2030 WRG KNOWLEDGE EXCHANGE

29 February - 01 March 2016, South Africa

Background document

SIWI

2030 Water Resources Group

water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

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Content

Introduction

The 2030 Water Resources Group, (2030 WRG), is a global public-private-civil society partnership. It was formed at the World Economic Forum in 2008 between a group of governments, multinational companies and agencies, and international non-government organizations.

The primary aim of the 2030 WRG is to develop partnerships that can assist governments to accelerate actions to increase water sustainability and water efficiency. The 2030 WRG is currently active in the following countries: South Africa, (supporting the Strategic Water Partners Network, (SWPN), since its inception), Bangladesh, India, Kenya, Mexico, Mongolia, Peru, and Tanzania. Interventions are only made at the request of national governments ensuring support is demand-driven. More information on the 2030 WRG is available at 2030wrg.org

An important role of the 2030 WRG is to raise awareness about the water scarcity challenge and potential solutions among high-level decision-makers as well as to support in-country activities.
In addition to knowledge sharing through analytical work and case studies, 2030 WRG leverages its growing network of country partners to foster in-person exchange of knowledge and ideas. In the past, this has been achieved through dedicated 2030 WRG "partner days" at major events such as World Water Week.

In 2016, it was decided to expand on these initiatives via an exchange trip to South Africa. The aim of this event is to enhance knowledge sharing and capacity building around specific topics. The purpose of selecting South Africa is to learn from the country's efforts to address municipal water losses and mine-water management, topics that are present across several 2030 WRG country partnerships.

Specific objectives of the exchange trip:

1. Provide an opportunity for participants to gain practical insights from the South African water management and public-private-civil society experience, which can be used to guide water management policy and practice in their own countries;
2. Provide an opportunity for partners from across 2030 WRG countries to meet, spend time together, and learn from each other;
3. Enable South African stakeholders, as hosts, to showcase its water management achievements to senior officials from other countries.

The Minister of Water Sanitation in South Africa, Ms Nomvula Mokonyane, will officially open the exchange, and is a member of the Governing Council of 2030 WRG. The Governing Council makes key decisions related to the 2030 WRG strategic plan and budget. The exchange trip is convened by the 2030 WRG and the South African Department of Water and Sanitation. The Stockholm International Water Institute, (SIWI), is an organizing partner.

This background document provides an overview of the knowledge exchange.

Welcome to South Africa

South Africa has a surface area of 1,233,404km² and some 3,000km of coastline. The event will be held in the administrative capital, Pretoria. The other capitals are Cape Town, (legislative), and Bloemfontein, (judicial). Johannesburg is the business "capital" of South Africa. Eleven official languages, (English, Afrikaans, Ndebele, Xhosa, Zulu, Sepedi, Sesotho, Setswana, Siswati, Tshivenda and Xitsonga), are spoken by its population of 54 million people.

The country is strong on adventure, sport, nature and wildlife travel, and is a pioneer and global leader in responsible tourism. Some of its most popular destinations include national parks, such as the Kruger National Park, the coastlines and beaches of KwaZulu-Natal and the Western Cape, and major cities such as Cape Town, Johannesburg, and Durban.

South Africa has been declared one of the world's 18 mega-diverse destinations. As a pioneer in responsible tourism, South Africa has numerous conservation projects to protect its natural heritage.

Water resources and development
South Africa is a country with an upper middle-income economy and a growing GDP of approximately US$350 billion. This growth, both economic and social, is giving rise to increasing demands for water. Consequently, most key economic and social plans are water-dependant including agricultural development, energy security, tourism and recreation, mining, industry, and municipal water supply. A study by the 2030 WRG highlights that the country is water-stressed and indicates that South Africa is facing a 17 per cent demand-supply gap by 2030.

Photo: iStock

Even with its well-developed water resources infrastructure, (there are more than 4,395 registered dams in South Africa), the National Water Resources Strategy acknowledges that full utilization of available surface water yields is being fast approached, and that suitable dam sites have become limited. Primary water consumers have traditionally been the agriculture, manufacturing, energy, mining, and residential sectors.

