

# **FRESHWATER COUNTRY PROFILE**

## **SOUTH AFRICA**

### **Decision-Making**

#### **Programmes and/or Projects**

- A. Integrated Water Resources Development and Management
- B. Water Resources Assessment
- C. Protection of Water Resources
- D. Drinking Water Supply and Sanitation
- E. Water and Sustainable Urban Development
- F. Water for Sustainable Food Production and Rural Development
- G. Impacts of Climate Change on Water Resources

### **Status**

#### **Capacity-Building, Education, Training and Awareness-Raising**

#### **Information**

#### **Research and Technologies**

#### **Financing**

#### **Cooperation**

**Decision-Making:** The First Edition of the National Water Resource Strategy (NWRS - published in Draft for public comment August 2002, scheduled for finalisation in March 2004) sets out government's plans for water resources management at national level. Among many other things the NWRS provides an indicative multi-year programme for implementing the national water policy, and an indicative quantification of government's proposed investments in all aspects of water resources management, including investments in new infrastructure. South Africa's national policy and legislation for water resources are based on an integrated approach to managing quality and quantity of surface water and groundwater, in which the need to protect water resources from unacceptable degradation is balanced with the need to use water for social and economic development. Integrated management of water, land and the environment is addressed through co-operation with other responsible departments in all spheres of government. The availability of and requirements for water were assessed countrywide in 2000, and the assessment will be repeated at five-year intervals. Extensive databases exist of water availability (quantity and quality) and are continually updated and expanded. A number of models exist to facilitate the management of large systems. A model has been developed to investigate the balance between water availability and requirements at national level, and many models are in use for more detailed assessments at catchment level. Environmental impact assessments are obligatory for all water-related developments, in terms of water and environmental legislation. Allocations of water are made after consideration of a number of criteria relating to achieving social equity, environmental sustainability and economic efficiency. Water use is authorised with a range of conditions attached that include the requirement to use water efficiently, and to pay all relevant charges relating to the water use. Failure to comply with conditions attracts sanctions and penalties that could include withdrawal of the authorisation. Decentralisation of responsibility for water resources management is one of the objectives of national legislation. Nineteen catchment management agencies will be established over the next eight to ten years, five or six of them within two years. Transfer of responsibility for operating and maintaining irrigation infrastructure to water user associations are in progress. The national Department of Water Affairs and Forestry's eventual role will be to develop and maintain policy and to regulate the activities of other water management institutions. There are currently no plans for an independent regulator for water resources. Monitoring water resources is a shared responsibility at national and catchment levels.

South Africa's water resources policy and law is based on integrated watershed management. It has as its fundamental objectives the achievement of equity in access to water resources, and their sustainable and efficient use. Specific provisions are made for the protection, use, development, conservation, management and control of water resources, within a framework of integrated management of all aspects of the water system - surface and groundwater quantity and quality - managed in conjunction with the management of land use. Integrated planning on a catchment basis is emphasised, and the responsibility for water resources will be decentralised to catchment based institutions. Charges for water use are intended to recover the costs of management activities and the costs of developing, operating and maintaining infrastructure, but provisions are made for free basic water for all, and assisting previously disadvantaged population groups to gain access to the use of water resources. Specific provisions are made for protecting water resources - rivers and streams, wetlands, estuaries and groundwater - from unacceptable degradation, whilst making water available for social and economic development.

Policies on gender mainstreaming and public participation are in place. There has been a move to arrange most meetings in rural and local areas to accommodate local communities, particularly local women who are not in a position to travel long distances to attend meetings. Separate meetings have also been organised for women in order to encourage them to participate in water resources development issues. Representatives from poor communities are reimbursed for transport costs to travel to a more central place for larger area meetings. The most suitable time for the participation of both women and men is considered. The Department of Water Affairs and Forestry is working with the Gender and Water Alliance to train trainers for gender mainstreaming in the water resources sector in South Africa.

The government of South Africa has an employment equity policy which requires government departments to meet a target of 50% women in management positions. This target has not yet been met in the water sector, but is improving annually.

South Africa has developed a National Water Conservation and Water Demand Management (WC/WDM) strategy which forms part of the National Water Resource Strategy. The WC/WDM strategy promotes the efficient water use to all water use sectors. Although elements of the strategy have already been implemented, a widespread monitored implementation plan is anticipated to take a few more years. South Africa has developed appropriate legislation to ensure priority of water allocation for basic water needs and for environmental water reserve. Projects have been undertaken to determine the basic human and environmental reserve and it is anticipated that within the next five to ten years the reserves will be determined for all catchment areas. Water allocation for other users will not be allowed to impact on the reserves determined.

South Africa's National Water Act has replaced the previous riparian water rights with a system of administrative, limited period and conditional authorisations to use water. This system is applicable to both surface and groundwater. Water use licences are subject to regular review, when conditions may be changed. However, provided the water use continues to be socially equitable, environmentally sustainable and economically efficient licences will usually be extended on review. Under certain circumstances licences may be traded. A licence is specific to a specific property and, when the property is sold, the successor-in-title may continue with the water use under the licence.

The introduction of higher tariffs for water use, based on the actual costs of providing water provide an incentive to improve water use efficiency.

After the WSSD, the Cabinet mandated the national Department of Environmental Affairs and Tourism to coordinate the efforts towards successful implementation of the Johannesburg programme of implementation through the IRPS Cabinet Cluster. A sustainable development task team whose secretariat is resident in the Department of Environmental Affairs and Tourism was established to advise the IRPS Cluster on sustainable development implementation. This team has representation from those departments that are not part of the IRPS cluster. The task team has the responsibility of identifying ways and means of ensuring that South Africa successfully implements the JPOI including the institutional arrangements thereof. Major groups and other stakeholders are currently engaged in their individual formation.

