

Water Affairs



South Africa is the 30th driest country in the world.

Water is a critical element to sustainable socio-economic development and the eradication of poverty and is at the core of the green economy in the context of sustainable development and eradicating poverty.

Water has a critical function in the South African economy where it contributes 60% towards agriculture and irrigation.

Census 2011 established that 91% of the population has access to improved water sources, while 79% have access to improved sanitation.

The improvement is the result of the country's 15 water provision authorities including local and district local municipalities, driven by the millennium development goals (MDGs), climate change, improved framework for government and financing. The goal is 100% access to water.

The United Nations (UN) declared 2013 the International Year of Water Cooperation to raise awareness of the potential for increased cooperation, and the challenges facing water management in light of the increase in demand for water access, allocation and services.

The importance of high-quality water for human consumption, and high standards for waste-water management in the economic development of the country and sustainable environmental management can never be overemphasised.

Legislation

In September 2013, the Minister of Water and Environmental Affairs issued a notice of intention to declare fracking a controlled activity of the National Water Act, 1998 (Act 36 of 1998).

The notice, which was published in the Government Gazette for public comment, included the exploration for and/or production of onshore unconventional oil gas resources.

The department's key priority was to protect the environment and water resources, and take every precaution to ensure that the possible effect of fracking on water resources was carefully managed and minimised.

An interdepartmental monitoring committee has been established for the exploration and production of unconventional oil and gas.

The monitoring committee will review the existing regulatory framework for the regulation of fracking and develop the necessary regulations and guidelines on the methodologies of hydraulic fracturing.

It will also develop guidelines to ensure that the effect of exploration and production of shale gas resources are prevented, managed or mitigated.

South Africa's Constitution and Bill of Rights enshrine the basic human right to have access to sufficient water and a safe and healthy environment.

Government fulfils these rights through the Department of Water Affairs (DWA), assisted by specific legislation:

- The National Water Act of 1998 ensures that South Africa's water resources are protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner, for the benefit of all people.
- The Water Services Act, 1997 (Act 108 of 1997), prescribes the legislative duty of municipalities as water service authorities to provide water supply and sanitation according to national standards and norms. It also regulates water boards as important water service providers and gives the executive authority and responsibility to the Minister of Water Affairs to support and strengthen the capacity of municipalities to manage their own affairs, exercise their powers and perform their functions.
 - The Water Services Act of 1997, places an obligation on the Minister to maintain a National Water Services Information System and to monitor the performance of all water services institutions.
- The Water Research Act, 1971 (Act 34 of 1971), provides for the promotion of water-related research through a Water Research Commission (WRC) and a Water Research Fund.
- The National Environmental Management Act (Nema), 1998 (Act 107 of 1998), makes provision for cooperative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that promote cooperative governance and procedures for coordinating environmental functions exercised by organs of state.
- The National Water Policy is underpinned by three fundamental principles for managing water resources: equity, (environmental) sustainability and efficiency.

The department is responsible for policy development, regulation and oversight of sanitation provision.

Sanitation provision is governed by the Strategic Framework on Water Services (2003) and the Water Services Act of 1997.

All water users who do not receive their water from a service provider, local authority, water board, irrigation board, government water scheme or other bulk supplier, and who use water for irrigation, mining purposes, industrial

use, feedlots or in terms of a general authorisation, have a statutory obligation to register.

This includes the use of surface and groundwater.

Other uses that must be registered include:

- diversion of rivers and streams
- discharge of waste or water containing waste
- storage, which includes any person or body storing water for any purpose from surface run-off, groundwater or fountain flow in excess of 10 000 m³ or where the water area at full supply level exceeds one hectare (ha) in total on land owned or occupied by that person or body, and who is not in possession of a permit or permission
- local authorities and other bulk suppliers with their own water sources and purification works
- controlled activities such as irrigating with waste, power generation with water, atmospheric modification or recharging of aquifers.

An assessment of the environmental requirements of the rivers and streams concerned is conducted before a licence can be issued.

To further promote sustainable and equitable water resources management, the department has developed and continues to update a range of strategies for water management.

Policies and strategies National Water Resource Strategy (NWRS)

In July 2013, the Minister of Water and Environmental Affairs released the second National Water Resource Strategy (NWRS2), which sets out the vision and strategic actions for effective water management.

Since the publication of the first strategy in 2004, new challenges have emerged, and many changes have occurred in the water sector, which required new thinking and innovation.

These included the security of water supply, environmental degradation, and pollution of resources.

The NWRS2 outlines the key challenges, constraints and opportunities in water resource management and proposes new approaches that ensure a collective and adequate response for the benefit of all people in South Africa.

This strategy seeks to propel towards the achievement and attainment of an inclusive sustainable and equitable economy.

The NWRS2 seeks to ensure that the management of national water resources contributes towards achieving South Africa's growth, development and socio-economic priorities in an equitable and sustainable manner over the next five to 10 years.

The strategy also responds to the priorities set by government in the National Development Plan (NDP) and National Water Act imperatives that support sustainable development. It is centred on three key objectives:

- Water supports development and the elimination of poverty and inequality. The strategy recognises that the manner in which water was allocated in the past was unequal and favoured certain sections of the population. The intention, therefore, is to redress past imbalances in the manner in which water was allocated.
- Water contributes to the economy and job creation.
- Water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner.

The NWRS2 also focuses on water conservation and the management of water demand as key priorities.

According to research published by the Water Research Commission, non-revenue water for urban supply systems was at 36,8% over the past six years, equal to 1 580 M³ a year.

Water for Growth and Development (WfGD)

The WfGD Framework points to the relationship between the availability of water and the many forms of economic activity that depend on the available supply of water of specific levels of quality.

The department's position is that the country's economic growth target cannot be achieved at the expense of the ecological sustainability of water resources or meeting people's needs.

It wishes to respond to the needs of the different economic sectors and this is best achieved when water supply and the impact of use are factored in during planning.

Rather than being an add-on or afterthought, the department's position is that the need for water has to be mainstreamed and placed at the nucleus of all planning decisions both in the public and private sector.

For water to support economic growth without compromising primary needs or ecological sustainability requires adequate integrated strategic planning.

Although the WfGD framework was approved by Cabinet, it was never gazetted.

The revised NWRS-2, however, has incorporated aspects of the WfGD that pertain

to water resource management as key core strategies.

Raw Water Pricing Strategy

Since 1994, there have been continued efforts to reform and realign the water value chain so that it can efficiently achieve government's objectives.