With agricultural water demand capped by legislative action, future water demand will be driven largely by urban and industrial growth. Some parts of the country have already started to experience a "water gap" – prompting them to call for urgent partnership action between the public-private and civil society sectors on a scale that matches the magnitude of the of water risk.

Important Contact Details

Further to information in a separate logistics note, you can find detailed tourist and other information here:

- country.southafrica.net/country/us/en
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For further emergency information, including the location and contact details of hospitals and police stations, please refer to the logistics note. World Water Week in Stockholm.

Knowledge event
29 February - 1 March 2016

Session descriptions

P ublic private partnerships for mine water management

Mining, while generating jobs and a significant GtDP contribution in most 2030 WRG countries, is increasing water demand and, in some cases, has caused severe water pollution. In many geographies, mining coincidest with water resource systems that are already over allocated. In other cases, mines continue to generate polluted water long after operations have ceased. The challenge is how mining companies, working collectively with other water users and water authorities, develop collaborative interventions for mining areas, or their river basins, (catchments). Solutions are required for non-operational, operational and future mines. The interventions required range from collaborative technical solutions, to policy interventions that enable collective action between mining companies and other key water stakeholders.

Expert presentations will describe the challenge of managing mine water in ways that ensure mining operations remain viable, without externalising costs to other co-located water users such as domestic water users and farmers. Collaboration models that have worked, or hold promise to manage water beyond a single mining facility, have a clear business case beyond public relations, and are sustainable following mine operations will be discussed with a view to scaling them out to new or other existing mining areas.

Public private partnerships for mine water management

Round table discussions in the world café format will assess the effectiveness and replicability of innovative partnership models, as well as specific solutions for municipal, industrial and mine water management, and financing infrastructure.

For the solutions that are identified as desirable but with barriers for adoption, the groups will identify the actions that the public and private sectors and civil society organizations should take individually and collectively to remove such barriers.

Public private partnerships for municipal and industrial water management

Based on concrete case studies of municipal and or industrial water management, where collaboration has an element of risk sharing and is driven by a clear business case for all collaborating entities, this session will analyse the applicability of various collaboration and PPP models. Based on the case studies presented, and the experiences of participants, the key attributes of good practice in developing and managing PPPs, or other forms of collaboration, will be distilled. The models used for a range of PPPs and collaborative projects will be presented in the following areas:

- Reducing non-revenue water
- Wastewater treatment
- Water supply

The session will:

- Provide practical examples of good practice in public private partnerships, (from conceptualisation, project development to implementation), based on the interests of the public and private sectors and civil society.
- Define actions that should be taken by the public, and private and civil society to enable public private partnerships, or to improve the performance of current partnerships when benchmarked against good practice (as defined jointly by the participants).

Financing water infrastructure

The Global Infrastructure Facility (GIF) based at the World Bank estimates the unmet demand for infrastructure investment in emerging markets and developing countries at more than US$1 trillion a year. By some estimates, total investment in water and wastewater in Latin America needs to more than triple, from US$18 billion to more than US$60 billion annually, to achieve a satisfactory level of performance. The funding gap for water infrastructure in Africa is more than US$ 11 billion annually, and in Asia, a staggering US$180 billion. Most of the current infrastructure spend in developing countries is from the public purse, and in many cases public funding for infrastructure as a proportion of GDP is already high; all this points to the need for increased investment from the private sector to achieve the SDGs. But where do the opportunities for private sector financial participation lie in the water value chain, and what are the barriers to such investment?

The opportunities and barriers for private sector financial participation in different country contexts will be analysed through discussion between participants and an expert panel. Participants will share experiences on how such barriers have been overcome. The discussion will also identify ways collaboration platforms can be used to improve financial participation of the private sector in water management.

Private sector engagement in multi-stakeholder partnerships

A recent report by the Global Green Growth Forum, (3GF), and 2030 WRG used the SWPN as a case study to provide insights illustrating how the 2030 WRG model of collaborative partnerships can be a solution for green growth. The case study highlights how partnerships can succeed. A key insight is that many partnerships tend to focus on individual activities and projects. The core challenge for multi-stakeholder partnerships is how to move beyond these individual activities and achieve impact at speed and at scale. Scalability requires that solutions partnerships conceptualize, trial or implement go beyond “niche areas and shift the behaviour of the larger system”. But how are multi-stakeholder partnerships set up? How is their evolution managed? How can scale be planned for? This session attempts to answer these questions.
Bangladesh, Peru and South Africa will also present their partnership models and how these and the programmes they implement are designed for effectiveness and to achieve scale.