The ideal position that the task team is currently working on is the creation of institutional arrangements that will complement the existing arrangement but with more focus on sustainable development. This includes the following:

- To create a forum for stakeholder interaction and collective planning, both government and major groups
- Create a forum for government sustainable development for all the spheres
- Create a forum that promotes major groups interactions
- Create a Sustainable Development Institute to support policy planning, policy, implementation and monitoring and evaluation
- To create a secretariat that provides support to all the above formations

### **Programs and Projects:**

A. Integrated Water Resources Development and Management: The first draft of the National Water Resources Strategy was published for comment in 2003 and the final Strategy will be published in March 2004. Integrated strategic perspectives, which are integrated water resources management plans and which include water efficiency have been developed for each of the 19 water management areas in the country. A National Water Conservation and Demand Management Strategy has been developed and sector based strategies for water use efficiency will be finalised in early 2004.

B. Water Resources Assessment: Policies and strategies have been prepared to support new water management institutions - catchment management agencies, water user associations and forums - in the establishment processes, through capacitating and empowering them until they are fully functional, and continuously thereafter as required. Guideline policies have been developed to facilitate the establishment of Catchment Management Agencies (CMAs) in South Africa. A protocol for the establishment of CMAs has also been developed. The first proposal has been received for the establishment of the Inkomati CMA. Within the next year the establishment of CMAs in the Mvoti, Crocodile-West and Olifants/Doorn are expected. Within the next five years South Africa should have at least eight CMAs established.

The National Water Act, Act 36 of 1998, (NWA) provides the policy framework for water resources assessment. Chapter 14 of the Act requires the establishment of national monitoring systems and national information systems to address the monitoring, recording, assessing and dissemination of information on water resources. The implementation of these systems is comprehensively addressed in the National Water Resource Strategy. To give effect to the policy, a Water Resources Information Management component has been established in the Department of Water Affairs and Forestry to consolidate the technical and scientific capacity required to collect and manage water resources and other information and provide an integrated information service to national government and a growing number of external stakeholders.

The Hydrological Services of South Africa currently operates a network of 1197 river flow gauging stations and 259 reservoirs (utilised as gauging structures) at 870 different geographical locations. The average network density is just less than one station per 1500 km<sup>2</sup>. This is considered to be inadequate for a water scarce country such as South Africa where one station per 1000 km<sup>2</sup> would be more appropriate. Data are transmitted from 270 of these gauging stations by GSM modems, satellites and a radio network.

A network of 363 evaporation stations is concentrated mainly at major reservoirs. Groundwater levels are recorded continuously at 150 observation wells and at regular intervals at approximately 1000 additional points.

Since most runoff is generated in mountainous catchment areas with high rainfall, a network of 5 precipitation stations had been established on the Eastern Escarpment as a pilot project. The intensity of the rainfall determines the frequency of data logging. Data are transmitted via GSM modem to the office. After successful operation, a network of 20 stations was established in the Western Cape Mountains to aid flood warning and the creation of a database of mountain rainfall for rainfall-runoff modelling.

The Hydrological Services host a Regional Centre for the Southern Africa Development Community Hydrological Cycle Observing System (SADC-HYCOS) as part of the World HYCOS programme of the World Meteorological Organisation. This project currently comprises a network of 44 data collection platforms for rivers in 10 SADC countries. Data are received in near real-time in a regional database and published on the web.

C. Protection of Water Resources, Water Quality and Aquatic Ecosystems: The South African National Water Policy (1996) and National Water Act (NWA) are explicit about the need to protect aquatic ecosystems in order to allow for sustainable achievement of social and economic benefits from these systems. A balance is required between protecting rivers and achieving economic development. The Department of Water Affairs and Forestry formally initiated a River Conservation Project (RCP) in 2002. The purpose of the RCP is to determine a framework for the identification of rivers and to develop a policy that will result in the implementation of a plan for the conservation of rivers. The NWA requires the Minister of Water Affairs and Forestry to develop a national classification system for water resources, a framework within which water resources management can achieve equitable, optimum and sustainable use of the water resources. The RCP, in conjunction with the water resources classification system, will provide a sound basis for the protection of water

resources and for the sustainable utilisation of water resources in South Africa. The NWA also requires that all water use authorisations (licences) can only be issued after consideration has been given to ecological and basic human needs (the Reserve).

The monitoring of water resources is essential in order to enable national government to audit the compliance with the vision and resource objectives set to ensure protection. The requirements for sustainable utilisation of water resources have been extended to the water resource monitoring and assessment functions of national government. The River Health Programme (RHP) is a national monitoring programme that measures the status of rivers in terms of ecological health through bio monitoring, assessment of instream and riverbank conditions, riparian vegetation conditions, etc. The national coverage phase of the RHP was initiated during 2003 and the aim is to complete one implementation and monitoring cycle of all the major river systems in South Africa during the next five years. Specific institutional capacity and implementation challenges will be encountered during the process of developing, refining and implementing the above-mentioned provisions.

**Water pollution prevention and control:** National government is developing a policy for waste discharge charges that will be implemented on a pilot scale in 2004. All license applications for water use, including waste discharge and disposal, require that the social, environmental and economic impacts be considered. Water quality guidelines for various users, including domestic, industry, agriculture, environment and marine environment have been developed. A minimum waste discharge standard is also in place. The precautionary approach with the concomitant waste reduction and minimization strategy forms the corner stone of water quality management within the Department of Water Affairs and Forestry. The principle is captured in the National Framework Policy for Water Quality Management. A Regulation promulgated under the Environment Conservation Act, Act 73 of 1989, published in 1997 identifies a list of activities that may have a substantial detrimental effect on the environment, and compelling the proposed operator/owners of such an activity to conduct an environmental impact assessment. The Water Quality Management Framework Policy promotes a risk assessment methodology. Risk assessment is a pillar of the Remediation Strategy and all standards developed for water quality. National government has as yet not progressed far enough in regulating nitrogenous fertilisers and agrochemicals. The initial phase of a Nutrient Management Policy has been completed. Further phases of this project are being planned. The re-use of treated effluent on a commercial and small scale is being promoted in both agriculture and industrial sectors. Various licences have recently been issued whereby industry or the agricultural sectors benefit from accepting treated sewage water directly for re-use.

**Groundwater protection:** Groundwater protection has been given the appropriate policy framework through the National Water Act, Act 36 of 1998, by moving it from its previous “private water” legal status to that of a “public water resource” which must be managed in an equitable and sustainable way in the interest of all water users. Specific measures to achieve groundwater protection are:

- minimum requirements for solid waste disposal;
- protocol for groundwater protection as part of sanitation implementation;
- development of a water resource remediation policy;
- the licensing of eleven different types of water use that allow for the setting of management conditions and compliance monitoring.

