



## Chapter 24

# Water Affairs and Forestry

South Africa is a water-stressed country where water planners and managers are faced with increasingly complex issues.

The country is largely semi-arid and prone to erratic, unpredictable extremes in the form of droughts and floods. Water is most abundant in the geographically small escarpment areas, which run in a narrow strip from the north-east of the country down the eastern and southern seaboard, remote from the major demand centres in the hinterland. Many large storage dams have been constructed to regulate the natural variable flow of rivers and to facilitate water transfers between catchments.

Rivers are the main source of water in South Africa. Country-wide, the average annual rainfall is less than 500 mm, compared with a world average of about 860 mm. On average, only some 9% of rainfall reaches the rivers. Sixty-five percent of the country receives less than 500 mm, which is generally accepted as the minimum required for successful dry-land farming. Twenty-one percent of the country, mainly in the arid west, receives less than 200 mm a year.

The Orange River Basin is the largest river basin in South Africa with a total catchment area of 1 million km<sup>2</sup>, almost 600 000 km<sup>2</sup> of which is inside South Africa, the remainder being in Lesotho, Botswana and Namibia.

Every year, South African rivers receive 50 billion m<sup>3</sup> of water with a further 6 billion m<sup>3</sup> available from underground aquifers. This translates into 1 400 kilolitres per person per annum. Of this 56 billion m<sup>3</sup>, 21 billion is utilised. Of this volume, 52% is used for agriculture and irrigation, 8% for forestry, 11% for industry, 10% for domestic use, with 19% allocated to ensure sustainable environment.

Apart from erratic rainfall and the low ratio of run-off, which affects the reliability and variability of river flow, the average annual potential evaporation is higher than the rainfall in all but a few isolated areas where rainfall exceeds 1 400 mm per year. Only about 32 000 million kilolitres of the annual run-off can be economically exploited using current methods. Usable run-off is further reduced by land uses such as commercial afforestation and sugar cane, and by high evaporative losses from the numerous storage dams throughout the country.

Farm dams, of which there are a large number, can seriously reduce the flow of rivers and streams during the dry season and

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◀ On 1 July 2001, South Africa reached a historical milestone with more than 50% of the South African population receiving 6 000 free litres of basic water per month. The programme will be implemented by smaller and lesser resourced municipalities over a period of two years.

also delay the run-off water at the onset of the rainy periods.

Furthermore, rainfall, and to a greater extent run-off, is poorly distributed in relation to the areas of greatest economic activity. Accordingly, water is transported over great distances from areas of relative abundance to areas of increasing demand. For instance, water supplies in the populous and economically important industrial hub in Gauteng are supplemented by transfers from the better-watered east.

The aim of the Department of Water Affairs and Forestry is to ensure the availability and supply of water on a national level and to promote forestry development.

Major dams of South Africa		
	Full Supply Capacity (10 <sup>6</sup> m <sup>3</sup> )	River
Gariep	5 340	Orange
Vanderkloof	3 171	Orange
Sterkfontein	2 616	Nuwejaarspruit
Vaal	2 603	Vaal
Pongolapoort	2 445	Phongolo
Katse	1 518	Malibamatso
Bloemhof	1 240	Vaal
Theewaterskloof	480	Sonderend
Heyshope	451	Assegaai
Woodstock	380	Tugela
Loskop	361	Olifants
Grootdraai	354	Vaal
Kalkfontein	318	Riet
Goedertrouw	304	Mhlatuze
Albert Falls	288	Mgeni
Brandvlei	284	Brandvlei
Spioenkop	277	Tugela
Umtata	253	Mtata
Driekoppies	250	Lomati
Inanda	241	Mgeni
Hartbeespoort	212	Crocodile
Erfenis	207	Groot Vet
Rhenosterkop	204	Elands
Molatedi	200	Groot Marico
Ntshingwayo	198	Ngagane
Zaaihoek	192	Slang
Midmar	175	Mgeni

Source: Department of Water Affairs and Forestry

The past few years have seen a number of achievements in the management of water resources in South Africa, and the implementation of the internationally-acclaimed National Water Act, 1998 (Act 36 of 1998). Key achievements include:

- development, with stakeholders, of water conservation and demand-management strategies for the industrial, agricultural and domestic sectors.
- a drive to register all significant users of raw water for the proper management of scarce water resources and for the implementation of the national pricing strategy as promulgated in 1999.
- the introduction of the new licensing system, under the National Water Act, 1998, for abstraction and effluent discharge.
- the initiation of a project to develop a pricing strategy for waste discharges.
- the completion of a strategic environmental assessment for water use for the Mhlatuze catchment, as a pilot in the development of a strategic environmental assessment.
- the development of policy and guidelines for the establishment of catchment-management agencies, and the initiation of consultative processes for the establishment of such agencies in a range of water-management areas.
- the creation of work opportunities for 20 000 people under the poverty-relief programme of the Working for Water Programme.
- the further development of progressive approaches to the control of alien invasive species.
- the establishment of an interdepartmental coordinating committee focusing on the provision of general and financial support to small-scale and emerging farmers.

### Water for all

According to the Constitution of South Africa, 1996 (Act 108 of 1996), it is every person's right to have access to clean water. Since 1994, approximately 6,5 million people



have been provided with basic water supply, at an average per capita cost of R607. Construction has been completed on 323 water supply projects, creating 73 000 temporary jobs, and 42 water schemes have been transferred.

