

DRAFT FOR CONSULTATION



NATIONAL WATER AND SANITATION MASTER PLAN

VOLUME 1: CALL TO ACTION

(Version 8.3)

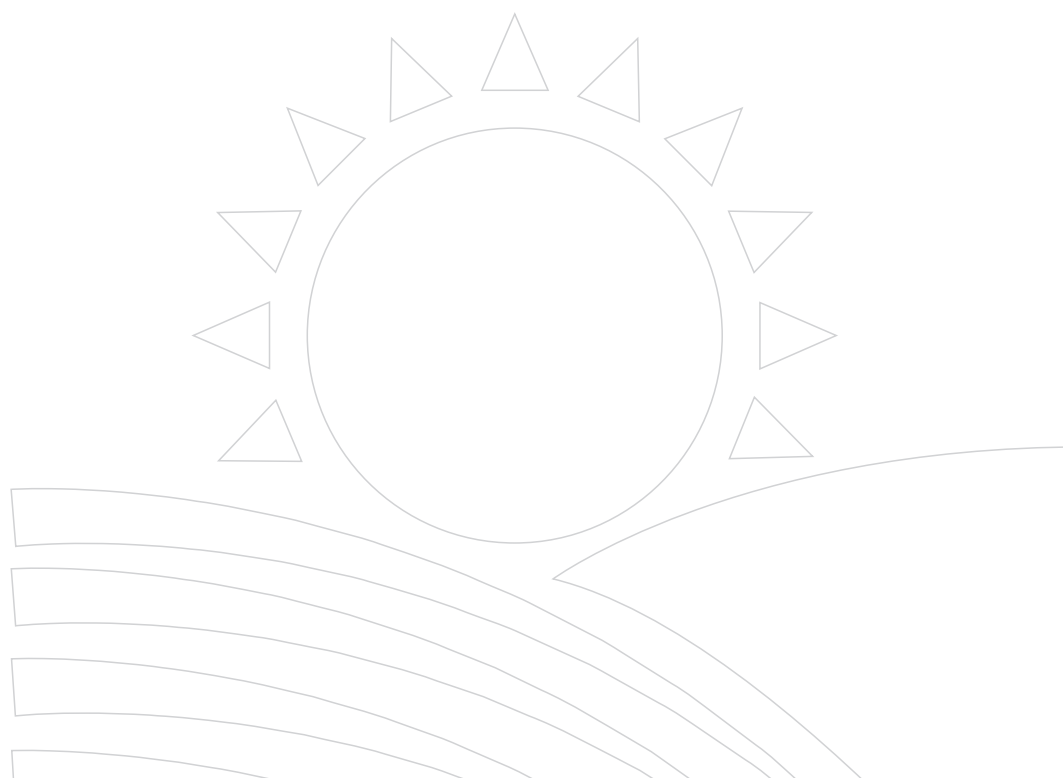
*Ready for the Future
and Ahead of the Curve
18 January 2018*



water & sanitation

Department:
Water & Sanitation
REPUBLIC OF SOUTH AFRICA

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LIST OF ACRONYMS

AMD	Acid Mine Drainage
COGTA	Department of Cooperative Governance and Traditional Affairs
CMA	Catchment Management Agency
DPME	Department of Planning, Monitoring and Evaluation
DWS	Department of Water and Sanitation
DAFF	Department of Agriculture, Fisheries and Forestry
DoE	Department of Energy
DIRCO	Department of International Relations and Cooperation
DM	District Municipality
DMR	Department of Mineral Resources
DST	Department of Science and Technology
DTI	Department of Trade and Industry
DRDLR	Department of Rural Development and Land Reform
EDD	Economic Development Department
ELU	Existing Lawful Use
IB	Irrigation Boards
IUCMA	Inkomati Usuthu Catchment Management Agency
KZN	Kwa Zulu Natal
LHWP	Lesotho Highlands Water Project
LWRMI	Local Water Resource Management Institution
MFMA	Municipal Finance Management Act
MISA	Municipal Infrastructure Support Agent
MuSSA	Municipal Services Self-Assessment
NAWASIA	National Water and Sanitation Infrastructure Agency
NDP	National Development Plan
NGO	Non-Governmental Organisation
NT	National Treasury
NWA	National Water Act
NW&SMP	National Water and Sanitation Master Plan
NWRS	National Water Resources Strategy
NWSRSS	National Water and Sanitation Resources and Services Strategy
PFMA	Public Finance Management Act
RWU	Regional Water Utilities
SAAWU	South Africa Association of Water Utilities
SABS	South African Bureau of Standards
SALGA	South African Local Government Association
SAWS	South African Weather Service
RDP	Reconstruction and Development Programme
TCTA	Trans Caledon Tunnel Authority
WARMS	Water Authorisation and Registration Management System
WMA	Water Management Area
WRC	Water Research Commission
WSA	Water Services Authority
WSP	Water Services Provider
WUA	Water User Association
WTW	Water Treatment Works
WWTW	Waste Water Treatment Works

1. ADDRESSING THE CRISIS

South Africa is facing a water crisis driven by a massive backlog in water infrastructure maintenance and investment, recurrent droughts driven by climatic variation, glaring inequities in access to water, and deteriorating water quality. This crisis is already having significant impacts on economic growth and on the well-being of everyone in South Africa, which will be exacerbated if it is not addressed.



South Africa CAN avoid a projected 17% water deficit in 2030 by taking bold action today!



5.3 million households (35%) do not have access to safe drinking water

14.1 million people do not have access to reliable sanitation

Only 63 % of households have access to a reliable water supply service

41% of municipal water does not generate revenue
35% is lost through leakage

56% of waste water treatment works and 44% of water treatments work are in a poor or critical condition. 11% are dysfunctional

Only 5% of agricultural water is used by black farmers

48% of remaining wetlands are critically endangered



In April 2017, 5.3 million households in South Africa did not have access to reliable water services, and 14.1 million people still used sanitation facilities below the RDP standard. Only 10.3 million households (63%) have access to reliable water supply.

Approximately 56% of the over 1 150 municipal waste water treatment works (WWTWs) and approximately 44% of the 962 water treatment works (WTWs) in the country are in a poor or critical condition and in need of urgent rehabilitation. Some 11% of this infrastructure is completely dysfunctional.

Between 1999 and 2011 the extent of main rivers in South Africa classified as having a poor ecological condition increased by 500% with many rivers pushed beyond the point of recovery. The extent of tributaries with a poor ecological condition increased by 229% in this same period. South Africa has lost over 50% of its wetlands, and of the remaining 3.2 million hectares (ha), 48% are critically endangered with one third already in a poor condition.

Only 5% of the over 60% of South Africa's water that is used in the agricultural sector is used by black farmers.

Water is severely underpriced and cost recovery is not being achieved. To achieve water security, an estimated capital funding gap of around of R33 billion per annum for the next 10 years must be closed through, a combination of improved revenue generation and a significant reduction of costs.



Municipalities are losing about 1660 million m³ per year through Non-Revenue Water. At a unit cost of R6/m³ this amounts to R9.9 billion each year



Without improved revenue generation from transfers and tariffs and a reduction in costs, the sector will be unsustainable

The National Water and Sanitation Master Plan (NW&SMP) volume 1: Call to Action seeks to rally all water sector stakeholders in South Africa to work together to address the challenges confronting the water and sanitation sector and to ensure that we get ahead of the curve in relation to both current and future challenges. This includes ensuring that by 2030 we have a sufficient reserve of supply to take us safely into the future beyond 2030 and that we meet Sustainable Development Goal 6: Ensure access to water and sanitation for all and that the water sector is financially sustainable.

This Master Plan is driven by a sense of urgency. It sets out the critical actions and investments the country must implement between now and 2030 to overcome challenges and ensure a water secure future supporting inclusive development across the country. The Master Plan also sets out the roles and responsibilities, targets, timeframes and how performance will be monitored.



Volume 2 of the NW&SMP: Plan to Action supports the high-level Call to Action and consists of thematic chapters that address specific topics in more detail with a much larger suite of actions that will be implemented.

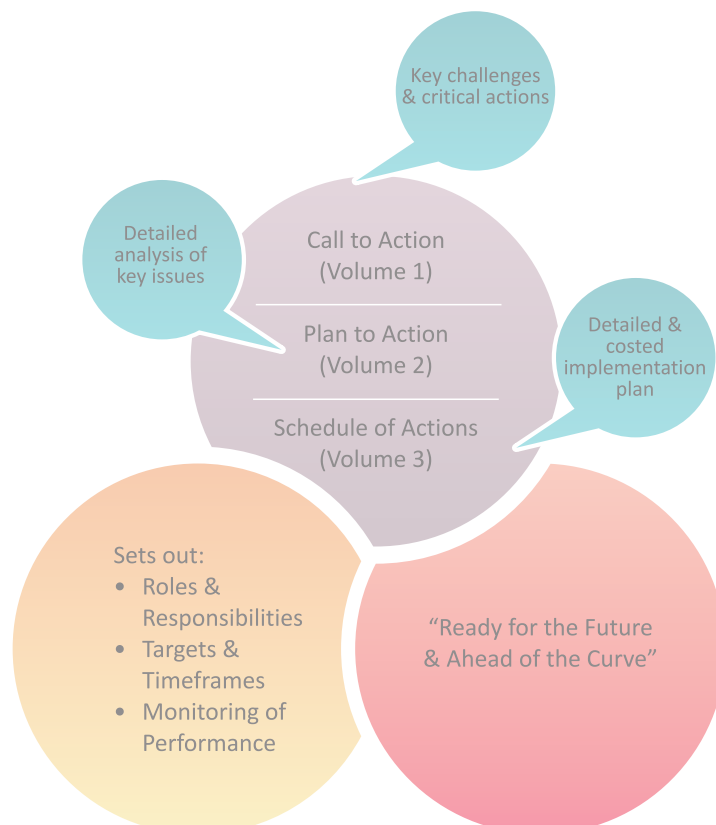
The complete document is available for download and comment at www.dws.gov.za

Volume 1 of the NW&SMP is this Call to Action, which is divided into two sections, Water and Sanitation Management and Enabling Environment, each having six sub-sections. Each section includes critical actions that, when implemented, will have a significant impact in addressing the crisis. These actions are collated at the back of the document for ease of reference.

Volume 2: Plan to Action provides a more detailed analysis of the key issues of the 12 subsections of this report.

Volume 3: Schedule of Actions provides a detailed and costed implementation plan covering all of the actions required across the sector to achieve the objectives of the plan.

National Water and Sanitation Master Plan



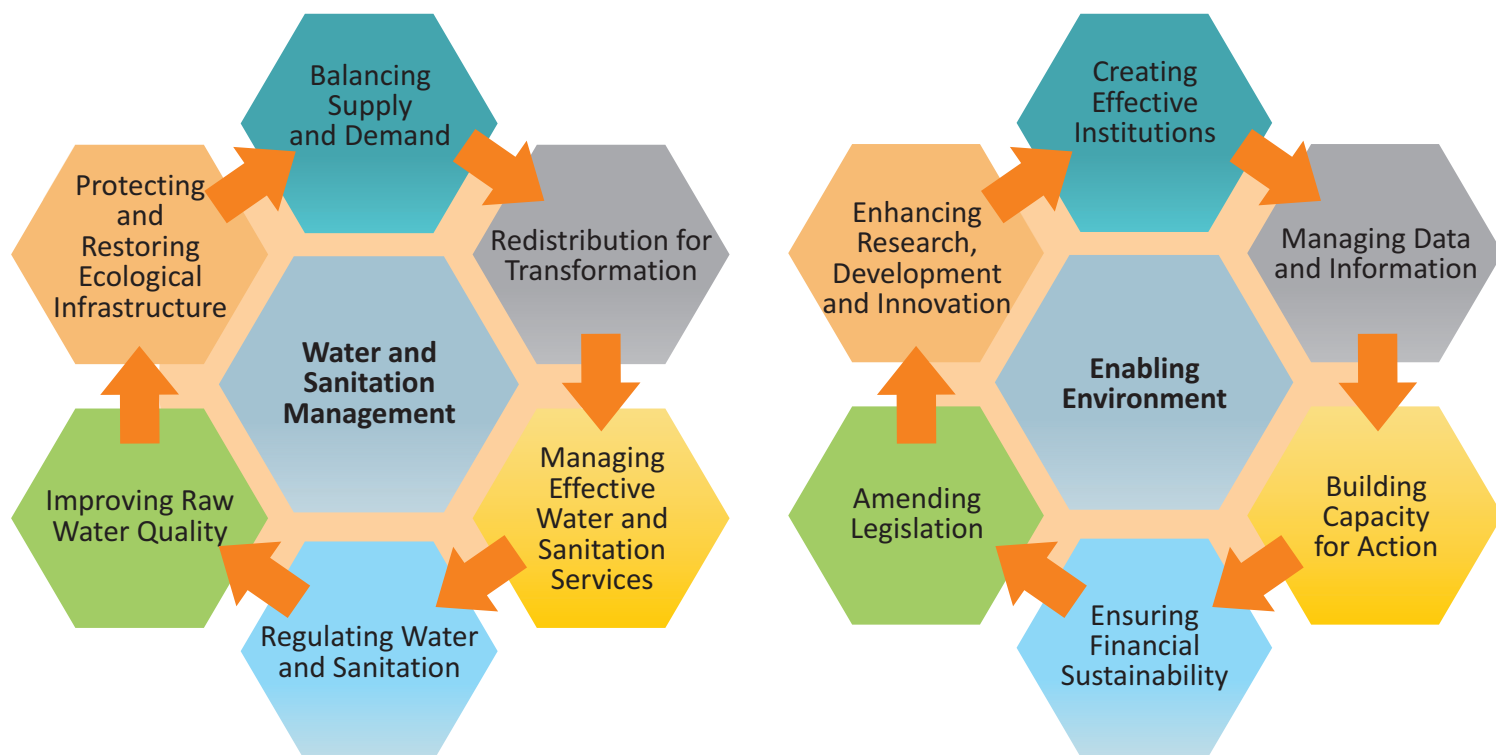


Figure 1: Overview of NW&SMP Call to Action structure

This Call to Action: Ready for the Future and Ahead of the Curve is presented for consultation with selected stakeholders, the outcomes of which will inform the finalisation of the draft Master Plan to be tabled for Cabinet-approval in March 2018.

Implementation of the NW&SMP will be reviewed annually and the NW&SMP will be updated accordingly in an adaptive management approach. The NW&SMP is the implementation plan for the National Water and Sanitation Resources and Services Strategy (NWSSRS) which is reviewed every 5 years. In addition, in order to address the issues confronting the water sector in greater depth, a process similar to a mini-Operation Phakisa, bringing together the key players in the water sector for in-depth planning, will be held in 2018. The results of this national engagement will be included in subsequent updates of both the NW&SMP and NWSRSS.