These include ensuring equitable access to water and sanitation, the sustainable use of water for optimum social and economic benefit, and ensuring the sustainability of water resources and water services delivery, as outlined in the NWRS of 2004 and Strategic Framework for Water Services of 2003.

As part of this process, the DWA is looking at pricing, financing and economic regulation reforms in the water sector.

This project will review the raw water pricing strategy, develop infrastructure funding models and recommend an appropriate model and institutional arrangements for an economic regulator for water.

It is generally agreed that pricing and economic regulation play a key role in the provisioning of infrastructure by assuring necessary investments to support socio-economic growth and ensuring that services are widely available and accessible and priced at levels that support of current and future needs.

The project will contribute to the following:

- The revision of the Raw Water Pricing Strategy to ensure equitable and appropriate raw water tariffs that will enable sustainable operation and management of raw water infrastructure and will adequately fund catchment management.
- Funding/financing models for water resources infrastructure.
- The establishment of an economic regulator for the entire water value chain.

The project is strategic in nature and will enable the DWA to have sound water-pricing policies, cost-reflective tariffs for the entire water value chain in South Africa and a good funding framework for infrastructure.

The project is divided into three work-streams, each to be led by the DWA together with different institutions to provide support.

The 2013 review of the Raw Water Pricing Strategy addressed the issue of water scarcity and how best to use water pricing as a tool for driving more efficient water-use without having a negative effect on small-scale or under-resourced water users.

National Groundwater Strategy

Groundwater is a strategic resource in many parts of South Africa, especially in rural areas. It also plays an important role in the supply of water

During National Water Week in March 2013, the Minister of Water Affairs launched new stamps to popularise the water message.

to small towns and villages in the drier parts of the country.

There is considerable potential for additional development of groundwater resources to augment existing resources.

The need for improved groundwater management to ensure sustainable and efficient use of the resource was recognised in NWRS-1 and led to the formulation of a National Groundwater Strategy through which strategic actions are undertaken.

Reuse Strategy

The DWA has developed a water reuse strategy to encourage informed decisions relating to water reuse.

Reuse could be significantly increased with reuse of return flows in coastal cities, where it would otherwise drain into the sea.

In coastal cities, water reuse and desalination compete as two options for water conservation.

Reuse is becoming increasingly acceptable and feasible owing to increasing shortages, improved purification technology and decreasing treatment costs. Membrane technologies, also used for desalination of seawater, have become more affordable and have improved.

The reuse of treated waste water will have to be managed carefully to ensure public health safety.

Rainwater harvesting

The DWA supports a national rainwater harvesting programme, which has a narrow but important focus on the construction of above and below-ground rainwater storage tanks by rural households for food gardens and other productive water uses.

Several municipalities now use roof rainwater tanks for domestic purposes. These have been found to be particularly effective when used in conjunction with other water supply options.

Though there are no hard figures yet on how many cubic millimetres per year rainwater harvesting can contribute, it is an option that can be implemented in a short timeframe.

Desalination strategy

The department has developed a supporting desalination strategy, which also includes desalination as a technology for treating water other than seawater for water reuse. Desalination of seawater could potentially provide an unlimited resource of fresh water.

It has become more attractive since the NWRS-1 because of improved technologies, decreasing costs and increasing water scarcity.

However, the rising cost of energy may be a deterrent.

Like other infrastructure projects with potential environmental impacts, the planning for a desalination plant will have to undergo an environmental impact assessment in compliance with Nema of 1998.

The DWA will ensure that desalination is considered as an option for meeting future water requirements, in particular in coastal cities where there is sufficient electricity for desalination.

The target is not only to implement desalination in several locations in South Africa, but also to become an international knowledge centre in this particular field.

Budget and funding

A budget of R4,334 billion was set aside for the Interim Water Supply Programme to address backlogs in rural areas through immediate interventions in the 23 district municipalities prioritised by Cabinet over the next three years.

Building the skills base and the capacity of the State to deliver quality services, the DWA Learning Academy has 536 active bursars of which 418 have been absorbed into the department's training programme and 118 candidates are enrolled at various universities – 270 of them are in engineering, 241 in the sciences and 25 in surveying. By May 2013, 166 graduates had been appointed in permanent and/or candidate occupation specific dispensation (OSD) engineering and science posts within the department. Candidates graduating from the Learning Academy will also supplement the skills required at municipal level.

The department's budget has also grown significantly owing to increased allocations for infrastructure development. The total allocation is R10,2 billion for 2013/14, R12,4 billion for 2014/15 and R15,5 billion for 2015/16.

Capital investment in new water and sanitation infrastructure for the entire value chain including the refurbishment of existing infrastructure is projected to require an estimated R670 billion, over the next 10 years, or R67 billion per year. By May 2013, only 45% (R30 billion) per year was available from government sources. These investments will have to be funded from on-budget and off-budget sources through the private sector.

The work on the first pipeline, which connects water treatment works at Steelpoort with the De Hoop Dam, and the pipeline to Sekuruwe in the Waterberg and Pruisen in the Capricorn areas in Limpopo are the veins for delivering domestic water to the most needy communities and the mines in the area. Once complete, government

will have invested in excess of R4,5 billion on the project that will benefit more than two million people in the Sekhukhune, Capricorn and Waterberg areas.

The Komati Water Augmentation Project providing an additional yield of 57 million cubic metres of water a year to improve the security of supply for Eskom's Duva and Matla power stations and for the new Kusile Power Plant was implemented far below its projected costs, resulting in efficiency saving of R500 million on completion.

Water boards are key strategic entities that play an important role in socio-economic development investing R3,3 billion during the 2012/13 financial year.

In KwaZulu-Natal, a number of water projects were implemented. The R186 million water supply project in the Maphumulo area of the Ilembe District benefiting 150 000 people was inaugurated. In the Ugu District, a further 100 000 people benefited from the Mahlabatshana water scheme.

A new project, the Richmond Pipeline, will be developed at a cost of R134 million and will provide water to 200 000 people.

In North West, the first phase of the R1,2 billion Pilanesberg scheme is being implemented. The project developed in partnership with the mines will provide a further 100 Mℓ of water per day for the benefit of local municipalities and mines. At least 700 direct jobs will be created and 6 000 indirect permanent jobs through new mining developments.

In the Free State, R156 million will be invested in two new pipeline projects providing additional water to the Botshabelo and ThabaNchu municipalities and the Mangaung Metro.

By May 2013, government had invested R1,7 billion and 35 dams had been successfully rehabilitated. The department implemented

projects in every province with a total budget of R3,7 billion over the next three years.