In the area of sanitation, 178 000 people benefited from the Health and Hygiene Education and Awareness Creation phase of 182 projects. Only 13 projects have been completed in the second phase (infrastructure provision), providing a total of 17 991 toilets since 1997.

The outbreak of cholera has underlined the need for rapid delivery of basic sanitation services. A new strategy has been developed that will integrate the above phases.

In September 2000, it was announced that poor families would be provided with 6 000 free litres of water per month. Following the instruction to assist local governments to implement a free basic water programme, several actions were undertaken, including:

- establishing a task team to manage the process
- producing training and information documents and holding workshops
- creating a user-friendly interactive financial model for local government
- creating a website dealing with free basic water.

On 1 July 2001, South Africa reached a historical milestone with more than 50% of the South African population receiving free basic water.

#### Information

In November 2000, the Minister of Water Affairs and Forestry, Mr Ronnie Kasrils, signed an agreement on regional co-operation in the use of water from the Orange River. The establishment of the Orange-Senqu River Commission took place in Windhoek, Namibia, and was attended by representatives from South Africa, Lesotho, Botswana and Namibia. The Commission will study the future uses of a shared river system called a 'river basin institution'. Botswana, Lesotho, Namibia and South Africa share the Orange River, the largest watercourse system south of the Zambezi. The main tributaries to the system are the Molopo in Botswana, the Malibatso in Lesotho, the Fish in Namibia and the Vaal in South Africa. The Commission will develop a comprehensive perspective of the Orange Basin and determine the requirements for flow monitoring and flood management.

A survey done by the Department of Water Affairs and Forestry showed that 51% of all South Africans – or 23 million people – lived in areas where municipalities had committed themselves to supplying a basic amount of water free of charge every month.

### Implementing Sustainable Water Services Institutions Programme (ISWIP)

The ISWIP is a selection of pilot projects to investigate various institutional arrangements for the provision of water services, specifically for the rural areas. Projects are under way in KwaZulu-Natal, Eastern Cape, Northern Province and Mpumalanga. Valuable lessons from these are being used as input for designing the institutional development parts of the Masibambane Programme.

Late in November 2000, the European Union (EU) committed about 75 million Euros (R500 million) for water and sanitation projects in three provinces in South Africa. Close to 2,4 million people from the Northern Province, the Eastern Cape and KwaZulu-Natal stood to benefit. The donation would be added to government funds and bring the amount allocated for supplying water and sanitation over the next three years to R2,2 billion. The project, dubbed *Masibambane* (a Zulu word meaning let us work together) was expected to start on 1 April 2001. The contribution was for infrastructural and policy development as well as institutional support to various levels of government. The first phase was valued at around R301 million, and the remainder would be subject to a positive review of the first phase. A sanitation strategy has been developed to fast-track sustainable sanitation services delivery in the country based on a study carried out in these three provinces.

### Community Water Supply and Sanitation (CWSS) Programme

The Department of Water Affairs and Forestry's CWSS Programme was initiated in 1994 to achieve the constitutional objective of ensuring that all South Africans have access to sufficient water and a healthy living

environment, with the focus on rural areas. One aim of the CWSS Programme is to capacitate local government and promote the sustainability of water-services projects. During 1999/00, R75 billion was spent on sanitation. New projects are identified at local level and prioritised by the provincial planning fora, in which provincial and local governments are active participants. Close co-ordination is promoted with the Municipal Infrastructure Programme, which has focused principally on providing for new developments in urban areas. The Department of Water Affairs and Forestry provides ongoing technical support for the assessment of project viability.

Where capacity exists, the operation of existing water-supply schemes at local level – particularly in the Northern Province and Mpumalanga – will be handed over to local governments or water boards. Programmes are under way to ensure effective operation of existing schemes and to promote regional water supply. Structures to steer and facilitate the transfer of water-services works have been set up. These structures will take over the responsibility for the transfer of assets from the Department. These structures are the:

- Interdepartmental Transfer Committee
- National Transfer Steering Committee
- National Transfer Task Team.

Part of this process is an initiative to review and reposition the functions of water boards with the South African Local Government Association, the Department of Provincial and Local Government and the South African Association of Water Boards. As required by the Water Services Act, 1997, the Department has commenced a process to monitor the viability of existing boards. In line with the Government's policy of co-operative gov-

ernance, the Department is developing a framework for water services capacity-building and training in the local government sector, which will form part of the Department of Provincial and Local Government's Local Government Transformation Programme.

The Minister of Water Affairs and Forestry has initiated a sanitation project in Nkownkwa in the Northern Province; a water-supply project in Matsulu, Mpumalanga; the Ingwavuma community water-supply project in KwaZulu-Natal; the Rustfontein water works supplying ThabaNchu and Botshabelo; and the Baviaanspoort waste water works serving Mamelodi, Gauteng.

In January 2001, in response to the cholera epidemic in KwaZulu-Natal, the Minister announced that a minimum of R15 million would be made available from the national reprioritisation of funds to the former Ugu Regional Council to be spent in 2000/01.

These funds would provide 65 000 people with sanitation and 30 000 people with water in five communities. Additional funds will be allocated on the basis of progress. The Ugu initiative will also serve as an important kick-start for acceleration of the rural sanitation programme in the province.

In addition to the R15 million, the Department re-allocated a further R20 million to the Uthungulu region and other affected areas for the provision of sanitation and water before the end of the 2000/01 financial year.

