2017
2018

ANNUAL COMPENDIUM

DEVELOPING INFRASTRUCTURE FOR INNOVATION AND TRANSFORMATION

South African Conversations on INFRASTRUCTURE

infrastructureDialogues

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DBSA
Development Bank of Southern Africa

South African CitiesNetwork

planning, monitoring and evaluation
Department: Planning, Monitoring and Evaluation
REPUBLIC OF SOUTH AFRICA

NBI
National Business Initiative

CREAMER MEDIA'S ENGINEERING NEWS

economic development
Economic Development Department
REPUBLIC OF SOUTH AFRICA

The Infrastructure Dialogues is a high-level platform for stakeholders in the infrastructure sector to discuss and share their views. The value of the Dialogues is enhanced when senior leaders and managers from government, the private sector and civil society continue the conversation once the event itself is over.

Each Dialogue is recorded so that interested people who have not been able to attend in person are able to read a report of the proceedings and join in the conversation. This Compendium of the Infrastructure Dialogues 2017–2018 is a distillation of those conversations, presenting the key themes and identifying issues that preoccupy all who are constructively involved in improving South Africa's infrastructure.

Find us online: www.infrastructuredialogues.co.za

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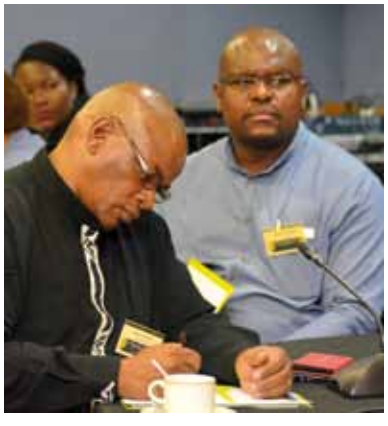

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List of Acronyms

DBSA	Development Bank of Southern Africa
DFI	Development Finance Institution
DPME	Department of Planning, Monitoring and Evaluation in the Presidency
EDD	Economic Development Department
GIFA	Gauteng Infrastructure Financing Agency
GTAC	Government Technical Advisory Centre
IDC	Industrial Development Corporation
JDA	Johannesburg Development Agency
KfW	German Development Bank
NBI	National Business Initiative
PPP	Public-Private Partnership
REIPP	Renewable Energy Independent Power Producer
SACN	South African Cities Network
VRP	Voluntary Rebuild Programme

Foreword

from the Steering Committee

The Infrastructure Dialogues are a forum that provides senior government, private sector and civil society stakeholders with a regular platform for the sharing of views and perspectives on critical issues affecting the infrastructure sector.

Since 2009, the Dialogues have been hosted by the Development Bank of Southern Africa (DBSA), in partnership with the South African Cities Network (SACN), the National Business Initiative (NBI), the Economic Development Department (EDD) and the Department of Planning, Monitoring and Evaluation (DPME) in the Presidency, with Engineering News as Media Partner.

This is the fifth edition of the Compendium, which is a compilation of the key issues that emerged from the four dialogues held between May 2017 and February 2018.

The Steering Committee of the Dialogues takes great pride in fostering an environment of frank, constructive engagement on the issues in this critical sector. Topics for the Dialogues are the result of suggestions from the partners, input from participants in the Dialogues and discussion forums on the website.

We invite you to visit the Infrastructure Dialogues website where a report of each Dialogue and all of the Compendiums are published: www.infrastructuredialogues.co.za

Introduction

The Infrastructure Dialogues provide a forum in which government, the private sector and civil society stakeholders can share views and perspectives on the infrastructure sector. Since 2009, the dialogues have evolved, from being concerned with identifying and describing problems, to seeking to understand what is required to harness the power of infrastructure investment to support national growth and development. Through these dialogues, what has emerged clearly is that government alone cannot grow and develop the country through investing in infrastructure. All stakeholders need to play their part.

This year's dialogues expanded on the previous year's theme of the wealth of the commons that highlighted the need to balance conflicting interests and build a shared vision and objectives through dialogue. The dialogues asked some hard questions about the transformation and innovation in the infrastructure sector, which is needed if South Africa is to grow the economy and achieve the goals of the National Development Plan.

The first dialogue (May 2017) made the case for public-private partnerships (PPPs) as a means of crowding-in infrastructure investment and catalysing economic development. South Africa has examples of successful PPPs that can serve as a foundation of knowledge and insight into what works. In addition, as the August dialogue highlighted, new ways must be found to deliver and fund infrastructure, and barriers to innovation need to be overcome. The answer lies in improved collaboration, but for that to happen mindsets need to change. Mindsets are one of the barriers to transformation in the property and construction sectors, which was the subject of the November dialogue. Emerging from the robust discussions was a consensus about the importance of transforming the sector, which would create new dynamics and lead to the identification of new opportunities. Finally, the last dialogue of the year (February 2018) looked at what is needed to build infrastructure for the future in times of uncertainty. Participants agreed that South Africa can either remain a highly consolidated economy, where wealth and power are in the hands of a few, or become a country that unleashes its society's creativity at the localised and micro level. Transformation and innovation will come from talking to each other, sharing lessons and working together.

This Compendium highlights the key themes that emerged and provides a summary of the Infrastructure Dialogues held in 2017/18.