The Blue Scorpions, the department's enforcement unit, plays a vital role in enforcing the water laws especially in areas such as the Vaal River system where illegal water use is rife. The department has already invested about R23,6 million in the area to strengthen law enforcement efforts. By 2013, the department had been able to stop water theft in the order of 50 million cubic meters per year.

Role players

Water boards

The primary activity of water boards is to provide water services (bulk potable and bulk waste water) to other water services institutions within their respective service areas. They may perform other activities under conditions set out in the Water Services Act, 1997. In certain situations, the Minister of Water Affairs may direct water boards to amend their business plans to meet all the requirements of the Water Services Act, 1997. There are nine water boards in South Africa.

Catchment management agencies (CMAs)

The main responsibilities of CMAs are to manage water resources at catchment level in collaboration with local stakeholders, with specific focus on involving local communities in the decision-making processes, in terms of meeting basic human needs, promoting equitable access to water, and facilitating social and economic development.

In essence, CMAs are service-delivery agencies and are listed in the Public Finance Management Act, 1999 (Act 1 of 1999). There are nine CMAs in South Africa.

Water-user associations (WUAs)

WUAs are cooperative associations of individual water users who wish to undertake water-related activities at local level for their mutual benefit. They operate in terms of a formal constitution as set out in Schedule 5 of the National Water Act, 1998.

Water Research Commission

The WRC has a vital role in water research by establishing needs and priorities, stimulating and funding research, promoting the transfer of information and technology, and enhancing knowledge and capacity building in the water sector.

The commission provides support to the water sector and all its relevant institutions and partners.

The winners of the 2013 Water Sector Awards on Water Conservation and Water Demand Management were announced in October 2013. The winners were awarded in recognition and acknowledgement of their initiatives in water conservation and water-demand management per category:

- agriculture: Lower Olifants River Water Users Association, Western Cape; and Water Research Commission, Gauteng
- business: Sun City Resort, North West; Garden Court Hartfield, Gauteng
- industry, mining and power generation: Richards Bay Minerals, KwaZulu-Natal; Eskom, Gauteng; Optimum Coal Mine, Mpumalanga
- domestic or local government local municipalities: Emfuleni (Sasol and GIZ), Gauteng; Drakenstein, Western Cape; New Castle, KwaZulu-Natal
- metropolitan and district municipalities: City of Cape Town, Western Cape; Johannesburg Water, Gauteng; City of Tshwane, Gauteng.

Over the medium term, it will focus on water resources management, water-linked ecosystems, water use and waste management, and water use in agriculture.

The WRC, in partnership with the departments of water affairs, and science and technology, hosted a Water Research and Development Symposium in September 2013.

The symposium was held under the theme “Local Water Solutions for Global Impact.”

The aim was to present and celebrate excellence in the South African water research and development domain, and to link various institutions operating at different stages of the water innovation value chain.

As part of the UN International Year of Water Cooperation, the symposium sought to debate the scientific development imperatives for South Africa from a water perspective and the innovations that address this agenda.

For the first time, the public had a chance to engage directly in a dialogue format with the members of the Parliamentary Portfolio Committees and the scientific community outside the confines of Parliament.

The theme for the pre-symposium parliament session was “The future of water in South Africa and the role of the scientific community of practice: a public engagement session with parliamentarians.”

Water is core to achieving the Department of Science and Technology’s (DST) Global Change Grand Challenge, as well as broader national targets relating to the green economy.

The DST and the WRC are to develop the roadmap, which aims to provide a 10-year platform for research, development and innovation in the water and wastewater sectors of South Africa.

This includes providing a platform for the country to compete with leading countries in water technology, increase the numbers of technology-based small and medium-sized enterprises operating in the water sector and increase access to water and sanitation in rural communities.

Water Trading Entity (WTE)

The DWA is responsible for the regulation of water use in South Africa by ensuring that water is allocated equitably and used beneficially in the public interest, and is also required to create a register of all water users in the country.

The National Water Act of 1998 makes provision for cost recovery on services rendered by the department to water users. It is against this background that the department created the WTE within its administration.

The main function of the WTE is development, operation and maintenance of specific water

resources infrastructure and managing water resources in specific water management areas.

Trans-Caledon Tunnel Authority

The Trans-Caledon Tunnel Authority is a State-owned entity (SOE) specialising in project financing, implementation and liability management. It is responsible for the development of bulk raw-water infrastructure. It also provides an integrated treasury management and financial advisory service to the DWA, water boards, municipalities and other entities that are linked to bulk raw-water infrastructure. The Trans-Caledon Tunnel Authority is primarily responsible for off-budget projects.

Komati River Basin Water Authority

The Komati Basin Water Authority was established in terms of a treaty between South Africa and Swaziland. The aim of the authority is to manage the water resources of the Komati River basin sustainably. The authority is responsible for financing, developing, operating and maintaining the water resources infrastructure in the basin, comprising the Driekoppies Dam in South Africa and the Maguga Dam in Swaziland.

Water Tribunal

The Water Tribunal was established in 1998 to hear appeals against directives and decisions made by responsible authorities, CMAs or water management agencies about matters covered by the National Water Act of 1998, such as the issuing of licences to use water. It is an independent body and can hold hearings anywhere in the country.

The WRC and the Judicial Services Commission recommend people to be included as members of the Water Tribunal, and the Minister of Water Affairs appoints them. The members have to be familiar with water management, engineering, law and other related matters, and they are given administrative support by the DWA.

Strategic Water Partners Network – South Africa (SWPN-SA)

SWPN-SA is one of South Africa’s most innovative public-private civil-society sector partnerships, making progress that would not have been possible.

The International Finance Corporation, the Japanese International Cooperation Agency and the Development Bank of Southern Africa hosted the Water Works conference in Midrand in November 2013 to promote private-sector participation in the water sector.

The role of the private sector is becoming increasingly essential in the introduction of water infrastructure and in enabling access to water.

The efforts of the SWPN-SA are integral to the second draft National Water Resources Strategy, which the DWA released in 2012.

A cornerstone of the SWPN-SA is developing innovation that leverages the strength and expertise of the DWA, the South African private sector, civil society, and expert organisations.

In 2013, additional investors contributed to the SWPN-SA, including Anglo American, BHP Billiton, Eskom, Nestlé, Sasol, South African Breweries and the 2030 Water Resources Group. The New Partnership for Africa's Development Business Foundation's role as secretariat has proved important and has facilitated continued dialogue among members within the working groups on projects.

Resources

South Africa's water resources are, in global terms, scarce and extremely limited. The total flow of all the rivers in the country is about 49 200 million m³ a year. This is less than half that of the Zambezi River, the closest large river to South Africa. Groundwater plays a pivotal role, especially in rural water supplies.

