

INFRASTRUCTURE *Dialogues*

Innovative Partnerships for the Future? Water Services

15 September 2016

1. Introduction

Water straddles two realities. It is life giving, but as an asset, is often over exploited. As a result, it needs to be effectively managed, ensuring sustainability despite inherent complexities. At this Infrastructure Dialogues session, the departure point for discussion was that the water sector has seen only a few effective Public Private Partnerships (PPPs) to date. This can be ascribed to numerous factors including the complexities surrounding the resource. The focus of the conversation revolved around the major obstacles experienced in bringing about extensive partnerships, and how to bring together the right role players for the development of sustainable solutions. The desired outcome surrounding water custodianship should be the creation of efficient communication, cooperation and collaboration for environmental conservation. The consensus was that innovative partnerships are imperative to ensure South Africa's water future. This report captures the key ideas raised by panelists and the audience at the Infrastructure Dialogue.

The Infrastructure Dialogues are hosted jointly by the [Development Bank of Southern Africa](#), the [South African Cities Network](#), the [National Business Initiative](#), the [Performance Monitoring and Evaluation Department in the Presidency](#), and the [Department of Economic Development](#), with the [Engineering News](#) as media partner.

2. Programme and Panellists

Zwelakhe Tshandu of the Southern African Development Bank (DBSA) welcomed the audience to the 40th session of the Infrastructure Dialogues. He emphasised the partnership behind the initiative and mentioned that it is one of the longest standing forums of its kind. **Alex McNamara** of the National Business Initiative (NBI), facilitator of the Dialogue, introduced the following panel members:

Ms. Joanne Yawitch	<i>CEO of the National Business Initiative</i>
Mr. Misaveni Ngobeni	<i>National Treasury Urban Development & Infrastructure Unit</i>
Ms. Gillian Maree	<i>Researcher South African Cities Network</i>
Mr. Johann Lübbe	<i>Deal Originator DBSA</i>
Ms. Shanna Nienaber	<i>Programme Manager Research, Development and Innovation Roadmap, Water Research Commission</i>
Ms. Julie Clarke	<i>Environmental Analyst DBSA</i>

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3. Overview



INNOVATIVE PARTNERSHIPS – WATER SERVICES



Infographic: The diagram summarises the Infrastructure Dialogue discussion points. It highlights the current issues and factors that need to be addressed in order to enable efficient and innovative partnerships in the Water sector.

4. Issues in the Water Sector

4.1 South Africa has a water crisis

Multiple water indicators point out that South Africa faces a water crisis and the prevailing drought is a wake-up call. While the persistent drought may emphasise the immediate problem, the water crisis is extensive and is reaching a tipping point. More than 70% of the country's rivers are polluted and critically endangered, with the major rivers being impounded. Furthermore, South Africa's 'water factory', the grasslands, is rapidly disappearing.

Statistics further illustrate South Africa's water crisis. Rand Water recently reported that the average urban household uses 30 kilolitres of water per month. With an average 2.6 people per household, this consumption figure is significant compared to international examples. The National Planning Commission 2012 revealed that the country uses 12.5 billion litres of water on an annual basis, with 13% of this lost due to leakages caused by the poor condition of infrastructure that is on average 39 years old.

In setting the scene for the Dialogue it was emphasised that water is nature's gift to humanity and that if we do not have it, it will cost us everything. Water resources in the country have been neglected and over exploited, stated a panelist. Another voice noted, "We take it for granted: we waste it, we let it go to waste, we mismanage it. We simply do not think of water as a valuable asset to protect and manage effectively."

"We have a water crisis. It is not about a leaky pipe, which is an easy solution. Water demand management is a social as well as an economic problem. Our current thinking and the way we do things, stemming from our policies and strategies are not geared towards sustainable solutions. It is also not by allocating additional funding to repair 39-year-old infrastructure. We need to understand the real value of water and what we are dealing with." Gillian Maree

4.2 Water management complexities

Water management is more complex than is commonly perceived in South Africa. As consumers, we tend to think of water flowing through a pipe or being stored in a dam. The reality is that capturing and retaining water at a catchment level, managing and treating water in our rivers, dams and streams, providing adequate water services while managing water losses, managing water at a consumption level and changing water related consumption behaviour are just some of the aspects of water management.