A further R100 million will be made available over the next three years for the delivery of water and sanitation services in cholera-affected areas in KwaZulu-Natal.

With the help of a R320-million EU grant, the total allocation over the next three years for the provision of water and sanitation to KwaZulu-Natal will be R670 million. This represents a 50% annual increase on the current expenditure.

**Information**

In November 2000, the Minister of Water Affairs and Forestry, Mr Ronnie Kasrils, signed a partnership agreement with Roundabout Outdoor and the United States' Kaiser Family Foundation for the installation of 100 merry-go-rounds, which use the energy of children at play to pump water to rural communities.

**Water policy**

South Africa is developing a multidisciplinary approach to managing the country's scarce water resources, based not only on technical



considerations, but also on economic, social, political and environmental considerations. This new approach to integrated water-resources management will be enshrined in a National Water Resources Strategy.

### **Sanitation Policy Review Programme**

The Department of Water Affairs and Forestry is leading a process of reviewing the Draft National Sanitation Policy with a view to submitting it to Cabinet as an updated White Paper. It is taking this process forward in partnership with the other members of the National Sanitation Task Team which includes the departments of Health, Education, Provincial and Local Government, Environmental Affairs and Tourism, and Housing as well as the Mvula Trust and the Development Bank of Southern Africa.

The Review was deemed necessary to consider the lessons learnt, other related policy and legislative developments, and sanitation experiences over the past five years. The cholera epidemic has also compelled stakeholders in the sanitation sector to reconsider implementation strategies.

### **Water Services Act, 1997**

The Water Services Act, 1997 (Act 108 of 1997), aims, among other things, to

- ensure and define the rights of access to basic water supply and basic sanitation services
- set out the rights and duties of consumers and those who are responsible for providing services
- allow the Minister of Water Affairs and Forestry to set national standards (including norms and standards for tariffs) to ensure sufficient, continuous, affordable and fair water services
- promote the effective and sustainable use of financial and natural resources
- regulate contracts for the provision of water services to promote their fair and transparent provision
- create effective and financially viable statutory institutions to assist local government to fulfil its obligations under the Act.

The following sets of regulations have been developed, and are awaiting approval of the Minister prior to promulgation:

- Regulations under Section 9 (1) of the Act, dealing with compulsory national standards
- Regulations under Section 10 (1) of the Act, dealing with norms and standards for tariffs
- Regulations under Section 19 (5) of the Act, dealing with contracts for water-services providers.

### **National Water Act, 1998**

The National Water Act, 1998 provides for

- integrated management of surface water and groundwater
- sustainable use of groundwater within the average annual replenishment rates
- devolution of groundwater management to local level
- the Government to play a support role through functions such as awareness, information provision and capacity-building.

The Act does not differentiate between surface water and groundwater with respect to allocation, protection and conservation. The Act aims to control the use of water resources, protect them from being abused and polluted, and ensure that every person has equitable access to water resources.

On 1 October 1999, the Department of Water Affairs and Forestry started a registration drive for users of large amounts of untreated raw water.

The new measures will not apply to users of borehole water for domestic purposes, those who use it to grow food for subsistence, or those who use it to water a few head of cattle. It will affect those who draw water from a dam, stream or underground aquifer and use it for irrigation, mining, industrial use and feedlots.

Water users had to register before 30 June 2001 or faced paying a late registration penalty of the greater of R300 or 10% of outstanding water charges. The registration of users of raw water will for the first time provide the knowledge base needed to manage the country's water resources more effectively. The process will also see the management

charges levied on commercial users of water from 1 April 2002.

## Water resources quality management

Water resources management in South Africa has undergone major revision along with the reform of water policy and legislation. The National Water Act, 1998, provides the principles for water resources management. The objective of this policy is to manage water resources in an integrated manner that will ensure a healthy, stable water-resource base to meet the current and future needs of South Africa.

The definition of water quality has been extended to a more comprehensive consideration of water-resources as dynamic aquatic ecosystems, including indicators such as biotic diversity and the status of river-bank habitat. Water-resource quality provides an indication of the status of water resources and the ability of the resources to provide sustained access for use. Recognising that protection and conservation are not goals in themselves, the policy reflects the reality that impacts are associated with water use.

Water-resources management provides a protective framework that is intended to safeguard water-resource quality against unsustainable practices, through a system of source controls and resource protection measures. Source-directed measures include a range of regulatory controls aimed at the sources of impacts on water resources, such as

- limitations on abstractions
- prescribed volumes and quality of waste water discharges that may take place.

Resource-directed measures focus on the water resource as an ecosystem, and provide measures designed for the required level of protection for that resource, such as

- minimum flow conditions that must be maintained
- provision for biotic mobility.

A classification system will provide the basis for setting appropriate resource quality objectives and source controls for the manage-

ment of the resource. Water use is allocated according to the resource class, including the use of certain water resources for disposal of waste discharges. Water resources classified as sensitive or environmentally important may be stringently controlled, with water use allocations limited to minimise detrimental impacts.

While recognising that water resources are not freely available for uncontrolled impacts, it is not realistic to prevent all impacts in economically important water resources. Controlled impacts will be permitted and managed within a system of waste minimisation technologies, pollution prevention, recycling and re-use of water. A system of economic incentives will form part of the management approach, through the introduction of waste-water charges in a phased manner intended to foster use of low-water or zero-waste technology.