The minimum requirements to manage waste disposal sites are being reviewed to accommodate the latest developments in waste management, e.g.

- Site specific total load
- Buffer zone determination
- Control over buffer zones

A Comprehensive Framework for Integrated Water Resource Management in the Mining sector is being drafted. Special attention will be given to the development of policies and guidelines for the Rehabilitation and Remediation of Abandoned and Marginalized Mines. An important pro-active

measure that is in a feasibility stage, is groundwater source protection zoning. Overall, groundwater protection is not yet keeping pace with the rapid development of groundwater as a strategic resource for community water supply.

**Protection of aquatic ecosystems** National government is involved in various programmes to develop measures to protect the aquatic ecosystems and enable sound environmental decisions. A strategy for resource directed measures (RDM) has been developed for the protection of water resources. The approach includes measures to classify resources, set the Reserve and determine resource quality objectives, the three cornerstones of protecting resources for sustainable development and use. Protocols to determine the ecological and basic human needs Reserve have been developed for South Africa's water resources and these reserves have been determined for a large number of water resources. The protocols for determining the ecological requirements of rivers and estuaries have been updated and are being used for license application requests and planning purposes. The groundwater and wetlands protocols are scheduled to be reviewed and updated in the next year.

The Department of Water Affairs and Forestry in collaboration with other organs of state and interested and affected parties have developed a policy on the delineation of wetlands and riparian zones to create buffer zones in which development will not be allowed.

One of the success stories in wetland rehabilitation is the Seekoeivlei, catchment of the Wilgerriver and a Ramsar site, which has been rehabilitated since 1996. This wetland has a high bio-diversity and is important for water supply to the Vaalriver.

Working for Water is a national program that focuses on creating job opportunities through the eradication of aquatic and terrestrial weeds. A total of 266,147 hectares were cleared in 2002/2003 with 523,613 hectares of follow-up work already done.

**Protection of freshwater living resources:** The National Water Act, 1998 has a strong focus on the protection of aquatic ecosystems. The biota are not seen as water users any more but rather as an integral part of the water resource. Water resources rely on natural hydrological, biological and ecological processes and require at least some degree of maintenance of the natural structure and character of aquatic ecosystems. The Reserve is set to protect basic human needs and the structure and function of ecosystems to ensure ecologically sustainable development and utilization. Classification of the physical and biological status of the resource will also promote the management objectives directed towards sustainability of the aquatic resources to the benefit of future generations. Freshwater living resources are protected through the environmental water requirements (ecological part of the Reserve) by ensuring suitable water quality and quantity; ensuring a suitable level of habitat integrity, and ensuring a suitable level of biotic integrity.

Monitoring and surveillance of water resources and waters receiving wastes: A River Health monitoring programme was initiated in 1996 to measure the health of selected rivers. It is now actively operative in five of the nineteen Water Management Areas. An extensive network of water quality and hydrological monitoring points is in place throughout the country. Authorisations to discharge water containing waste into water resources require monitoring of the discharge by the developer in order to meet standards set in the authorisation. Monitoring of water quality is done by a range of institutions, including national government and water boards.

Development of national and international legal instruments that may be required to protect the quality of water resources: The Incomaputo Accord was signed by South Africa and Mozambique in 2002 covering this aspect. Meetings with the basin countries of the Limpopo and Orange Rivers take place on a regular basis during which monitoring, water quality and pollution incidents and water quantity issues are discussed.

On a national level, directives in terms of the National Environmental Act and the National Water Act may be issued to polluters to rectify and remedy pollution incidents. Should the polluter not remedy

the situation the Department is enabled by legislation to clean up the pollution and recover the costs from the polluter.

In water stressed catchments no further allocations of water are authorised. In order to meet the ecological requirements of water resources and to meet equity needs, in stressed catchments a process of compulsory licencing and reallocation of water is being developed. This will be pilot tested in one catchment over the next three years.

National government is mandated to ensure that water use is sustainable and that the aquatic ecosystems are protected through operationalising the reserve.

A system of water restrictions has been developed in order to cope with drought conditions.

Various projects have been implemented to restore agricultural land, and aquatic ecosystems and their functions, The “Working for Water Programme” has a number of dedicated projects to remove alien invading plants from wetlands, agricultural land and indigenous vegetation. The “Working for Water Programme” is implemented through local communities and thousands of impoverished people are employed through this initiative. A national LandCare programme to restore and protect agricultural land is also in place.

**D. Drinking-Water Supply and Sanitation:** A national programme is in place to deliver appropriate basic sanitation to the 18 million people who do not have access to basic sanitation.

The following policies are being developed for implementation to contribute positively in managing impacts on water quality:

- A Framework Policy for Water Quality Management Policy
- A Water Discharge Charge System, a Source Management Policy
- A Remediation Policy for land based activities which contribute detrimentally to the water environment
- Review of the minimum requirements to manage waste disposal sites are being reviewed to accommodate latest development in waste management e.g. site specific total load, buffer zone determination, and control over buffer zones
- A Comprehensive Framework for Integrated Water Resource Management in the mining sector is drafted. Special attention is given to the development of policies and guidelines for the rehabilitation and remediation of abandoned and marginalized mines.
- A Communication Strategy was developed which encompasses both awareness creation and capacity building of communities and officials alike.

**Environment and Health:** The South African government has put in place a national programme to eradicate the backlog of people without access to basic water or sanitation. Since 1994 a basic water supply has been provided to 9 million people. A protocol for groundwater protection as part of sanitation implementation has been developed. The eradication of the bucket system as a means of sanitation is being driven by the Department of Water Affairs and Forestry with set goals and targets. Local Governments are largely responsible for providing the sewage treatment facilities and drainage systems services and are encouraged to do timeous planning for developments in their areas of jurisdiction through their Water Services Development Plans. The re-use of treated effluent on a commercial and small scale is promoted in both agriculture and industrial sectors. Various licences have been issued whereby industry or the agricultural sectors benefit from accepting treated sewage water directly for re-use.