Infrastructure Dialogues 2017/2018

18 May 2017
Crowding in Infrastructure Investment – how can we be "smart catalysers"?

31 August 2017
Industry, Innovation and Infrastructure

16 November 2017
Black Participation and Transformation in the Infrastructure Sector

15 February 2018
Building for the Future in South Africa's Cities

Key Themes

In 2017/18, the common thread running through the dialogues was developing infrastructure for innovation and transformation. While the main themes showed some continuity with last year's themes, the emphasis evolved and expanded. For example, the need for skills development and capacity building remained important but was not one of this year's main themes. The theme of shared understanding and commitment evolved to changing mindsets, while people at the centre expanded to the need to start small and local, and two new themes emerged: do business differently and find innovative funding arrangements. The main themes that became apparent across the dialogues were:

- Use the existing system more effectively
- Do business differently
- Start small and local
- Change mindsets
- Find innovative funding arrangements

Use the existing system more effectively

Government can better use the existing system to promote transformation, as the private sector is unlikely to include black players of its own accord. Legislative instruments are available that allow government departments to increase to 50% the generic 25% black-owned requirement for tenders. All spheres of government can do more to leverage public procurement to encourage the participation of black-owned companies. For instance, municipalities can insist on existing suppliers (the "usual suspects") improving their BEE scores and design the procurement process to enable more black-owned companies to tender (as SANRAL has done). At the same time, government needs to improve its monitoring and evaluation, check credentials and impose consequences, such as fines and bans, for misrepresentation ("fronting"). This would address the problem of developers who use contractors with poor BEE levels, or companies that do compliance ("tick boxes") rather than empower emerging entrepreneurs.

In addition, entities such as the Industrial Development Corporation (IDC) and the DBSA can instruct their implementing agents to use part of any contract value to develop the skills of small contractors and aspiring entrepreneurs. This would not only lead to greater empowerment and transformation, but also would open up the sector to more innovation.

Do business differently

Transformation needs to be embedded culturally and financially in how business is done. Using only government's "big stick" to push for transformation can lead to fronting, whereas if profitability depends on transformation, shareholders and businesses themselves would do the necessary monitoring. Transformation is also good for business, as when new perspectives are allowed in, new opportunities are identified, and new business models emerge.

The need to do business differently is especially important to meet the challenges of the fourth industrial revolution, refers to the coming together of data, connectivity, broadband and mobile, and the digitalisation of services. Many are worried that technology will replace jobs, especially low-skilled jobs, which will lead to higher unemployment. However, this does not necessarily have to be the case. Countries can choose to adopt a balanced approach, where technology exists alongside labour-intensive manual work. For instance, Thailand adopted such an approach and has an unemployment of less than one percent. Advances in technology have resulted in new jobs, which are perhaps better described as "digitally enabled income opportunities" in new (and often disruptive) businesses such as Uber and M-Pesa. Such "jobs" are not attached to a large corporation or government in the formalised economy; they are informal and will require different skills. What this means is that, to meet the needs of the future, training will have to move away from standardised, classroom-based education to more flexible learning that builds on experience and creates space for people to find solutions to their (and society's) needs.

Technology is also changing the way in which infrastructure is delivered, with traditional utility companies no longer the only service providers. In the water and energy sectors, "pro-sumers" (consumers who are also producers) are feeding into the water and electricity distribution networks at a local level.

Start small and local

These "pro-sumers" are examples of localised network solutions that can have greater impact than large capital expenditure projects and are less vulnerable to a whole-system collapse than interconnected systems in "smart" cities. Such off-grid power and water solutions are explored through pilot projects, which enable the testing of new technologies, learning and assumptions. This approach is referred to as agile development and involves starting small, planning, doing, learning and changing. Related to this is "broken world thinking", where the focus is on repairing things, not building new infrastructure.

In the case of new infrastructure projects, local labour should be used. Localisation, or the use of local labour on projects, would reduce the contestations that often prevent developments from proceeding. Indeed, community involvement should go beyond localisation to include communities in the design and development of the project, not just the construction phase. Involving local communities from the start of a project brings a sense of local ownership (which means that the community looks after the asset) and ensures that the project meets community priorities and needs. However, finding effective localised solutions requires collaboration, which South Africa is not always very good at.

Change mindsets

For collaboration to work, all parties involved – government, business and labour – must have shared interests and trust. Government needs to understand that its role is to enable the economy and wider participation, while the private sector is the developer. Collaboration starts by getting to know each other through dialogue, where each can see the future from the other's perspective. Only then will mindsets change. Current mindsets are a barrier to innovation and to transformation. An example of how mindsets impede transformation is when a client will only appoint a black professional company if a white professional company is involved. However, while the lack of transformation may be in part because of prevailing mindsets, it is also because black business lacks a common agenda for transformation – unlike the Afrikaner

apartheid agenda, which was not a nice agenda but was clear, focused and produced results. It is perhaps time for black business to self-examine, address mindsets and agree on a transformation agenda.

Government, by its nature, has an institutional mindset that does not encourage innovation and employs people who generally are not interested in innovation or are not innovative. Therefore, ways need to be found to encourage innovation within the public sector. Lessons can be learned from the DBSA, which has created a "disruptive den" to allow for multi-stakeholder innovation forums that contribute to changing mindsets.

Find innovative funding arrangements

DFIs, such as the DBSA, are able to deal with risks that private sector banks are unable to, such as the risks associated with infrastructure. For instance, localised solutions could, through innovative financing models, have a trickle-down effect and result in additional micro-businesses. However, the private sector would not support such investments until a certain mass is attained, which is where the DFIs must come in. Tax-based increment financing is another solution that was successfully used by the City of Johannesburg to finance a project and could be applied at a broader level.

Access to funding will always be a challenge, and the infrastructure needs for the future are beyond the public purse. New funding models must be found, and capital needs to be mobilised differently, combining and using different pools of capital. For instance, financing through pooling risk capital, DFI money and regulatory contributions, or using community funds available from burial societies and stokvels. Access to working capital is especially difficult, and various innovative ideas emerged from the dialogues for funding working capital needed by emerging entrepreneurs. These included providing matching funding and government guarantees (e.g. 10-year lease) so that small companies can access materials or funding, and incubating enterprises, through established companies providing space and favourable terms for start-up businesses.

1. Crowding in Infrastructure Investment – How can we be "smart catalysers"?

The 43rd Infrastructure Dialogue explored how private sector resources can be mobilised through public-private partnerships (PPPs), to address the scarcity of public funds for financing both the infrastructure backlogs and the new infrastructure needed for growth. The discussion covered two approaches to infrastructure development, examples of successful PPPs, sectors that would benefit from PPP solutions and requirements for ensuring PPPs work in South Africa.