Voluntary as well as mandatory measures for water conservation are intended to ensure that water is used efficiently, as are demanding management strategies, which increasingly form part of water supply, management and development decision-making. The establishment of formal structures for integrated management of water resources at catchment and local level will bring a new dimension to the management of water resource quality. Stronger user representation of all interest groups will ensure equitable allocations among the user groups, as both the costs and benefits of utilising water resources are realised by the stakeholders. Decision-making will be devolved to the appropriate level, allowing those most affected by the decisions to provide primary input through catchment agency structures.

There has been significant progress in the establishment of catchment management agencies. These will play an important role in the execution of policy on water-resource management. The country has been divided into 19 water-management areas.

## Working for Water Programme

The Working for Water Programme is a labour-intensive initiative to clear invading alien plants. These introduced species are



having a negative impact on South Africa's water security, biological diversity, the ecological functioning of natural systems, the productive use of land, and the intensities of fires and floods.

Estimates are that over 10 million ha – bigger than the size of KwaZulu-Natal – is already invaded by alien plants, and that these invaders are spreading and growing at a rapid rate. They are estimated to be using about 7% of the country's mean annual run-off of water. In terms of fires, it has been reported that every house that burned down in the January 2000 fires along Table Mountain – which gave birth to the Santam/Cape Argus Ukuvuka: Operation Firestop Campaign – was surrounded by invading alien plants.

The Programme is having a marked influence on employment opportunities, training and capacity-building, community empowerment, social development and the creation of secondary industries. It focuses on the most marginalised – the poor, rural communities, women, the disabled, and those living with Acquired Immune Deficiency Syndrome (AIDS).

The Working for Water Programme is a multidepartmental initiative led by the departments of Water Affairs and Forestry, Environmental Affairs and Tourism, and Agriculture. It started in 1995 with a budget of R25 million and has grown into one of the Government's key Poverty Relief Fund initiatives. Its direct budget through government funding for 2000/01 was R230 million from the Poverty Relief Fund, R87 million from the Department of Water Affairs and Forestry, and R6,5 million from the Department of Social Development. Indications are that up to 90% of the budget was spent in almost 300 projects across the country, employing over 18 000 people. These figures exclude the contributions being made through partnership programmes, such as those being run through Rand Water and the Ukuvuka Campaign.

About 250 000 ha was cleared of invading alien plants during 2000/01.

## Flood and drought management

In terms of the South African Disaster Management Policy, there is a major move in focus from reactive to preventive disaster management. This will inevitably move the South African flood management focus from structural to non-structural, such as attaching special value to floodplain zoning and flood warnings.

## Dams and water schemes

A number of new projects are being undertaken by the Department of Water Affairs and Forestry. It is departmental policy to ensure that water-demand management programmes are implemented before embarking on new infrastructure development.

Construction of the Injaka Dam is taking place in Mpumalanga on the Marite River, a major tributary of the Sabie River. The Dam will augment the water supply to the rural communities of Mapulaneng, Mhala and Nzikazi North, and its capacity will be sufficient to supply domestic water to the area for the next 15 to 20 years.

Work is progressing on the construction of the R1,1-billion Maguga Dam on the Komati River in Swaziland as the second subphase of the first phase of the Incomati River Basin development. The Dam will be completed in 2002.

One of the most ambitious binational water projects ever to be undertaken is the Lesotho Highlands Water Project by South Africa and Lesotho. The completion of the first phase was celebrated in January 1998. The first phase of the project is composed of 1A and 1B. The main components of 1A are dams at Katse and Muela, an 82-km water transfer tunnel, and a hydroelectric plant at Muela. Phase 1B will include the construction of the Mohale Dam and tunnel and the Matsoku tunnel and weir. Phase 1B was expected to deliver its first water from the Matsoku River Diversion into the Katse Dam by mid-2001. The Mohale Dam will be completed in 2003.

Planning studies and environmental impact assessment have been compiled on the pro-

posed Skuifraam Dam on the Berg River near Franschhoek. The Dam was also reviewed against the World Commission on Dams Guidelines with satisfactory results.

The Levuvhu Water Scheme will provide nine million people in the Northern Province with drinking water. The Scheme will also stabilise the water supply for irrigation, and alleviate water shortages in the Kruger National Park. It will be run through the Department of Water Affairs and Forestry's CWSS Programme while municipalities gain the experience and capacity needed to handle the provision of services.

Construction of the Nandoni Dam started in May 1998, and it will store water from January 2003. The total cost of the project will be R750 million.

Progress is being made on the implementation of a Commission in the Orange-Senqu Basin between Lesotho, Namibia and South Africa. The country is also engaged in a number of collaborative projects with Mozambique and Swaziland. It is working with these neighbours to establish an interim water-sharing agreement as a first step towards the implementation of full basin management arrangements as provided for in the South African Development Community (SADC) Protocol on Shared Rivers.

South Africa is also giving specific support to Swaziland to promote the Lower Usutu Irrigation Scheme, which is part of the Lubombo regional SDI.

### **Drainage and hydrology**

Worldwide, 31% of all rainfall returns to the sea by way of rivers. In South Africa, with its abundant sunshine and high evaporation rate, the figure is a mere 9%.