Action	Responsibility	Timeframe
Mini-Phakisa on water and sanitation to be held <ul style="list-style-type: none"> To enable critical stakeholders to engage with the NW&SMP in-depth 	DWS, DPME	August 2018
Review and updating of NW&SMP	DWS	Annual

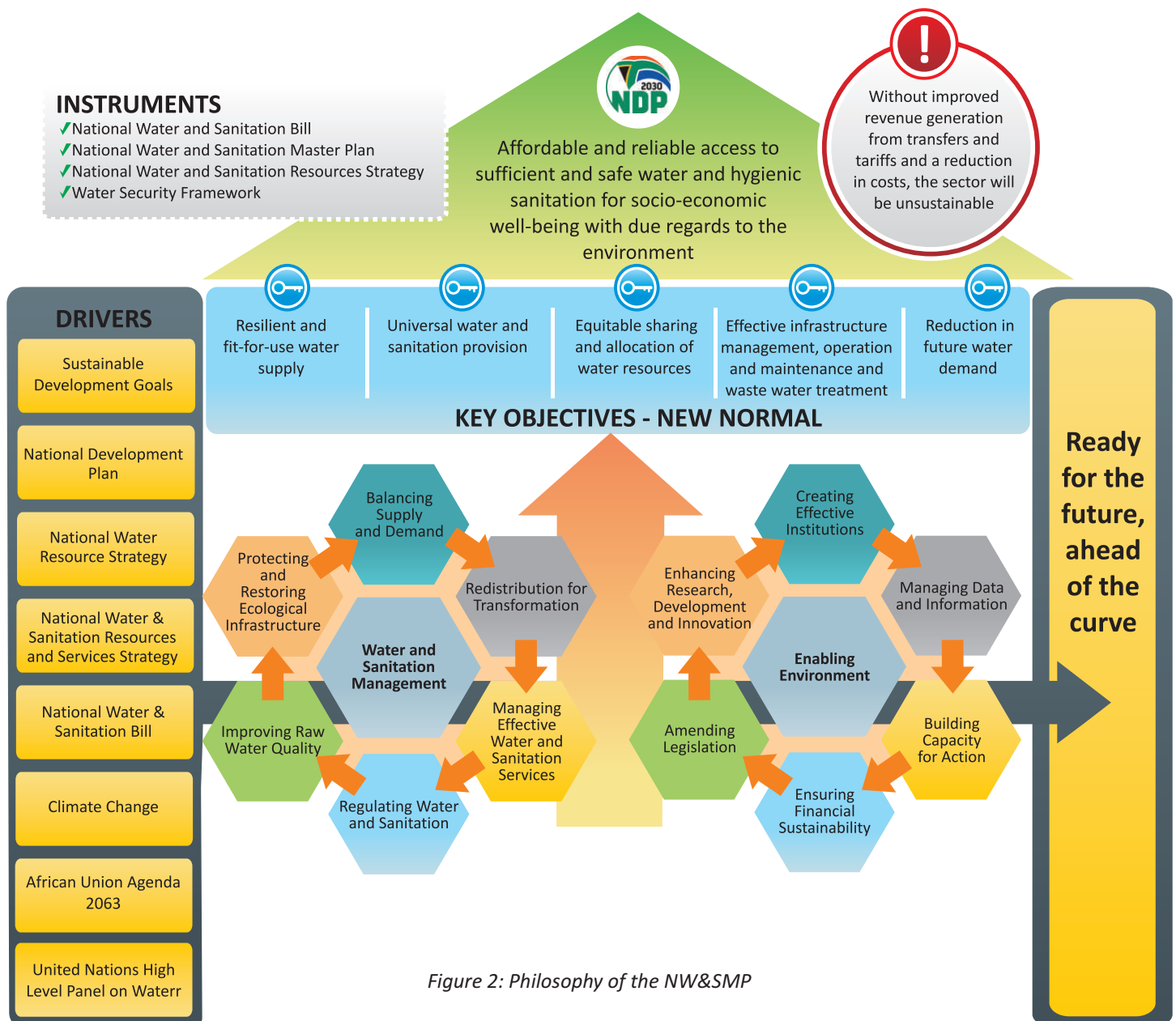
2. BUILDING A WATER SECURE FUTURE

The NW&SMP is based on five key objectives that define a 'new normal' for water and sanitation management in South Africa:

- Resilient and fit-for-use water supply
- Universal water and sanitation provision
- Equitable sharing and allocation of resources
- Effective infrastructure management, operation and maintenance and wastewater treatment, and
- Reduction in future water demand.

These five objectives enable the achievement of the National Development Plan's vision for 2030, of affordable and reliable access to sufficient and safe water and hygienic sanitation for socio-economic growth and well-being, with due regard to the environment.

NW&SMP PHILOSOPHY



Achieving this NDP vision of a water secure future is one of the biggest challenges facing South Africa in the 21st century. It is a critical element of achieving social well-being and sustainable economic growth.

South Africa is facing increasing water demands to meet the needs of a rapidly growing and urbanising population, changing lifestyles, and economic growth. At the same time, climate change is driving the country towards a warmer and drier future, with predicted longer and more extreme droughts, and more intense floods. Climate change means that there will be less water available to meet water needs.



Achieving water security in South Africa requires a 'new normal', a significant paradigm shift that:

- *recognises the limitations of water availability*
- *addresses the real value of water and the need for financial sustainability*
- *ensures equitable access to limited water resources*
- *delivers reliable water and sanitation services to all*
- *focuses on demand management and alternative sources of water*
- *considers the impacts of climate change*
- *addresses declining raw water quality*



The new reality:

Water will become more expensive
Everyone MUST use less water for the same activities
Everyone - except the indigent - must pay for services

To achieve this, decision-making will be based on sound evidence, supported by rigorous research, innovation and appropriate technology development.

The water sector will enforce regulation through accountable and effective leadership, to ensure that the water sector meets the requirements of a current and future South Africa and that demand is brought in line with available water supply.

Working together, government departments, the private sector and civil society will implement the necessary actions to achieve financial sustainability, functional infrastructure and institutions, fair and sustainable water use, and universal water supply and provision.

Implementation of this Master Plan will enable South Africa to become more resilient to climate change and the increasing intensity of droughts and floods, while meeting the water needs of a growing population and economy.



To achieve water security, all water users in all sectors in South Africa must use water more efficiently, maintain water assets better and address water use in the plans the municipal, energy, agriculture, forestry, mining and industrial sectors. South Africa has no other option, if the country is to be **READY FOR THE FUTURE AND AHEAD OF THE CURVE**.



To achieve safe sanitation for all and protect the quality of our water resources, all institutions responsible for sanitation services provision must ensure rapid eradication of the backlog, informed choice of appropriate technologies, and effective operation and maintenance of infrastructure.

SECTION 1: WATER AND SANITATION MANAGEMENT

3. BALANCING WATER SUPPLY AND DEMAND

3.1 Status quo

South Africa has an arid to semi-arid climate, with an average annual rainfall of 465 mm (half the world average), producing a total annual runoff of approximately 49 000 million m³/a. The current reliable yield of surface water at an acceptable assurance of supply is approximately 10 200 million m³/a nationally. Of this volume, around 70% is stored in the country’s 252 largest dams.

The total realistically accessible groundwater potential is about 4 500 million m³/a of which between 2 000 and 3 000 million m³/a is currently being utilised. Of the approximately 5000 registered dams, the vast number (3832) are small dams (less than 12m) serving farms and municipalities. These smaller dams play a critical roll in local water security and climate resilience.



If demand continues to grow at current levels, the deficit between water supply and demand could be between 2,7 and 3,8 billion m³/a by 2030, a gap of about 17% of available surface and ground water.

Agriculture is the largest water use at 61% of total water use, followed by municipal use at 27% (including industrial and commercial users provided from municipal systems), with power generation, mining and bulk industrial use, livestock and conservation and afforestation jointly making up the remaining 12% (see Figure 3).

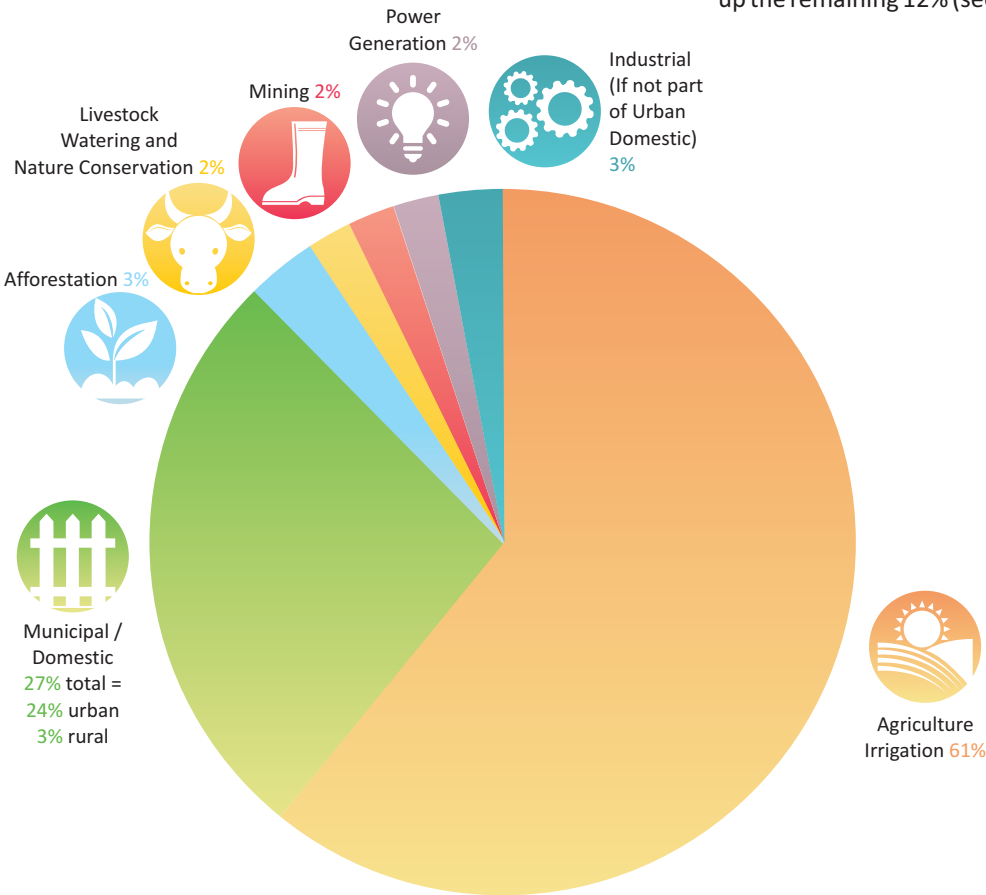


Figure 3: Water use by sector



Agriculture uses the most water in South Africa and pays the lowest tariff

Agricultural consumption is largely unmetered, and there are concerns about unauthorised abstraction and water wastage in the sector. In addition agricultural users pay a much lower tariff than other users of untreated water and the relatively cheap water has not incentivised the adoption of water efficient irrigation practices.



On average, each person in South Africa uses 64 litres per day more than the global average

Average municipal water use in South Africa is around 237 litres per person per day compared to the world average of 173 litres per person per day. Since large numbers of South Africans use very small amounts of water per day, this average masks the high water use by privileged sectors of the population. The high domestic water use is partly due to municipal non-revenue water which is currently at an unacceptably high 41%. While figures vary greatly between municipalities and water services providers, average physical losses in municipal systems are at around 35%, against a global best practice in the order of 15%.

There is significant opportunity to reduce water demand in the municipal and irrigation sectors. The irrigation sector is by far the largest water user in South Africa. Any percentage reduction in water use in this sector will therefore have a significant effect on total water demand. DWS, through the Strategic Water Partnership Network (SWPN) has implemented the Water Administration System (WAS) Release Module at a number of irrigation schemes. With the WAS, it is possible to release the correct amount of water from a source according to demand, thereby reducing wastage.

59 out of 78 large government irrigation schemes submit monthly Water Use Efficiency Accounting Reports which indicate that average water loss in these schemes is around 27%. This is well above the unavoidable seepage and evaporation losses in concrete canals which are about 12% of the total loss.

Achievement of water demand targets in municipalities has been mixed. Figure 4 below indicates the targets and actual achievements for municipalities in eight large water supply systems for 2012 – 2016.



Municipalities are losing about 1660 million m³ per year through Non-Revenue Water. At a unit cost of R6/m³ this amounts to R9.9 billion each year

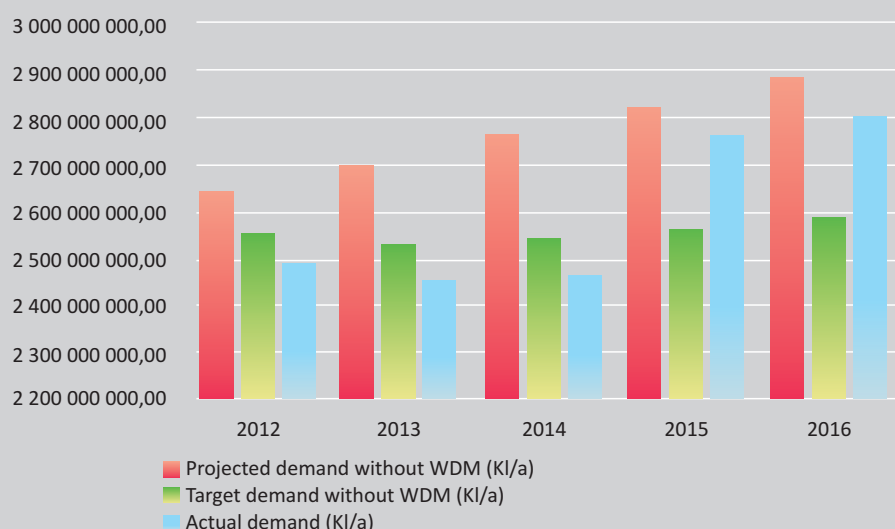


Figure 4: Municipal water use demand targets and actual in eight large water supply systems, 2012 - 2016

Re-use of effluent is becoming more cost effective with advances in technology, and treated effluent from waste water and acid mine drainage is being used to supplement water supply and this can be expanded considerably. With the cost of desalination decreasing due to advances in technology, desalinated water (sea, brackish groundwater and waste water) will soon be more economically viable than most new surface water developments. While the utilisation of desalinated sea water is only financially feasible for coastal areas, it will free up surface and ground water for upstream and/or inland use where water is currently transferred or released for use in coastal areas.

¹Non-revenue water includes all water supplied that is not paid for, including physical water losses through leaks in the distribution system, illegal connections, unbilled consumption and billed, but unpaid for water use.

3.2 Drivers

To balance supply and demand, South Africa will need to reduce water demand, as well as to increase supply. The projected gap between supply and demand is driven by over-consumption, inefficient use, wastage, leakage, lack of maintenance and refurbishment, inappropriate infrastructure choices (e.g. water borne sanitation in a water scarce country), inadequate planning and implementation, as well as population and economic growth. Water availability and raw water quality will decline further if the degradation of aquatic ecosystems (including wetlands), poor land use practices, and high levels of water pollution continue.