The country's climate varies from desert and semi-desert in the west to sub-humid along the eastern coastal area, with an average rainfall of about 450 mm per year. This is well below the world average of about 860 mm per year, while evaporation is comparatively high. Water resources are unevenly spread across South Africa. The variable rainfall distribution and characteristics give rise to an uneven run-off and distribution of water resources, with more than 60% of the river flow arising from only 20% of the land area.

To compensate for the uneven spread of water resources and to manage floods and droughts, more than two-thirds of the country's mean annual run-off are stored in dams. Most of the economically available yield from surface water resources has been fully developed and used, and opportunities for developing new and economic dams are few.

South Africa's inland water resources include 22 major rivers, 165 large dams, more than 4 000 medium and small dams on public and private land, and hundreds of small rivers.

However, owing to the predominantly hard-rock nature of South Africa's geology, there are few major groundwater aquifers that can be used on a large scale.

The poor spatial distribution of rainfall means that the natural availability of water is also highly uneven. This is compounded by the strong seasonality of rainfall over virtually the entire country, and the high within-season variability of rainfall, and consequently, of run-off.

As a result, stream flow in South Africa's rivers is at relatively low levels most of the time, with sporadic high flows occurring – characteristics which limit the proportion of stream flow that can be relied upon to be available for use, and which also have implications for water-related disasters such as floods and droughts.

To aggravate the situation, most urban and industrial development, as well as some dense rural settlements, have been established in remote locations away from large watercourses. As a result, the requirements for water already far exceed its natural availability in several river basins. Widespread and often large-scale transfers of water across catchment areas have, therefore, been implemented.

Measures will also be introduced to ensure the most beneficial and efficient use of water from a social and economic perspective.

Provided that South Africa's water resources are judiciously managed and wisely allocated and used, sufficient water of appropriate quality will be available to sustain a strong economy, high social standards and healthy aquatic ecosystems for many generations.

South Africa depends mainly on surface-water resources for urban, industrial and irrigation water supplies in the country. In general, surface-water resources are highly developed in many parts of South Africa.

Groundwater is also extensively used, particularly in the rural and more arid areas, contributing to some 60% of newly serviced households since 1994.

In the northern parts of the country, both surface and groundwater resources are nearly fully developed and used. Some over-exploitation occurs in localised areas, with little undeveloped resource potential remaining. The reverse applies to the well-watered south-eastern region of the country, which still has significant undeveloped and under-used resources.

The total mean annual run-off of water in South Africa under natural (undeveloped) conditions is estimated at a little over 49 200 million m³ per year, including about 4 800 million m³ per year of water originating in Lesotho, and about 700 million m³ a year originating in Swaziland, which naturally drain into South Africa.

Agricultural irrigation represents close to 60% of the country's total water requirements, while urban requirements constitute about 25% as the second-largest user sector. The remaining 15% is shared by the other sectors (all standardised to 98% assurance of supply).

The total nett abstraction of water from surface water resources amounts to about 10 200 million m³ per year for the whole of South

Africa, after allowing for the reuse of return flows. This represents about 20% of the total mean annual run-off of 49 200 million m³ per year (all standardised to 98% assurance of supply). A further 8% is estimated to be lost through evaporation from storage and conveyance along rivers, and 6% through land-use activities. As a national average, about 66% of the natural river flow (mean annual run-off) therefore still remains in the country's rivers.

Southern Africa also has large hidden underground water reserves, with 12 to 15 aquifer systems, of which three are considered very important for the future.

In South Africa, a substantial resource lies in a massive dolomite aquifer system that covers a vast area, extending from Springs and Brakpan, east of Johannesburg; to Lenasia, south of the city; Zurbekom, Carltonville and Magaliesberg on the West Rand; Kuruman in the Northern Cape and even as far as parts of Botswana.

The Witwatersrand mining basin's aquifer storage capacity is about the size of Lake Kariba. Other countries such as Botswana, Ghana, Mozambique, Namibia, Zambia, and Zimbabwe also have hidden aquifers.

Dams and water schemes

In an attempt to adequately respond to demand and anticipate future demand, South Africa has built numerous large and medium-sized dams, and developed sophisticated inter-basin transfer schemes. The country now has more than 500 government-owned dams countrywide. They range in storage capacity from a volume of 5 500 million m³ of water down to 0,2 million m³ of water.

South Africa currently uses about 10 200 million m³ of water per year from its major dams. This amount is about 20% of the total mean run-off volume of water South Africa receives a year. Evaporation accounts for a very high 8% loss of stored water resources (the hot climate contributes to this, as well as the large surface areas of many dams), and a further 6% is lost through various land-use activities. Most water consumption can be attributed to drinking, irrigation, electricity, mining processes and industrial processes.

The DWA follows an integrated approach to managing South Africa's water resources. Proposed new water schemes have to comply with the NWRS, requiring that water-demand management programmes be implemented before embarking on new infrastructure development.

Strict environmental impact assessments must also be performed in accordance with laws and regulations administered by the Department

of Environmental Affairs, while the guidelines issued by the World Commission on Dams must also be followed.

Bulk infrastructure is a critical element of water-services infrastructure and an integrated part of water-services management.

Government has implemented key projects to augment South Africa's water resources, such as:

- The Trans-Caledon Tunnel Authority has procured funding to implement the Mokolo and Crocodile River West Water Augmentation Project's first two phases at a cost of about R2 billion, to deliver water to Eskom's new Medupi power station and other industries in the area, as well as domestic water to the Lephalale Local Municipality. The first water delivery is expected in 2014.
- In July 2013, the Bloemendal Bulk Water Project, which helped address issues of water-borne diseases and water shortages in Delmas, in the Victor Khanye Local Municipality. The bulk water project is part of the government's drive to bring services to the people of the country. The project is designed to supply 25 Ml/d (potable water) and is sufficient to meet water demand in the service area up to 2026. The new project incorporates a 10 Ml reservoir located at mid-point of the new pipeline and is designed to improve system operation as well.
- In November 2013, President Zuma launched the Spring Grove Dam, in Mooi River, KwaZulu-Natal. Spring Grove Dam (or Mooi Mngeni Water Scheme) supplies water to the eThekweni Metropolitan Municipality and the uMgungundlovu District, Msunduzi Local, Ugu Local, Sisonke and iLembe local municipalities. It created 960 jobs when it was constructed. The R1 billion dam is part of government's infrastructure development plan that is also designed to create jobs, improve the quality of life and boost the economy.