The combined annual run-off of all South African rivers amounts to 53 500 million m<sup>3</sup>. This is only half the run-off of the Zambezi River and roughly equal to that of the Nile River at Aswan in Egypt or the Rhine River at Rotterdam in the Netherlands. South Africa lies in a drought belt. Rainfall is seasonal and is influenced by topography. The slopes of the eastern plateau, which cover 13% of the sur-

face area of South Africa, account for nearly 43% of the total run-off. The Orange River System, which drains almost the entire plateau – 48% of the total surface area of the country – accounts for only 22,5% (about 12 060 million m<sup>3</sup>) of the total annual run-off to the sea.

Truly perennial rivers (those that flow all year round) are only found over one quarter of South Africa's surface area – mainly in the southern and south-western Cape and on the eastern plateau slopes.

Rivers that flow only during the rainy season are found over a further quarter of the surface area. Rivers in the western interior are episodic, that is, they flow only sporadically after infrequent storms, while their beds are dry for the rest of the year.

Research on river ecosystems is funded by the Water Research Commission and the National Research Foundation. (See chapter: *Science and Technology*.)

### **Lakes and pans**

Except for Lake Fundudzi, which was formed by a huge landslide in the Soutpansberg in the Northern Province, there are no true inland lakes in the country. Coastal 'lakes' are found at Wilderness on the Cape south coast, and at St Lucia, Sibaya and Kosi Bay on the KwaZulu-Natal coast. Although they are seldom without water, lakes Chrissie and Banagher near Ermelo in Mpumalanga differ little from the innumerable 'pans' to be found in a wide belt from the Northern Cape through the western Free State to the North-West.

### **Groundwater resources**

Groundwater, despite its relatively small contribution to bulk water supply (13%), represents an important and strategic water resource in South Africa.

Owing to the lack of perennial streams in the semi-desert to desert parts, two-thirds of South Africa's surface area is largely dependent on groundwater. Although irrigation is the largest user, the supply to more than 300 towns and smaller settlements is also



extremely important. Through government's commitment to meeting basic water needs of communities, groundwater has also 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. Underground water sources also contribute to river flow. This will require reserving a significant part of groundwater resources for the protection of aquatic ecosystems in terms of the National Water Act, 1998. The maximum quantity of groundwater that can be developed economically is estimated at about 5 400 million m<sup>3</sup> a year. A national groundwater mapping programme and the development of a national groundwater information system form part of the new strategy. A number of important secondary maps such as national exploitation potential, groundwater importance, classification, and groundwater pollution vulnerability maps have also been produced.

## Forestry

Indigenous forests are indispensable to the country's heritage, beauty, wildlife and environment, while commercial forests provide jobs and economic opportunities for many people in the rural areas. Forestry represents a massive investment in the country, and could play an important role in the rural development strategy. South Africa has developed one of the largest man-made forestry resources in the world. Production from these plantations approached 16 million m<sup>3</sup>, valued at almost R2,3 billion in 1998/99. Together with the products processed from it, the total industry turnover was around R11,8 billion in 1998/99, including R4 billion worth of paper. More than 8,7 million t (pulpwood, mining timber, matchwood and charcoal) and 5,1 million m<sup>3</sup> (sawlogs, veneer and poles) were sold in this period.

Collectively, the forestry sector employs about 125 000 people. An equivalent of about 75 000 full-time staff is employed in the primary sector (growing and harvesting) while the balance is employed in the process-

ing industries (sawmilling, pulp and paper, mining timber and poles, and board products).

About half of the 1 100 indigenous tree species found in South Africa grow along the south and east coasts and on the southern and south-eastern slopes of inland mountains. The other half is spread over the interior plateaux.

The yellowwood tree (*Podocarpus* species) is South Africa's national tree. Yellowwood trees can grow to a height of more than 40 m with a girth of eight metres, and can live up to 800 years. The Big Tree near the Storms River Bridge (46 m), the King Edward VII in the Knysna forest (46 m) and the Eastern Monarch in the Amatola Mountains (44 m) are the best-known giants.

Two different Trees of the Year are nominated annually: a common variety and a scarcer, possibly endangered, species. The 2000 Trees of the Year were the wild willow and the African wattle. Trees of the Year for 2001 were the Wild Pepper tree (*Loxostylis alata*) and Sneezewood (*Ptaeroxylon obliquum*).

National Arbor Week is celebrated at the beginning of September every year to encourage the greening of South Africa. In 2000, Arbor Week was held from 1 to 7 September with the theme *Trees heal our land*.

The launch of the 2000 Arbor Week included the Remembrance Campaign, which entailed the planting of trees to remember fallen heroes. This was followed by the establishment of a remembrance register which will include the names of people commemorated through tree-planting events. The theme of 2001 Arbor Week was *Trees are life*.

## Managing the forests

The Department of Water Affairs and Forestry is pursuing a reform programme in the forestry sector which will eventually see the Government leasing State-owned forest land to private-sector operators.

The Department will move from the management of plantations towards promoting,

regulating and developing the forest industry. The forestry policy of the Department focuses on several elements:

- overall policy on the place of forestry in the management of land, water and other natural resources
- industrial forestry
- community forestry
- the conservation of natural forests and woodlands
- South Africa's response to global concerns about forests
- research, education and training
- South Africa's relationship with SADC members and bilateral relations with countries beyond the SADC.

The policy has been applied, tested and developed in accordance with the following principles:

- sustainable forest development
- forests and forest resources are to be treated as national assets
- democratisation
- gender equity
- people-driven development
- recognition of the scarcity of water resources
- a competitive and value-adding forest sector
- decent employment conditions.