**Support to local capacity building:** Regulations regarding the levels of operators on Wastewater Treatment Plants and Waste Disposal Sites are being developed. Concomitant to this initiative is the development of Qualifications Criteria for these operators in terms of the National Education Policy, Act 27 of 1996, and South African Qualifications Act, Act 58 of 1995. The Department of Water

Affairs and Forestry has a programme to build the capacity of local government to provide effective water supply and sanitation services.

**Provision of enhanced access to sanitary services:** The Department is driving the programme which implements the strategy to manage water quality effects from urban areas, the Dense Settlement Strategy, which focuses on managing all the waste streams e.g. sewage/sanitation, storm water, solid waste and grey water originating from dense settlement. The root cause of activities, which leads to urban pollution, is identified in terms of the "Dense Settlement Strategy". The solution to the problem is agreed upon between all the involved parties including Local Government and the community. The agreement will also include the financing and payment of services.

**People and Institutions:** The National Water Act requires consultation with stakeholders on most water resources management matters. Institutions created under the National Water Act, such as the Catchment Management Agencies are designed to enable the involvement of stakeholders in water resources management. Guidelines on public participation have been developed in order to guide the involvement of stakeholders in the management of water resources. In the water services delivery programme of national government, project steering committees were established in villages in which water services projects were being implemented. A 30% representation of women was required on these committees. This requirement was later raised to 50%.

**National and community management:** Masibambane is a programme of the water services sector, promoting a sector wide approach in South Africa. This programme contributes to co-operative governance by engaging with other government departments and spheres of government related to water services issues. Masibambane is developing the capacity of stakeholders such as civil society and local government through specific projects to ensure they are able to deliver sustainable services. Appropriate technology is being addressed via a project life cycle approach in recognition that technology decisions are affected by all stages of the process including planning and policy.

#### E. Water and Sustainable Urban Development:

**Protection of water resources from depletion, pollution and degradation:**

The National Water Resources Strategy describes, in broad, the way in which the water resources of the country will be protected. Integrating the management of the resource from a water quantity and quality perspective is key to success in this regard. The restructuring of the Department of Water Affairs and Forestry, amongst other, aims to ensure that such integration happens. Greater detail on strategies to be followed are being captured in (so-called) Internal Strategic Perspectives (ISP's). These ISP's are fore-runners for the catchment management strategies that are to be developed by the future CMA's.

**Promotion of public participation:** Public participation guidelines have been developed. The use of fora, champions programmes to develop and capacitate, and developmental projects have brought success. There is an improved understanding of the increasing role that the public need to play in managing water resources. The regional and local level institutions will ensure that people are involved in decision-making processes to ensure conservation and protection.

**Support to local capacity building:** A National Water Services Information System has been initiated and extended to focus on the provision of information to communities, local government and national stakeholders. Initially its focus was on basic services, but in future it will cover total services. Support and communication tools are also in place to augment the use of this system. Both the Constitution of South Africa and the Water Services Act ensure accessibility to water and devolve accountability to local government. National government is required to provide support to local governments to enable them to achieve their mandate.

**Provision of enhanced access to sanitary services:** Minimum requirements for waste management and general authorisation have been set for smaller special sites in urban areas as per the Environmental Conservation Act of 1989. There has been finalisation of upgrading procedures for all

dump sites. A permitting process is in place and approximately 70% of all known sites have been authorised. Dumpsite training requirements are completed and ready for implementation. Minimum requirements for auditing of disposal facilities has also been finalised and in place for implementation.

**F. Water for Sustainable Food Protection and Rural Development:**

**Water-supply and sanitation for the unserved rural poor:** Policies and legislation have been established to create an enabling environment for the delivery of water supply and sanitation to the rural poor. This is reflected by documents on policies and regulations, such as:

- The National Water Act
- The Water Services Act
- A National Water Resource Strategy
- A Water Services Strategy (approved by Cabinet September 2003)
- Water Service Regulations.

A comprehensive national programme has been in place since 1994 to invest in basic capital infrastructure. The investment by government has exceeded 2 billion ZAR per annum. There has also been support from international and local governments. The programme has been designed to combine service delivery with aspects such as community ownership and asset transfer to local governments. A water services information system is in place to monitor and evaluate the performance of the programme.

**Water-use efficiency:** Efficiency and productivity in agricultural water use has increased over the last few years. This is mainly due to better understanding of the real value of water, as it is evident from the fact that the irrigated areas have increased whilst the demand for irrigation water has remained almost the same. The implementation activities that have resulted in the increased water use efficiency are:

- Better management of water and consultation services by the agriculture sector
- Better irrigation practises and scheduling
- Gradual increase of tariffs using sliding scale principles and the reduction of subsidies on the cost of water
- Introduction of compulsory licensing under special circumstances
- Training of irrigators

The indirect reuse of effluent that returns to rivers particularly for irrigation has been practised for many years in South Africa. This is often blended if the salt content is high. The Department of Water Affairs and Forestry will continue to promote the use of effluent water but the first priority is to promote the efficient use of current water allocated to the irrigation sector. In many instances effluent water is also considered for reuse for the industrial and even domestic water use sector.

**Waterlogging, salinity control and drainage:** In irrigation areas waterlogging is often a problem due to the fact that fertile land becomes unusable and is often covered with saline deposits. To cope with this challenge, proper drainage systems are installed. Larger drainage canals often also have the dual use of conveying storm water away from the cultivated areas.

**Water Quality Management:** Conditions are set for cost-effective water quality monitoring system for agricultural water uses and included all licences. Water Quality Guidelines for the various water use sectors have been developed including agriculture and marine environments. Minimizing soil run-off and sedimentation is not adequately addressed yet in terms of policy. The Guideline for the Disposal and Beneficial Use of Sewage Sludge is now being reviewed. Limited attention has been given to the development of a policy related to the impact on water of agricultural chemicals. A comprehensive strategy to manage impacts on the water environment from the agricultural sector will be developed in two to three years time.