In addition, climate change is projected to increase the variability of rainfall throughout the country, and to reduce average rainfall, particularly in the western part of the country. Climate change may also increase the agricultural demand for water due to higher temperatures, and a reduced ability to rely on rain-fed agriculture.

Water demand must be reduced by improving efficiency, adopting new technologies, and reducing losses, especially in the agricultural and municipal sectors, through water awareness, and strict regulation and incentives.

As a target, average domestic consumption must be reduced to 175 litres per person per day by 2025. Further actions linked to reducing demand are addressed in the section on regulation. The National Development Plan (NDP) targets an average reduction in water demand of 15% below baseline levels in urban areas by 2030, where the baseline is taken as year 2012. This plan acknowledges and refers to the targets that have already been set for different catchments through the reconciliation strategies and all-town studies.

On the supply side, there is a need to move from the current water mix which is strongly dominated by surface water, with some groundwater and return flows to a water mix that includes increased groundwater use, re-use of effluent from waste water treatment plants, water reclamation, as well as desalination and treated acid mine drainage (AMD). The dependence on surface water will decrease over the coming decades (see Figure 5).

The provision of waterborne sanitation is unsustainable and South Africa must adopt water-less sanitation technology

By 2040, treated acid mine drainage and desalinated seawater will make a significant contribution to South Africa's water mix, ground water usage will increase, and the over-reliance on surface water will be addressed.

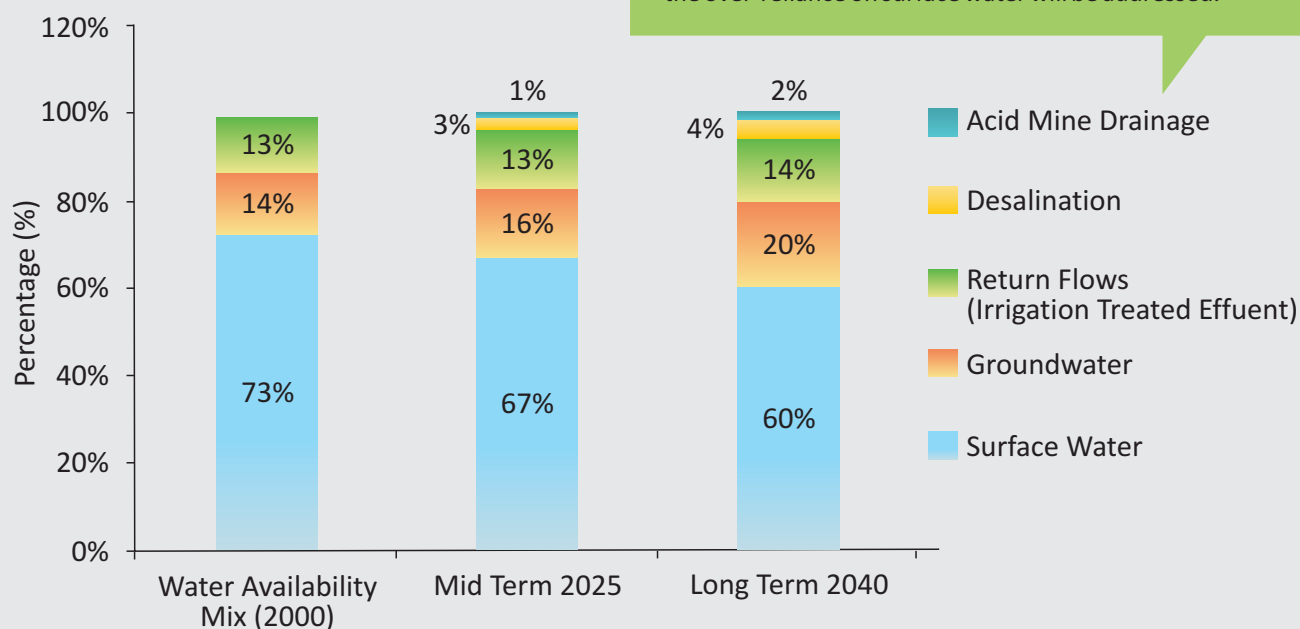


Figure 5: Planned shifts in water mix as a percentage of total water mix

Delays in the implementation of Phase 2 of the Lesotho Highlands Water Project (LHWP) (to augment the Vaal River System for greater Gauteng), the AMD project in the Witwatersrand area, the uMkhomazi Water Project Phase 1 (to augment the Mgeni System for the KwaZulu-Natal Coastal Metropolitan Region) and the augmentation of the Western Cape Water Supply System have significantly impacted on the water security of these areas. The current water crisis in Cape Town serves as a stark reminder of the impacts of delayed action.

In addition, South Africa has four internationally-shared river basins that contribute 45% of the country's total river flow. These resources must be shared equitably with neighbouring states who also have increasing water needs due to growing populations and economies.

45% of the water in South Africa comes from rivers shared with neighbouring countries



The table below indicates how a range of infrastructure projects as well as demand management are needed if we are to build water security by 2030. Without demand management, currently planned infrastructure development and the broadening of the water mix will not be sufficient to balance supply and demand. However, if the targets of reducing physical losses in municipalities are reached, as well as a reduction in the per capita consumption to the global average, in addition to the surface and groundwater supplies, and desalination, re-use and treated Acid Mine Drainage, there will be a slight surplus available in 2030. It must be recognised, however, that achieving these targets will require significant investment and capacity. It must also be recognised, that these figures are national and do not address specific areas where even bigger interventions will be required to address local shortages. These issues are addressed in more detail in NW&SMP Volume 2: Plan to Action.

2030 demand projections (Mm3)			
	Without interventions	With urban losses reduced from 35% to 15%	With domestic demand reduced from 237 l/c/d to 175 l/c/d
Agriculture (irrigation and livestock watering)	9 700		9 700
Municipal (industries, commerce, urban and rural domestic)	5 800	4 941	3 696
Strategic/Power generation	430		430
Mining and bulk industrial	1 017	1 017	1 017
International obligations	178		178
Afforestation	434	434	434
Total Demand	17 559		15 455
Deficit	-939	-80	1 165
Total Supply	16 620		16 620
2017 total supply	13 000		
Increased surface water storage	1 400		
Increased groundwater use	1 500		
Desalination	365		
Re-use	300		
Treated AMD	55		
Surplus water availability	-5%	0%	8%

Table 1: National water balance with and without critical interventions.

3.3 Key Actions

Action	Responsibility	Timeframe
Update and maintain reconciliation planning studies to achieve optimal water mix (surface water, groundwater, re-use and desalination, and incorporate climate change into studies)	DWS	3 studies updated per annum
Integrate results of All Towns studies and reconciliation studies into sectoral plans (domestic, agriculture, energy, mining, industrial development, land reform and rural development)	DWS, DAFF, DoE, DMR, DTI, DRDLR	2022
Develop provincial W&SMPs then five-yearly	Provincial government	2019 and then five-yearly
Include water use efficiency and water loss reduction targets in the KPIs of municipal managers and municipal water services managers, and in municipal implementation plans	DWS, COGTA, WSAs	2023
Revitalise the No Drop Programme	DWS	2018
Lesotho Highlands Water Project (LHWP) Phase 2 <i>Water for the largest economic hub, Gauteng. System already in deficit. Design in progress.</i>	LHWC	2025
Western Cape Water Supply System Augmentation Project (Voëlvlei Dam) <i>Water for the 2nd largest economic hub, Cape Town. System already in deficit. Financial structuring in progress.</i>	DWS	2024
Cape Town emergency desalination plants <i>Water for the 2nd largest economic hub, Cape Town. System already in deficit.</i>	City of Cape Town	2018
uMkhomazi Water Project Phase 1 <i>Water for the 3rd largest economic hub, eThekweni. System already in deficit.</i>	DWS	2025
Desalination of AMD from the Wits mining basins in Gauteng <i>Prevent pollution of Vaal River System and provide additional water. In implementation.</i>	DWS (TCTA)	2021

Action	Responsibility	Timeframe
Treatment of effluent for potable and non-potable use <i>Reduce demand for fresh water resources</i>	DWS and WSAs	50% increase by 2025
Thukela - Goedertrouw Emergency Water Transfer Scheme <i>Richards Bay Industrial area. Risk of failing system soon. Design in process.</i>	DWS	2019
Lower uMkhomazi Scheme <i>South Coast in deficit with limited resources. Can also augment Mgeni System if needed.</i>	Umgeni Water	2022
Mokolo Crocodile (West) River Augmentation Project <i>Strategic water for Lephalale area for power station – national impact on electricity grid.</i>	DWS	2023
Greater Mangaung Water Augmentation Project: Gariep Pipeline <i>System under stress.</i>	Bloem Water	2025
Clanwilliam Dam Raising and Conveyance Infrastructure <i>Design completed. Awaiting appointment</i>	DWS	2023
Lower Tugela Bulk Water Supply Scheme <i>North Coast</i>	DWS DWS	2021 2023
Ncwabeni Off-channel Storage Dam <i>South Coast</i>		
Lusikisiki Regional Water Supply Scheme (Zalu Dam) <i>Lusikisiki</i>	DWS DWS	2022 2022
Lower Orange River: Feasibility Study (Vioolsdrift Dam) <i>Mitigation of LHWP impact and provide water growth for Lower Orange</i>	DWS	2024
Mzimvubu Water Project: <i>Dam at the Ntabelanga Site, WTW and Ntabelanga Bulk Distribution</i>	DWS	2020
Groot Letaba Water Augmentation Project: raising of Tzaneen Dam and development of Nwamitwa Dam <i>Design in process.</i>	DWS	2019 2022
Algoa Water Supply re-use	DWS	2025

4. REDISTRIBUTING WATER FOR TRANSFORMATION



4.1 Status quo

Transformation is critical in three areas: ensuring that the use of water for productive purposes is equitable, making sure that the governance of water is representative, and ensuring access to decent water and sanitation services for all.

Despite both policy and legislative tools intended to enable the transformation of water allocation to redress the historical racial discrimination in access to water, little has been achieved since the National Water Act (NWA) was promulgated in 1998. This is particularly true in the agricultural sector, where 95% of the water remains in the hands of white commercial farmers.

Existing Lawful Use (ELU) was originally intended as a transitional arrangement. However, nearly 20 years since the NWA was promulgated, it remains the biggest volume of water used in the country.

While the restitution of agricultural land has been slower than intended, the reallocation of water has not always kept pace with the transfer of that land. In some instances, the previous owners traded away their existing lawful water use rights, so that the water allocation was not transferred to land reform beneficiaries.



More than 70% of commercial farms in South Africa are owned by white farmers, who also use 95% of the water allocated to the agricultural sector

Transformation of representivity in water governance has also been slow. Membership of water user associations generally reflects land ownership and water use, so that the governance of those associations is mainly in white hands. According to The Institute for Poverty, Land and Agrarian Studies, more than 70% of commercial farms in the country are owned by white farmers. There are around 39 000 white commercial farmers and 5 300 black farmers, according to the African Farmers Association of South Africa. Most of the black commercial farmers have relatively smaller farms. The Irrigation Strategy developed by the Department of Agriculture, Forestry and Fisheries (DAFF) has identified water schemes where there is the potential for irrigation expansion. This expansion can contribute to access to water for black farmers.

4.2 Drivers

The demand for land reform is high on the political agenda and will remain so until the demand has been adequately addressed. Within the land reform programme, the transfer of irrigable land without a water allocation has limited the ability of recipients to make productive use of the land. In addition, there are black farmers and entrepreneurs who have expressed their concerns about lack of access to water, and the challenges in getting water allocated for farming and enterprise development. The pressure to reallocate water to achieve more equitable water use thus remains high.



In order to effect transformation, DWS will leverage water available in government water schemes to allocate to emerging black farmers

4.3 Key Actions

Action	Responsibility	Timeframe
Identify alternative sources of water and water that is not utilized (e.g. as mines are closing, resulting from War on Leaks) and allocate to black applicants	DWS, CMAs	Initial mapping by 2019 Allocation of water to begin in 2019
Identify where more water can be made available in government water schemes and allocate to black applications	DWS, CMAs	Initial mapping by 2019 Allocation of water to begin in 2019

Action	Responsibility	Timeframe
Identify areas where small dams for groundwater development can provide water for small scale black farmers	DWS, CMAs	Initial mapping by 2019
Align water, land and agrarian reform programmes and link to the Irrigation Strategy	DWS, DAFF, DRDLR	2018
Implement the Water Administration System (WAS) on all government irrigation schemes and reallocate savings to black applicants	DWS, DAFF/PDAs	2023
Implement pilot project on voluntary contributions from farmers for reallocation in the Kaap Catchment (Inkomathi-Usuthu WMA)	DWS, IUCMA	2018
Use General Authorisation to enable small scale water use by black farmers	DWS, DAFF	2019





5. MANAGING EFFECTIVE WATER AND SANITATION SERVICES

5.1 Status quo

Everyone living in South Africa has a constitutional right of access to a basic water supply and sanitation services and the country has progressed well in delivering infrastructure to provide these services. 89% households now have access to water supply services². However, whilst service provision has advanced, reliability of these services remains a challenge. Only 63% of households have a *reliable* water supply service - a lower figure than in 1996 (see figure 6). In the 2007 priority district municipalities the water reliability is only 42% with the worst 10 WSAs below 30% reliability.

Interruption in water supply (unreliability and blocked and overflowing sewers are two) is one of the key public frustrations leading to protests and vandalism. Approximately 56% of the over 1 150 WWTW and approximately 44% of the 962 WTWs are in poor or critical condition and in need of urgent rehabilitation. Poor water and waste water treatments have significant implications for public health. Some 11% of schemes are fully dysfunctional.

Municipal water reticulation infrastructure includes more than 290 000 km of pipelines, an estimated 7,7 million house connections, over 5 million yard taps and more than 2,1 million street taps³.

Current access to sanitation services is around 80% nationally. However, delivery is uneven and in some municipalities only 50% of residents have access to adequate sanitation facilities.

Over the years, several interventions have been put into place by national government, including interventions under Section 196 of the Constitution, and, most recently, the Back-to-Basics campaign and the Municipal Infrastructure Support Agent (MISA) instituted COGTA. Despite these interventions and water and sanitation specific interventions by DWS, in some cases repeatedly in the same municipality, failures in water supply and sanitation services continue. There are also challenges in the effective operation and maintenance of bulk water supply and sanitation infrastructure by water boards, DWS and other government departments.



56% of waste water treatment works in South Africa do not work properly
44% of water treatment works do not work properly
The capacity of WSAs to operate, maintain and manage assets for existing infrastructure needs urgent attention.