The overall goal of the Government is to promote a thriving forestry sector, to be utilised for the lasting benefit of the nation and developed and managed to protect the environment. Forestry is moving away from being an operational function towards policy and regulation. Policy and regulatory divisions have now been established. Significant progress has been made in transferring part of the commercial forestry function to other agencies. Cabinet has approved the transfer of a large portion of commercial forests to South African Forestry Company Limited (SAFCOL) and private companies.

In addition, a pilot project on the transfer of small plantations to communities is nearing completion. Progress has also been made in improving the management of indigenous forests with the active involvement of local communities.

In September 2000, the Ministers of Public Enterprises and Water Affairs and Forestry announced substantial progress in the restructuring of the State's forest assets. According to the announcements:

- Forestry will be phased out of 12 000 ha on the eastern and western shores of Lake St Lucia. The land will be transferred to the Greater St Lucia Wetland Authority, and will be incorporated into the conservation area falling under the World Heritage Site. Forest plantations will be phased out within five years, after which the land will be incorporated into the Greater St Lucia Wetland Park. This reflects the Government's commitment to the environment, and will encourage tourism investment through the Lubombo SDI.
- The remaining 20 000 ha of forest plantation in the KwaZulu-Natal package will be sold to the Siyaqhubeka Consortium comprising Mondi Limited and Imbokodvo Lemabalabala, a black-empowerment company representing communities living near the forest plantations. This area will be sold for a consideration of R100 million in addition to the lease rentals, which are valued at R48 million. The bidders have agreed to take over all operational staff and have undertaken not to retrench any of these staff for a minimum period of three years. The transaction is subject to Competition Board approval.
- The Eastern Cape North package will be sold for a total of R45 million to Singisi Forest Products, which is a consortium involving Hans Merensky Holdings and community groups living in the areas adjacent to the forest. The involvement of the communities has been facilitated by the Eastern Cape Development Corporation. The bidders have agreed to take over all staff and have undertaken not to retrench any of these staff for a minimum period of three years. The transaction is subject to Competition Board approval.
- Three parties have been shortlisted to bid for the Mpumalanga/Northern Province area, which has been consolidated into a



single package. The three short-listed bidders are GMO Renewable Resources of the United States, Pahapur of India and the African Forest Consortium of South Africa. These parties will enter a bidding process.

- An in-principle agreement has been reached between South African National Parks and the management of SAFCOL that the Tokai and Cecilia plantations situated within the Table Mountain area will be incorporated into the Cape Peninsula National Park. The areas will, however, continue to operate as commercial timber plantations, and SAFCOL will manage these on an agency basis. Tourism facilities will operate under the National Park, and the plantations will continue to serve as important public recreational areas. The parties will work on a detailed agreement, which will involve the Department of Water Affairs and Forestry, the Department of Environmental Affairs and Tourism, SAFCOL and the Cape Peninsula National Park.
- Forestry will be phased out of 15 000 ha in the Boland area of the Western Cape and 30 000 ha in the southern Cape currently managed by SAFCOL. These plantations are not commercially viable, and timber no longer represents the best land-use option in these areas. This will open opportunities for other land uses including agriculture (particularly fruit and grapes), tourism and conservation. The process of conversion will be carefully managed over a period of 10 to 15 years. Various studies are under way to examine the best mechanisms for making this land available. The remaining forestry areas (3 000 ha in the Western Cape and 30 000 ha in the southern Cape) will be managed by SAFCOL and may be re-offered in coming years.

The Department still controls 70 000 ha of forest, which had not been put up for sale, while 61 000 ha remains with SAFCOL.

### **SAFCOL**

The main objective of the State-owned enterprise SAFCOL is the development of the South African forestry industry and the opt-

imising of its assets and land value according to accepted commercial management practice and conservation principles. The main functions of the Company are:

- timber growing and harvesting as well as the growing and harvesting of other forestry-related products
- sawmilling and timber processing, including the manufacture of timber and timber-derived products
- marketing of raw and processed timber in all its forms, both locally and internationally
- developing and managing of ecotourism activities and facilities and agro-forestry projects.

SAFCOL's annual production of 3,2 million m<sup>3</sup> of logs for sawmilling, pole-treating and pulp comprises almost 20% of South Africa's production. The Company's share in its core business, namely softwood sawlog production, comprises more than a third of the country's total output.

In 2000, SAFCOL's five sawmills processed 300 000 m<sup>3</sup> of round logs. This is almost 9% of South Africa's annual round wood intake for the production of sawn timber.

### **Industry and exports**

The industry was a net exporter to the value of almost R3,4 billion in 1999, over 98% of which was in the form of converted value-added products. The forest products industry currently ranks among the top exporting industries in the country, contributing an estimated 4,03% to the overall exports of manufactured goods in 1999, and 2,2% of total imports.

Exports are dominated by the pulp and paper sector (68% of all timber industry exports), the balance being made up of exports of sawn lumber, value-added solid wood products, wood chips, wattle extract and a variety of other products.

Capital investment in the industry amounts to some R33 billion, having grown at an annual real rate of close to 5% since 1980. The turnover of the industry amounts to an annualised R11,8 billion.

Stringent environmental codes of practice are implemented in all plantation and pro-

cessing activities. The Chief Directorate: Forestry of the Department of Water Affairs and Forestry promotes optimal development of forestry and arboriculture in South Africa.