In unpacking a better understanding of the sector, it was noted that South African legislation requires compliance with two Water Acts (national legislation considering river catchments), and that to distinguish between and manage these at a local government level is difficult.

In addition to water supply, one also needs to consider effective wastewater management for private and commercial land uses. 'Fitness for use', where different qualities of water have different usages (e.g. the use of grey water to water plants) rather than having treated water used for all purposes could contribute significantly to water savings.

4.3 Disconnects in the water sector

The current silo approach that is taken towards water management is not sustainable and is actually destructive. When it comes to service delivery in the water sector, two 'languages' are spoken, namely that of cost, profits and losses for stakeholders and the 'language' of systems, social and ecological infrastructure for communities. What might be the best decision in terms of infrastructure serving

communities as well as the environment, might not deliver the required profits. This division in priorities causes further disconnect in sector delivery.

If we are to secure future water sustainability we must intervene at all levels and develop integrated and holistic solutions to address issues across the broad spectrum of water services, usage and management.

5. A call for *waterproof* partnerships

5.1 Innovative Partnerships

The Dialogue emphasised that to solve our water issues, we need a shift in how we approach the complete water crisis. To get this right will require innovative partnerships as well as effective infrastructure, processes and systems. It calls for collaboration between the right organisations in government, the public and private sector as well as citizens, but also partnerships that connect stakeholders’ visions, plans and behaviour at all levels.

Moving forward we need to develop strategies that will not only avert the crisis but also enable us to implement long-term solutions. We need a new vision with clear objectives that are shared and bought into by all spheres of government, business and private sectors as well as citizens.

KEY PARTNERSHIPS HIGHLIGHTED
Between all spheres of government and government departments
Governments and citizens
Government and the private sector
Between different professions and skills in the water sector (including research)
Between the water and energy sectors as well as the food industry
Between all role players and the water environment

Another key role player is the water sector research as we venture into new territories and develop new solutions. Research should also assist to address slow project roll-out and other challenges. “Research should be an integral part of the vision for the future and investment should be made available to fast track activities,” it was said. Currently, however, there are only a few organisations investing in research in the field and resources are limited.

AN EXAMPLE OF A NEWLY FORMED WATER RESOURCE PARTNERSHIP

The NBI identified the Umhlathuze District, in northern KwaZulu Natal in the vicinity of Richard's Bay, as having a critical set of water problems that were detrimental to business and the broader community. The drought had exacerbated the situation and created a substantial crisis. If issues were not addressed the situation could have led to an economic shut-down of business in the area.

The problems identified were wide-ranging and included poor management, as well as a lack of effective partnerships that went beyond solving water problems and considered how to deal with the impact of climate change and to ensure water conservation for future use.

The NBI linked up with stakeholders in the area. These included NBI member companies: Transnet, Richard's Bay Coal Terminal, Grindrod, Mondi and Tongaat Hullett. Other stakeholders comprised big and small irrigation farmers as well as the Zululand Chamber of Commerce, Umhlathuze Municipality, Umhlathuze Water Board, the World Wildlife Fund and the Department of Cooperative Governance and Traditional Affairs (COGTA). A partnership was formed and the process of evaluation is ongoing. A set of categories of key issues affecting water management were identified namely: Engineering, Water Management, Pollution, Water Losses due to leakages, Agricultural needs and behavior, as well as crisis areas where there was no water at the time.

To date an in-depth understanding of issues has been secured after one year of engagement and what has become increasingly clear is the significant inter-dependence between parties. The development of appropriate solutions is still in the process. – Joanne Yawitch, NBI

5.2 Roadmap to water security

A National Water Research and Development Innovation Roadmap is being developed through a partnership between the Water Research Commission (WRC) and The Department of Science and Technology. Water conservation for future generations is at the heart of this plan and the research and development community is an important partner in finding new solutions to ensure water security.