Groundwater resources

Groundwater, despite its relatively small contribution to bulk water supply (13%), represents an important and strategic water resource in South Africa, since it services between 52% and 82% of community water-supply schemes in the Eastern Cape, Limpopo, Northern Cape, North West and KwaZulu-Natal.

Owing to the lack of perennial streams in the semi-desert to desert parts, two-thirds of South Africa's surface area depend largely on groundwater.

Although irrigation is the largest user, the supply to more than 300 towns and smaller settlements is also very important.

Through government's commitment towards meeting the basic water needs of communities, groundwater has become a strategic resource for village water supply in the wetter parts of the country, because of its cost-effectiveness in a widely scattered small-scale user situation.

Groundwater also contributes considerably to river flow. This requires reserving a significant share of groundwater resources to protect aquatic ecosystems in terms of the National Water Act, 1998. The maximum quantity of groundwater that can be developed economically is estimated at about 6 000 million m³ a year, while some 4 000 million m³ of groundwater (mainly in the dry season) contributes to surface-water flow annually.

Managing and developing water resources

To facilitate the management of water resources, the country has been divided into 19 catchment-based water management areas, of which 11 share international rivers.

Sufficient water resources have been developed and are available to ensure that all current requirements for water can reasonably be met, without impairing the socio-economic development of the country.

Where feasible, special management techniques may be applied to improve water quality to appropriate standards for particular uses. The quality of groundwater varies according to hydrogeological conditions and anthropogenic impact. However, most major aquifer systems contain potable-quality water.

To underscore its commitment to the pursuit of universal access to water, the department is investing in new infrastructure and maintaining and rehabilitating dysfunctional systems to ensure operational efficiency.

This is particularly relevant to developing water infrastructure to meet the specific needs of different rural communities. Closely related to rural development is the need for mainstream support to local government to sustain the infrastructure underpinning efficient service delivery to communities.

Managing water quality and wastewater

To ensure compliance with minimum water quality norms and standards, the department started the annual Blue Drop and Green Drop assessments to guarantee that water and wastewater systems are managed according to set norms and standards.

The department has set a target of 99% compliance with drinking-water quality standards and 80% compliance with wastewater effluent standards.

Introduced in 2008, this incentive-based regulation system aims to improve the quality of municipal drinking-water quality and management of waste water.

Because of the scale and magnitude of resources needed for the national certification programme, the Green Drop and Blue Drop programmes take place every second year, alternating with each other. In a programme's "gap" year, progress in the wastewater sector is tracked and reported via the assessment of the cumulative risk status of treatment systems.

The department was honoured to receive international recognition in terms of Environmental Engineering Excellence for the Blue Drop and Green Drop Certification programmes from the American Academy for Environmental Engineers. This academy is affiliated to the International Water Association.

Blue Drop Programme

South Africa's drinking-water quality matches best international practice and follows the guidelines set out by the World Health Organisation. As it involves a benchmark score of 95%, the Blue Drop certification is the recognition of exceptional performance, and should not be equated to a pass mark. It simply credits exceptional drinking-water quality.

Green Drop Programme

The Green Drop certification measures the performance of waste-water treatment works.

The 2013 Green Drop Report indicated that 41% of the 914 water supply systems assessed require attention. Similarly, 55% (or 821) wastewater treatment works require serious, critical and urgent refurbishment.

On-site sanitation systems provided in mostly rural areas have been found to be relatively robust, with inadequate provision for pit emptying.

Programmes and initiatives "No Drop" assessments

To reduce leakages from the water supply networks and boost the efficiency of water use the DWA implemented "No Drop" assessments across all municipalities in South Africa from October 2013.

The report assessment programme would be rolled out to municipalities from October to March 2014, with the results of the first assessments to be published in the *Blue Drop/No Drop Report* in 2014.

Thereafter, the results, which would provide the public and the water sector with audited and verified information on water use, water loss and efficiency of water used and managed within a municipality, would be released every two years.

The results would be integrated into the Blue Drop scorecard. The No Drop assessment would deal with water loss issues, while the already-implemented Blue Drop assessment dealt with the quality of drinking water.

The supply-demand curve shows that South Africa will face a supply-demand deficit of around 17% representing 3,8 billion kilolitres of water by 2030.

Ageing infrastructure, inadequate maintenance and repairs to existing infrastructure, slow responses to water leaks and bursts, shortcomings in technical competency in municipalities and a culture of water wastage challenge the water sector.

Data from 132 municipalities – 75% of the total volume of municipal water supply – revealed that the current level of nonrevenue water reached 36,7%, of which 25,4% was considered to be losses via physical leakages.

Integrated Water Resources Management (IWRM)

The DWA, with the assistance of the Royal Danish Government, initiated a programme in 2000 to pilot IWRM approaches in three water management areas of South Africa: Crocodile West – Marico (mainly in North West), Mvoti to uMzimkulu (KwaZulu-Natal) and Olifants-Doorn (mainly in the Western Cape).

These water management areas were selected as they represent a cross-section of water resources conditions as well as water-use conditions and user interests.

The IWRM requires intensive planning to ensure efficient, equitable and sustainable management of water resources and for coping with conflicting demands.

National Water Resources Infrastructure (NWRI) Programme

The NWRI ensures reliable supply of water from bulk raw-water resources infrastructure. The programme solicits and sources funding to implement, operate and maintain bulk raw-water resources infrastructure efficiently and effectively by strategically managing risks and assets.

Some augmentation projects were identified and prioritised for implementation by 2014. These include:

- emergency works in Mopani
- construction of the Nwamitwa Dam in the Groot Letaba Water Augmentation Project
- raising the Tzaneen Dam in the Groot Letaba Water Augmentation Project
- the Mdloti River Development and raising of Hazelmere Dam

- the Mokolo from Crocodile River (West) Water Augmentation Project Phase 1
- the Nandoni Pipeline Project
- raising the Clanwilliam Dam in the Olifants-Doorn River Water Resources Project
- phase two of the Olifants River Water Resources Development Project
- the Komati Water Augmentation Project
- phase two of the Mooi-Mgeni Transfer Scheme
- the Vaal River Eastern Sub-System Augmentation Project.

The NWRI Maintenance Programme ensures the availability of water for domestic use.

The following progress was made in 2012:

- nine out of 25 national dams were rehabilitated
- seven of 28 water conveyance projects were completed, measures were put in place to expedite the process to meet the 2014 targets
- following the process of verification to determine safety, health and environment, about 91 dams with a safety risk were classified
- a total of 195 dams were identified for safety risks.