**Water resources development programmes:** A synoptic water resources development programme is provided in the National Water Resources Strategy. This is being amplified in greater detail in studies, usually on a catchment basis (e.g. the Internal Strategic Perspectives), basin studies (e.g. the Joint Incomati Basin Study) or Systems Analyses (where there already exists a system – often complex and cross-catchment - of interlinked bulk water supplies).

G. Impacts of Climate Change on Water Resources: South Africa has undertaken relevant basic research on various hydrological processes that also allow for first estimates of the potential impact of climate change on water resources. This has been incorporated into various scenario modelling studies, combining global climate change and hydrological models. There is, however, still a lack of long-term, systematic monitoring at undisturbed reference sites specifically focused on climate change.

**Status:** Access to sufficient water is recognised as a basic human right in the Constitution of South Africa, as is the right to an environment not harmful to health or wellbeing. 76% of municipalities have implemented the free basic water policy and supply 0-6 kl of water per household free of charge to cater for poor households. The quantity and quality of water required for the protection of aquatic ecosystems is recognised under the National Water Act as a priority and along with the water required for basic human needs is determined as the Reserve, prior to any water being allocated for economic purposes. A basic water supply is provided free of charge, and water for resource poor farmers is subsidised for a period of 5 years. Apart from this, water users must pay for the cost of the water provided to them.

The Department of Water Affairs and Forestry already operates a number of the monitoring systems required in terms of the National Water Act, 1998. Water quality information monitoring programmes are being expanded from basic inorganic water quality monitoring to the inclusion of eutrophication, toxicant and radioactivity data and information. However spatial coverage is incomplete, so that little or no information is collected in some areas, and problems are experienced with the quality and reliability of information. Monitoring and information system strategies are developed to work towards coherent and structured systems, each comprising the three main functional components, namely data acquisition, data storage, maintenance and dissemination, and data analysis, information generation and reporting.

It is expected that the establishment of nineteen Catchment Management Agencies in the next 5 to 10 years will also give a major boost to water resources monitoring in South Africa.

National, provincial and local disaster management plans are in preparation in terms of recently enacted legislation. The approach is proactive, and involves assessments of hazard, vulnerability and risk, especially for poor communities. Disaster management centres in all spheres of government are being established to, among other things, co-ordinate the availability of appropriate information.

### **Progress with Type II Partnerships related to Water and Sanitation**

#### **EU Water Initiative: Water for Life**

Leading partner: European Commission, EU Member States and others

This partnership has been extensively discussed with the relevant role-players, including the African Water Ministers. A joint declaration has been prepared and agreed to by the EU Ministers and has been presented to AMCOW (African Ministers Council on Water) on 3 September 2003. The process that has been used to develop these initiatives has been inclusive and consultative and South Africa is participating in this initiative through AMCOW.

#### **Partners for Water and Sanitation**

Leading partner: Secretariat, Partners for Water and Sanitation, London

The Government of South Africa and the United Kingdom Partners for Water and Sanitation have jointly decided to work together in partnership with a common goal of improving access to safe water

and sanitation for communities in South Africa. This arrangement aims to make a tangible contribution to address the Millennium Development Goals for water and sanitation. It also aims to contribute to the South African goals of eradicating backlogs for the provision of water and sanitation by 2008 and 2101 respectively. Partners for Water and Sanitation is a United Kingdom tri-sectoral initiatives involving representatives from government, civil society and private sector. The emphasis of partner involvement will be on capacity building to ensure sustainability of projects.

#### **Health and sustainable development**

A protocol for managing water borne diseases has been developed with the associated training and awareness materials to empower communities and local government. Major awareness campaigns were undertaken with communities around the prevention and treatment of Cholera in rural areas.

WASH has contributed to primary health care via hygiene education, focussing on hand washing and measures to prevent the spread of cholera via an extensive national communications campaign on community radio, posters and pamphlets, bus and taxi interiors and exteriors and roadshows.

#### **Gender Equity**

A comprehensive guide to public participation has been prepared and is followed in all participatory and consultative processes. The guide addresses issues of representivity and gender. Women play a key role in identifying problems, which lead to pollution of the water resource and contribute positively to finding the appropriate solution. A gender policy for the Department of Water Affairs and Forestry has been developed. The National Water Act and the Strategic Framework for Water Services are explicit on the need to address gender issues in water management and water services.

#### **Institutional Framework for Sustainable Development**

Co-operative mechanisms with water users are developed and strengthened through consultative and participatory processes. Various mechanisms exist to foster co-operation with other departments in all spheres of government in accordance with the constitutional mandate.

#### **Poverty Eradication**

Tariffs are aimed at recovering the full costs of managing water resources, and operating and maintaining infrastructure, but provisions are made for free basic water supplies, and there are a range of subsidies for members of previously disadvantaged population groups. A policy is in place to provide 6kl water free to all households. 76% of municipalities have put in place systems to provide free basic water.

The Department of Water Affairs and Forestry has through the Working for Water Programme entered into a partnership in 2000 with the Department of Environment Affairs and Tourism, and the Department of Agriculture. Using the control of alien invasive vegetation as the vehicle, the programme is designed to address poverty relief, job creation, black economic empowerment, skills transfer and education. The programme offers temporary employment to around 20 000 unemployed people per annum.

South Africa has set the target of ensuring access by everybody to water services by 2008, and sanitation services by 2010. Basic water services are defined as 25 litres potable water within 200m on a sustainable basis. Sanitation services are defined as being safe and hygienic. The ongoing programme has completely changed the water supply and sanitation profile of the South African population, namely in 1994 access to basic water supply was 59% and in 2003 it is now 76%. By contrast sanitation was 47% in 1994 and in 2003 it is 61%.