Photo: iStock

Invited South African knowledge event specialist speakers and facilitators

Ronnie Mckenzie

Ronnie has more than 30 years' experience in Water Demand Management, Hydrology, Water Resource Planning, Management and Operation. He pioneered the use of Advanced Pressure Control throughout South Africa and several other countries. Ronnie initiated and helped to manage the award winning Khayelitsha Pressure Management installation in Cape Town as well as the Sebokeng/Evaton Public Private Partnership. He provided specialist Water Demand Management support to various organizations including the World Bank, the EU and the UN. He has a BSc in Civil Engineering and PhD in Water Resources Planning from the University of Strathclyde in Glasgow, and is MD of WRP. He is Chairman of the International Water Association's specialist group on water loss.

Barbara Schreiner

Barbara is a Director at Pegasys and the Executive Director of the Pegasys Institute. She has an MPhil in Environmental Science from the University of Cape Town. She has worked in the public sector, and in the NGO and consulting sectors. She spent 12 years at the Department of Water Affairs in South Africa, including five years as Deputy Director General: Policy and Regulation, and three years as Advisor to Minister Kader Asmal, then Minister of Water Affairs and Forestry.

Dhevan Govender

Dhevan is Senior Manager of Commercial and Business of eThekwini Water and Sanitation (EWS). He holds an honours degree in corporate business administration and majors in accounting and economics.

eThekwini Water & Sanitation, serving the Durban metropolitan area in South Africa, was named the 2014 winner of the Stockholm Industry Water Award, for its transformative and inclusive approach to providing water and sanitation services.

Dhesigen Naidoo

Dhesigen is CEO of the Water Research Commission, South Africa's only dedicated water research steering and funding institution. Previously, Dhesigen was Director of Research and Innovation at the University of Pretoria.

He also served as an official in the South African government between 1996 and 2007, where he worked for the Ministries of Water Affairs & Forestry, Environmental Affairs & Tourism, and Science & Technology where he served as Deputy Director General for International Cooperation and Resources. Between 1990 and 1996 he was a medical natural scientist at the University of Cape Town and Red Cross Children's Hospital.

Yogan Reddy

Yogan is an Associate Director in PwC's Capital Projects & Infrastructure team. He is a registered engineer and holds degrees in engineering, (BSc. Eng.), and commerce, (MBA). Yogan has considerable experience in the public sector and has advised a range of government departments on institutional arrangements, policy and strategy. He has also worked with utilities in Ghana, Kenya, Malawi, Mozambique, and Nigeria.

He is a senior advisor to the South African Department of Water Affairs, and has been involved in the restructuring of the South African water sector, developing regulatory frameworks and supporting water services and water management institutions.

Rudy Roberts

Until January 2014, Rudy served as chief executive of the Union Investment Company of National Education Health and Allied Workers Union, South Africa's largest public sector union. Instrumental in defining the company's industrial ambitions, he grew its portfolio to more than R2 billion with investments in mining, financial services, health and communications, renewable energy, and textiles. Mega Water, an integrated water utility enterprise offering an advanced delivery solutions to the African continent, exemplifies his skills in forging strong international partnerships. Formally trained as a lawyer, and having practiced corporate law in the US, he graduated with a Juris Doctor degree from Georgetown University Law Center, and completed an undergraduate degree in politics and economic history at Oberlin College (1986).

Field visits 2 - 4 March 2016

This section of the background document makes extensive use of content from SWPN projects reports listed in the bibliography below and Bender and Gibson (2010).

Field visit 1. Witbank mining area and the eMalahleni Water Reclamation Plant

A country built on mining. The start of the diamond rush in 1866 signified the true beginnings of massive global interest in South Africa's mineral wealth. It was to be followed by a gold rush a decade later. The Johannesburg Stock exchange, established in 1887, resulted from the growth of the gold industry and the discovery of the world largest gold deposits in 1886 in modern day Johannesburg.