Regional Bulk Infrastructure Grant Programme

Regional bulk infrastructure is defined as the infrastructure required to connect water on a macro or sub-regional scale, over vast distances, with internal bulk and reticulation systems or any bulk infrastructure that may have an impact on water resources in terms of quality and quantity. The department is responsible and accountable for the management of funding, which is administered by the National Treasury.

Over 16 000 households will benefit from the R52 million Makapanstad and Mathibestad Bulk Water Project, which aims to address water shortages in villages in the Moretele Local Municipality in North West.

Upon completion, the project will address water shortages in the villages of Kwa-Mmatlwaela, Tladistad, Leeukraal, Kgomo-Kgomo, Kontante, Moretele, Makapanstad, Phomolong, Potoane, Prieska, Mathibestad, Thulwe and Opperman.

The Mathibestad and Makapanstad Bulk Water Project is funded through the Provincial Infrastructure Grant and Municipal Infrastructure Grant.

Strategic integrated projects (SIPs)

In June 2013, the Minister of Water and Environmental Affairs launched SIP 18, which is aimed at addressing water supply and sanitation backlogs to millions of households.

SIP 18 was approved by the Presidential Infrastructure Coordinating Commission (PICC).

The launch of the 18th SIP is part of the PICC's 18 SIPs, which are divided into geographic, energy, spatial and social infrastructure development projects. These projects – headed by different departments – cover more than 150 specific infrastructure interventions in rail, road and ports, dams, irrigation systems, sanitation and electricity.

This programme is a 10-year plan that will address the estimated backlog of adequate water to 1,4 million households and that of basic sanitation to 2,1 million households. SIP 18 is expected to fast-track the issuing of water licences, expand the capacity of the water system, speed up build programmes, address backlog projects and rehabilitate and upgrade existing water and sanitation infrastructure.

The project, which will also focus on priority small towns and rural areas where water service delivery is a problem, is also expected to create jobs, raise the quality of service delivery of water around the country and extend water supply to areas that are either underserved or unserved.

The department identified several projects that will be used to drive SIP 18, including the Sedibeng Regional Sewer Scheme, a R5-billion project to be implemented in the area.

Rand Water's BG3 pipeline, which is sub-Saharan Africa's largest water pipeline, running from the Vaal Dam to its Zoekfontein Plant, which is 8,6 km away, was also launched in June 2013.

The Vaal Dam is about 2,5 hours' drive from Johannesburg. The pipeline will increase water distribution in this district and surrounding areas.

The BG3 pipeline runs adjacent to Rand Water's existing BG1 and BG2 pipelines that supply water to Gauteng and parts of the neighbouring Free State, Mpumalanga and North West.

Once in commission, the BG3 pipeline will allow for Rand Water's two pipelines (BG1 and BG2) to be shut down for refurbishment and maintenance. The BG3 pipeline will augment raw water capacity to Zuikerbosch by up to 2100 M³/d, which will accommodate the region's projected growth in water demand to 2030.

The Komati Water Scheme Augmentation Project (KWSAP), which was designed to resolve the water supply problems to Eskom's Duvha and Matla power stations in Mpumalanga, was launched in June 2013.

The KWSAP augments the Komati Water Scheme from the Vaal Eastern Subsystem to help Eskom overcome its water supply challenges. The Matla power station reservoir will in turn also provide water to Kusile power station, which is under construction.

The interaction of the water resources of the Komati, Usutu and Vaal River systems provides a higher assurance of water supply to all Eskom's thermal power stations and other water users in Mpumalanga. The KWSAP will be able to deliver an additional 57 million m³ of water a year to the Komati Water Scheme. On the department's instruction, the Trans-Caledon Tunnel Authority is financing and implementing the project. The project is part of SIP 18.

Dam Safety Rehabilitation Programme

The Dam Safety Rehabilitation Programme ensures the continued structural and operational safety of the dams owned by the DWA.

The municipalities of Mohokare, Letsemeng, Tokologo, Dihlabeng, Phumelela and the Sterkfontein Dam Water Scheme are included in Strategic Infrastructure Project 18 of the PICC.

Various strategic projects of the DWA during 2013/14 included:

- The Bulk Water Schemes in the Xhariep District, namely Phase 2 of the Jagersfontein/Fauresmith and Rouxville/Smithfield/Zastron

Natural mean annual run-off and ecological reserve (million m³ per year)

Water management	Natural mean annual run-off ⁽¹⁾	Ecological reserve ^(1,2)
Limpopo	985	156
Luvuvhu/Letaba	1 185	224
Crocodile West and Marico	855	165
Olifants	2 042	460
Inkomati ⁽³⁾	3 539	1 008
Usutu to Mhlatuze ⁽⁴⁾	4 780	1 192
Thukela	3 799	859
Upper Vaal	2 423	299
Middle Vaal	888	109
Lower Vaal	368	48
Mvoti to Umzimkulu	4 798	1 160
Mzimvubu to Keiskamma	7 241	1 122
Upper Orange	6 981	1 349
Lower Orange ⁽⁵⁾	502	69
Fish to Tsitsikamma	2 154	243
Gouritz	1 679	325
Olifants/Doring	1 108	156
Breede	2 472	384
Berg	1 429	217
Total	49 228	9 500

1) Quantities refer to the water management area under consideration only (water that originates or is required in that water management area).

2) Total volume given based on preliminary estimates, impact on yield being a portion of this.

3) Includes Komati catchment in Swaziland (mean annual run-off = 517 million m³/a).

4) Includes Pongola catchment in Swaziland (mean annual run-off = 213 million m³/a).

5) Includes contributions from the Senqu and Caledon rivers in Lesotho (mean annual run-off = 4 765 billion m³/a).

Source: Department of Water Affairs

projects. Regional Bulk Water Schemes in the Masilonyana and Tokologo local municipalities in the Lejweleputswa district and the Moqhaka Local Municipality in the Fezile Dabi district.

- Regional Bulk Water Schemes in the Setsoto, Dihlabeng and Phumelela local municipalities, the Sterkfontein Dam Scheme and the Nketoana Regional Water Scheme Augmentation in the Thabo Mofutsanyana district.
- Significant progress with the refurbishment of water and wastewater treatment works, including those at Bethlehem and Saulspoor, Ficksburg, Vredefort, Heilbron, the Matjhabeng and Moqhaka local municipalities.
- the upgrade of the Jacobsdal raw water pipeline
- refurbishment at the Cocolan pump station
- upgrade of Ficksburg sewerage network
- refurbishment of the waste water treatment works of Wepener.

The Mangaung Metropolitan Municipality embarked on an extensive programme aimed at eradicating ventilated improved pit toilets (VIP) and pit latrines, specifically in Botshabelo and Thaba Nchu. In addition, an extensive programme aimed at extending the bulk water and sewer purification plants will be implemented.