Two approaches to infrastructure development

Spatial targeting (which includes transit-oriented development) and greenfield development are the two approaches. An example of spatial targeting is Johannesburg's Corridors of Freedom, where areas located around transit corridors and stations are identified for densification, with the aim of creating mixed-use, pedestrian-oriented inclusive precincts. Unlike these developments, which take place within existing infrastructure corridors, greenfield developments create new economic nodes on the edge of residential or industrial areas. Although initial land costs for spatial targeting projects are higher than for greenfield development, spatial targeting is more affordable over time. Municipalities, which are often financially constrained, also become responsible for the operational costs of greenfield developments.

PPPs in South Africa

PPPs are not new to South Africa and, if done in the right way, can stimulate growth and development. Several institutions and agencies focus on making PPPs work. Examples include: the Gauteng Infrastructure Financing Agency (GIFA), which is funded by the provincial government and has a pipeline of projects valued at R37.5-billion for implementation over the next few years; the Johannesburg Development Agency (JDA), which looks after infrastructure development in the city; and the Government Technical Advisory Centre (GTAC), which is currently assessing the redevelopment of six major border posts through PPPs. Two successful PPPs are the Mbombela and Ilembe water projects that demonstrate how private funding can be leveraged if the project is properly developed and efficiently managed.

Projects suitable for PPPs

Several sectors and projects could benefit from PPPs, although many believe that South Africa's PPP framework needs reviewing, as the current framework is based on frameworks adopted in England.

- Affordable housing, although the challenges are many. The main challenge is that to unlock the opportunities for growth in areas such as Alexandra will require designing buildings and developments differently to what is usually done. New real-estate products will also be needed, as current products are either based on living standards measures or accessible to only a narrow market segment.
- Rooftop solar energy, which leverages the rooftop space on government buildings, can make the buildings largely self-sustainable. Grants could be leveraged from provincial treasury to attract private resources and technical capacity. It is estimated that renewable energy could generate 350MW per year.
- Waste management projects are needed to address the shortage of available land for landfills. For example, projects that convert waste to energy.
- Public hospitals, if ways can be found to leverage the R10-billion that provincial government receives.
- Gautrain expansion, with infrastructure development at seven depots, which offers opportunities for PPPs focused on transit-oriented land development.
- The Kopanong project, which involves merging 19 provincial government buildings into one, new government centre in Johannesburg's inner city.

Requirements for PPPs to work

For PPPs to work in South African and to achieve infrastructural objectives in South Africa, the following requirements were identified.

- **Coordinate input and projects.** All parties – planners, developers and financial people – need to work together from the start of a project and manage expectations. The idea of a Centre of Expertise was raised, to provide direction, guidance and help to unlock doors to the marketplace and communities.
- **Understand effective land use.** The Gauteng government could leverage the land that is available. For example, at the Innovation Hub in Pretoria, government provides the land, while the private sector put up top structures and rents out buildings. This would require a proper land audit and an understanding of the factors that impact a precinct before development.

- **Get private sector buy-in.** This requires rules of the game that are set in stone and do not change when governments change. Partners need to share the same thinking and approach to development and service delivery, to align their objectives and to trust each other. If their agendas are different, inertia creeps in.
- **Have the right skills.** The DBSA offers technical skills and services in project preparation and helps to leverage funding once a project is affordable. PPPs need external dealmakers/negotiators, and internal leaders/project champions.
- **Minimise bureaucracy.** The private sector should be allowed to take initiatives, even if government is not involved. Government needs to cut red tape to crowd-in private investments, and to leverage the private sector's willingness to participate and generate ideas.
- **Trust and understand each other.** Government needs to understand that its role is to enable the economy and capital market to operate, whereas the private sector drives the developments.
- **Balance competing factors.** Smart thinking is needed to bring together competing elements. For example, government provides grants for social housing but could also consider lowering the cost of land, which would enable competition and crowd-in private investment.

Funding of PPPs

Municipal bonds are the most viable tools for raising capital for the growth of cities, although the JDA had to go to the international debt market to obtain a rate that was low enough to be affordable. Uniform or similar asset classes, such as waste-energy projects, can create infrastructure bonds and project bonds that can catalyse new businesses. The Johannesburg Stock Exchange has adopted these types of bonds, which will be ringfenced. It is anticipated that there will be a huge demand for these bonds – green bonds are suitable for South Africa. In other countries, including the USA, tax increments have been used successfully to raise funds.

What emerged from the dialogue was that South Africa has successful PPPs that could serve as a foundation of knowledge and insight into what works and how to implement and manage PPPs effectively. In developing innovative funding mechanisms, South Africa should prioritise options that will increase private investment and catalyse sustainable development.

CROWDING-IN INFRASTRUCTURE
PUBLIC SECTOR CHALLENGE
• Scarcity of funds, resources & skills
Public Private Partnerships (PPP)
VISION
• Transformation
• Innovation
• Inclusivity
• Job opportunities
• economic growth opportunities
• Catalytic investment
• Social change
INNOVATIVE SOLUTIONS, ENSURING TRANSFORMATION & SUSTAINABLE CHANGE
• Spatial Targeting & Transit-oriented Development • Greenfields Development
How do we leverage public funds and grants, making sure innovative and cost-saving initiatives are workable and implemented effectively by crowding-in private resources, both financial and technical?
?

2. Industry, Innovation and Infrastructure

The 44th Infrastructure Dialogue was inspired by the Sustainable Development Goal 9, which considers infrastructure as going beyond dams, roads etc., to include research and development, education, cities, social housing and health infrastructure. The socio-economic scenarios developed by the National Business Initiative (NBI) was the starting point for discussions, which centred on identifying innovative ways to deliver and finance infrastructure, and the barriers to innovation.