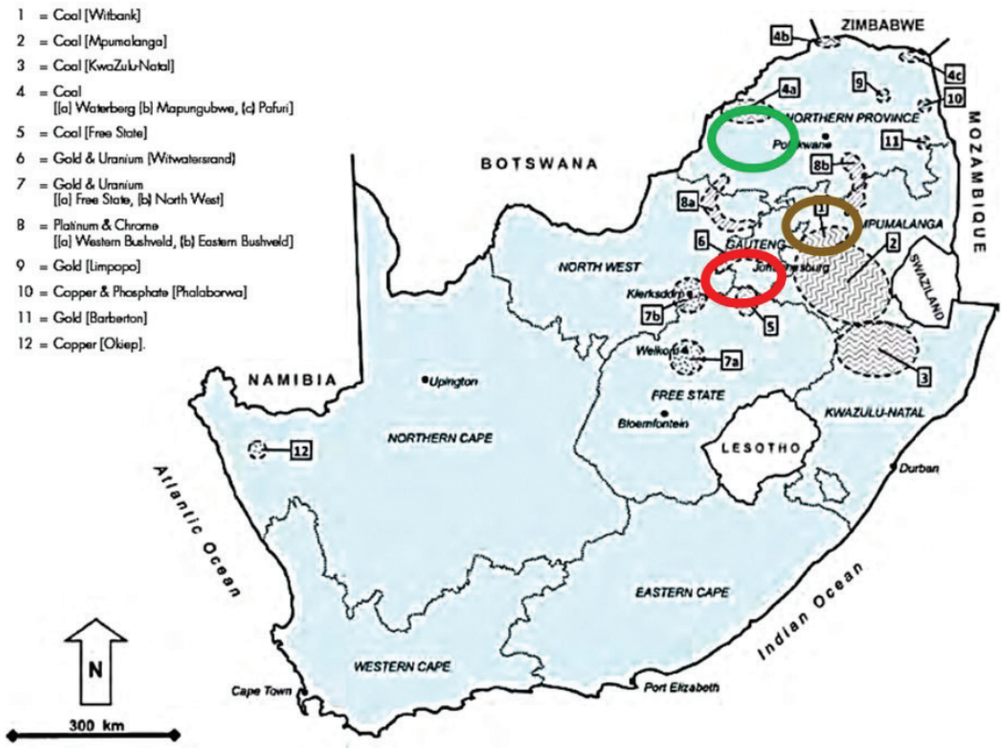
The intermingling of agriculture and mining has created many of the allocation and pollution management dilemmas for water authorities in South Africa and elsewhere. In South Africa, these issues are compounded by mining pollution effects that have accumulated for the past 150 years since the advent of commercial mining. The field visit to a coal mining operation in the Mpumalanga coalfield serves to illustrate not only these dilemmas, but also the strides taken towards their resolution by the Department of Water and Sanitation, mining companies, and other water stakeholders.

If you would like to learn more about the history and political economy of mining in South Africa, Davenport (2013) and Meredith (2008) make for interesting reads.

At the time of the knowledge exchange, mining was the second largest South African employer after agriculture. It contributes about 8 per cent of GDP, and a quarter of all investment in the economy.

Water resources and mining in the Mpumalanga coalfields

Mpumalanga is South Africa's largest coal producing province accounting for more than 80 per cent of national production. Most of South Africa's electricity is generated from coal-fired power stations. The area where many of these coalfields are located is set to run a water deficit by 2017. If environmental water flows were fully implemented, the surrounding catchment would already be over located. In the Middle Olifants sub-catchment area, a projected acute water deficit will largely be driven by an expansion in coal mining.



The map above shows the priority mining areas where Acid Mine Drainage is a serious concern. The field visit will be to the Witbank coalfields, which has extensive coal mining operations.

The graph to the right illustrates the problem of increasing mine water generation in the area. The treatment capacity of mining facilities is much lower than mine water generation. The eMalahleni Water Reclamation Plant illustrates how two mining companies, Anglo American and BHP Billiton and a municipality, eMalahleni, are turning this problem into an opportunity.