The De Hoop Dam in Limpopo was officially opened in March 2014; the Komati Water Augment Project, which provides Eskom's Duva and Matla power stations Spring Grove Dam in KwaZulu-Natal had been finished.

In North West, the first phase of the R1,2 billion Pilanesberg scheme was implemented in May 2013, in partnership with the mines to provide a further 100 Mℓ of water for the benefit of local municipalities and mines. About 700 direct jobs were created, while new mining developments will open up 6 000 indirect permanent jobs.

In the Free State, R156 million will be spent on two new pipeline projects that will supply additional water to the Botshabelo and Thaba Nchu municipalities as well as Mangaung Metropolitan Municipality.

The department was processing draft reforms to the National Water Act, while a review of the National Water Resources Strategy had been successful.

Support for resource-poor farmers

In accordance with the National Water Act of 1998, and regulations on financial assistance to resource-poor farmers, the Minister of Water Affairs may allocate assistance to those farmers who fulfil requirements as per regulations.

To ensure that water resources are protected, the regulations explicitly state that financial

assistance may be granted and used only for activities that ensure water is protected, used, developed, conserved and managed in a sustainable and equitable manner.

Rainwater harvesting

Rainwater harvesting enables people who live in areas where reticulation has not as yet been implemented to have access to water. The programme targets rural communities through the installation of tanks and awareness creation sessions.

Water Allocation Reform

The Water Allocation Reform Programme's objectives are to ensure equitable access to water, eradicate poverty and promote social and economical development. The programme's priorities are to meet the water needs of historically disadvantaged people, ensure their participation in water resources management and promote the beneficial and efficient use of water in the public interest.

Licences are required for storage and use of water, among other things. To facilitate the availability of water for historically disadvantaged people, attention is also given to the allocation of water following principles of equity and sustainability.

Women in Water

The Women in Water Project aims to strengthen the active participation of rural women in water resource management. Women identify water-related challenges in their communities and conceptualise ideas to address them. They are registered for Women in Water awards. The national winners receive cash prizes which are used for further project development and implementation.

Management of water conservation and demand

Although South Africa has been classified as a water-scarce country, water from the source to the consumer is often lost as a result of inappropriate and inadequate asset management.

Lack of education on the part of the consumer also leads to inefficiency in the day-to-day use of water. The loss of water depletes the country's

According to *The General Household Survey (GHS) 2012 Report*, 90,8% of South African households had access to piped water while the percentage of households with no toilets or bucket toilets decreased from 12,3% in 2002 to 5,3% in 2012. Households in the Eastern Cape, Mpumalanga and Limpopo were most likely to lack access to toilet facilities or to still use bucket toilets.

resources and reduces revenue to water services authorities.

The municipalities' revenue is lost due to leaking pipes, illegal connections and poor billing systems.

In terms of the water-use efficiency programme, 68 municipalities were supported in implementing water conservation and water demand measures to reduce water loss by 519 million m³. Measures to improve efficient water use in the catchment areas were also undertaken and the volume of water loss was reduced to 32 million m³.

In August 2013, municipal mayors were challenged to create effective partnerships with women and the youth in their planning programmes, especially the water and environmental sectors, to find ways to protect the environment and conserve water for socio-economic development, and women and youth empowerment.

The initiative seeks to promote cooperation and share learning at all levels of government to strengthen the commitment to waste management and water conservation. It further seeks to ensure programmes and key stakeholders are part of an integrated approach, and to identify innovations to address challenges and gaps at local government level.

Women had a significant role to play in the preservation of water and the environment, as they were the ones who bore the brunt of the consequences of not having these resources.

Enhanced Local Government Support Approach

A rapid response unit in the department addresses poor performance of water and waste-water systems, which has resulted in community protests in some cases.

The unit deals with proactive and reactive non-compliance cases of municipal service delivery. The specialists within the unit enable the department to intervene directly in high-risk operational situations, where the lives of citizens and the environment are under threat because of water and wastewater treatments failures.

Freshwater Programme

Recognising the value and threatened status of South Africa's freshwater biodiversity, and the need to build competence and leadership in this area, the South African National Biodiversity

Institute (Sanbi) has established a programme focusing on freshwater biodiversity.

The Freshwater Programme aims to grow and consolidate freshwater activities within Sanbi.

The Freshwater Programme focuses on supporting collaborative freshwater initiatives. These include Working for Wetlands, the National Wetland Inventory, National Freshwater Ecosystems Priority Areas Project, a wetlands mitigation banking scheme with the Grasslands Programme and coal-mining industry, and water-related payments for ecosystem services pilot projects. Key to the programme's operation will be the further development of strategic relationships with other organisations with shared objectives.

This includes managing the Working for Wetlands Programme on behalf of the departments of water affairs, environmental affairs and agriculture, forestry and fisheries. Working for Wetlands champions the protection, rehabilitation and sustainable use of South Africa's wetlands through cooperative governance and partnerships.

Monitoring programmes

River flow is monitored at 1 200 flow-gauging stations and some 260 major reservoirs. The evaporation and rainfall station network has 360 stations.

The oldest flow-gauging station still operating in South Africa is on the Mooi River near Potchefstroom in North West.

There are 21 operational rainfall stations in the mountains of the Western Cape and five in the Mpumalanga escarpment. Observations are relayed through the cellular short-message system. The data is updated daily on the department's website at www.dwa.gov.za.

Water levels are monitored at some 1 000 observation boreholes across South Africa. Particular attention is given to monitoring in dolomitic areas. In addition, a small network of rain gauges monitors rainwater quality.

The importance of qualitative information on South Africa's water resources has led to an increasing drive towards creating a national water-quality monitoring network.

The formal protection, restoration and rehabilitation of wetlands has to be strengthened through improved land-use planning, land and development management policies, as well as operational and regulatory means at national, provincial and local level.

Adopting of ecosystem-based approaches and implementing the open-space planning and management programmes aggressively will add impetus to the protection of these systems and associated services, especially at

National Water Week celebrations coincided with the United Nations (UN) General Assembly declaring 2013 as the UN International Year of Water Cooperation. Water Week is celebrated annually on 22 March internationally.

local government level. It will require integrated approaches and the involvement of multiple sectors, particularly those dealing with human settlements, development and planning.

The DWA is also designing programmes to assess and report on the radiological (radioactivity) and toxicological quality status of the country's water resources.

River Health Programme (RHP)

The *River Health Report* will be used for assessing the pattern of water quality. Generally, water quality is good in the upland regions and deteriorates downstream, particularly in areas affected by mining and urban development. Because of the longitudinal nature of rivers, poor water quality may extend far downstream of the source of pollutants.