New ways of delivering infrastructure

Innovations are changing the way in which infrastructure is delivered and making infrastructure networks more efficient. Traditional utilities are no longer the only service providers, and the number of "pro-sumers" (consumers who are also producers) continue to rise. For example, some mines treat their wastewater and return the treated water to the municipal distribution networks, while small solar home companies are delivering energy to the grid. Networks are becoming more efficient: in the water sector, thanks to new technologies that enable meters to respond to leaks and pressure surges; and improved route planning in the transport sector. The state needs to build the public sector's credibility in order to attract the private sector that brings capital, efficient delivery and innovation. The Renewable Energy Independent Power Producers (REIPP) programme is an example of how to harness private sector efficiency and performance, and similar programmes could work in the water and wastewater sectors. In China, the private sector serves 32% of the municipal water sector, compared to 3% in South Africa.

New ways of funding sustainable infrastructure

The World Bank estimates that transitioning from the status quo to a low-carbon economy will require R150-billion per year up until 2030. There are many opportunities for small, emerging companies in the energy-efficient sector. However, the challenge is finance – with no bespoke energy-efficient finance products on the market, the only option for these companies is to borrow against balance sheet. In response to this challenge, the NBI and DBSA have developed an innovative solution that uses a combination of instruments with the aim of scaling up private and public capital. Instruments include government grants (to municipalities) and guarantees (for energy service companies), which lower the risk, and a private sector fund that includes private equity and off-balance sheet debt.

Barriers to innovation

For aspiring entrepreneurs with innovative ideas for developing small-scale infrastructure, the main barrier is easy access to information about what assistance (including funding) is available. Development finance institutions (DFIs) should ensure that their implementing agents develop small contractors and promote labour-intensive work. Government should put in place a dedicated, evolutionary programme aimed at getting SMMEs on the ladder, while local government needs to explore different models that will provide small businesses with the space to innovate. However, another barrier is the mindsets within government and society. The institutional setup across government is unnecessarily complex and does not encourage

innovation, and municipalities tend to attract (and employ) individuals who are not generally innovative thinkers. Societal aspirations can also block innovation, as alternatives to (for example) piped water and flushed toilets may be seen as "poor alternatives" that are unacceptable to communities.

What emerged from the dialogue was the recognition that everyone agrees on the importance of collaboration, but it is difficult to achieve. Conversations, such as those at the Infrastructure Dialogues, are needed to build bridges between the private and public sectors, and to share ideas and role models.

3. Black Participation and Transformation in the Infrastructure Sector

Robust discussions were the order of the day at the 45th Infrastructure Dialogue, which reflected on the lack of transformation in the infrastructure sector, the missed opportunities and practical challenges facing the construction and property sectors, in particular for black-owned companies.

Lack of transformation

The construction and property sectors do not represent South Africa's demographics. Most large construction companies have about 10% black ownership, well below the target of 25%. In the built environment sector, just 1% of large companies (above R35-million annual turnover) are black-owned, while in the property sector only a tenth of all estate agents are black. This lack of transformation affects where development is taking place, and ways need to be found to attract development to under-resourced areas.

Missed opportunities

The biggest missed opportunity to transform the infrastructure sector was the 2010 FIFA World Cup, which could have enabled black-owned construction companies to grow sustainably. The Voluntary Rebuild Programme (VRP), an agreement between government and the seven white-owned construction companies found guilty of collusion over the 2010 contracts, is supposed to contribute to the sector's transformation but has not been rolled out. This may be in part because emerging companies were not included in drawing up the agreement.

Practical challenges

Several challenges were identified that contribute to the difficulty in transforming the sector.

- **Access to funding.** This will always be a challenge, and what is important is ensuring that funds are channelled in the right direction, to drive transformation. Part of the problem is the timespan of infrastructure projects, as cost drivers can change over 3–4 years.
- **Subcontractors.** Most developers use contractors with low BEE levels, and some get around the requirements by giving projects to implementing agents such as the IDT or DBSA. Government needs to focus on developing contractors and to ensuring that companies do not just comply (tick boxes) but are committed to developing black/women-owned firms.
- **Mindsets.** These range from some clients who will only appoint a black professional company if a white company is involved, to some black businesses who feel entitled to 100% grant funding. In addition to mindsets, black business needs to have a common agenda for transformation that is not a legislative box-ticking exercise.

Transformative solutions

The public sector has to drive transformation, and sector charters are not the only tools for achieving transformation. Some innovative suggestions emerged from the discussions.

- **Make access to working capital easier,** by setting aside some of the VRP money (so participants can get matching funding from the IDC), giving government payment guarantees (so companies can get access to materials or funding), and establishing incubators where established enterprises can mentor start-up companies.
- **Use legislative instruments effectively,** to avoid "fronting". Government departments can apply for a deviation to increase the requirement from 25% to 51% black-owned companies, and municipalities can insist on the participation of black-owned companies before approving any development.
- **Leverage public procurement,** which requires government to have realistic project timings and aligned funding, and industry players to do due diligence and deliver quality projects.
- **Use the 30% procurement properly,** by ensuring that subcontractors receive the same rates as the main contractor, or by paying the 30% directly to the subcontractors.
- **Promote localisation and community involvement,** as this will ensure community ownership of the infrastructure and mean that community priorities are included from the start of the process.
- **Embed transformation in how we do business,** both culturally and financially, as changing how we do business will mean changing mindsets, resulting in being able to identify new opportunities and to mobilise differently the available pools of capital.

What emerged clearly from the Dialogue was a consensus that now is the time to lay the groundwork for a fully transformed construction and professional services sector. Increasing the participation of black professionals and companies will transform the entire project cycle and must involve everyone – the private sector, the public sector and communities.

