ We have to confront the thinking that engineers will always find a solution ”

Greening infrastructure

1. Introduction

South Africa's government has committed to an infrastructure expenditure programme of almost R1 trillion. Global and national agreements and policies reflect extensive acceptance of climate change and its implications. There is a strong conviction that countries and people have to adapt to the impacts of the changing climate and that infrastructure needs to have less impact on the environment. The purpose of this Roundtable was to explore the concept of greening infrastructure and its relevance for a country like South Africa, especially in light of its commitment to infrastructure development. The issue is important as all social development and economic activity depends on infrastructure which involves long term and high value investments.

The presentations and discussions were concerned with some components of this issue, understanding the relationship between the natural environment and the built environment and the implications of this relationship for the economy, with particular emphasis on:

- the role of ecological infrastructure and biodiversity assets in South Africa's development, and how to optimise development futures at a landscape level;
- how to make the built environment including infrastructure robust enough to withstand the impacts of climate change, and how to better integrate it with the natural environment; and
- is it possible to integrate the green economy with a growth driven economy, and if so, how?

The discussion was concluded by examining practical steps that DBSA could take to begin to incorporate these perspectives into its work and to influence other stakeholders to do the same.

2. Issues

2.1 Natural infrastructure - our asset

The South African National Biodiversity Institute (SANBI) defines green infrastructure as infrastructure that is good for the environment and for sustainable development. This broad definition is applicable to the ecological infrastructure – the landscape, which consisted of natural open spaces – and the role that it plays in our lives. The ecological infrastructure provides many 'free' services in the form of ecosystem services, such as water conservation and crop pollination. Very importantly, the biodiversity sector has changed its advocacy strategy from speaking the language of loss, which was not interpreted as a call to action, to positioning ecosystems and biodiversity as an asset.

Looking to the future of these assets, society must act to optimise the long-term productive capacity of landscapes. This means making the right choices. In making these choices we need to acquire a good understanding of the value of our natural capital, and accept the obligation to account for its use. Globally there have been moves afoot to adopt green accounting which corrected for the depreciation of natural capital. SANBI is working on this, linking Pavan Sukhdev's work on the economics of bio-diversity to develop green accounting for South Africa where high levels of biodiversity translate into highly complex ecosystems. From a purely utilitarian viewpoint they are a valuable resource to exploit for service delivery and for the benefit of society. A potential danger is that this approach can soon lead to the commodification of ecosystems, reducing their long term value for purely utilitarian purposes.



2.2 Integrated landscape land-use choices and development

SANBI's role is to understand how land-use preferences impact on this ecological infrastructure. Taking farm land for example, well planned fields and roads would enable natural features like wetlands to provide natural storage and flood control benefits. Poor integration could result in the destruction of wetlands and other ecological infrastructure, leading to costly problems like erosion, silting of dams and washing away of roads. South African planners need to look at the whole landscape and plan roads, railways, ports and other infrastructure with a single vision that optimises the use of natural capital. Preserving ecological infrastructure in isolation is not the answer on its own – it should be about careful planning of ecological infrastructure and development in tandem.

Areas with a rich ecological legacy commonly coincide with poor rural areas, suggesting opportunities for poverty alleviation, rural livelihoods and restoration of ecological features. Case studies show that restoring, maintaining and enhancing ecological infrastructure could improve service delivery and create jobs in rural and urban contexts.

Development and land use planners have been quick to employ information that SANBI produces about ecological processes and ecosystem goods and services to inform land use decision making. SANBI's biodiversity maps clearly identify critical biodiversity areas that need careful management, while higher resolution maps provide specific guidelines for municipalities on land use changes, enabling practitioners to apply a landscape planning perspective. These biodiversity maps represent the biodiversity sector's primary input into multi-sectoral planning alongside the Spatial Development Framework (SDF) as the primary framework for national land use planning. This planning feeds into municipal integrated development plans (IDPs), environmental management frameworks, individual environmental impact assessments (EIA) and state of the environment reporting.

Recently SANBI has been approved to manage the Global Adaptation Fund for Climate Change, which is linked to the United Nations Framework Convention on Climate Change's (UNFCCC) Clean Development Mechanism. This gives South Africa direct access to the fund rather than having to go through the World Bank. It represents a significant resource that the country could exploit to change its approach to development.

2.3 Implications for the built environment

The built environment is increasingly impacted on by the effects of extreme weather events. These phenomena present global challenges in bearing the costs, with insurance companies and governments steadily limiting their coverage of costs. This raises the question of how South African institutions could reduce exposure and increase resilience. The meaning of resilience was not well understood; people in municipalities mainly saw it as protecting what was already there rather than adopting a new approach to human settlements. For this reason SANBI dropped the term in favour of human settlement adaptation.

The first priority for green infrastructure planning has been to determine optimal locations for new infrastructure, taking into consideration the predicted impacts of climate change. South Africa has been building infrastructure to last for the next 50–100 years that might not be able to withstand the impacts of climate change. For instance, the high rainfall and high winds predicted along South Africa's east coast as a result of climate change has raised awareness about the need to

adapt building codes in these areas. Given different climatic conditions across the country, a one-size-fits-all building code no longer seems appropriate.