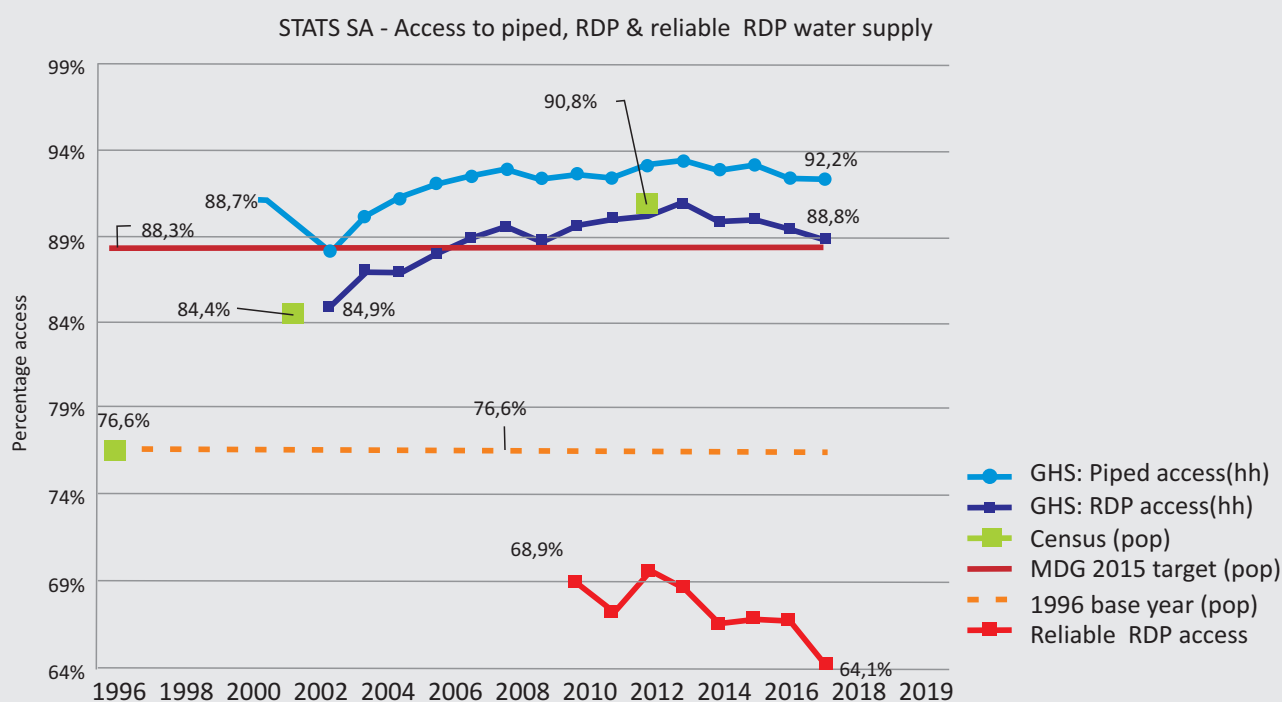


Figure 5: Access to piped, RDP and reliable RDP water supply (Source: StatsSA)

² Stats SA general household survey

³ Stats SA community survey 2016

The failure of municipalities to provide reliable water and sanitation services is largely due to the lack of capacity, the misappropriation of funding, and/or the lack of funding to operate, maintain, refurbish and manage water and waste water infrastructure assets properly. Further contributors towards the poor reliability of water and sanitation services is the limited budget allocated by municipalities for operations and maintenance relative to that allocated to new capital works poor revenue management, and the failure of municipalities to employ appropriately qualified technical staff. In addition, the national infrastructure grant funding mechanisms incentivise the building of new infrastructure, rather than the maintenance of existing infrastructure.

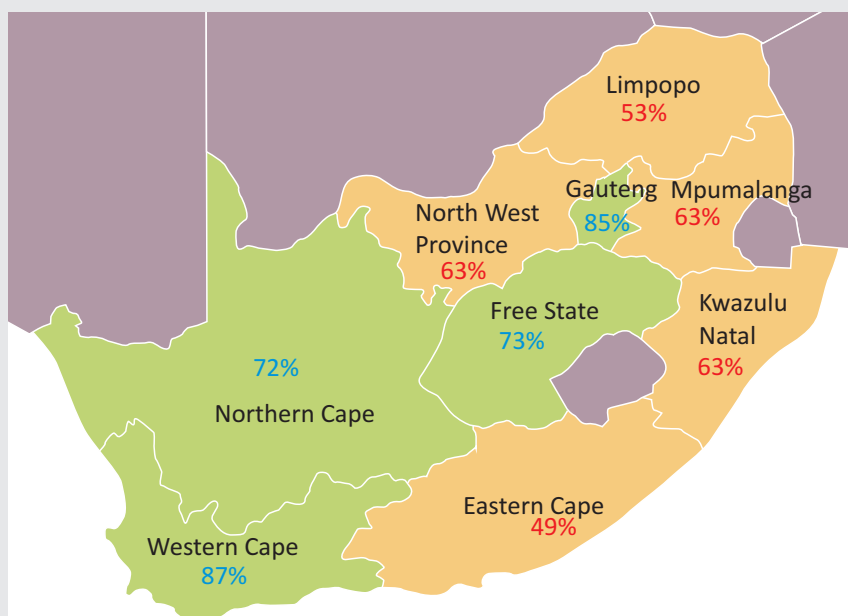


Figure 7: Reliability of water services per province

5.2 Drivers

In line with the global Sustainable Development Goals, and the aspirations of the NDP, the national targets for water supply and sanitation are as follows:

Target	Date
Achieve universal, sustainable sanitation provision	2020: 90% 2030: 100%
Achieve universal, sustainable and reliable water supply provision	2019: 90% 2025: 100%

These targets must be met in a sustainable manner, with effective operation and maintenance, so that the services provided are reliable over time, and are accessible to all people, including those living with disabilities. The levels of service that are provided must be affordable at the household, WSA and national levels, to ensure financial sustainability in the sector.

The constitutional water supply responsibility lies with 144 municipalities that are designated as water services authorities (WSA). At least 33% of these municipalities are regarded as dysfunctional and more than 50% have no or very limited technical capacity. Twenty seven (27) priority district municipalities have been identified as being particularly dysfunctional and require specific intervention.

In addition, many of the smaller and/or rural municipalities are faced with financial challenges. The socio-economic profile of South Africa is highly variable with 63% of households earning less than R38 000 per year (and therefore classified as indigent). Municipalities with high levels of indigent households are dependent on national grants to provide reliable and affordable water and sanitation services. In rural municipalities, the proportion of indigent households averages 77%. It is consequently difficult for municipalities with a low revenue base to address the backlog and to allocate sufficient funds for maintaining and operating existing works. Levels of service must be informed by issues of affordability and life-cycle costs to the municipality and the national fiscus. Smaller schemes are far more expensive to run than the major supply schemes serving the urban areas. Often the major supply schemes run through the rural areas without supplying them (such as the Tugela-Vaal Scheme).

South Africa is in a low economic growth climate and the number of indigent households is not expected to decrease in the short term. In addition, high rates of urbanisation have a major impact on the demand for water supply and sanitation services. South Africa is currently 65% urbanised and the National Development Plan (NDP) estimates that urban populations will grow by 10% every two decades. Increasing urbanisation will place more pressure on cities to deliver affordable and reliable water and sanitation services to larger numbers of poor households.

Aging, poor quality and poorly maintained infrastructure is contributing to high levels of water wastage and pollution of rivers and ground water with sewerage.

5.3 Key Actions

The national capacity to operate, maintain and manage water supply and sanitation assets requires urgent attention. Key actions are:

Action	Responsibility	Timeframe
DWS, with COGTA, National Treasury, and SALGA to develop and implement a long-term plan for the turn-around of water supply and sanitation services in the country that: <ul style="list-style-type: none"> - Revisits the powers and functions of Municipalities - Categorises municipalities according to competency to deliver services and designs long-term interventions accordingly - Draws on the capacity of regional water utilities and the private sector to support the provision of reliable services - Revisits levels of service for water supply and sanitation against issues of affordability, and - Assesses tariffs and addresses revenue generation potential. 	DWS, COGTA, NT, SALGA	Plan developed by March 2019 Review of plan bi-annually
DWS, with COGTA, National Treasury, SALGA and relevant WSAs to develop and implement a long-term plan to provide reliable and sustainable water supply and sanitation to 3,4 million households in the 27 priority DMs	DWS, COGTA, NT, SALGA, 27 DMs	2019: 90% 2025: 100%

Action	Responsibility	Timeframe
Generate and implement a business model for the operation and maintenance of WWTW and municipal works where municipalities are not able to do so	DWS, NT, COGTA	2022
Restructure the grant funding mechanisms and conditions for water supply and sanitation <ul style="list-style-type: none"> - Focus to be on maintaining and restoring existing infrastructure rather than the construction of new infrastructure - Lifecycle planning (asset management) conditions to be set by DWS - Maintenance grants to be prioritised for social schemes 	DWS, NT, COGTA	2020
Standardise and enforce required O&M budgeting and expenditure Municipal Financial year	NT, COGTA, DWS	As from 2018/2019
Align interventions with COGTA on failing municipalities with existing support programmes e.g. MISA	DWS, COGTA	2018
Turn around the functionality of five, currently dysfunctional, large waste water treatment works	DWS, WSAs, NT	2022



6. REGULATING WATER

6.1 Status Quo

The Department of Water and Sanitation (DWS) is responsible for the regulation of the use of water across the country. This includes issuing licences for water abstraction, waste discharge, and dam safety, and setting the charges for the use of raw water and the discharge of effluent. There are in the region of 80 000 water use authorisations, either under the existing lawful use claws of the NWA or through water use licences, with around 60 000 unique users. Of these, about 8 000 use water from state-owned infrastructure.

DWS also sets standards for water services and sanitation provision and for water services tariffs, which are also governed by the Municipal Systems Act and the Municipal Finance Management Act. There are significant challenges in ensuring WSAs set appropriate tariffs that cover costs, including operation and maintenance costs, and that promote water use efficiency.

Water services authorities are responsible for developing by-laws that, amongst other things, contribute to the regulation of water use in municipal areas. The South African Bureau of Standards sets several standards for the water sector, including drinking water standards (SANS241).

6.2 Drivers

Strong regulation is a critical tool in achieving water security in South Africa, in terms of water quality (in rivers and taps), balancing supply and demand, ensuring the safety of dams, and meeting the challenges of climate change. Despite strong regulatory tools in the legislation, the quality of raw water continues to deteriorate across the country, and there are high levels of water theft and water wastage. The continued use of water under the Existing Lawful Use clause of the National Water Act is hampering the redistribution of water and effective regulation of this water use. Dam safety regulation is under threat from limited qualified people in the country: currently there are less than 100 dam safety approved professional persons (APPs) in South Africa approximately one qualified person for every 50 dams on the Dam Safety Register and more than 66% of these are older than 60 years of age. Some municipalities fail to deliver the requisite level of water supply and sanitation including failing to meet drinking water quality standards. In 2014 Blue Drop assessment, 86% of WSAs achieved good or excellent status for microbiological water quality compliance, but only 70% achieved good or excellent status for water quality operational compliance.

6.3 Key Actions

Action	Responsibility	Timeframe
Revitalise the Green, Blue and No Drop programmes	DWS	2018, annually from then onwards
Set a cap on water use per municipality with reducing allocation over time	DWS, SALGA, COGTA	2023
Identify and prosecute major non-compliant abstractors (water thieves) across the country, with a national communication campaign to accompany the action	DWS, DEA	10 by 2020 Additional 10 by 2023
Establish Water Efficiency Labelling and Standards Scheme	SABS, DWS	2026
Replace all ELU with licences with enforceable conditions	DWS, CMAs	2028
Identify and prosecute big polluters across the country (including municipalities), with a national communication campaign to accompany the action	DWS, DEA	10 by 2020 Additional 10 by 2023

7. IMPROVING RAW WATER QUALITY



7.1 Status quo

Raw water quality, being the chemical, physical and biological characteristics of water in rivers, dams, wetlands, estuaries and ground water, shows ongoing deterioration in many parameters. This deterioration poses a threat to economic growth, social development and aquatic ecological functioning.

Raw water quality is altered by point source discharges such as the quality of water discharged from municipal and industrial WWTW and untreated effluent discharged by industrial users, inadequate onsite sanitation, and polluted storm water.

It is also altered by diffuse pollution sources such as atmospheric deposition or land use practices, including water either draining through or running off fertilized agricultural land, wash-off from mine residue deposits and mining areas, wash-off from municipal areas, and erosion. Raw water quality is also dependent on the amount of water remaining in the source that is available to dilute the discharges. Current regulation focusses mostly on the control of point sources of pollution.

Poor raw water quality pushes up the costs of treatment to make it fit for domestic and industrial use. Poor water quality also impacts negatively on agricultural production. It is generally cheaper to treat water at the point of discharge, where the pollution is still relatively concentrated, than it is to treat water once the pollution has dispersed into a large water body and mixed with multiple other pollutant types. The cost of pollution should be borne by the polluter and not externalised to downstream water users or the state.

Pollution of rivers results in poor raw water quality which is driving up the cost of municipal water treatment



Poor raw water quality, together with sedimentation and damming of rivers, has significant impacts on the ecology of rivers, estuaries and wetlands.

The discharge of water into a water source is classified as a water use and is governed by the National Water Act (Act No 36 of 1998) and regulated by DWS to ensure that the water in receiving water resources is fit for use.

7.2 Drivers

South Africa is already experiencing significant impacts on water quality from mining, industry, agriculture, and poorly operated and maintained municipal waste water treatment works. Without effective regulation, several “mega-trends” in addition to current challenges can be expected to lead to new or accelerated water quality challenges. These include: climate change; hydraulic fracturing; further industrial development including the discharge of emerging pollutants; excessive use of fertilizers, insecticides and herbicides in the agricultural sector, and rural-urban migration and the growth of inadequately serviced densely populated settlements. Deteriorating water quality is putting human and animal health at risk, impacting negatively on aquatic ecosystems, and imposing significant costs on the economy.