<b>Programmes / Activities</b>	<b>Performance 2003</b>	<b>Plans 2004</b>	<b>Priorities 2005 – 2008</b>
a) <b>Basic water supply:</b> Based on Census 2001:	-DWAF target to serve 0,60 million	-DWAF Target 0,60 million	-Eradicate backlog of <b>9.00</b> million people without

-5.0 million people without access to formal infrastructure -11.20 million people without acceptable RDP levels of service -Target is to eradicate backlog by 2008	people -SECTOR target to serve 1,25 million people -People served to basic levels of service.	people/annum -SECTOR Target 1,25 million people/annum. -People served to basic levels of service.	access to RDP levels of service of which 2,5 million people have no access to formal infrastructure – through the MIG program.
<b>b) Basic sanitation:</b> Based on Census 2001: -4.4 million households without basic levels of service (18.1 million people without acceptable sanitation services - VIP) -Target is to eradicate the backlog by 2010	-DWAF Target 85000 toilets/annum -SECTOR Target 300000 toilets/annum	-DWAF Target 150000 toilets/annum -SECTOR Target 300000 toilets/annum	-Achievement of target requires the provisioning of at least 700000 toilets per annum -Present funding availability limits annual achievement to the order of 300000 toilets/annum
<b>c) Free basic water</b>	Free Basic Water accessible to 70% of people served.	Free Basic Water accessible to 75% of people served.	Free Basic Water implemented and serving 85% of people.
<b>d) Free basic sanitation</b>	Free Basic Sanitation policy in the process of being implemented.	Free Basic Sanitation accessible to 20% of people.	Free Basic Sanitation accessible to 40% of people.

A policy on basic household sanitation was developed and adopted by Cabinet in 2001. Following up on this a comprehensive strategy is being developed which will be completed by March 2004 and include aspects such as basic and higher levels sanitation in informal settlements, urban and rural areas, as well as an implementation plan and financial models for sustainability. A target objective has been agreed on by the South African Government, notably “that all schools have an adequate and safe water supply and sanitation by 2005”. It is estimated that approximately 2000 schools will require attention in a national programme. In the meantime there is interdepartmental collaboration between departments on water, health and housing on a multifaceted programme for sanitation and education for schools. This includes aspects such as:

- Health and hygiene programme
- Clinic sanitation
- A Cholera programme
- Toilet structure
- Job creation
- Training skills for builders
- Community involvement

The priority importance of this is reflected by the budget for 2003/2004 where R321 million has been allocated. The progress to date includes: 1.26 million people have received training since 1998, 17 947 jobs have been created; 7 439 builders have been trained.

### **Sustainable Development for Africa**

The capacity of national hydrological services in the region, including South Africa, is still a concern. The most significant general conclusion with regard to South Africa of the 1996 World Bank assessment of hydrological services in Sub-Saharan Africa still stands today: “The commendable status of hydrological services in South Africa is in an extremely fragile and vulnerable state because of the loss of highly trained personnel during the last few years. These losses are particularly acute in the early and mid-career positions in science, engineering and information technology, which not only bodes poorly for information production in the near term, but also will create increasing problems in the future as institutional memory is lost”.

South Africa has championed the need for further construction of dams in Africa to ensure water security in Africa, particularly in areas that are prone to significant fluctuations in rainfall. A reliable supply of water is crucial to be able to achieve sustainable development in Africa.

### **Challenges and Constraints in implementation**

South Africa's water policy and law have introduced fundamental changes to the ways in which water resources are managed. The changes are necessary to achieve equity, sustainability and efficiency in the allocation and use of water resources, but they are also ambitious, and it is acknowledged that available human and financial resources are insufficient to effect all the changes, all at once, everywhere in the country. Implementation will therefore take place progressively over time in accordance with a multi-year programme in which geographical areas are prioritised for attention according to, among other considerations, the prevailing or potential level of water stress.

#### **Financial Resources**

Implementation of the water policy will require extensive financial resources, particularly during the transition period until all necessary water management institutions are being established, capacitated and empowered.

The ultimate intention is for catchment management agencies to be financially self-sufficient from water use charges, but affordability requires that these charges be increased only relatively gradually until this aim is achieved. The cost of establishing the agencies, and the costs of supporting their activities until water use charges are sufficient, will have to be borne from the national fiscus. This situation is likely to prevail for some time.

In terms of national policy the majority of infrastructure development should be funded off-budget on a project basis through payments by users, and measures are being put in place for a coherent approach to funding capital investments. It is however likely that government funding will continue to be required for investments where long pay-back periods or financially weak consumers do not allow a project finance approach to be adopted.

South Africa is allocating most of the available financial resources to the development of basic infrastructure and the upliftment of the poor. Considering the large social needs it would be difficult to justify any allocations of funds that will result in the apparent benefit of a private enterprise.

The cost margins of a number of water users particularly irrigators, is marginal and they cannot afford the introduction of new equipment and technologies that will result in the more efficient utilisation of water. Some irrigators have no incentive to become more efficient because they are currently paying for the full quota of water allocated and not for the amount of water they actually use.

#### **Human Resources**

Until relatively recently a significant proportion of the population were actively excluded from entering technical areas of endeavour. There are as a result too few qualified and experienced people working in water resources management. Successful implementation of water policy and law will require steps to be taken to build sufficient capacity in the water sector to implement, and sustain the implementation of water policy and legislation. Water resources management is a multi-faceted and relatively specialised activity that, as a result of the changes introduced by the National Water Act in 1998 now requires competencies in a wider range of disciplines than was previously the case. The training, re-training, and development of the potential of people who currently work, or who will work in the future, at all levels of all organisations and agencies in the water sector is recognised in the National Water Policy as being a critical determinant for the achievement of wise and efficient water resources management in South Africa. A Water Sector Capacity Building Strategy Task Team has been established to ensure that, within a reasonable and achievable time the necessary capacity exists in all relevant institutions to fully implement water policy and law.

#### **National Sustainable Development Priorities**

Water policy and law is supported by national environmental legislation in seeking to balance the need to use natural resources for social and economic development with the need to ensure that natural resources are not unacceptably degraded and rendered of diminished value and utility for future generations. In many parts of South Africa water has been over-utilised, and the quality of many resources has deteriorated to the extent that their capacity to support human use is reduced. One of the most significant challenges facing water resources managers will be to adjust prevailing levels of water use to ensure that the quality and quantity of water remaining in the resource is sufficient to ensure its long-term health and, consequently, utility for human use.

#### National Coordination Systems

Co-operation with other departments is done through the Committee for Environmental Co-ordination and the Cabinet clusters.

