POLICY BRIEF

June 2021
The WRC operates in terms of the Water Research Act (Act 34 of 1971) and its mandate is to support water research and development as well as the building of a sustainable water research capacity in South Africa.

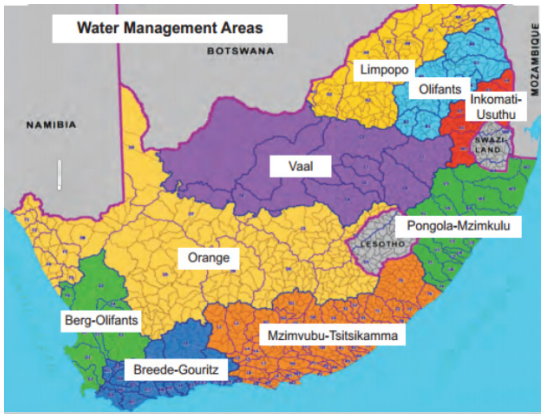
Development of scenarios for future agricultural water management in South Africa

A recently completed Water Research Commission (WRC) project developed scenarios for future agricultural water management in South Africa. It is expected that the scenarios will provide stakeholders and policymakers in South Africa's water sector with valuable insights to strengthen decision-making and counter undesirable trajectories of change in order to achieve food security, the continued relevance of the agricultural sector, and ongoing agricultural development in South Africa.

Background

The challenges of feeding South Africa's growing population in a climate-altered, resource-constrained future are substantial. The sustained availability of sufficient and clean freshwater presents one of the greatest risks to South Africa, and the global economy at large. This project developed scenarios for future agricultural water management taken into consideration the vulnerability and capacity of society, government and all stakeholders to deal with future water-related hazards. This was achieved through identification of forces that drives scenarios and quantifying the effects of those forces on future agricultural water management.

Aims and objectives



CMAs in South Africa

The main aim of this research project was to develop scenarios that will impact on agricultural water management in South Africa. These scenarios considered the ***social dynamics*** (including issues such as poverty, employment, demographic changes, and security); ***economic dynamics*** (including food production, industry, mining, global markets, and trends), ***ecological dynamics*** (including land degradation, climate change, and variability), and ***political dynamics*** (including political stability and policy).

The secondary objectives of the project were to:

- Determine the status of agricultural water management in South Africa.
- Review and provide critical analysis of current social, political, and ecological scenarios.
- Identify socio-, environmental and economic indicators to measure different scenario outcomes. These indicators were sub-categorised into ten drivers (capitals): human, social, cultural, political, institutional, economic/financial, environmental, technological and infrastructure.
- Develop a dynamic decision support tool based on real-time indicator values and changes.
- Recommend policy and action plans for sustainable agricultural water management, based on the main scenarios.

Major outcomes

- The study developed four potential scenarios ranging from a best-case to a worst-case (Z) scenario. These scenarios are at the strategic level and will impact directly on future water management. The best-case scenario is only possible if private sector, the Government, and society together take full and joint responsibility for future water management.
- The worst-case scenario is looming on the horizon if the gap between the "haves" and "have-nots" continue

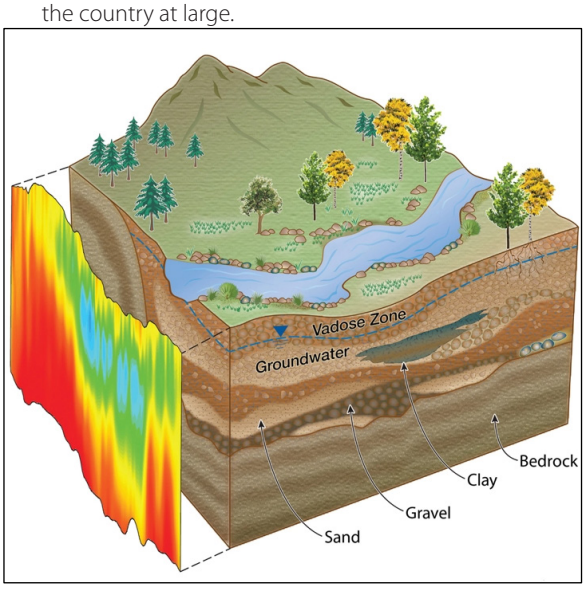
to increase; and, if an environment for job creation and economic development is overshadowed by political opportunism, social unrest and social intolerance; and, if society and government does not eradicate the culture of corruption in all walks of life; and, if service delivery at all governance levels continues to fail because of incompetency and negligence. Delivery of clean and sufficient water and the maintenance and management of water infrastructure is particularly critical and strategic in avoiding a worst-case scenario.

- An intermediate Frustration scenario is where the Government remains pegged down in political struggles, political conflict, and poor service delivery at a local level at the cost of sustainable and efficient developmental programmes. In this scenario the private sector is still efficient and actively involved in economic development, but, together with civil society, is growing increasingly more frustrated with the Government. Our feedback and results indicated that we currently find ourselves in the Frustration scenario with a tendency to shift towards the Traditional and Z scenarios if the private sector withdraw its investments.
- The Traditional scenario is where the Government becomes more autocratic, driving nationalisation and the implementation of policies that centralise water management and interfere with the free-market system. That includes the introduction of rules and regulations to control society and limit the influence of the private sector. The Covid-19 pandemic currently serves as an instigator to propel South Africa from the Frustration to the Traditional and most-possibly the Z scenario. If that happens, the private sector will expand to other investment regions and cease further investment in South Africa.
- On the positive side is that signals for a positive scenario became evident with a common realisation that sustainable water management depends on good governance, coordination and cooperation in the water sector. The Minister of Human Settlement, Water and Sanitation showed commitment for increased efficiency in the department and is already involved in discussions with the private sector and other stakeholders. Building on such initiatives should open the pathway for a positive water management scenario.