7.3 Key Actions

Action	Responsibility	Timeframe
Develop and implement a diffuse pollution source strategy that includes the regulation of land use	DWS	Strategy to be implemented by Jan 2023
Implement the Waste Discharge Charge Systems (WDCS) in the Upper Crocodile, Upper Vaal, and Upper Olifants catchments, followed by roll out across the whole country	DWS, CMAs	Revenue to be received in 2019
Implement programmes to rehabilitate the and Upper Olifants, Upper Crocodile, catchments based on revenue from the WDCS, followed by roll out across the whole country	DWS, CMAs	Planning during 2018 to 2020 Upper Vaal, Implementation to start from 2021
Develop and implement municipal bylaws to protect raw water quality	DWS, SALGA, Municipalities	2020

Water quality problems across South Africa

[Adapted from Ashton, 2009]

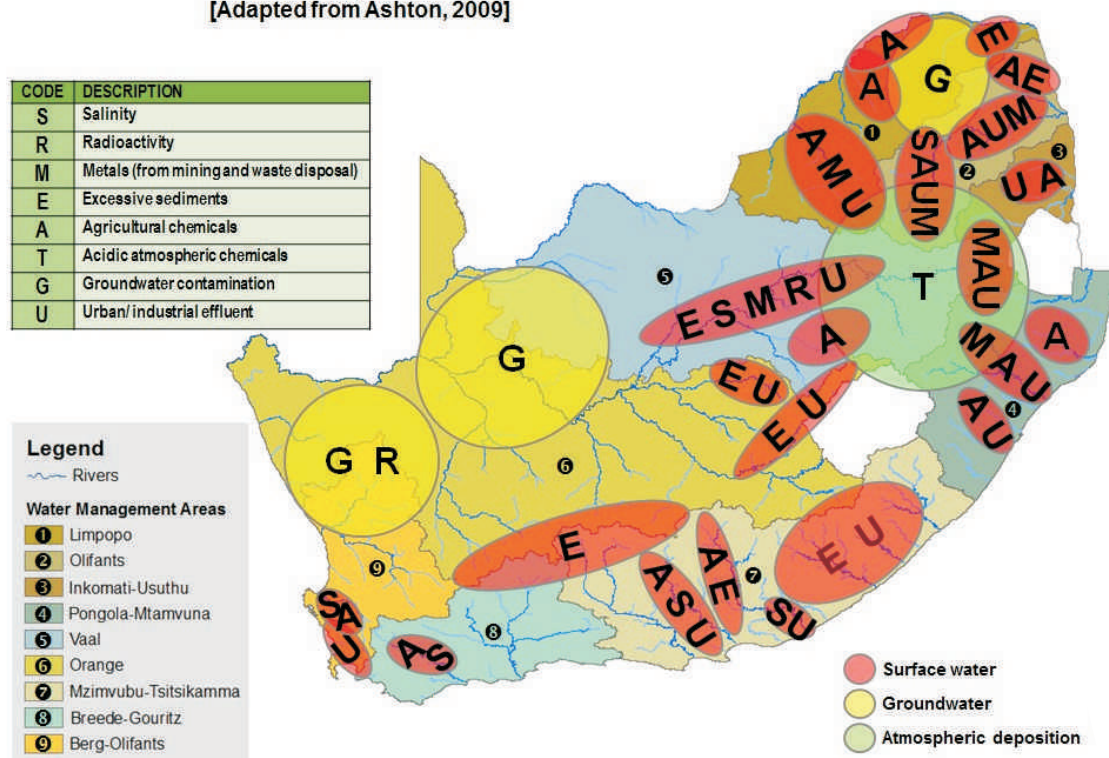


Figure 8: Map of key water quality issues across South Africa (adapted from Ashton 2009)

8. PROTECTING AND RESTORING ECOLOGICAL INFRASTRUCTURE

Protecting and Restoring Ecological Infrastructure

Water and Sanitation Management



8.1 Status quo

South Africa is known for its rich biodiversity, hosting one of the world's six floral kingdoms and a wide variety of aquatic ecosystems, including seven of the world's freshwater eco-regions that are characterised by a wide range of river ecosystems, wetlands and estuarine types.

Over-abstraction, high levels of pollution, and changes to the physical structure of rivers and wetlands through, for example, construction of dams or sand mining, has negatively affected the flow, habitat (physical structure), and water quality of our rivers.

Between 1999 and 2011 river health deteriorated across all of South Africa's nine water management areas. The extent of main rivers in South Africa with a poor ecological condition increased by 500% between 1999-2011 with many rivers pushed beyond the point of recovery. The extent of tributaries with a poor ecological condition increased by 229% in this same period (see Figure 9). It is estimated that South Africa has lost over 50% of its wetlands, and of the remaining 3.2 million ha (less than 5% of SA's land cover) 48% are critically endangered and a third of these wetlands are already in a poor condition (see Figure 10).

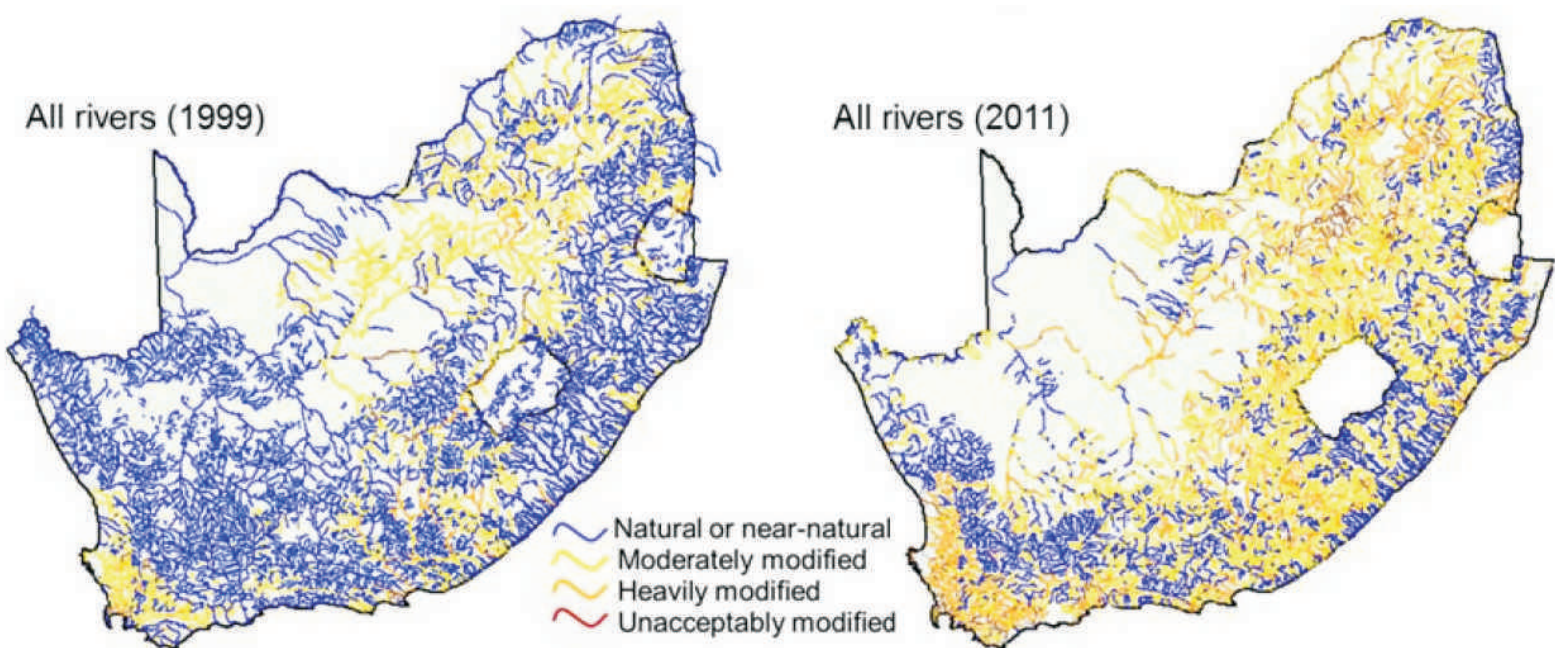


Figure 9: Deterioration of South African rivers, 1999/2011 (Source: Nel, JL & Driver, A. 2015. National River Ecosystem Accounts for South Africa)

Source: SANBI

The loss of ecological infrastructure negatively affects system yield and increases water-related risks. Degraded wetlands, for example, lose their ability to release water in times of drought, or to recharge groundwater supplies.

Degraded ecological infrastructure increases the vulnerability of people and built infrastructure to floods, and increases maintenance and repair costs on built infrastructure. It is often more cost effective to rehabilitate ecological infrastructure than to be faced with an ongoing need to repair or replace built infrastructure.

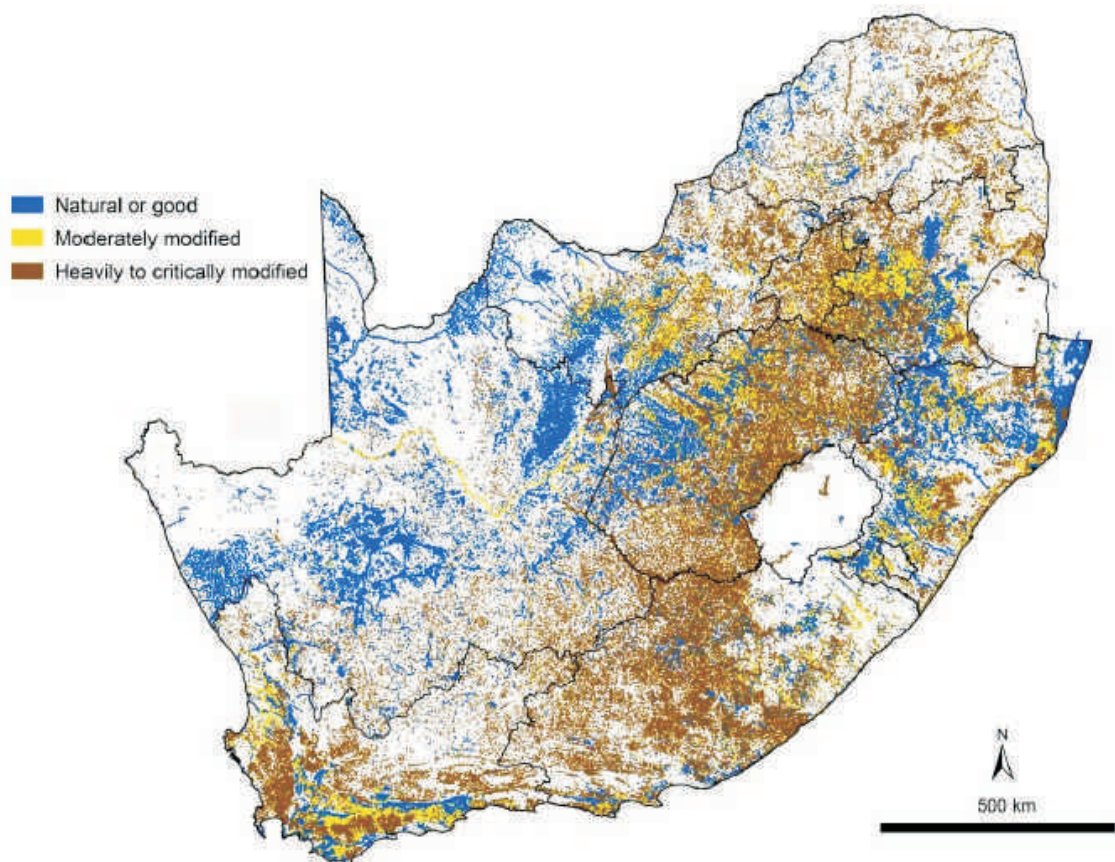


Figure 10: Status of South African wetlands, 2011 (Source: Nel J.L. and Driver A. 2012. South African National Biodiversity Assessment 2011: Technical Report. Volume 2: Freshwater)

Source: SANBI

8.2 Drivers

An increasing population, urban sprawl, widespread mining, increasing water storage and abstraction, the spread of invasive alien species and poor agricultural practices are the main drivers of degradation of water-related ecosystems and ecological infrastructure. Mining in high yielding catchment areas poses a threat to water security both in the short-term but also in the long-term.

The main threats to river ecosystems are the alteration of flow (dam construction, transfer schemes and abstraction), the destruction of natural vegetation along river banks, the growth and spread of invasive alien species, and pollution from point and diffuse sources.

The main threats to wetland ecosystems are mining, cultivation (e.g. sugar cane, fruit orchards, wheat), urban development, dam construction and poor grazing management causing erosion.

The main threats to estuarine health and biodiversity are flow modification, pollution (e.g. agriculture, waste water treatment works (WWTW), industrial, sediment, exploitation of living resources (fish and invertebrates), habitat destruction (within estuarine functional zone) and climate change.

The South African Bio-diversity Institute (SANBI) and DWS have worked on a process of identifying key 'water factories', or high yielding surface and groundwater areas in the country, which must be protected if water security is to be achieved (Figure 11).

Strategic Water Source Areas

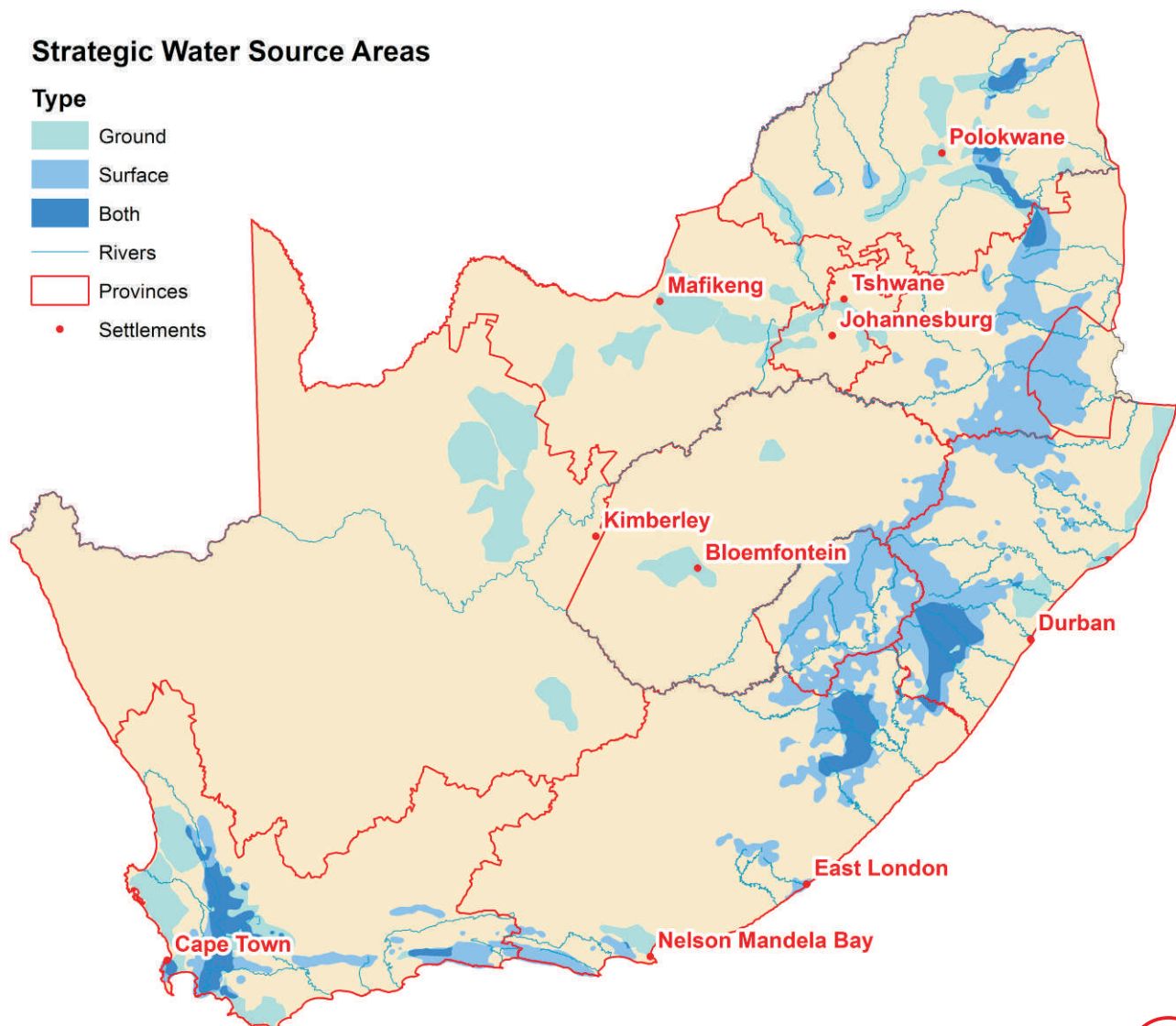


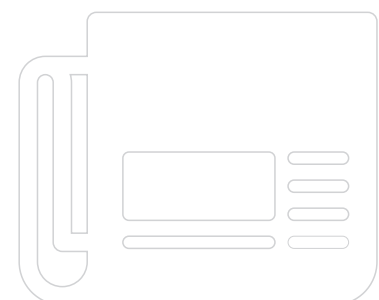
Figure 11: Map of strategic, high yielding ground and surface water areas.)