### **Capacity-Building, Education, Training and Awareness-Raising**

- A national schools education programme on water has been running for some years, and water-related topics are being progressively introduced into schools curricula. Water management and water services institutions are encouraged and supported to mount water demand management education and awareness creation programmes among their consumers and customers.
- Public consultation programmes on all aspects of policy implementation are used as vehicles for disseminating information, raising awareness and educating stakeholders.
- National government is in the process of developing training manuals for governing board members of water management institutions and for champions of IWRM. Capacity building workshops for previously disadvantaged individuals have been initiated to bring stakeholders at grass-root level in line with current debates on IWRM.
- In order to address the establishment and strengthening of technical and institutional capacities for the implementation of the protection provisions, the DWAF in partnership with UNESCO and the Flemish Government initiated a Framework programme for Education and Training in Water (FET -Water). FET -Water is a capacity building and training programme in the water sector that provides in the training and capacity needs by using networks. Two networks with the specific aim to identify capacity requirements, implementation of training programmes have been created to address the need for more and adequately trained technical and institutional staff members to ensure successful implementation of the protection components of the NWA.
- A framework for a Capacity Building Strategy for the South African Water Sector has been developed. Various training and capacity building initiatives will form part of the implementation of this strategy, including the Framework programme for Education and Training in Water.
- Through WASH, a public -private partnership has been formed with Unilever South Africa to promote hand washing through a media campaign, materials and roadshows at 10 000 schools. WASH has supported best practice promotion, research into marketing hygiene education messages and the promotion of hand washing devices.

**Information :** South Africa has an Access to Information Act which protects the right of members of the public to have access to government information which affects them. Wide spread consultation is held on key issues pertaining to the management of water resources, such as the National Water Resources Strategy.

The key instrument to give effect to the constitutional right of access to information is the Promotion of Access to Information Act of 2000. To assist stakeholders in the water sector in this regard, the Department of Water Affairs and Forestry has published a guide to assist the public to get access to information.

**Data systems:** National hydrological networks and the complimentary information systems covering surface water, groundwater and water quality are well established within national government. The Department of Water Affairs and Forestry is presently addressing strategies to move towards integrated monitoring and information systems which will also be supporting the emerging water management institutions at basin and local level. A major initiative is the development of geodatabases which will allow the enterprise level GIS, with its increasing amount of spatial data required for Integrated Water Resource Management, to interface to other water resource information systems.

**Data dissemination:** Within the framework of the World Water Assessment Programme, South Africa will finalize one of the first four national assessment reports for the African continent by 2004. This will form the basis of a national reporting system to address the rapidly increasing national and international reporting needs. Interim strategic plans are developed for each of the nineteen Water Management Areas, with special attention to the information needs in each area. Flood forecasting systems are in place and link well to existing disaster management structures and to sister organizations in other basin states. Drought monitoring has not yet been addressed in the same way.

A consolidation of information services in the Department of Water Affairs and Forestry has already taken place during the 2003 organizational restructuring, but is still far from the ideal of a formal hydrological service. The issue will definitely remain on the ongoing restructuring agenda that must accompany the devolution of water resources management services in South Africa from national to catchment and local levels.

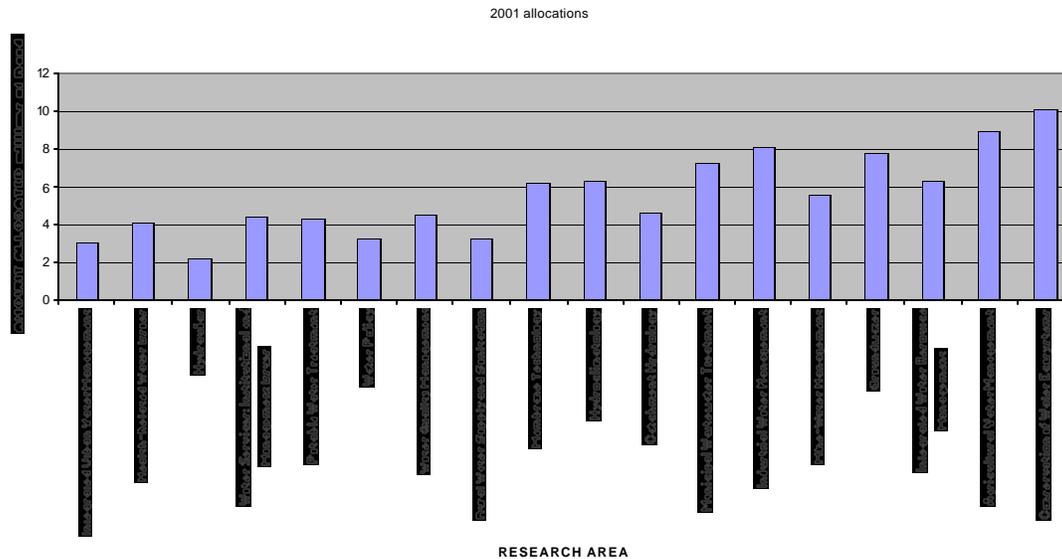
**Research and Technologies:** The hygroscopic cloud seeding technique for rainfall augmentation was developed in South Africa. The methodology has been successfully tested in randomised experiments in South Africa and Mexico, and proved in a semi-operational environment in South Africa. Hygroscopic seeding has recently been employed in the United Arab Emirates.

The Water Research Commission, Agricultural Research Council and various universities, have various research projects focusing on the improvement of water and soil management. Research is also carried out by the Council for Scientific and Industrial Research (CSIR) on a contract basis and by a number of universities. Funds for research on water and soil management have stabilised over the last few years. The Water Research Commission is funded through a levy on water use.

Monitoring and assessment is strongly supported by research programmes and projects financed and coordinated by the Water Research Commission (WRC).

The highly acclaimed report series “Water Resources of South Africa” will be completely updated for the 4th time since 1969, under the auspices of the WRC, and will also, for the first time be extended to include the whole southern Africa (SADC) region. The outcomes of the project are essentials for water resource management and planning in South Africa.