Major findings

- **Red flags** are those drivers that will have an immediate effect and potentially cause a dramatic shift to a negative scenario. Numerous red flag drivers are identified but the four most important red flag drivers are highlighted here.
- The **first red flag** is the absence of a social pact between the major stakeholders i.e. the Government, agribusiness, farmers, farm workers and society at large. The distrust between the Government and the commercial farming sector, and the negative statements from certain political leaders are issues that need to be addressed. This is also characterised by an increased gap between white commercial farmers and black farmers in agriculture as well as the increased gap between the "haves" and "have nots" in society as a whole.
- The **second red flag** is the capacity of government and more specific provincial and local government to efficiently govern and provide services with the albatross of corruption and self-enrichment around the neck of some leaders and officials; and some elements in the private sector also participating in corrupt activities. This distracts attention from good governance, and forces some leaders and officials to focus on protecting their patronage networks and their own interest, instead of on the needs of the state or province or municipality. This is especially relevant at municipal level where water quality and water availability is determined by proper service delivery and the maintenance of water infrastructure. Poor governance at municipal level is also driving frustration within the citizenry and the increased levels of intolerance.
- The **third red flag** is centred around the economy and its resilience to withstand the negative impacts of, firstly, the 2015 – 2019 drought, and, secondly, the 2020 – 2021 Covid-19 pandemic. Millions of people have lost their jobs, and the Government has provided social grants to support the poorest of the poor; but this cannot continue indefinitely. The Government borrowed money to manage the pandemic, and that needs to be paid back at some stage.
- The **fourth red flag** is the absence of successful land and water reform. Few of the land reform projects are successful, due to various reasons. The lack of progress in land and water reform sends out a negative message to citizens, and commercial farmers are blamed for not making land available for land reform (which is not the case since the Government already holds titles for millions of hectares of unproductive land). Learning from the example of Zimbabwe, it is clear that the lack of progress with successful land and water reform hold the potential to fast-track South Africa to the Z scenario.
- In three of the four scenarios agriculture will be on the losing end. Agriculture makes use of surplus water after domestic, business, mining and energy water allocations. The negative image of agriculture amongst the average person in South Africa also contributes towards additional challenges for water management in the

agricultural sector. Only the positive best case scenario outcome will benefit agriculture (read food security) and the country at large.



Current and future water management challenges

Recommendations

- Scenarios provide a look into possible futures, and the development of scenarios is senseless if potential solutions are then not investigated and provided. Although the focus of this research was not on the development of solutions for water management, but rather on the development of scenarios, some solutions and action plans are also suggested in summarised format. The recommendations are grouped according to 10 clusters, with the most prominent recommendation for each cluster as follows:
- **Human cluster**: The appointment of qualified and experienced staff at all governance levels within all organisations having a stake in water management, water distribution and water use. Organisations must initiate and implement focused training and education programmes to educate individuals in water management issues. The focus should be to educate the critical number of hydrologists and engineers required for water management and planning at all governance levels.
- **Social cluster**: The development of a social pact between all stakeholders to work together, not only in the water sector, but in all aspects of societal interaction. Governance sectors are probably the most important driver.
- **Cultural cluster**: The driver identified as most important within the cultural cluster is the societal consciousness of the importance of water as a strategic natural resource. In addition, leaders, water managers, water users, scientists, and others need to make a paradigm shift to view and treat water as a flux and not a stock.
- **Political cluster**: The political cluster is closely linked to the social and cultural clusters in that leaders influence the way members of society act and react towards each other. The social pact mentioned under the social cluster is not possible without the support and positive example of political leaders. Policy addressing the rectifying of land and water rights is equally important, and if land and water reform fails, one would see a Z scenario sooner than later.
- **Economic/financial cluster**: The major driver in the economic cluster focuses on the investment in water infrastructure and new technology at all levels of governance. Also important is the acknowledgement that water is an economic driver, and the realisation that South Africa is already economically constrained because it is, for additional reasons, also water constrained.
- **Infrastructure cluster**: Key success factors here are the maintenance of current water infrastructure, and timely and innovative construction of future water infrastructure development with consideration of population growth and climate change.
- **Technology cluster**: New technologies that will be a key driver for sustainable water management include those designed and implemented around water saving, water harvesting, new water, dual reticulation systems, conservation and precision agriculture, early warning, monitoring and remote sensing.
- **Natural resources cluster**: South Africa is an arid country with a water constrained economy, and we need to treat water as a flux and not as a stock. Climate change and climate extremes, together with population growth, negatively affect the water supply/demand ratio. All water management organisations and water users need to protect and preserve water sources – groundwater and surface water – with vigilance through the prevention of water pollution and land and wetlands degradation; the implementation of "new water technology"; conservation agriculture; water saving technology; and water harvesting, amongst other interventions.
- **Organisations cluster**: Organisations dealing with water management and distribution need to be properly funded, and staffed with expert and qualified staff. Key organisations are Department of Human Settlement, Water and Sanitation (DHSWS; Catchment Management Agencies (CMAs); Water User Organisations (WUAs);

Water Supply Agencies (WSAs) (municipalities); and farmers' organisations that lobby for farmers at all levels.

- **Institutions cluster**: Institutions deal with the way organisations interact with each other, and the regulations required for sound management. South Africa has, in general, excellent laws and regulations, but implementation, enforcement and adherence to laws and regulations is a key requirement for a positive scenario in water management.

Related project:
Development of scenarios for future agricultural water management in South Africa (**WRC project no. K5/2711**).
For more information, contact WRC Executive Manager, Dr Sylvester Mpandeli, at Email: sylvesterm@wrc.org.za