About 50% of South Africa's water resources originate from 8% of our land. These high water yield areas ('water factories') must be protected through appropriate regulation

8.3 Key Actions

Action	Responsibility	Timeframe
Declare high yielding areas, critical groundwater recharge areas and aquatic ecosystems recognised as threatened or sensitive as protected areas	DWS, DEA	2021



SECTION 2: ENABLING ENVIRONMENT

9. CREATING EFFECTIVE WATER SECTOR INSTITUTIONS



9.1 Status quo

The water sector is currently comprised of a number of statutory institutions. The Minister and DWS are the executive arm of national government responsible, amongst other things, for water and sanitation policy, oversight of water sector institutions, water resources planning, operation and maintenance of 342 large dams, regulation of water use, setting of raw water tariffs and collection and assessment of water data.

The Trans Caledon Tunnel Authority (TCTA) was initially established to fund the Lesotho Highlands Water Project (LHWP), but subsequently directed by the Minister to fund, implement and manage the debt of a variety of water resource projects as an implementing agent for DWS.

Only two of nine envisaged catchment management agencies (CMAs) have been established in terms of the NWA. No functions have been delegated to these bodies which are therefore currently only responsible for the limited initial functions of a CMA as set out in the Act. Water boards, established in terms of the Water Services Act, have a primary function of providing regional bulk water services and with a secondary function of supporting municipalities.

144 municipalities are designated as Water Services Authorities (WSAs), responsible for the constitutionally mandated task of supplying potable water and sanitation services, either as water service providers (WSPs) themselves, or externally through third party WSPs.

222 Water User Associations (WUAs) and 125 Irrigation Boards (IBs) exist, most of which managing common water resource and infrastructure for irrigation.

There are transboundary watercourse commissions in the Orange Senqu catchment, the Limpopo catchment and the IncoMaputo catchment, as well as Kobwa and the Lesotho Highlands Water Commission which are responsible for transboundary infrastructure. The Water Research Commission (WRC) commissions research into water and sanitation issues, funded by a levy paid by water users.

The Water Research Commission (WRC) exists to support water and sanitation research, development and innovation and is funded by a levy paid by water users and other partners. WRC thus exists to drive RDI strategy, fund research activities and organisations and synergise with partners to shift solutions to practise.

9.2 Drivers

There are several challenges associated with these arrangements that need to be addressed to create a suite of effective institutions with clear mandates. The future institutional arrangements, which has already been determined, are set out in Figure 12.

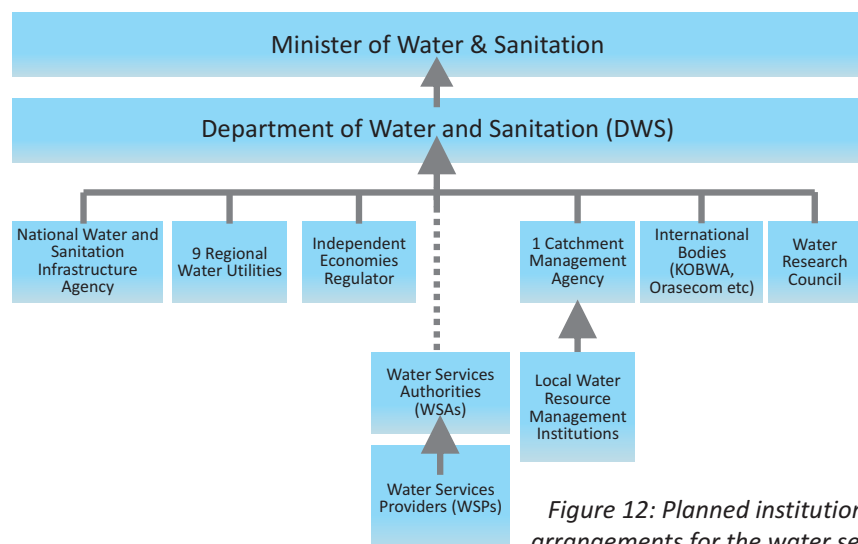


Figure 12: Planned institutional arrangements for the water sector

DWS is policy maker, regulator, implementer and operator of water resource infrastructure and acts as Catchment Management Agency in most of the country. Some of these roles have potential conflicts of interest, while others could be performed better by more decentralised institutions.

The TCTA funds off-budget infrastructure development, while DWS funds the social portion of schemes and plans and develops national infrastructure. The TCTA also acts as an implementing agent for DWS. A National Water and Sanitation Infrastructure Agency will be established which will develop, operate and manage national water infrastructure and will develop new capability around bulk sanitation provision.

The establishment of CMAs, and the delegation of functions to them, has progressed extremely slowly with only two of nine CMAs established and functional. DWS is currently driving the establishment of one national CMA with nine sub-structures, one in each of the declared water management areas. To make this effective at the local level, stakeholder structures in the WMAs will be critical.

The water boards are of different sizes and capabilities, with only a few technically and financially strong boards each serving one or more major cities, while the smaller boards are technically and financially stretched and are serving economically weaker and less dense areas.

A process is underway to amalgamate some of the boards to reduce the overall number of water boards to nine, and to transform these nine into Regional Water Utilities which will have an expanded mandate, including for regional bulk infrastructure.

All irrigation boards should have been transformed into Water User Associations (WUAs) many years ago, but this has not happened. A policy position to do away with WUAs was approved by Cabinet in 2013. A roadmap is under development to transform all irrigation boards and water user associations into local water resources management institutions.

The challenges faced by Water Services Authorities are discussed under the section on water services and sanitation.

The need for an independent economic regulator to regulate tariffs, standards and performance in the water services sector has been recognised and processes are underway to establish this institution.

Rationalisation of the institutional arrangements is urgently required and is supported by the Presidential Review on State Owned Enterprises.



The institutional landscape of the water sector in South Africa is overly complex resulting in inefficiency. A lack of transformation in certain areas must also be addressed.

9.3 Key Actions

DWS, as the leader of the water and sanitation sector, will drive increased functionality and efficiency in institutional arrangements, as follows:

Action	Responsibility	Timeframe
Establish one, financially sustainable CMA for the county, with one sub-structure for each of the nine water management areas, and transfer staff and budget and delegated functions, including licensing of water use	DWS	Establishment April 2018 functional CMA December 2019
Establish the National Water and Sanitation Infrastructure Agency (NAWASIA),	DWS, NT	Table legislation by 2019 Functional entity by 2022
Establish Regional Water Utilities (RWUs)	DWS, Water Boards	Rand Water RWU April 2018 KZN RWU April 2018 Sedibeng Magalies RWU April 2019 Lepelle RWU April 2020 Bloem RWU April 2020
Establish independent economic regulator	DWS, NT	2023



A lack of data and information resulting from a weak monitoring system poses high risks to decision making and planning and urgently needs to be addressed through the formalisation of an effective national hydrological monitoring centre

10. MANAGING DATA AND INFORMATION

10.1 Status quo

Reliable data on the status of the country's water resources is required for the proper analysis of hydrological trends, for the protection and regulation of the resource, for the operation of the water resource systems, for the planning of new works, and for disaster management.

Water resources data includes regular measurements of rainfall, streamflow, dam levels, and of chemical and biological determinants.

The coverage of rainfall and runoff gauging in the country has however been allowed to deteriorate and many rainfall measurements stations and gauging weirs are no longer functional. A Hydronet programme has been developed to bring together data from disparate systems to support decision making.

Reliable data is also required on the performance of the water sector institutions and on the state of water and sanitation assets in order to monitor progress on the implementation of the NW&SMP, and progress towards the goals set out in the Second Edition of the National Water Resources Strategy (NWSRS2) and the NDP. Up to data data on water authorisation and use, as captured in WARMS database, is also critical for effective management of water use.

10.3 Key Actions

While ambitious regulatory and/or benchmarking data bases have at various times been initiated by institutions such as DWS, SALGA-WRC, and the South African Association of Water Utilities (SAAWU), these exercises never achieved full coverage and most have been allowed to lapse.

One of the more successful and informative benchmarking programmes was the Blue Drop and Green Drop certification developed and operated for a few years by DWS, but this too has lapsed. The same applies to the No Drop programme that focussed on water conservation and water demand management. The MuSSA programme is also an important tool.

Currently the most reliable information on municipal financial performance is maintained in the National Treasury data bases, but the water and sanitation financial information is not clearly ringfenced.

10.2 Drivers

Without effective monitoring, and evaluation of the data, it is not possible to understand trends, adapt management plans appropriately, or plan effectively for the future. This is particularly critical in an environment facing significant change. The lack of data and information resulting from weak monitoring systems poses a high risk to the achievement of the goals set out in the NWSRS2 and this NW&SMP. Improved data and monitoring systems must be developed in parallel with the implementation of this Master Plan.

Action	Responsibility	Timeframe
Refurbish gauging stations	DWS	2027
Monitor and report annually on streamflow, dam levels, key water quality parameters	DWS, SAWS	2019, then annually
Establish a monitoring, evaluation, learning and reporting system for implementation of the NW&SMP	DWS	2018 Report annually to Parliament and in annual report
Address the functionality of the Water Authorisation and Registration Management System to ensure records of water use are correct and are kept up to date	DWS	2020

11. BUILDING CAPACITY FOR ACTION



11.1 Status Quo

The NW&SMP sets out the challenges that must be addressed to ensure a secure water future. These will not be achieved without addressing the issue of capacity – the skilled people required to undertake the work.

A skills gap analysis⁴ conducted by the WRC in 2015, looking at numbers of staff and their skills relative to required skills, showed significant skills gaps in all water sector institutions, including DWS (over 30%), CMAs (e.g. BOCMA 36%), water boards and municipalities.

On the positive side, the number of Civil Engineering graduates doubled between 2010 and 2015 from approximately 1000 to 2000 graduates per year. It is not clear how many of these graduates seek work in the water sector.

Other graduate numbers with qualifications that apply to the water sector also increased dramatically in this period, with there no longer being a shortage of science graduates. However, the challenge of appointing qualified and experienced staff will remain, particularly in rural municipalities. As well as a shortage of technically trained and experienced staff, there is a shortage of people with appropriate legal and financial skills in this sector.

11.2 Drivers

Implementing the NW&SMP Call to Action requires the right mix of skills and expertise in the water sector. This includes the capacity expressed as number of persons and skills expressed by qualification and experience required to fulfil the requirements in water resources and water services planning, management and operations.

11.3 Key Actions

Action	Responsibility	Timeframe
Establish regulations on required qualifications and experience for senior and technical positions in DWS, CMAs, water boards and municipal water services	DWS, COGTA	2022
Develop and implement programme for recruiting experienced technical and managerial staff in South Africa and externally	DWS, COGTA, DIRCO	2023



The Energy and Water Sector Education and Training Authority (EWSETA) is the skills development authority serving the water sector.



⁴INTEGRATED WATER SECTOR SKILLS INTERVENTION MAP BASED ON A SECTOR SKILLS GAP ANALYSIS Report to the WATER RESEARCH COMMISSION by A VIENINGS (Water Concepts) & M LIMA (ONYXX Human Capital) (Co-Project Leaders) WRC 2015

12. ENSURING FINANCIAL SUSTAINABILITY

12.1 Status quo

The water and sanitation sector is currently not financially sustainable. The sector is in decline with aging infrastructure, highly vulnerable municipalities, increase in customer dissatisfaction, rising level of unpaid bills and tariffs which are insufficient to cover the costs. A significant funding gap exists between funding needs and available funding from both fiscal transfers and revenue.

The water and sanitation sector is capital intensive and faced with increasing funding needs whilst fiscal funding is limited. A “turn-around” is needed to be “Ready for the Future” and maintain financial health “Ahead of the Curve”. The current dependency on the fiscus to develop the sector has to be addressed through purposeful interventions.

CAPITAL REPLACEMENT VALUE: The capital replacement value of the existing water and sanitation infrastructure is estimated at R 1 362 billion, while the current book value of the infrastructure is R 584 billion. The current assets are thus 57% depreciated or valued at 43% of capital replacement cost.

CAPITAL FUNDING: South Africa is currently investing R 42 billion per annum into water infrastructure and R 13 billion in sanitation infrastructure. Significant additional capital investment is required to address the remaining backlog in water and sanitation services, the backlog in infrastructure refurbishment and renewals, and the need to expedite the implementation of large water resource schemes. The total estimated capital investment requirement is R89,9 billion per annum, being R 33 billion per annum more than the current spend.

The funding gap of R 33 billion per annum indicates the difference in expectations versus the financial capacity of the sector without interventions and the sector will be required to “cut its coat according to its cloth”.



The indicated funding requirement includes a critical refurbishment backlog, caused by a lack of maintenance, of over R53 billion for water supply and a further amount for wastewater treatment works.

It includes a backlog in infrastructure renewals, due to continued “stretching” of ageing infrastructure. Proper life-cycle asset management is lacking. Most institutions have depleted their reserves and currently only about R12 billion per annum is allocated to renewal of infrastructure, which is about 1% of the capital invested.



Renewal backlog totals about R332 billion with R125 billion a priority need, which needs urgent intervention to prevent major water interruptions.

If asset management is not implemented, existing infrastructure will deteriorate further resulting in regular service interruptions and a down-ward spiral of customer dissatisfaction, protest and vandalism. This picture is confirmed by various findings, particularly from the vulnerability assessment report where 78% of municipalities are between high and extreme in terms of vulnerability. The dire situation is confirmed by No-Drop and Green Drop Reports which shows high levels of non-revenue water and large number of wastewater treatment works not meeting the discharge standard.



Operating funds of R136 billion per annum is in principle adequate, but not applied correctly.



OPERATIONAL FUNDING

Annual operating expenditure in the water and sanitation sector is currently in the order of R124 billion per annum, with about R109 billion per annum needed by municipal services. Total available operational funding in the sector is about R136 billion per annum, comprising water services revenue of R 84 billion and additional operating subsidies of R 52 billion from the equitable share. However, these funds are not ring-fenced and thus not necessarily available for operation of water and sanitation services.

WATER PRICING: Water tariffs are not cost-reflective resulting in short-fall on cost recovery from users, which requires implicit subsidies from the fiscus.