There are a number of research areas where improvements in the understanding of catchment hydrology have occurred over the years, such as groundwater – surface water linkages, hydrological impacts of land-use change, evaporation and evapotranspiration processes, flow generating mechanisms, vadose zone processes, water quality and stream flow reduction activities. At present the value of these improvement in knowledge is constrained by the limited integration of these developments. A study will develop a Decision Support System that will be useful for the operation and planning at Water Management Area level.



**Development of clean technology:** Guidelines for the implementation of Clean Technologies have been developed for the textile, metal finishing, food and fishing industry. All licence applications for discharge of waste or water containing waste are evaluated against the framework of waste minimisation and re-use. Small scale implementation of the re-use of municipal wastewater for agricultural purposes has been implemented involving communities. Academic and research institutions such as the Water Research Commission are supported in the development of appropriate technologies in terms of wastewater and others. The beneficial re-use and bioconversion of sewage treatment sludges has received particular attention over the past five years. Research on the Municipal Wastewater Treatment discipline has led to the development of the PETRO process, which is very efficient in treating sewage wastewater, and is technologically not advanced.

The application of appropriate technology for a given environment is being promoted with the beneficial use of sewage sludge, receiving focussed attention over the past five years.

**Financing:** The African Ministerial Council on Water (AMCOW) and the African Development Bank is developing a proposal for an African Water Facility, controlled by AMCOW, to unlock further financial resources for water in Africa. This concept is supported.

**Cooperation :**

**Africa**

South Africa has been active in the African Ministerial Council on Water (AMCOW) since its inception in Abuja in 2002. AMCOW has been very successful in driving the African water agenda.

**SADC**

Regional coordination of water resource assessment has been promoted by the SADC Water Division, supported by various international initiatives. The first region-wide analysis of river flow data took place under the Southern Africa FRIEND (Flow Regimes From International Experimental and Network Data) programme, launched in 1994 as a contribution to the International Hydrological Programme of UNESCO. An important, now already in its second phase, initiative is the SADC-HYCOS (Hydrological Cycle Observing System) project. The project, established in 1997 under the umbrella of the WMO, is helping to build up a network of benchmark hydrological stations in member states which ensure data continuity by means of real-time electronic data logging,

transmission, capture and dissemination. In the first phase, some 50 data collection platforms have been established, linking to a Regional Centre in South Africa from which dissemination takes place.

The SADC Regional Strategic Action Plan (RSAP) for Integrated Water Resource Management and Development is well advanced with most of the 31 projects in the implementation phase. The RSAP however focused on the softer issues of IWRM and did not really address development to date.

The RSAP has become part of the Regional Indicative Strategic Development Programme (RISDP) with a focus on integration of the different sectors and also on sustainable development. The water targets in the RISDP are:

- 2004: Long term regional water policy and strategy developed and approved
- 2005: Increased awareness, broad participation and gender mainstreamed in water resources development
- 2005: Centres of excellence for water research and technology development are identified
- 2006: Water sector policies and legislation harmonised
- 2006: Establish and strengthen at least eight River Basin Organisations
- 2007: Water data banks and planning networks are established and fully operational
- 2008: Training and institutional capacity strengthening programmes developed and implemented
- 2015: Halve the proportion of people without access to safe drinking water and sanitation services
- 2015: Develop water resources infrastructure needed to double land under irrigation

The two targets for 2015 have been added to the SADC water sector agenda as part of the recent restructuring of SADC and the adoption of a cluster approach instead of a sectoral approach. The water agenda is now part of the SADC agenda for infrastructure and services with an emphasis on sustainability. The new emphasis on sustainable infrastructure development in SADC is a step forward, significant financial resources will be needed, and should contribute directly to poverty reduction and economic development of the region.

A significant achievement of the SADC water sector since 1992 is the adoption of the Protocol on Shared Watercourses, now replaced by the Revised Protocol. The Revised Protocol provides the framework for co-operation, integrated water resource management and development of the internationally shared watercourses of SADC. It also provides for the idea of shared watercourse institutions, but provides little guidance on this very popular concept. The concept of shared watercourse commissions has been accepted by most SADC countries as well as the donor community as the appropriate way forward and significant financial resources can be unlocked by such institutions. The challenge is to develop efficient and appropriate models and model agreements, which can unlock financial resources, improve IWRM without creating unnecessary bureaucracies.

Significant progress has been made since 1994 between South Africa and its neighbouring states in co-operation in transboundary water resources in the following areas:

- Completion of the first phase of the Lesotho Highlands Water Project, a major inter basin water transfer project from Lesotho to South Africa bringing long term and sustainable benefits to both countries. General infrastructure development in Lesotho, sustained by a continuous income stream generated by the water transfer, ensures that the people of Lesotho, including the local communities directly affected by the project, benefits in a sustainable way, in line with the principals of Agenda 21.
- Completion of the first phase of the Komati River Development Project, a joint irrigation development project between Swaziland and South Africa. The mitigation of social and environmental impact due to the construction of Maguga Dam in

Swaziland was done in line with international best practice for large dams. The first annual survey report on socio-economic, land use and health monitoring for Maguga Dam resettlement projects indicates that the two countries have been successful to ensure that the affected people benefits from the project.

- Significant progress has been made in the assessment of the water resources of the Incomati River Basin as well as the impacts on the environment by South Africa, Mozambique and Swaziland. This progress resulted in the conclusion of an interim water sharing agreement between the three countries opening the door for water resource development, especially in Swaziland and Mozambique. It was difficult to ensure that the downstream country, Mozambique gets an equitable share of the water of the Incomati due to extensive water use in South Africa and Swaziland. It has been further aggravated by the current drought. This imbalance is high on the agenda of all three countries and is being addressed by a joint task team of the three countries.
- In the Orange-Senqu River, a Shared Watercourse Commission has been established by South Africa, Lesotho, Botswana and Namibia. Joint water resource assessment studies for the basin has been initiated, a first step towards further sustainable development and integrated water resource management of the basin.
- In the Limpopo River Basin, progress has been made by Botswana, South Africa, Zimbabwe and Mozambique towards the establishment of a Shared Watercourse Commission for the sustainable development and integrated water resource management of the basin.
- In the Maputo River Basin, South Africa, Swaziland and Mozambique has started with a basin study. Further development of this basin is possible and will be decided upon in partnership with the other two countries.

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