The RHP was implemented in all nine regions, comprising 48 projects.

Products of the RHP have attracted wide attention and recognition, and provide strategic water-resource management information and training material for use in schools and universities, as well as in awareness creation.

The implementation of resource-directed measures, such as ecological water requirements/reserve, the classification of water resources and setting resource quality objectives as part of water-use authorisations, also indicated a need for the massification of natural-resource management programmes.

These include Working for Water, Working for Wetlands, Working on Fire, Working for Woodlands and Working for Energy, which are key components of the management of water quantity and quality in South Africa.

The RHP is part of the National Aquatic Ecosystem Health Monitoring Programme initiated in 1994.

Based on the information obtained from the RHP, four compared to the planned two major rivers were rehabilitated namely the:

- Buffalo River in the Eastern Cape
- Luvuvhu River in Limpopo
- Hart River in the Northern Cape
- Berg River in the Western Cape.

Two more rivers, in the Eastern Cape and Limpopo, were identified as flagship projects.

In 2012/13, the department's Adopt-a-River project, which fights the pollution of rivers, led to 24 rivers being cleaned, while creating 985 jobs for women.

National Aquatic Ecosystem Health Monitoring Programme (NAEHMP)

The NAEHMP is responsible for managing aquatic ecosystems. It focuses on the biological

attributes of a river that serve as indicators of its ecological health. The rationale for initiating a biomonitoring programme is that the classic approach of monitoring only physical and chemical water-quality attributes was inadequate for generating information on the overall health of an aquatic ecosystem. Monitoring chemical attributes alone was found to be insufficient to detect, for example, the cumulative effects on aquatic ecosystems of extended exposure to multiple stressors.

Such stressors include habitat alteration, barriers that alter stream flow, water abstraction and alien species being introduced. Aquatic communities (for example, fish, riparian vegetation and aquatic invertebrate fauna), however, are adapted to live within a certain range of environmental conditions.

If healthy and diverse biological communities inhabit it, the watercourse as a whole is considered to be ecologically resilient and healthy. However, from an RHP point of view, a healthy water resource does not guarantee the fitness of that resource for domestic, recreational, industrial and agricultural use.

The NAEHMP's main objectives are to:

- generate a national perspective of the health of aquatic ecosystems in South Africa
- develop the capacity and information base required to enable the department and other role players to report on the status of and trends in the ecological health of South Africa's river systems, in an objective and scientifically sound manner
- generate information products and audit-management strategies that could assist in distinguishing between aquatic ecosystems exposed to sustainable use and those experiencing ecological deterioration.

National Chemical Monitoring Programme

The National Chemical Monitoring Programme assesses and reports on the chemical status of water resources in South Africa. The main water-quality challenges for domestic water users are high levels of dissolved salts and, in some places, high fluoride concentration. The other challenges facing irrigated agriculture are the high sodium-absorption ratio, high electrical conductivity, high pH and high levels of chloride.

Another global challenge affecting South Africa is eutrophication or excessive plant (including algae) growth in dams. This is because of high levels of nutrient input from point sources of pollution and diffuse sources of pollution from catchments. Annual reports indicate that 50% of dams in South Africa are seriously affected

(hypertrophic), while the rest range in quality from good (oligotrophic) to poor (mesotrophic).

Another problem is the sporadic outbreak of cholera and other water-borne diseases, mainly because of poor sanitation and hygiene at household level. The Eastern Cape and KwaZulu-Natal are prone to cholera outbreaks.

National Toxicity Monitoring Programme

The National Toxicity Monitoring Programme reports on the status of dichloro-diphenyl-trichloroethane and other persistent organic pollutants. This information is reported internationally to the Stockholm Convention through the Department of Environmental Affairs.

Education and awareness Youth development and National Water Week

National Water Week is an awareness campaign by the DWA to highlight the value of water, the need for sustainable management of this scarce resource and the role water plays in eradicating poverty and under-development in South Africa.

The campaign seeks to continue building on ongoing awareness creation within the broader South African community.

In 2013, Water Week was observed from 18 to 24 March under the theme *Water is Life – Respect It, Conserve It, Enjoy It*.

National Water Week celebrations coincided with the UN General Assembly declaring 2013 as the UN International Year of Water Cooperation. The objective is to raise awareness of the potential for increased cooperation and the challenges facing water management in view of the increase in demand for water access, allocation and services.

The aim is to highlight water cooperation initiatives, and identify crucial issues concerning water education, water diplomacy, transboundary water management, financing cooperation, national/international legal frameworks, and the linkages with the MDGs.

Regional and international cooperation and initiatives

South Africa has signed cooperative agreements with a number of countries in the southern African region with which it shares water resources, such as:

- Mozambique and Swaziland on the Inkomati and Maputo rivers
- Botswana, Lesotho and Namibia on the establishment of the Orange Senqu River Commission

- Botswana, Zimbabwe and Mozambique on the establishment of the Limpopo Watercourse Commission
- Lesotho on the Lesotho Highlands Water Project
- Swaziland on the Komati River Development Project.

These agreements improve South Africa's bilateral and multilateral relations in the African Union. All the countries involved benefit, while sharing development costs.

South Africa shares four of its major river systems with six immediate neighbouring countries, namely Botswana, Lesotho, Mozambique, Namibia, Swaziland and Zimbabwe.

In the area of shared river basins, South Africa continued participating in joint water commissions to form part of Africa bilaterals with Botswana on Joint Permanent Cooperation and with Mozambique regarding the breach of the Usuthu River, where a feasibility study was completed.

As President of the African Ministers Council on Water (AMCOW), South Africa made significant contributions towards the council's work through its strong leadership in financial and staff regulations. South Africa provided leadership in the preparation of a triennial workplan, which has instilled donor confidence in AMCOW's programmes.

The DWA facilitated a workshop on water between South Africa and Japan, to share and exchange technical information and opportunities.

This has led to the signing of a joint resolution between South Africa and the Japan Ministry of Land, Infrastructure, Transport and Tourism to encourage and strengthen mutual cooperation in water management.

South Africa has entered into a partnership with the World Economic Forum. The Strategic Water Partners Network was established, focusing on the water efficiency supply chain, with a focus on agriculture and water quality.

The Inga Hydro-Electric Project could become the largest hydro-electric project in the world, and is expected to generate a massive 40 000 MW of electricity – more than the current electricity generation in South Africa.

In September 2013, the DWA acquired additional engineers from Cuba to assist in South Africa's water infrastructure.