OBJECTIVES OF THE ROADMAP

- Improve coordination through partnerships and leverage opportunities for investment and shared expertise.
- Leverage resources with a particular focus on scaling up knowledge and research, providing convincing proof of new technologies and processes for different applications.
- Improve skills development.

Many of the challenges faced in cities and catchments in 15 years' time will not require today's technology, infrastructure and solutions. While we struggle with keeping pace with the urgency that is required to solve current issues, we should think about future challenges. It is through research that we need to stay ahead of time and ensure that we respond appropriately to future scenarios.

5.3 The drive for data intelligence

“What you cannot measure, you cannot manage. What you cannot manage, you cannot protect.” Roundtable Comment

The lack of valuable data is one of the biggest challenges in the water sector. Current data is limited and focuses only on water usage and losses at consumption level. The data around catchment, water quality, management efficiency, waste water management and fit for use, the effectiveness and condition of infrastructure as well as the real cost of water is limited or unreliable. Data in metros is available to some extent, while M2 and M3 municipalities lack the capability to monitor and measure water service delivery.

Without sufficient and reliable data, it is impossible to identify the real issues and root cause of problems. In some cases, we have no idea how much water is lost while some areas have losses of up to 80% without knowing exactly where the losses occur. Some industries and consumers are not effectively metered due to inappropriate meter reading systems, or not having meters installed. In certain regions municipalities are looking to provide water over distances of more than 200km from source to tap. Not only is this costly but we cannot afford to invest in such solutions, while not knowing the exact causes of water losses.

We do not have a clear picture of how much water we have, what we consume, what is lost and what is saved. Municipalities and water services need to be linked to big data, and evident trends should be tracked and analysed. It was noted that there are a number of successful small pilot studies that have been conducted around smart metering as a potential source of big data. Smart devices and meters open up the opportunity to link metering to data and analysis systems, which allows for immediate responsiveness.

The Dialogue further linked the data challenges to not having a national hydrological centre. What is required is the identification of who should be responsible for such a centre at a constitutional level and the formal evaluation of the re-establishment of such a hub.

5.4 The importance of economic regulation

As the conversation shifted to focus on the demand, pricing and control thereof, it was highlighted that an economic regulator for the water sector in South Africa is necessary. Not only do we have to manage demand and supply levels, we also have to ensure the effective management of costs as well as the right pricing strategies.

The reality is that a significant portion of consumers cannot afford to pay for water, while we have to manage sliding tariff scales for paying consumers. Finding the right balance in building and maintaining the revenue stream, we need to dedicate skills, time and energy to effectively manage this critical resource. Bringing in the private sector as a financing partner, the regulator could facilitate water management processes and play a role in ensuring feasibility within the sector.

A key role of the regulator could also be to facilitate the partnerships between the Water sector, Energy sector and the Food Industry. In addition, the economic regulator should look at the country's economic development and forecast future water requirements, working closely with planners and developers.

It was voiced that municipalities should be held accountable for the management of their catchment areas, groundwater and resources such as rivers, dams and reservoirs as well as infrastructure around water services. In the same sense, industries and big water consumers such as mines should be monitored.

5.5 The critical need to build capacity

Management issues in the sector are largely attributed to a lack of capacity and skills. In many cases, local government and municipalities do not have the capacity to identify, plan, design, implement and oversee water projects.

The effective management of water demand and service delivery at a local level requires an in-depth understanding of the complexity of the institutional environment. This includes not only water issues and what it takes to solve such problems at a local level, but also how these issues relate to regional water services and affect all spheres of government.

When it comes to capacity, it is important that we differentiate between capacity, competency and skills. An example of a lack of capacity is where a poor municipality does not have a registered engineer. However, in other local governments and metros where there are a number of qualified engineers the issue of capacity lies in the lack of competency and skills. In other words, engineers are not equipped with the right knowledge, skills and understanding to deal with issues and the scale of these challenges confronting them. In other cases, engineers do not have the opportunity to learn on-the-job and gain experience.