Irrigation tariffs benefit from underpriced water which places an increased responsibility on other sectors and the fiscus to balance the cost:revenue equation.

The current inequality through water pricing policies must also be reviewed whereby some systems benefit from existing infrastructure (mostly historically funded by the fiscus) and have a large established user base, lowering the unit cost of water to those users through economies of scale. Areas that have been neglected previously in terms of water and sanitation infrastructure, needs to be developed at current cost of implementing infrastructure resulting in a higher unit cost of water.

Water quality is reducing which increases the cost of purification and whilst the “Polluter Pays” principle has been used to develop a system of charging for waste discharges into water bodies, this has not yet been implemented.

NON-PAYMENT: The sector is faced with a sharp increase in unpaid bills. Although a complex structure of entities exist in the sector, the sector is integrated and consists of only one value chain. Unpaid bills therefore have a knock-on effect, negatively impacting on the entire sector. Government departments, businesses and domestic consumers owe municipalities over R 128 billion, who in turn owe R10 billion to national entities in the water sector (Water boards and DWS).

Apart from the lack of regulation and enforcement, the sector lacks a strong, dependable revenue management system.

GOVERNANCE: The governance of the Water sector is fragmented between different Acts and different institutions, which makes it very difficult to resolve the financial challenges facing the sector, particularly at municipal level. As a result the sector is on a downward trajectory where it becomes increasingly difficult and more expensive to resolve issues which ultimately impacts on the health and economic well-being of the country.

There is a significant underinvestment in infrastructure maintenance resulting in an accumulated backlog in refurbishment of about R53 billion. Guidelines target 8% of asset replacement value for maintenance

FUNDING ENVIRONMENT: The sector in general is not conducive to attract investment at reasonable terms in its current shape. Various interventions have been identified throughout the Master plan which will be a pre-requisite to create an investor-friendly environment where value-for-money funding can be procured.

With a view to facilitating the raising of private sector funding, the Minister convened an Investor Summit to test the appetite of funders to invest in the water and sanitation sector and to brief them on investment opportunities.

12.2 Drivers

Although funding is a critical enabler to achieve the objectives of the Master Plan, the implementation of the Master Plan in terms of regulation, anti-corruption, efficiencies, enforcement etc., will be the enabler to attract value-for-money funding, making the Master Plan, the main driver for funding.

It takes decades of investment and commitment to build a country's water and sanitation network and continued investment is required to optimise return on investment. Any period depicted by underinvestment, will be dearly felt by the country for decades to follow. The current underinvestment is already showing in decreasing levels of service and lack of water security. Equally, less-optimal and desperate funding decisions to address the underinvestment, can bind the sector's revenue for decades, limiting its ability to recover.

The demand for funding in the water and sanitation sector will continue to grow, both in terms of capital expenditure, and funding for operation and maintenance and refurbishments. The goal is to become a financially sustainable sector. To achieve financial sustainability, costs need to decrease and revenue needs to increase as a first principle. The sector needs to consider what it can do with the currently available funding.

The following drivers will play a key role to maintain positive cash flows and affordable service delivery:

VALUING AND COST OF WATER: The driver for achieving financial sustainability in the water sector is getting South Africa as a whole to understand the importance of financial sustainability on water security. A mindset-shift is required by users with regards to the value of water. Scarcity increases the value of water and needs to inform future allocations between competing uses. In the same way, users need to acknowledge that water is severely underpriced impacting on the level of services.

REVENUE: Water and sanitation services need to be costed accurately. A critical review of the current pricing strategies from its very first principles, is required. The sector is currently not financially sustainable and increases in excess of inflationary targets will be required to address the historic undervaluation of water and sanitation services.

Critical revenue enhancements must include:

- cost-reflective tariffs based on full life-cycle costs
- enhanced revenue collection through accurate metering and billing and enforcement
- critical review of subsidized water uses (e.g. agriculture) in consideration of socio-economic impact and food-security
- review of water allocations to turn “sterilized water” into “economic contributing water” (“use it or lose it” principles)
- ring-fencing of water revenue where appropriate
- implementation of waste discharge charges

COSTING: The sector needs to protect and maintain the value of the existing assets and optimize use from existing resources and infrastructure. Efficiency measures must be enforced and incentivized throughout the value chain.

Critical cost-cutting interventions must include:

- “sweating” of infrastructure through good maintenance and diligent operation
- delay the need for future infrastructure augmentation through water demand management and reuse of water
- improved institutional capacity and efficiency through improved structures and governance
- skilled project and contract management capacity to be sourced
- value-for-money procurement

Diligent project and contract management is a critical performance criterion to ensure cost-effective procurement and implementation.



AFFORDABILITY & WILLINGNESS-TO-PAY: Water and sanitation tariffs have increased by more than double the CPI for the past seven years, due to rising costs (especially electricity) and a long-overdue general adjustment to the historic under-valuation of water services. Tariff structures must be reviewed against socio-economic profiles of users to ensure that water remains affordable. “User-pay” principle must be strongly imbedded with all users and subsidization of free basic water must not prevent introduction of payment when basic service levels are exceeded.

FISCAL ALLOCATIONS: Citizens are paying taxes and fiscal allocations are made to the sector via budget allocations, grants, equitable share etc. However, further investment in the sector from a fiscal point of view is also critical to address the funding needs of water as a critically important and strategic asset to any country.

Funding options are limited. There are essentially only two ways to pay for capital and operation of infrastructure, being either taxes (national) and/or tariffs (users). Economic infrastructure represents infrastructure where the investment can be recovered from users (tariffs), whereas social infrastructure is reliant on fiscal funding (taxes and transfers). Most schemes comprise of economic and social use and require a combined funding approach. Donor funding is available in small quantities and mostly focused on funding feasibility studies.

The balance of the funding requirement can adequately be addressed through loans and funding structures. However, loans should only be utilised to address the funding gap which can’t be achieved through revenue enhancement and proven cost efficiency. In principle, inefficiencies should not be funded from loans and revenue from users should not be wasted on inefficiencies.

Loans do not constitute “new money”, but will be used to even out the cash flow mismatch between immediate funding requirements and future revenues BUT loans tie up future revenues to redeem such borrowings. Affordability of tariffs should therefore be carefully established before loans are committed. Loans provide immediate relieve, but increase pressure on future tariffs and debt obligations to future generations. Loan funding should be limited to capital investment and not be applied to fund operating costs. Although the sector has substantial physical asset value, it is confirmed revenue streams generated from such assets, that creates the surety to funders, not the value of the infrastructure itself.

Various funding structures are available to be explored. Whilst project finance will continue to be applied to fund large infrastructure projects, smaller projects could benefit from alternative funding options offered by the market.

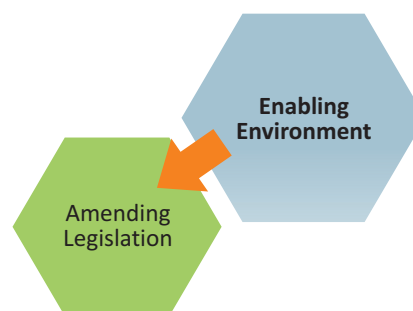
Ability to raise funding is constraint due to low credit ratings. Apart from TCTA and larger water boards and metropolitan municipalities, the sector is generally lacking capacity to raise long-term debt and appropriately manage the associated risks. Over 80% of municipal borrowings are held by metropolitan municipalities. Funding cost can exceed initial capital investment over a long-term repayment period and funding risks should be managed responsibly.

FUNDING TO IMPLEMENT MASTER PLAN: Dedicated funding will be required to implement the interventions identified in the entire Master Plan including project planning, programme management, sector coordination, implementation monitoring, and performance regulation. Current funding of water and sanitation services functions in national, provincial and local government institutions needs to be reviewed, adjusted and augmented where necessary to ensure that there is adequate capacity and resourcing to implement the NW&SMP. Institutional reform will be taking place and the new institutions will need financial support in the early post-establishment years.

12.3 Key Actions

Action	Responsibility	Timeframe
Determine cost required to implement NW&SMP	DWS, COGTA, NT	2018-2019
Resolve the accumulated debt between water services authorities, water service providers and the DWS (exceeding R10 billion)	DWS, NT, COGTA, SALGA, Portfolio Committee	2018
Review the raw water pricing strategy and implement the waste discharge charge	DWS	2019
Implement effective revenue management system in DWS <ul style="list-style-type: none"> • Fix billing and revenue stream with proper costing • Introduce strict “No payment - no water” approach • Restructure old debt to ensure payment • Introduce regulations for metering across all ELU and licensed users 	DWS	2020
Ensure cost efficiency in municipal services through <ul style="list-style-type: none"> • Benchmarking • Effective asset maintenance • Proper allocation of O&M subsidies • Value for money procurement • Cost reflective tariffs for water services and sanitation 	DWS, SALGA, National Treasury, COGTA	2023

13. AMENDING THE LEGISLATION



13.1 Status quo

The water sector is governed primarily by two major pieces of legislation: the National Water Act (Act 36 of 1998), which governs the use, protection and development of raw water, and the Water Services Act (Act 108 of 1997) which governs the provision of water and sanitation services. The National Water Act has been amended twice since it was promulgated: by Act 45 of 1999 and by Act 27 of 2014. The Water Services Act was amended by Act 30 of 2004. In addition, the Water Research Commission (WRC) was established under the Water Research Act (Act 34 of 1971). The Municipal Finance Management Act (MFMA) and the Municipal Services Act also govern water services at the municipal level. The Public Finance Management Act (PFMA) governs financial matters at national and provincial government.

13.2 Drivers

In the implementation of the National Water Act and the Water Services Act over the years since their promulgation, certain issues have been identified that require amendment. As a result, a National Water and Sanitation Bill is being developed which amalgamates the National Water Act and the Water Services Act, and which aim to:

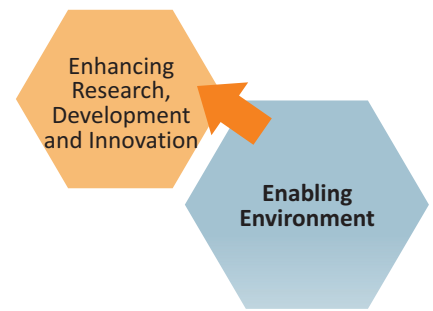
- avoid the need to cross-read between the two pieces of legislation
- align the legislation to subsequent policy decisions including:
 - o introducing mechanisms for the polluter pays principle
 - o the 'Use-It or Lose-it' principle under which any water which is not utilised reverts to the states
 - o the removal of temporary or permanent trading between authorised water users
 - o equity as the primary consideration in water allocation
 - o adopting a multiple water use approach in planning infrastructure
 - o the role of DWS in planning for bulk water infrastructure
 - o free basic water to be provided to indigent households only
 - o the establishment, powers and functions of Catchment Management Agencies, Regional Water Utilities and Water Services Authorities and
 - o the alignment of Appeal functions with NEMA and other appeal mechanisms.
- address issues pertaining to ownership of water and sanitation infrastructure, differential levels of service for sanitation, and appropriate technologies for sanitation
- address issues pertaining to water use authorisation
- enable the setting of tariffs for the whole value chain linked to levels of service and economic conditions, and
- ensure linkages between spatial planning and the NW&SMP, and create a mandate for a National Water and Sanitation Strategy.

In addition, the Water Research Act, now over 40 years old, must be amended to align to current governance best practice, contemporary institutional arrangements, and the PFMA. A Water Research Amendment Bill has been developed, which will be tabled before Parliament.

13.3 Actions

Action	Responsibility	Timeframe
Hold public consultation on National Water and Sanitation Bill and Water Research Amendment Bill	DWS, Portfolio Committee, Standing Committee	July 2018
Promulgate National Water and Sanitation Act	DWS, Portfolio Committee, Standing Committee	October 2018
Promulgate Water Research Amendment Act	DWS, Portfolio Committee	October 2018

14. DRIVING RESEARCH, DEVELOPMENT AND INNOVATION



14.1 Status quo

South Africa punches well above its weight in water and sanitation research and development, with international recognition and several internationally recognised products and solutions. Despite this, there is still much to be done in maturing how we shift new solutions into practise. Getting this right demands a highly coordinated system of institutions supporting innovation, demonstration, validation and deployment.

There is an active array of institutions engaged in different aspects of water research, development and innovation to start building from. The Water Research Commission (WRC) is the leading funder of water research in South Africa. The WRC is funded from water user charges, and also leverages additional resources from various partnerships and programmes. Various government departments are involved with funding and supporting research and innovation activities in different ways. There is also a range of science councils, tertiary academic institutions, non-profit organisations and private sector role players that are involved in developing and supporting water research and innovation.

Whilst there is a rich institutional and skills environment to draw from; water research, development and innovation continues to face a range of challenges including: poor coordination and synergising of activities between institutions; a weak understanding of the role of all water sector organisations in driving innovation and shifting solutions to practise, challenges in scaling up of solutions to be ready for the market, and highly limited funding for innovation (particularly in its scale up/ deployment stages). This results in many solutions that emerge from the research and development space not being implemented in practise. In order for South Africa to be ready for the future we have to be able to address the innovation chasm where emerging solutions fail to be tested at scale, or developed into viable business that are able to engage with different public and private sector role players.

In order to try to better synergise South African institutions involved in water innovation around the different gaps and opportunities of the sector, the Department of Science and Technology (DST) has collaborated with the DWS and the WRC to develop a Water Research, Development and Innovation Roadmap.

This Roadmap identifies RDI gaps and opportunities and orientates the sector towards addressing these opportunities in a more coordinated way through investments in research, high end skills development and actions that shift new solutions into practise. The plan focuses across six themes: i) Unlocking alternative sources of water (including reuse, improved groundwater utilization, desalination and harnessing of storm water); ii) Exploring ecological and built water infrastructure opportunities in relation to climate resilience (including supporting the alternative and water-less sanitation revolution) iii) Ensuring greater water efficiency and reduced losses and iv) water governance, planning and management for supply and demand; v) orientating the water sector towards more business savvy and bankable solutions; and vi) supporting monitoring, metering and water data innovation. This Roadmap, which forms the basis of the Research, Development and Innovation aspects of this Master Plan, is also an important linker to the Industrial Policy Action Plan ambition to drive water industry in areas of sanitation, membranes and waste water treatment.

A Water RDI Roadmap Implementation Unit has been put in place in partnership between DST and WRC. This unit is available to support intelligence gathering, sector tracking and facilitate aspects of coordinating the role players of the water innovation landscape.

The overall minimum investment required to achieve all aspects of the RDI master plan over a 10-year period is R 8.4 billion. In 2015 it was estimated that an average of R 300 million was spent on water research, development and innovation. This illustrates that the current spend on Water RDI is woefully inadequate to address the countries' needs (an approximately R 500 million a year shortfall). Traditional funders in this space such as the WRC and DST, cannot be the sole investors in the RDI Roadmap. Sector-wide ownership and investment will be needed to realise this RDI ambition, especially when it comes to the more costly issues of technology testing, demonstration, upscaling and solution deployment. If we are to develop a water industry in terms of localisation, manufacturing and job creation, it also requires investment from role players such as DTI and its entities, metros, and utilities.