BLACK PARTICIPATION AND TRANSFORMATION in the Infrastructure Sector

WHAT

Tepid economic growth & low profit margins

Lack of transformation

ONLY 10% BLACK OWNERSHIP

Amended BEE codes

35% Black ownership

30% State procurement

Missed opportunities during FIFA 2010

Voluntary Rebuild Programme (VRP) R1.5-billion for supporting black-owned businesses

CHALLENGES

Access to finance & changing cost drivers

Compliance "box-ticking", not commitment to developing skills & resource reallocation

Mindsets & lack of common black transformation agenda

SOLUTIONS

Innovative funding of working capital requirements

Effective use of legislative instruments & due diligence by the public sector

30% Procurement used meaningfully (no shaving of subcontractor rates)

Skills development, community involvement & localisation

POSSIBILITIES

Fully transformed construction & professional services sectors

Transformation embedded in business profitability

New opportunities & new business development models

Dynamic infrastructure sector driving healthy economy & job creation

4. Building for the Future

Infrastructure is the bridge to growth, but it is impossible to say with certainty what infrastructure is needed for the future. The 46th Infrastructure Dialogue explored what should be considered when building for the future in South African cities, given the city infrastructure legacies, digital infrastructure and the role of development finance institutions (DFIs). Issues discussed included balancing technological advances and jobs, developing skills and education, supporting pilot projects and localised solutions, creating collaborative platforms and new funding models, and regulating where necessary.

City infrastructure legacies

Understanding city infrastructure legacies starts with understanding the reason for city locations. In the case of South Africa, "ships, maize and gold" were the underlying drivers in the past: ships brought people to Cape Town, the discovery of gold attracted people to Gauteng, and on the way north some people stopped to farm, making Bloemfontein and the North West a maize hub. The gold of the future is data, which is used to build more efficient education, transport and other systems. And the bringing together of data, connectivity, broadband and mobile is known as the fourth industrial revolution.

Digital infrastructure

The future form of cities is driven by digital infrastructure, which includes fibre-optic cables and transmitters. Like traditional communications infrastructures (roads, rail), digital infrastructures connect people and places, in effect mapping (and entrenching) social and power relations. The spatial planning inequalities are being reproduced by the roll-out of fibre-optic cables, which bypasses townships such as Soweto and Alexandra. This creates more barriers for those who are already without access, especially as mobile technology is unaffordable and impractical for most applications. There are two key differences between traditional physical and digital infrastructure networks:

- Cities build most physical infrastructure, whereas private companies are building digital infrastructure.
- Cities have regulatory power over physical infrastructure but not over digital infrastructure, which is regulated at a national level.

The role of DFIs

The role of DFIs is to deal with risks that banks do not deal with. In other words, they deal with the risk associated with the uncertainty of moving forward, and so they must continually reinvent themselves to stay relevant. An example is the German DFI (KfW), which was established to reconstruct Germany after World War II, and was then used to rebuild Germany after the fall of the Berlin Wall. The DBSA has also changed over the decades. Established in 1980s, the DBSA was originally used to finance the homelands during apartheid but evolved post 1994 to focus on municipalities. In the 2000s, the DBSA went from accumulating many seriously under-performing investments to refocusing on core bulk infrastructure projects and assisting metros that were unable to access funding from commercial banks. In 2016, the DBSA changed its operating model after going through a process of self-disruption. It identified three focus areas: partnerships, structured products and internal innovation (which includes a "disruptive den"). Some of its staff have been taken through a formalised innovation programme, to enable them to understand that the form of technology and infrastructure is changing, and so they need to do things differently.

Building the future

If South Africa is to build infrastructure for the future that will make the country efficient, competitive and full of opportunities, the following needs to be addressed.

- **Balance technological advances and jobs.** This means using technology only when necessary and using manual labour for most of the work, and recognising that technology creates new jobs (or digitally enabled income opportunities) through disrupting existing or creating new industries. For example, Uber drivers or mobile money agents. What is needed is to change how we think about employment, from having a job with an employer to being part of a decentralised, enabled network of capability that provides livelihoods.
- **Develop different skills and education**. The education of the future must consider the skills needed for the fourth industrial revolution and the future needs of the country. For example, learn how to operate drones or maintain infrastructure that supports driverless cars, or develop capacity to produce value-added products from resources (beneficiation). Children need to be educated differently, exposing them to work experience rather than teaching theory in the classroom.
- **Promote localised solutions**. Networked localism is where energy generation, water use and trade take place at a local level and is less vulnerable to a whole-system collapse than interconnected systems in "smart" cities. South Africa needs to solve problems at local level, not from the top (as has been the tendency), and to build localism into the future – town by town, city by city.
- **Support pilot projects.** Pilot projects are a way of managing risks through processes that allow learning and testing. Linked to this is agile or lean development, which is an iterative process where you start small, plan, do, learn and change, and "broken window thinking", which focuses on repairing what is not working rather than building new, shiny infrastructure.

- **Create platforms for multi-stakeholder collaboration.** South Africa is not very good at cooperation, and there is an inherent distrust between the private and public sectors. Collaboration works if there are shared interests, mutuality and levels of trust among parties, which can emerge through dialogue. The CSIR is developing an online urban knowledge exchange that shares best practice policies and thinking around urban development, which will provide the platform for collaboration that has been missing.
- **Develop new funding models.** New pricing models and approaches are needed for infrastructure, especially related to connectivity. Suggestions made include reverse auctions and financing through pooling risk capital, DFI money and regulatory contributions. For localised solutions, financing models and "guardian" structures could be franchise-based. The challenge would be to create a risk profile within those investment vehicles that allow traditional financiers to participate, and so initially institutions like the DBSA would have to drive such investments.
- **Regulate where necessary.** The lack of transparency is a big challenge to democracy, as technology leads to a reliance on algorithms, which creates problems for accountability and governance. Some regulation is required, but such regulation must not happen too quickly and kill the innovation.

What emerged from the discussions was the realisation that growth will not come from South Africa's first-world economy but from finding efficiencies within the developing economy. It will require public and private sectors to work together and support small businesses. What is needed is more conversations and innovation – sharing lessons and finding what works and what doesn't work.