The Dialogue cited that the issue of capacity should not be used as an excuse to cover up a lack of work ethic and dedication to “get the job well done”. Municipalities currently need to address a low work ethic among staff and ensure that service officers are equipped with the right skills and capabilities.

The issue, however, is broader than local government. We have to look at capacity building across all spheres of government as well as the private sector.

5.6 A focus on operations and maintenance

As with other public services infrastructure, the water sector experiences significant underfunding at the local government level when it comes to operations and maintenance. This is mainly due to the primary focus in government being on service delivery and the provision of new infrastructure over

the maintenance and refurbishment of existing infrastructure. The status quo is reinforced in that grant funding is geared to the provision of services to poor communities. However, it was noted that recently there has been a shift within treasury to focus on maintenance of existing infrastructure and to consider the full lifecycle costs of infrastructure when new projects are funded.

Getting the balance right requires that municipal managers and decision-makers understand the impact of infrastructure maintenance on the entire value chain. Local requirements should be evaluated and calculations done on the long-term cost of maintenance versus the provision of new infrastructure. Municipal managers also need to make the right decisions in fund allocation, even if the decision taken is not the popular choice.

5.7 How to influence consumer behaviour

The Dialogue considered the way in which we think about water, and how our thinking impacts behaviour at the point of consumption. Existing consumption levels of approximately 30 kilolitres per month, per average household are huge. Figures at this level undoubtedly include substantial water wastage.

It was stated that South African consumers do not realise the true value of water and as a result, a significant portion of our natural capital is wasted. It is critical to intervene now and positively influence water related behaviour. Some examples of potential interventions include:

- **Education**

Getting the thinking right will lead to more conservative water consumption but this will require a substantial public educational drive.

- **Incentives**

Introducing incentives at the local government and municipal level to use less water could have a significant impact on the improvement of water management.

- **Penalties**

Just as the purpose of incentives is to change behaviour by giving back, penalties seek to change behaviour by charging higher prices for water, which could include use of a sliding tariff pricing system.

5.8 A drive for efficient use of water

Placing a greater value on water would mean that people would ultimately use water more responsibly, with a mindset to save rather than consume.

The agricultural industry was put forward as an example of more responsible behavior to water consumption. It has systems to ensure that just enough water is supplied to where it is needed. The

industry makes use of a computerised system to control usage. If the water demand increases, pricing goes up accordingly.

But what is the role of Government? It was said that the priority of the South African Government should not be to manage water consumption. Government should instead focus strongly on managing the water supply upstream to ensure efficiencies that are needed to save water. When it comes to the evaluation of water projects for financing, these efficiencies should be points of reference to ensure that projects create the necessary value, as well as to identify and manage potential problems upfront.

6. Financing

Water sector infrastructure projects require significant investment and existing financial mechanisms and tools are not suitable to finance such projects.

The majority of these projects have a commercial and social component. From a commercial perspective, projects need to generate revenue and value. The social aspect comes in where water needs to be made accessible for poor households and consumers who cannot afford it.

In cases where the commercial side of projects can be financed through loans, the social side needs to be funded on budget. What makes the financing difficult is that the distinctions between the commercial and social components are not clear, and defining the role of government versus business in the equation is equally difficult.

“The current reality on the commercial side of projects, which is usually the largest component at around 90% of the initiative, is that business is hesitant to commit to agreements due to economic volatility. For example, if Mining is the off-taker in the project, mines might be reluctant to sign agreements, as commodity prices may fall and create instability. Bridging this gap, government might opt to cover the risk until mines are ready to commit. However, it does not solve the issue of volatile commodity prices and government is also becoming risk averse.” Misaveni Ngobeni

Furthermore, where it comes to public private partnership and financing, there has been, and continues to be a low appetite for taking on risk in the sector. Once plans move into implementation, whether entailing the rollout of bulk infrastructure or large-scale skills programmes, role players become risk averse. This is due to the water sector having numerous interfaces, investors and decision-makers, causing many large-scale projects to fail or come to a halt. Also, implementing large-scale projects or attempting new approaches tends to cause tension due to an underlying fear of failure.