The National Forests Advisory Council (NFAC) was established in terms of the National Forests Act, 1998 (Act 84 of 1998). It advises the Minister of Water Affairs and Forestry on all aspects of forestry in the country. The NFAC is actively involved in, among other things, developing local criteria, indicators and standards for Sustainable Forest Management (SFM), and how public access to State-owned forests can be improved.

### **Sustainable Forest Management (SFM)**

The commercial forestry industry in South Africa is committed to practising SFM. This is demonstrated by the fact that today almost 1 million ha, or over two-thirds of the entire area of commercial forestry plantations in South Africa, are certified by the Forest Stewardship Council (FSC) and the ISO 14001 certification schemes as being sustainably managed. South Africa now has the largest area of FSC-certified plantations of any country in the world. This is a remarkable achievement considering that there were no certified plantations in 1996. Although not all these forests are owned by the large forestry companies, the rapid expansion in this certified area has been facilitated by the fact that all these large companies have their own specialist environmental departments which ensure, among other things, that their land is managed according to their own stringent environmental codes of practice. To promote transparency, members of the public are invited to join company staff when these regular audits are done. The commercial forestry industry is also actively involved in the NFAC's Committee for SFM, whose primary job it is to develop criteria, indicators and standards for SFM which suit South African conditions. Despite the fact that these criteria and indicators have still to be developed, the industry has developed a set of environmental guidelines for the sustainable management of commercial timber plantations in South

Africa. The first edition of these guidelines was published in 1995 and is widely used. The second edition was expected to be published in 2001.

### **Legislation**

The restructuring of the forestry sector is supported by two pieces of legislation, namely the National Forests Act, 1998 (Act 84 of 1998), and the National Veld and Forest Fire Act, 1998 (Act 101 of 1998).

The National Forests Act, 1998, provides a framework for the development of principles, criteria, indicators and standards for SFM. Once these are in place, they will become requirements for the management of both commercial and indigenous forests. The Act will also ensure that the public has reasonable access to State forest land for recreational, cultural, spiritual and educational purposes. In addition, provision is made for the protection of indigenous forests as well as support for community forestry.

The National Veld and Forest Fire Act, 1998 bans open-air fires when the risk of veld blazes in an area is high. It also introduces the concept of voluntary fire protection associations formed by landowners. It furthermore obliges the Minister of Water Affairs and Forestry to operate a national fire-rating system in consultation with the South African Weather Service and fire associations. The Act also allows the Minister to impose minimum fire-fighting requirements on landowners.

### **Indigenous high forest**

High forest covers only about 900 000 ha of the country's surface. The Department is responsible for the management of about 350 000 ha of these forests, which occur mainly on the eastern and southern slopes of mountain ranges from the Cape Peninsula in the Western Cape to the Soutpansberg in the Northern Province. High forest is normally found in isolated pockets, varying in size from only a few hectares to several thousands.

The largest area of high forest (35 000 ha) lies within a strip some 180 km long and 16 km wide between the Outeniqua and



Tsitsikamma mountain ranges and the sea, extending from Mossel Bay in the Western Cape through Knysna to the Humansdorp district in the Eastern Cape. High forest has virtually disappeared from the mountain ranges from Mossel Bay westwards, and occurs only in patches in mountain kloofs. In the Eastern Cape, indigenous forests occur along the coast and on the Amatola and Transkei mountain ranges.

Forests in KwaZulu-Natal and the former Transkei area of the Eastern Cape are generally small, and those that are easily accessible have been heavily exploited in the past.

Although similar in composition to those of the Keiskamma area, these forests also include some of the tropical tree species from the northern parts of South Africa.

In Mpumalanga and the Northern Province, high forest occurs in patches in the mountain ranges along the eastern edge of the Highveld plateau, while the largest areas are in the Woodbush and Soutpansberg ranges.

The single largest part of the indigenous high forest (some 43%) is managed by the Chief Directorate: Forestry. Indigenous forests are managed according to certain multiple-use objectives.

Systematic timber harvesting occurs in areas of the production management class. Harvesting is concentrated on over-mature trees, with logs being sold by tender and/or on public auction. On average, 3 750 m<sup>3</sup> of round logs are harvested annually (150 m<sup>3</sup> of stinkwood, 750 m<sup>3</sup> of yellowwood, 2 500 m<sup>3</sup> of Australian blackwood and 350 m<sup>3</sup> of other species). Another valuable product of the indigenous forests of South Africa is the seven-week fern (*Rumohra adiantiformis*), which is harvested in the Knysna and Tsitsikamma forests.

### Scrub forest and woodlands

This vegetation covers extensive areas in the low-lying, drier areas of the Northern Province, KwaZulu-Natal and Mpumalanga. Some areas of savanna and woodlands have been denuded for agriculture and firewood. Most tree species of the scrub forests and

woodlands grow slowly and do not reach great heights. The woodlands are, however, a valuable source of fuel, fencing material and other products. They provide protection for the soil, and shelter and fodder for stock. The tree growth along much of the coast is classified as coastal scrub, with the exception of patches of high forest along the Transkei coast and at Alexandria in the Eastern Cape.