BUILDING
for the Future in
South African Cities
Infrastructure is the bridge to future economic growth
DATA is the gold of the future
Digital access is key
LOCALISE
People create solutions to their needs
Decentralise networks to town/city level
INNOVATE
Thinking about education and jobs for the future
Pricing & financing models (e.g. localised)
TEST
Pilot projects: start small, do, learn, change ... "leapfrog in another direction"
Balance technological advances and jobs
SHARE
Create a platform for collaboration
Share lessons, best practices and perspectives
South Africa can
unleash society's creativity, resulting in massive growth
have wealth, jobs, power remain in hands of a few

Conclusion

This year's Infrastructure Dialogues highlighted the lack of transformation and innovation in the infrastructure sector. Transformation will lead to innovation, which is what South Africa needs to build a healthy economy and achieve the goals of the National Development Plan. Expanding participation in the economy will enable new opportunities, transform the dynamics of and contribute to a stronger construction sector, which is the only way for South Africa to progress and grow.

Future growth will not come from the first-world economy but from finding efficiencies within the developing economy and small businesses. The future lies in decentralised enabled networks of capability that provide people with livelihoods rather than jobs attached to a corporation or government. For this to happen will require more conversations, sharing lessons and working out what works and what doesn't work. The Infrastructure Dialogues are an example of the type of conversations that can build trust and bridges between the private and public sectors, and are needed for the way forward, which lies in collaboration and sharing role models.

Annexure

Infrastructure Dialogue Topics (2009–2017)

Date	Event name
Jun-09	Municipal Infrastructure Investment Framework
Aug-09	Municipal Infrastructure Asset Management
Sep-09	Municipal Infrastructure Capacity
Oct-09	Public Transport
Jan-10	Climate Change and the Effect on Municipal Infrastructure
Feb-10	Infrastructure Legacy
Mar-10	Infrastructure Sector Procurement
Jun-10	The Role of Public Infrastructure in Urban Regeneration
Aug-10	Road Infrastructure
Oct-10	Municipal Water Services
Nov-10	Infrastructure Stimulus Package – Development Outcomes
Jan-11	Municipal Infrastructure Investment Framework – Planning until 2019
Mar-11	Economic Infrastructure – Outcomes
Apr-11	State of Electricity Distribution
Sep-11	Infrastructure Inputs Monitoring Project (IIMP) III
Nov-11	Infrastructure and Greening the Future
Mar-12	Large-scale Public Infrastructure Projects
May-12	Planning for Infrastructure: Partnerships for the future, with reference to affordable housing
Aug-12	Matching SIPS to Skills: Can our infrastructure programme better leverage our skills reality?
Oct-12	Listening, Reflecting and Acting: Seeking lessons from our infrastructure sector performance
Dec-12	Municipal Service Delivery – Improving Quality and Quantity: How do we square the circle?
Mar-13	The State of South Africa within the Global Economy: Implications for infrastructure sector decision-making

Aug-13	Regenerative Cities
Oct-13	Maintenance of Public Infrastructure
Feb-14	Infrastructure Development Bill
Mar-14	Infrastructure Capacity Support
May-14	Infrastructure after 20 Years of Democracy
Jul-14	Integrated Urban Development Framework
Sep-14	Funding Infrastructure: the Case of Student Accommodation
Nov-14	Localisation: Driving Industrialisation through the National Infrastructure Plan
Feb-15	Municipal Water and Sanitation Infrastructure
Mar-15	Pricing and Paying for Municipal Rates and Charges
Jun-15	Securing our Energy Future and Tapping Energy Efficiency as the "First Fuel"
Jul-15	Towards Sustainable African Cities: Pan-African conversations, processes, experiences, opportunities
Sep-15	Township Economies: What is the role of infrastructure in government's strategy to revitalise township economies
Dec-15	Africa's Infrastructure Build Programme
Mar-16	Financing Government's Capital Programme: Towards sustainable municipal financing for the future
Jun-16	Catalytic Infrastructure: Are our interventions multiplying economic impacts?
Sep-16	Innovative Partnerships for the Future: Water services
Nov-16	Safety in Public Spaces: Can infrastructural, social or technological interventions save us, and in what balance?
Feb-17	Seizing Opportunities: Employment in and through infrastructure in the context of South Africa's job crisis
May-17	Crowding in Infrastructure Investment – how can we be "smart catalysers"?
Aug-17	Industry, Innovation and Infrastructure
Nov-17	Black Participation and Transformation in the Infrastructure Sector
Feb-18	Building for the Future in South Africa's Cities

Speaker Biographies

James Aiello

James is a consultant with the title of Senior Advisor, Transaction Advisory Services with the Government Technical advisory Centre's PPP Unit at National Treasury in South Africa. His African expertise in accessing private sector financing for infrastructure dates from 1998, when he was Chief of Party to the joint USAID – National Treasury initiative that created the Municipal Infrastructure Investment Unit. Among the projects initiated during that period are the Mbombela water services concession and the Ilembe water services project, both of which are still in operation. The Midvaal municipality electricity distribution PPP assessment is one of his current major municipal infrastructure assignments. James is currently working with the Johannesburg Stock Exchange to develop listing and trading requirements for PPP Project Bonds. This work has led to his involvement in the development of tax increment financing for public services infrastructure at the municipal and national department levels. He is also the National Treasury Advisor to the Gautrain Management Authority, the governing body of the Gautrain Rapid Rail System and is currently advising on the assessment of whether the redevelopment of six major South Africa's Border Posts should be as a PPP. He engages in many PPP training initiatives, the most recent being for the Democratic Republic of Congo, Malawi, Tanzania and Uganda.

Mehboob Babamia

Mehboob has been Director: Roads and Stormwater Infrastructure Planning and Management at the City of Tshwane Metropolitan Municipality since 2002. Prior to this, he had a decade of experience as an engineer in the private and public sectors. He has an MEng (Urban Engineering) from the University of Pretoria, and is a Board Member of the SA Institute for Civil Engineering (SAICE).