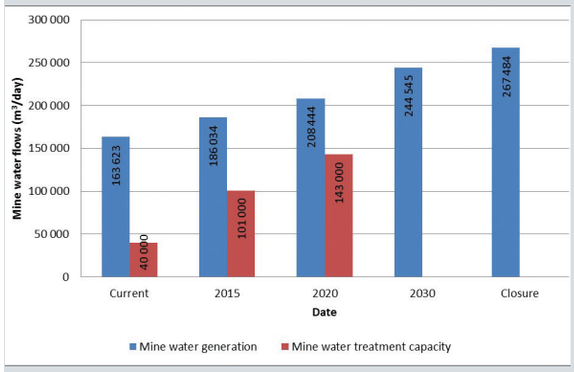


Fig. 1. Estimated mine water recharge and projected installed treatment capacity.

There are doubts over whether the continued installation of energy and capital intensive mine water treatment plants is a sustainable solution to combat pollution from mine water generation. Based on lifecycle financial evaluation, mine water treatment plants cannot recover costs if they sell treated water to municipalities – even after initial capital costs. Further, any effort towards regional pollution mitigation, or rehabilitation, would require agreement on how financial liability is shared by different mining companies, (for operational mines), and to the state, (for non–operational mines as required by law). A SWPN analysis concluded that the mine water management problem is driven by the following issues:

- Diverse responses by mining companies to mine water pollution.
- Ineffective regulation of mining in terms of mine water management.
- Inadequate financing for mine water management by mines.
- Inadequate regional planning and co-operation for mine water management.

The eMalahleni Water Reclamation Plant
Tour of the Anglo American mine effluent treatment plant that processes 25-30 million litres of effluent a day. Some of this is used in Anglo American's mining operations, but the bulk of it supplies 12 per cent of eMalahleni's municipality daily water needs. To date, the water reclamation plant has treated in excess of 50 billion litres of water and supplied 35 billion litres to the local municipality.

In addition to the plant having a 99 per cent-plus water recovery rate, and very low brine volumes, the 200 tons of gypsum by-product that is produced daily at the plant can be turned into a low-cost, high quality construction material. Following rigorous testing and approval, it has been used to construct 66 affordable houses for local Anglo American employees, with an additional 300 houses currently under construction.

Field visit 2. Nelspruit-Mombela Municipality

The city of Nelspruit
Nelspruit is in northeast South Africa and has a population of approximately 600,000. It is located in the Inkomati-Usuthu catchment, with characteristics below shown below. A key feature of the catchment is that its available water resources are over allocated.

Water balance (M m3 /yr)	Available (system yield + transfers in) = 1,029 Water Requirements (local requirements and transfers out) = 1,192 Balance =-163
Population	2,153,500
GDP	R9 billion pa = 0.3% of South Africa GDP
Largest GDP contributors	• Manufacturing and mining sector 28.6% • Agriculture 14.9% • Government 12.3%
Major water uses	• Irrigation 48.5% of total requirements • Transfers from the basin, (mostly for cooling coal-fired power stations) 19.1% • Afforestation 13.2%

The PPP
In the late 1990s, estimates put the total water and sanitation investment required to serve all of greater Nelspruit's citizens was R250 million. With an annual capital budget of R25 million, restrictions on budgetary growth, and the need to equitably provide for other services, the council faced a situation where none of the usual sources of finance would meet its capital investment needs for water and sanitation. Municipal officials were advised to consider a concession to a private entity.

The tour
The tour will pass through concession areas. Some are formal while others are informal, (peri-urban), areas. Participants will be shown the assets in operation, and the challenges of water supply, sewerage treatment and managing water losses within the context of an urban environment that is home to middle and lower income groups. Private partner Sembcorp will explain how it developed the concession contract; and challenges such as water theft, and how these are being addressed, will also be discussed.

The management agency that manages the catchment will also present the system perspective, and how they manage the competing needs of industry, the municipality, and farmers

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Meredith, M. 2008. Diamonds, Gold, and War: The Making of South Africa. Pocket Books. London.

SWPN. 2013. Background report. Using treated Acid Mine Drainage to close the water gap in the Olifants River Catchment-Issues, Opportunities and Constraints. Strategic Water Partners Network. Johannesburg.

SWPN. 2013b. Institutional and Pricing Models for the Sustainable Treatment and Reuse of Mine Water: Issues, Opportunities and Constraints.

Participant list

International participants

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Notes

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