14.2 Drivers

It is vital to recognise that RDI is an activity that has cross cutting linkages with all aspects and chapters of the National Water and Sanitation Master Plan. All aspects of the water sector have their own set of research, innovation and solutions requirements.

Ongoing research, development and innovation, and the harnessing of international developments, is a critical element of delivering effectively on this Call to Action, as is the translation of research and innovation into implementation at scale. The RDI system is key to being 'ahead of the curve' as it supports the development of new solutions and technology, provides evidence to support robust decision making, and builds capabilities that enable South Africa to respond to challenges. This is critical in terms of shifting the country into a more proactive planning space that abates some of the more reactive activities that emerge when we are not properly prepared for droughts and other extreme events.

Innovation also offers a significant opportunity to develop a water sector industry which can contribute to job creation, and to the development of economic opportunities for the country.

12.3 Key Actions

Action	Responsibility	Timeframe
Implement and regularly review/revise Research, Development and Innovation Policies, Plans and Roadmaps across the sector	DWS, DST, WRC	Ongoing with 5-yearly review
Support the development of an innovation-based water and sanitation industry by building on existing innovation platforms and opportunities (such as the IPAP mechanisms, Water Technologies Demonstration Programme)	WRC, DWS, SABS, DTI, DST	Plan with incentives developed by 2021, thereafter ongoing
Unlock investment, procurement and other localisation barriers to reposition the sector to implement new/niche solutions and approaches	NT, COGTA, DST, Roadmap PMU	Agreed approach by 2020
Collaborate and co-invest to systematically support the demonstration, scale up, deployment, and institutional learning linked to new solutions in niche areas (e.g. alternative and water-less sanitation solutions)	DWS, DST, COGTA, SABS, DTI, SALGA, utilities	Ongoing, with 5-yearly review
Coordinate, and where needed establish new platforms, to enable a synergised set of institutions that enable the shifting of innovations into the market (including business development and SME support)	DTI, DWS, Dept Small Business, EDD, Incubators	Ongoing, with 5-yearly review

SUMMARY OF ACTIONS

Action	Responsibility	Timeframe
Mini-Phakisa on water and sanitation to be held	DWS, DPME	August 2018
Review and updating of NW&SMP	DWS	Annual
BALANCING SUPPLY AND DEMAND		
Update and maintain reconciliation planning studies to achieve optimal water mix (surface water, groundwater, re-use and desalination, and incorporate climate change into studies)	DWS	3 studies updated per annum
Integrate results of All Towns studies and reconciliation studies into sectoral plans (domestic, agriculture, energy, mining, industrial development, land reform and rural development)	DWS, DAFF, DoE, DMR, DTI, DRDLR	2022
Develop provincial W&SMPs	Provincial government	2019 and then five-yearly
Include water use efficiency and water loss reduction targets in the KPIs of municipal managers and municipal water services managers, and in municipal implementation plans	DWS, COGTA, WSAs	2023
Revitalise the No Drop Programme	DWS	2018
Lesotho Highlands Water Project (LHWP) Phase 2 <i>Water for the largest economic hub, Gauteng. System already in deficit. Design in progress.</i>	LHWC	2025
Western Cape Water Supply System Augmentation Project (Voëlvlei Dam) <i>Water for the 2nd largest economic hub, Cape Town. System already in deficit. Financial structuring in progress.</i>	DWS	2024
Cape Town emergency desalination plants <i>Water for the 2nd largest economic hub, Cape Town. System already in deficit.</i>	City of Cape Town	2018

Action	Responsibility	Timeframe
uMkhomazi Water Project Phase 1 <i>Water for the 3rd largest economic hub, eThekwin. System already in deficit.</i>	DWS	2025
Desalination of AMD from the Wits mining basins in Gauteng <i>Prevent pollution of Vaal River System and provide additional water. In implementation.</i>	DWS (TCTA)	2021
Treatment of effluent for potable and non-potable use <i>Reduce demand for fresh water resources</i>	DWS and WSAs	50% increase by 2025
Thukela - Goedertrouw Emergency Water Transfer Scheme <i>Richards Bay Industrial area. Risk of failing system soon. Design in process.</i>	DWS	2019
Lower uMkhomazi Scheme <i>South Coast in deficit with limited resources. Can also augment Mgeni System if needed.</i>	Umgeni Water	2022
Mokolo Crocodile (West) River Augmentation Project <i>Strategic water for Lephalale area for power station – national impact on electricity grid.</i>	DWS	2023
Greater Mangaung Water Augmentation Project: Gariep Pipeline <i>System under stress.</i>	Bloem Water	2025
Clanwilliam Dam Raising and Conveyance Infrastructure <i>Design completed. Awaiting appointment</i>	DWS	2023
Lower Tugela Bulk Water Supply Scheme <i>North Coast</i>	DWS	2021
Ncwabeni Off-channel Storage Dam <i>South Coast</i>	DWS	2023
Lusikisiki Regional Water Supply Scheme (Zalu Dam) <i>Lusikisiki</i>	DWS DWS	2022 2022
Lower Orange River: Feasibility Study (Vioolsdrift Dam) <i>Mitigation of LHWP impact and provide water growth for Lower Orange</i>	DWS	2024

Action	Responsibility	Timeframe
Mzimvubu Water Project: Dam at the Ntabelanga Site, WTW and Ntabelanga Bulk Distribution	DWS	2020
Groot Letaba Water Augmentation Project: raising of Tzaneen Dam and development of Nwamitwa Dam <i>Design in process.</i>	DWS	2019 2022
Algoa Water Supply re-use	DWS	2025
REDISTRIBUTING WATER FOR TRANSFORMATION		
Identify alternative sources of water and water that is not utilized (e.g. as mines are closing, resulting from War on Leaks etc) and allocate to black applicants	DWS, CMAs	Initial mapping by 2019 Allocation begins 2019
Identify where more water can be made available in government water schemes and allocate to black applicants	DWS, CMAs DWS, CMAs	Initial mapping by 2019
Identify areas where small dams or groundwater development can provide water for small scale black farmers	DWS, CMAs	Initial mapping by 2019
Align water, land and agrarian reform programmes and link to the Irrigation Strategy	DWS, DAFF, DRDLR	2018
Implement the Water Administration System on all government irrigation schemes and reallocate savings to black applicants	DWS, DAFF, PDAs	2023
Implement pilot project on voluntary contributions from farmers for water reallocation in the Kaap Catchment	DWS, IUCMA	2018
Use General Authorisation to enable small scale water use by black farmers	DWS, DAFF	2019
MANAGING EFFECTIVE WATER AND SANITATION SERVICES		
DWS, with COGTA, National Treasury, and SALGA to develop and implement a long-term plan for the turn-around of water supply and sanitation services in the country that: - Revisits the powers and functions of Municipalities - Categorises municipalities according to competency to deliver services and designs long-term interventions accordingly	DWS, COGTA, NT, SALGA	Plan developed by March 2019 Review of plan bi-annually

Action	Responsibility	Timeframe
<i>(Continues from previous page)</i> Draws on the capacity of regional water utilities and the private sector to support the provision of reliable services - Revisits levels of service for water supply and sanitation against issues of affordability, and - Assesses tariffs and addresses revenue generation potential.		
DWS, with COGTA, National Treasury, SALGA and relevant WSAs to develop and implement a long-term plan to provide reliable and sustainable water supply and sanitation to 3,4 million households in the 27 priority DMs	DWS, COGTA, NT, SALGA, 27 DMs	2019: 90% 2025: 100%
Generate and implement a business model for the operation and maintenance of WWTW and municipal works where municipalities are not able to do so	DWS, NT, COGTA	2022
Restructure the grant funding mechanisms and conditions for water supply and sanitation - Focus to be on maintaining and restoring existing infrastructure rather than the construction of new infrastructure - Lifecycle planning (asset management) conditions to be set by DWS - Maintenance grants to be prioritised for social schemes	DWS, NT, COGTA	2020
Standardise and enforce required O&M budgeting and expenditure	NT, COGTA, DWS	As from 2018/2019 Municipal Financial year
Align interventions with COGTA on failing municipalities with existing support programmes e.g. MISA	DWS, COGTA	2018
Turn around the functionality of five, currently dysfunctional, large waste water treatment works	DWS, WSAs, NT	2022
REGULATING WATER		
Revitalise the Green, Blue and No Drop Programmes	DWS	2018 annually annually from then onwards
Set a cap on water use per municipality with reducing allocations over time	DWS, SALGA, COGTA	2023

Action	Responsibility	Timeframe
Identify and prosecute major non-compliant abstractors (water thieves) across the country, with a national communication campaign to accompany the action	DWS, DEA	10 by 2020 Additional 10 by 2023
Establish Water Efficiency Labelling and Standards Scheme	DWS, SABS	2026
Replace all ELU with licences with enforceable water use conditions	DWS, CMAs	2028
Identify and prosecute big polluters across the country (including municipalities), with a national communication campaign to accompany the action	DWS, DEA	10 by 2020 Additional 10 by 2023
IMPROVING RAW WATER QUALITY		
Develop and implement a diffuse pollution source strategy that includes the regulation of land use	DWS	Strategy implement. by Jan 2023
Implement the Waste Discharge Charge Systems in the Upper Crocodile, Upper Vaal, and Upper Olifants catchments	DWS, CMAs	Revenue received in 2019
Implement programmes to rehabilitate and manage water quality in the upper Crocodile, upper Vaal, and upper Olifants catchments based on revenue from the WDCCS	DWS, CMAs	Planning - 2018 - 20 Implement 2021
Develop and implement municipal bylaws to protect raw water quality	DWS, SALGA, municipalities	2020
PROTECTING AND RESTORING ECOLOGICAL INFRASTRUCTURE		
Declare high yielding areas, critical groundwater recharge areas and aquatic ecosystems recognised as threatened or sensitive as protected areas	DWS, DEA	2021
CREATING EFFECTIVE WATER SECTOR INSTITUTIONS		
Establish one, financially sustainable CMA for the county, with one sub-structure for each of the nine water management areas, and transfer staff and budget and delegated functions, including licensing of water use	DWS	Establish April 2018 Functional CMA & sub-struct. Dec 2019

Action	Responsibility	Timeframe
Establish the National Water and Sanitation Infrastructure Agency (NAWASIA)	DWS, NT	Table legislation 2019 Functional Entity 2022
Establish Regional Water Utilities (RWUs)	DWS, Water boards	Rand Water
Establish independent economic regulator	DWS, NT	2023
MANAGING DATA AND INFORMATION		
Refurbish gauging stations	DWS	2027
Monitor and report annually on rainfall, streamflow, dam levels, key water quality parameters	DWS, SAWS	2019 then annually
Establish a monitoring, evaluation, learning and reporting system for implementation of the NW&SMP & Report annually to Parliament and in annual report	DWS	2018
Address the functionality of the Water Authorisation and Registration Management System to ensure records of water use are correct and are kept up to date	DWS	2020
BUILDING CAPACITY FOR ACTION		
Establish regulations on required qualifications and experience for senior and technical positions in DWS, CMAs, water boards and municipal water services	DWS, COGTA	2022
Develop and implement a programme for recruiting and retaining experienced technical and managerial staff in South Africa and externally	DWS, COGTA, DIRCO	2023
ENSURING FINANCIAL SUSTAINABILITY		
Ensure effective revenue management in DWS Fix billing and revenue stream with proper costing Introduce strict “No payment - no water” approach Restructure old debt to ensure payment	DWS	2020
Develop models to promote investment in the water sector	DWS, NT	2020
Determine cost required to implement NW&SMP	DWS, COGTA, NT	2018- 2019
Resolve the accumulated debt between water services authorities, water service providers and the DWS (exceeding R10 billion)	DWS, NT, COGTA, SALGA, Portfolio Committee	2018

Action	Responsibility	Timeframe
Ensure cost efficiency in municipal services through <ul style="list-style-type: none"> Benchmarking Effective asset maintenance Proper allocation of O&M subsidies Value for money procurement Cost reflective tariffs for water services and sanitation 	DWS, SALGA, NT, COGTA	2023
Revise the raw water pricing strategy	DWS	2018
Implement the Waste Discharge Charge Systems in the upper Crocodile, upper Vaal, and upper Olifants catchments	DWS, CMAs	Revenue by 2019
Introduce regulations for metering across all ELU and licensed users	DWS	2020
AMENDING THE LEGISLATION		
Hold public consultation on National Water and Sanitation Bill and Water Research Amendment Bill	DWS, Portfolio Committee, Standing Committee	July 2018
Promulgate National Water and Sanitation Act Committee, Standing Committee	DWS, Portfolio Committee, Standing Committee	October 2018
Promulgate Water Research Amendment Act	DWS, Portfolio Committee	October 2018
DRIVING RESEARCH, DEVELOPMENT AND INNOVATION		
Implement and regularly review/revise Research, Development and Innovation Policies, Plans and Roadmaps across the sector	DWS, DST, WRC	Ongoing with 5-yearly review
Support the development of an innovation-based water and sanitation industry by building on existing innovation platforms and opportunities (such as the IPAP mechanisms, Water Technologies Demonstration Programme)	WRC, DWS, SABS, DTI, DST	Plan with incentives developed by 2021, thereafter ongoing
Unlock investment, procurement and other localisation barriers to reposition the sector to implement new/niche solutions and approaches	NT, COGTA, DST, Roadmap PMU	Agreed approach by 2020
Collaborate and co-invest to systematically support the demonstration, scale up, deployment, and institutional learning linked to new solutions in niche areas (e.g. alternative and water-less sanitation solutions)	DWS, DST, COGTA, SABS, DTI, SALGA,	Ongoing, with 5-yearly review utilities
Coordinate, and where needed establish new platforms, to enable a synergised set of institutions that enable the shifting of innovations into the market (including business development and SME support)	DTI, DWS, Dept Small Business, EDD, Incubators	Ongoing, with 5-yearly review

READY FOR THE FUTURE AND AHEAD OF THE CURVE – LET’S DO IT!

South Africa is a water stressed and climate vulnerable region. The NW&SMP Call to Action is an important step in driving action to achieve water security for all. South Africans share common interests and challenges in the pursuit of water security. Achieving water security requires sound evidence to inform policy and dialogue, good governance, advances in research and technology, the mobilisation of finance and investment, management of climate risks, and cooperation in managing transboundary water resources. It requires balancing supply and demand, redistributing water, managing water and sanitation services effectively, regulating water with a focus on high impact use, improving raw water quality and protecting and restoring ecosystems. These themes orient the NW&SMP and provide a rallying point for governments, civil society, the private sector, researchers and innovators, and the international community. The NW&SMP sets out priority actions and investments until 2030. After two years, a second NW&SMP (2020–2025) will reflect on progress and update the priorities, followed by a third (2025–2030) five years later. This iterative process, supported by a robust monitoring and evaluation framework, will keep the country focused on achieving the goals of the NW&SMP by the year 2030.



water & sanitation

Department:
Water & Sanitation
REPUBLIC OF SOUTH AFRICA