Paul Currie

Paul is the Chief Investment Officer of the Development Bank of Southern Africa (DBSA). Before joining the DBSA, he held several senior management positions at the Nedbank Group, including Head of Risk: Investment Banking, and General Manager: Corporate Banking Credit. During his tenure as the Chief Risk Officer at the DBSA, Paul Currie has been responsible for the bank's Credit Risk Monitoring and Governance function. Under his leadership, the Group Risk Assurance Division has re-engineered and rolled out credit risk rating and project pricing methodologies, implemented policies and processes to ensure alignment with the DBSA's requirements and strategic business initiatives, instituted the Enterprise-Wide Risk Management Framework, ensured that the DBSA is in full compliance with applicable regulations

and supported the development of new products. He has enhanced the monitoring and reporting of Group Risk to Exco, Board and various rating agencies and stakeholders. Paul holds a BSC (Physiology) from the University of Cape Town, a BCom (Acc) and a Post Graduate Diploma in Accountancy from the University of Port Elizabeth. He attained his MBA (with distinction) from the Manchester Business School and University of Wales and completed the Advanced Management Program (AMP) at INSEAD. He is a member of the South African Institute of Chartered Accountants.

Indra de Lanerolle

Indra leads the JamLab at Tshimologong, Johannesburg – Africa's only journalism and media accelerator. He teaches television and video journalism, media entrepreneurship and theories of new media at the University of the Witwatersrand. His recent research includes a study of mobile use among low-income South Africans, and a study of technology innovation in civil society organisations in South Africa and Kenya. Indra has presented at many conferences in South Africa and at the Universities of Oxford, Harvard and Lisbon. He has worked as a journalist, television producer, communications consultant and media entrepreneur. He has produced television series and feature films in South Africa, the US and the UK and was a senior producer of the BBC Newsnight and Panorama programmes. His work has received a Peabody Award and an Emmy nomination.

Mike Goldblatt

Mike is an executive in the Lereko Metier Sustainable Capital team. He holds an undergraduate degree in medical sciences and Master's degrees in Geography and Environmental Science, from the University of the Witwatersrand, and Economics from London University (UCL) specialising in environmental economics. Prior to joining Lereko Metier, Mike worked for a decade as a consultant and transaction adviser in the fields of climate change mitigation and renewable energy for the private sector and national, provincial and local levels of government, acting as a partner in the PDG group. Mike also has experience in other municipal service and infrastructure sectors with specific expertise in waste management and water services. Mike is a co-investor and developer in Solafrica Thermal Energy and is integrally involved in the ongoing leadership of Bokpoort CSP as well as sourcing and advising on sustainable capital transactions. Mike acts as the Social and Environmental Management Officer for LMSC. He sits on the boards of Kathu Solar Park, ACWA Power Bokpoort Solafrica CSP Power Plant, Butama Hydro-Electricity Company (Uganda) and Solafrica Thermal Energy.

Richard Goode

Richard is an Infrastructure Research Specialist at the DBSA. He has a MA from the University of Cape Town. At the DBSA, he is engaged in research on integrated infrastructure planning to improve the capacity for and execution of durable, economic, efficient and long-term infrastructure provision and knowledge management of the results thereof. Richard is animated by problems of growth, inequality and innovation. He has worked in applied economics in a wide range of sectors.

Matt Jackson

Matt is an urban planner working at the Johannesburg Development Agency (JDA). He has been employed to work with private sector investors, NGOs and communities to support the conceptualisation and pre-development phase of new property development projects, social and affordable housing developments, and community-driven initiatives within neighbourhoods. He performs his role along the Louis Botha Corridor of Freedom in close collaboration with the City Transformation and Spatial Planning Directorate and the City of Johannesburg Department of Development Planning. Prior to joining the JDA, Matt worked as a land development planner for one of Johannesburg's leading precinct development companies.

Kelikile Kwinana

Kelikile, or "Kile" as she is affectionately known, is the National President of South African Women in Construction and a driving force advocating for the meaningful participation and empowerment of women, especially the previously disadvantaged groups, in the mainstream of the economy of the built environment. After a stint in the corporate sector, Kile founded and led Ntando-Thando Holdings, a general building, civil works, renovations, maintenance and project management company. From that "boots on site" position, Kile has become a director of several companies and institutions governing the built environment. These leadership roles include: Treasurer General and Chairperson of the Finance Committee of the Black Business Council in the Built Environment; Co-Chairperson of the Infrastructure Committee and Convener of Women Programmes at the Black Business Council; Chairperson of the Investment Committee at the Social Housing Regulatory Authority; and the Women Advisory Council of Human Settlements. Kile is currently working closely with women on the Olievenhoutbosch Ext 36 Housing project and the Sokhulumi Rural Housing Project, the 2017 Govin Mbeki National Award-Winning programme of the Gauteng Department of Human Settlements intended for the development of business and technical skills for women in construction..

Warwick Lord

Warwick is the CEO of the Cato Ridge Logistics Hub Consortium and Chairperson of the South African Property Owners Association (SAPOA) Developers Committee. Warwick obtained a BCom from Stellenbosch University, post graduate degrees from the University of Cape Town and University of Johannesburg, did his articles in accounting with KPMG in Johannesburg and became a CA(SA) in 2006. Starting in 2007, Warwick developed the Lords View Industrial Park, a 130 hectare industrial land development in Midrand. Lords View has attracted the following international companies to the park: Unilever, The Foshini Group, The Lazer Transport Group (Stutaford Van Lines, Pickfords), Grandmark International and Cochrane. In 2015 he started the development of the Cato Ridge Logistics Hub in partnership with Inkanyezi Yezulu (Pty) Ltd.