Looking at current government funding, there are a number of grants, however these instruments have their own set of issues. For example we have the Regional Bulk Infrastructure Grant, Water Services Infrastructure Grant, the Bucket Eradication Programme (which will come to an end) and the Municipal Infrastructure Grant, yet they do not relate to each other.

The Dialogue shared the example of Costa Rica as being one to consider. The country has one grant system, which includes an environmental component. As explained by a panelist: “If you can demonstrate how you look after the environment, you get more money for what is needed, whether it is for housing or education. However if you cannot account for it, you get nothing.” This form of incentive could be combined with funding. South Africa cannot continue to fund and gain zero value in return for its water projects.

In co-funding projects, there is a request to find ways to assist in funding poor municipalities and where possible, waiver co-funding requirements. In the allocation of grants such as the Municipal Infrastructure Grant, municipalities are called on to secure the balance of funding. Where municipalities are unable to generate additional funds, projects come to a halt. It is here where opportunities for the private sector and the right partnerships open up, however the requirements for co-funding must be evaluated to make it feasible for business and institutions.

A further aspect that needs urgent attention, not only to make the sector feasible but also attractive for partnership and co-funding, is to address the issue of non-payment where payment is plausible. This touches on the broader issue of managing water sales. The free basic water approach should be re-evaluated. Within this provision-based model, the link between the service provider and consumers is broken and has resulted in consumers not being accountable for their water consumption levels. Responsible water stewardship is critical and needs to be reinstated among those that can pay, as well as those that cannot pay.

There are also a number of management issues related to financing, which impacts the rollout of projects. For example, some projects are delayed due to a discrepancy in what is needed and what can be financed. We need to focus on getting the job started with what we can afford right now instead of waiting for additional funding before work commences.

The sector too struggles with cost analysis versus the feasibility of the actual project. Another difficulty relates to the decision to allocate funds for maintenance, i.e. fixing the leaks and development to improve water supply, which could stimulate economic development.

“The DBSA has developed products that center around water and conservation management. The focus of the finance institution is to enable the development of projects based on a set of principles by linking a financing component to these scenarios. Where projects can demonstrate revenue generation that can be used to pay back loans within a five (5) year period, capital is available. The challenge is to demonstrate value creation across the water management spectrum.” Johan Lübbe

It was mentioned that should critical water project investment continue to be weak and withheld, water will not be available for where the future demand shall be.

7. The acceleration of progress through small community projects

The Dialogue brought a small-scale agricultural project in Kenya into the spotlight. In this project, known as the Lake Niavasha Payment for Ecosystem Services, farmers were given incentives to manage water consumption and look after the environment. The provision of a small incentive was the trigger that was needed to bring about significant change in a small community. The success achieved through this and other small-scale projects has the potential to be contagious, and could encourage further projects beyond the targeted communities.

8. Conclusion

“It is essential that we use what we have learnt and scale up solutions appropriate for building the smart cities for our future.” Shanna Nienaber

Evidence was presented at this Infrastructure Dialogues session to leave no doubt that South Africa is in crisis mode in its water sector. There is much tightening of processes and systems that is required from local government, which needs to embrace innovative partnerships to harness the strengths of players across the public, private and consumer arenas.

The challenge remains to demonstrate value creation across the water management spectrum.

While the reality is unmistakably stark, there is potential that is simply waiting to be harnessed. The country has a number of success stories and has experienced significant learning through projects such as that in the agricultural and ecological sectors. Through industry institutions and organisations such as the WWF, these successes should be packaged and communicated to government, business and consumers, all whom could play a role in forging innovative partnerships.