The second priority has been to set goals based on what planners would like developed areas to be like in 2050. Based on this assumption, planners could begin to devise strategies and plans for providing services that would cope with future conditions. An important realisation was the need to move away from centralised services, which are considered vulnerable to system failure, and to optimise services based on an individual city block which would continue to operate even if the wider system failed. However, this raised the issue of how to motivate municipalities to implement such changes. Why would a municipality want people to go off the grid and thereby reduce their electricity income? It may well be necessary therefore to look at a new model for municipal finance.

2.4 Spatial location of the built environment, transport and transit oriented development

Climate change presents challenges for transportation and transit-oriented development requiring several transport options so that if one failed, others would provide back-up. The next step would be to integrate the built environment and ecosystems with the aim of replacing settlements that were displaced by climate change. This involves a strategic choice: to accept some settlement displacement as inevitable, and to concentrate the built environment to reduce its footprint rather than try to integrate it into the ecosystem. To ensure open access between settlements is considered important to create corridors so that natural flows could continue.

To implement this framework the following is required:

1. Political will – without which adaptation would not happen.
2. Future-proofing development – based on an understanding of what is happening and what is likely to happen.
3. Prioritise the building sector, including infrastructure – important considerations include: future proofing, using infrastructure lifecycle analysis, and designing structures so that they could be disassembled and reused.
4. Community empowerment – people need to understand the reasons for adaptation of the built environment.
5. Communication – hurricane Irene caused fewer deaths than other extreme weather events in the United States because people were informed in time to take evasive action. Similar communication systems should be implemented in similarly threatened regions in South Africa.
6. Institutional capacity – governments have to prepare themselves at national and local level to understand what is going on.

2.5 The economy and environmental justice

Is there a basic contradiction between a growth-driven economy, environmental justice and sustainability? While it was possible and necessary to integrate elements of a green economy into the existing economy, to limit the catastrophic effects of climate change a new organising principle for the economy is required. The target of limiting climate change to the benchmark two degree



temperature increase as set out in multilateral negotiations will not be met if humankind sustains current consumption patterns – which in turn will have disastrous consequences in the lifetimes of today's younger people. Even a two degree increase would have catastrophic results for southern Africa which is likely to see far higher temperature increases than global averages, with current estimates indicating increases of more than six degrees. A more manageable 1.5 degree average global increase is unlikely to be achieved unless there is an immediate halt to carbon emissions. The question of whether carbon free or zero carbon growth is possible has been raised and continues to be the subject of debate.

2.6 Policy shifts

The South African Constitution provides the basis for a new organising principle for economic planning in the form of the right to a clean and healthy environment. However, current policies in South Africa are not being implemented rigorously enough in terms of the measures required by science to meet the targeted two degree temperature reduction. Five priorities essential to be addressed to limit climate change to manageable proportions include: to change the organising principle of the economy, to shift towards localisation of economic activity, to shift energy production to renewable sources, to change the way energy is consumed and eliminate wasteful consumption, and to address the way in which food is produced and consumed. Implications for South Africa is that it may need to implement further green taxes, control its waste economy better and make the transition to public transport.

2.7 Participation and behaviour changes

It is important to look at ways to change behaviour and get people to act differently. To get the general population to take up these issues would require popularising a 'green' language, removing jargon and using more plain language. There is also a danger that in talking about the green economy people would see it as something separate from daily economic activities, or as an add-on commitment rather than essential to a sustainable economy. One way to avoid this is to focus on the benefits that environmentally conscious project design and implementation could bring in terms of cost savings and reducing impacts on natural resource use.

2.8 Practical initiatives

One of the biggest challenges is individual and institutional behaviour. It was noted that the challenges are being addressed inside the DBSA in terms of approaching its business differently, and infusing green thinking into its work. The Bank needs to persuade other stakeholders to buy into and influence green development processes. It was argued by participants that the DBSA needs to look at how to integrate issues more effectively so that it can put forward tested solutions. One way to start would be to interrogate South Africa's infrastructure build programme to see if it would stand up to a 'Green test'.

There are a number of practical things that the DBSA could do to advance a green infrastructure agenda. For example, including practice notes on new environmental tools in its new Environmental Appraisal Procedures. From a project perspective, the Bank could ask what a project could achieve and what more should be required from a green perspective. It could also consider approaches to design and technology that would be implemented from a pro-green stance. Further opportunities

reside in how the Bank could set pro-green conditions in its loan agreements. This might include initiatives such as the Jobs Fund, which has created space for dialogue with Treasury around the kind of economy South Africa is moving towards.

The DBSA could influence conditions through its investment strategy though these also need to be realistic. Ideally it might well aspire to implementing very different kinds of green project, but there are policies and regulations that are beyond the Bank's control. Finally, participants acknowledged that to achieve pro-green change the scale of intervention under discussion was even beyond the national fiscus and would require a new funding model to bring in private sector funding.

3. Conclusion

The Roundtable concluded that extensive and very useful work has been done across a number of institutions, such as SANBI, the CSIR and the DBSA to provide information and tools for advancing a greener infrastructure agenda. Environmental justice or a just transition emerged as an important issue which presents an opportunity to promote social development, reduce inequality and develop the economy. The interchanges in the session were very stimulating and served as a very useful primer on the green infrastructure debates.