Eugenia Masivkeni

Eugenia is currently a Principal Investment Officer with the DBSA's Green Fund, a climate finance initiative established by the Department of Environmental Affairs in 2012. She holds a Master's in Development Finance (Stellenbosch University) and a BSc Economics Honours (University of Zimbabwe). She has also completed several energy professional development and climate finance training programmes. With 26 years of diverse public and private sector experience, she has worked for the Zimbabwe Power Company, Parsons Brinckerhoff, Africa Infrastructure Consulting and the KMPG Development Advisory Services, and extensively collaborated with DFIs and United Nations agencies. Eugenia was involved in five projects under the Renewable Energy Power Producer Procurement Programme (REIPPPP) Window 2 for a joint venture IPP between a South African mining conglomerate and an Indian energy utility company. She is currently in charge of a portfolio of renewable energy and energy efficiency projects aimed at transitioning South Africa to a green economy, and is involved in developing a pipeline of climate financing projects for the DBSA in collaboration with the Global Environmental Facility (GEF) and the Global Climate Fund (GCF).

Zodwa Mbele

Zodwa is the General Manager: Finance (also Acting Chief Financial Officer (CFO) of the DBSA. Zodwa is a Chartered Accountant with at least 20 years of professional services and corporate experience, including a previous stint at the DBSA in the International Finance Division responsible for originating deals and due diligence up to achieving the financial close. Zodwa was the CFO and Director for Alexkor SOC, CFO and Financial Director at TUMS (Pty) Ltd and Executive: Project Finance and Treasury at the Trans-Caledon Tunnel Authority, where she was responsible for commercially structuring and fundraising for mega infrastructure projects. In addition, the position included liaising with credit rating agencies and capital markets (including international DFIs, local commercial banks and asset managers) and leading international roadshows together with CEO.

Nathaniel Munetsi

Nathaniel is the Head of Structured Finance at the Gauteng Infrastructure Financing Agency. He has 14 years of experience in project and infrastructure finance, involved in different stages of project finance including ideal origination, credit risk analysis and due diligence, deal structuring and financial closure. Currently Head of Structured Finance at GIFA, Nathaniel also worked for the European Investment Bank, where he was involved on a number of infrastructure projects in Southern Africa and the Indian Ocean. He holds an Honours Degree in Business Studies (majoring in Finance and Banking), a Diploma in Financial Management and is in his 3rd year towards a Master's in Business Leadership with Unisa.

Busisiwe Ngwenya

Busisiwe is with the Compliance Unit at the B-BBEE Commission. She was previously with the Competition Commission dealing with SME and consumer issues, providing advice, education and interpretation of law. Busisiwe moved to Maxum Incubator at the Innovation Hub, where she provided advisory, incubation, coaching and leasing services to start-ups. Busisiwe joined the dti Consumer and Corporate Regulation Division dealing with special projects, strategy, secretariat and corporate governance and transferred to Compliance Unit at the B-BBEE Commission, and overseeing and responsible for strategy, compliance, stakeholder relations, education and research projects.

Steve Nicholls

Steve leads the Climate Change, Water and Green Economy programmes at the National Business Imitative (NBI), with an emphasis on harnessing the collective effort of business across these thematic areas. His key focus areas include the strategic business case for environmental management and the impacts of ill treatment of the environment on society and the economy. Steve has worked mainly in the consulting industry in the United Kingdom and South Africa, on projects based in Europe and Southern and East Africa and across a number of sectors including mining, energy, telecoms, government, oil and gas, financial services and retail. Prior to joining the NBI, Steve headed the sustainability services function for Accenture across Africa, and he has also worked within KPMG's advisory and assurance team. His speciality is the integration of sustainability issues into governance, risk management and strategy. Steve holds an MSc from Stellenbosch University and has completed an executive education programme at the WITS Business School. He has lectured on sustainability and business at a variety of universities including GIBS, WITS, Stellenbosch and the University of Pretoria.

Marius Oosthuizen

Marius is a futurist and member of faculty at GIBS. He teaches leadership, strategy and ethics and heads up the Future of Business Project on the future of South Africa, Africa and BRICS. A previous participant of the Oxford Scenarios Programme at the Saïd Business School, University of Oxford, UK, Marius holds a Master's in Strategic Foresight, is pursuing a PhD on Integrative Public Leadership and completing a Master's in Applied Social and Political Ethics. He has worked with business leaders, policy makers and civil society using stakeholder dialogue, scenario planning, strategic foresight and systems thinking to create future-orientated strategy. He is a recent participant in London's School of International Futures, as well as contributing to the European Strategy and Policy System in Brussels. He has consulted to IT, financial services, insurance, agriculture, manufacturing (chemicals), warehousing and logistics, oil and gas, international relations, social development, tourism, city and regional planning and mining engineering.

Malcolm Simpson

Malcolm is a specialist at the Industrial Development Corporation (IDC). After graduating in Chemical Engineering in 1979 from the University of Natal/KZN, Malcolm worked on technology development during the 1980s. In the 1990s Malcolm changed course from technology development to consultancy and took up a position in London. As a result of the "Fall of the Wall" he took the opportunity to work on a number of interesting government and private sector reform assignments in the Commonwealth of Independent States (Russia, Armenia, Ukraine) and Central Europe (Poland and Hungary). In 2003 Malcolm returned to South Africa and joined National Treasury. In 2006, he was appointed Deputy Director-General responsible for the roll-out of the infrastructure required for successful delivery of the 2010 FIFA World Cup. After another engineering stint in the private sector, Malcolm returned to work in government serving as the Acting Director-General of the Department of Economic Development from August 2015 to June 2017, when he joined the IDC.

Portia Tau-Sekati

Portia is the CEO of The Property Sector Charter Council. The Council is entrusted with developing the strategy and programmes that become an enabler for the stakeholders of the property sector to achieve transformation as outlined in the Property Sector Charter. Portia has extensive knowledge and experience in dealing and lobbying government. She has also gained reputation as an expert on issues of transformation, in particular in the property sector. She has led and facilitated discussions on transformation targets with the major property stakeholders and aligned property sector requirements to BBBEE Codes of Good Practice – a process which has enabled the property sector to obtain its own Sector Charter and the Amended Property Sector Code under section 9 (1) of BBBEE Act. Portia has won numerous awards over the last decade for her leading role in women in construction, transformation initiatives and leadership in the property sector.

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