In closing this 40th Infrastructure Dialogues session, it was concluded that innovative partnerships are imperative to pool together the strengths and experience in public, private and consumer capacity and capabilities. Collaboration is the process through which we can effectively manage the risks that we face today in order to ensure that South Africa has water security.

Innovative Partnerships for the Future?

Speaker Biographies

Joanne Yawitch

Joanne has been the Chief Executive of the National Business Initiative (NBI) since March 2011. Prior to this she was a Deputy Director General at the Department of Environmental Affairs with responsibility for Environmental Quality and Protection as well as for the Department's Climate Change work. Joanne worked for the Gauteng Department of Environment from 1997 to 2004 and before that she was the Special Advisor to the then Minister of Land Affairs.

Misaveni Ngobeni

Misaveni is the Director in the National Treasury responsible for the compilation, management and oversight of budget votes for the Departments of Water and Sanitation and the Department of Cooperative Governance and Traditional Affairs as well as 20 related public entities. He has 11 years' experience in the public sector having worked for Stats SA and economic survey analyst and SALGA as an Advisor for Municipal Infrastructure and Services. He also has a broader understanding of intergovernmental relations and local government finance policy and the water sector institutional arrangements cutting across the entire water value chain. Misaveni is a research-oriented public finance economist currently finalising a PhD in Public Finance.

Gillian Maree

Gillian Maree is an Urban Planner specialising in issues of sustainability, policy, water and biodiversity. She has worked in both the public and private sector with a focus on urban issues particularly as they relate to sustainability, natural resource management, infrastructure, spatial planning and the policy environment. Recent work has brought a strong focus on indicator development and data management and what this means for more sustainable urban areas. Gillian is a Senior Researcher at the Gauteng City Region Observatory (GCRO). The GCRO is a partnership of the University of Johannesburg, University of the Witwatersrand, Gauteng Provincial Government and organised local government

Johan Lübbe

Johan is a Deal Origination Specialist in the DBSA's Project Preparation Unit. His responsibilities include the identification, conceptualisation and development of new mechanisms and models to enable and enhance the delivery of infrastructure. Besides his passion for project preparation and creating bankable projects, he has a special interest and experience in the water sector. Johann is a Professional Engineer and holds a Civil Engineering Degree from the University of Pretoria, a BCom (Law) Degree from Unisa and a Master's Degree in Development Finance Cum Laude from the University of Stellenbosch Business School.

Shanna Nienaber

Shanna is the Programme Manager for the National Water RDI Roadmap. The Water Research, Development and Innovation (RDI) Roadmap was conceptualised and co-created by the Department of Science and Technology (DST) and the Water Research Commission (WRC). Shanna has a background in the social science research and has worked in the public sector since 2012. She has a particular passion for exploring how to facilitate processes that enable uptake of research and innovations and positioning innovation for impact.

Julie Clarke

Julie is an environmental analyst in the DBSA. She has dedicated her life to environmental and social justice and has founded, worked and served on the Board of several human rights based NGOs. She has designed courses on environmental justice issues for parliamentarians, councilors, universities and technicians. She has published work on resource economics and environmental management. Julie worked in the municipal environment and has 30 years' experience in the finance space. She has played a key role in bringing in the Drylands Fund, the Green Fund, the Global Environmental Facility and the Green Climate Fund Agencies to the DBSA. She has degrees in town and regional planning and a master's degree with distinction through London University, specialising in water resource management.

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Innovative Partnerships for the Future?

Dialogue in Pictures



Picture Above: 40th Infrastructure Dialogue Panellists

From left to right: Gillian Maree (SACN), Shanna Nienaber (WRC), Johann Lübbe (DBSA), Julie Clarke (DBSA) and Misaveni Ngobeni (National Treasury)



Pictures Above: 40th Infrastructure Dialogue – Roundtable Discussions

INFRASTRUCTURE *Dialogues*

Innovative Partnerships for the Future?

Dialogue in Pictures



Picture Above: 40th Infrastructure Dialogue – two participants discussing issues



Picture Above: 40th Infrastructure Dialogue – Roundtable Discussions