### Exotic plantations

During the thirties, the Government started to establish extensive plantations to make South Africa self-sufficient in its timber requirements and to provide more job opportunities in a diversified economy during the depression years. Commercial plantations of exotic species proved to be a sound investment, and the private sector has established large plantations of pine, eucalyptus and wattle trees. The private sector now owns 987 016 ha of plantations or 70% of the total plantation area, as well as virtually all the processing plants in the country.

The forestry industry is promoting rural development and economic empowerment through a small-grower afforestation programme. Currently, there are more than 12 000 small emergent black timber growers, the majority of whom operate through schemes run under the auspices of Sappi Forests (Project Grow), Mondi Forests (Khulanathi) and the wattle industry (South African Wattle Growers Union).

### Plantation yields

Of the 1 401 800 ha of plantations in 1999, 52% were softwood species and 48% hardwood species. Thirty-five percent of the plantation area was managed mainly for sawlog production, 42% for pulpwood and 17% for mining timber, while the balance of 6% is grown for the production of poles, matchwood (poplar) and other minor products. Plantation yields vary from an average of 16 m<sup>3</sup> per ha per annum for softwood to 21 m<sup>3</sup> per ha per annum for eucalyptus and 10 m<sup>3</sup> per ha per annum for wattle (timber and bark together). Likewise, the rotation ages vary

from a maximum of 30 years in the case of pine sawlogs, to six to 10 years in the case of eucalyptus pulp and mining timber. The production from plantations amounted to some 15,9 million m<sup>3</sup> in 1999.

### **Primary wood processing**

South Africa currently has 138 primary wood-processing plants, 126 of which are owned by the private sector. Of these, some 88 are sawmills, 10 mining-timber sawmills, 21 pole-treating plants, 14 pulp, paper and board mills, two match factories and three charcoal plants. The total roundwood intake during the year was 16 789 872 cm<sup>3</sup>. The value of sales of timber totalled R11 813 million. An amount of some R9 745 million was invested in primary roundwood processing plants.

The two main pulp and paper-manufacturing companies in South Africa, Sappi and Mondi, rank among the largest in the southern hemisphere and own assets in many parts of the world.

### **Research and training**

South Africa has world-class forestry research infrastructures and personnel, with almost 2% of the forestry industry (private and public sector) turnover devoted to research. The priority fields of research range from tree-breeding through applied silviculture, climate and soils, environmental impact and management solutions, and forest biology to hydrology and forest protection.

Forestry research is undertaken by the Institute for Commercial Forestry Research, Environmentek of the Council for Scientific and Industrial Research, the Plant Protection Research Institute, the University of Stellenbosch, and the Forestry and Agricultural Biotechnology Institute at the University of Pretoria. All major forestry companies also have well-established, in-house applied research divisions.

Degrees in forestry are offered by the Faculty of Agricultural Forestry Sciences at the University of Stellenbosch, the University of Natal (Pietermaritzburg) and the University of Venda. Diplomas and limited degree courses

in forestry disciplines are also offered at the Port Elizabeth Technikon, George (Saasveld Campus). The Natal Technikon offers a diploma in Pulp and Paper Technology. Fort Cox College of Agriculture and Forestry offers a diploma in social forestry.

Skills training is provided by a number of industry-sponsored and in-house training centres. Industry-sponsored bursaries are available, as are company-sponsored bursaries for study at these institutions.

### **Forest Industries Education and Training Authority (FIETA)**

On 20 March 2000, FIETA was formally established after two years of negotiations between employer and trade unions involved in the forestry, wood products, furniture, and pulp and paper industries. Its main functions are to perform Education Training Quality Assurance functions, to develop and run leadership programmes and to manage the disbursement of training grants.

### **Community forestry**

In South Africa, wood is the primary source of fuel for some 12 million rural and urban dwellers. More than 10 million m<sup>3</sup> of firewood is chopped annually in South Africa for fuel, some 2,8 million m<sup>3</sup> of which is used in KwaZulu-Natal.

According to the *White Paper on Sustainable Forest Development in South Africa*, community forestry is forestry designed and applied to meet local social, household and environmental needs and to favour local economic development. It is implemented by communities or with the participation of communities, and includes farm forestry, agroforestry, and tree planting in urban and rural areas, woodlots and woodland management by communities and individuals. The White Paper states that community forestry was neglected in South Africa in the past, when the Government focused on woodlots for fuel and construction.

Commercial farm forestry, in the form of farm wind-rows, shelter belts and woodlots, has proved quite successful, and no longer



needs much support. Lately, community forestry has gained impetus through changes in the core functions of the Department of Water Affairs and Forestry.

### **Food and Trees for Africa (FTAF)**

FTAF is the sub-Saharan African partner of the international Global Releaf greening organisation.

In August 2000, the Minister of Water Affairs and Forestry launched the National Urban Greening Fund by handing over a cheque of R1,2 million to FTFA, formerly Trees for Africa. A national Urban Greening Strategy has been prepared by the Department. The Urban Greening Fund will forge links between communities and local govern-

ments in their efforts to plant street trees, and develop parks and food gardens. FTFA's projects have overseen the planting of more than 1,2 million trees, and involved thousands of communities in food gardening and other greening activities.

### **Eduplant**

EduPlant, the national schools programme funded by the Eskom Development Foundation, contributes to the upliftment of schools throughout South Africa by assisting disadvantaged schools to grow their own food and to provide greener environments conducive to learning. It focuses on permaculture and received a R2-million donation from the Department of Water Affairs and Forestry.

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## **Acknowledgements**

Department of Water Affairs and Forestry  
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