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Water affairs and forestry

The Department of Water Affairs and Forestry's core function is to ensure that all South Africans have equitable access to water and sanitation, and that the country's water resources and forests are managed in a sustainable matter.

Hydrological conditions

South Africa is located in a predominantly semi-arid part of the world. The climate varies from desert and semi-desert in the west to sub-humid along the eastern coastal area, with an average rainfall for the country of about 450 mm per year, well below the world average of about 860 mm per year, while evaporation is comparatively high.

The country's water resources are, in global terms, scarce and extremely limited. The total flow of all the rivers in the country combined amounts to about 49 200 million cubic metres (m^3) per year, less than half of that of the Zambezi River, the closest large river to South Africa. Groundwater plays a pivotal role, especially in rural water supplies. However, due to the predominantly hard-rock nature of the South African geology, few major groundwater aquifers exist that could be utilised on a large scale.

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

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

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

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

Water-resource development and management in South Africa have, over the years, continuously evolved to meet the needs of a growing population and a vibrant economy, within the constraints

imposed by nature. These developments have largely been made possible by recognising water as a national asset, thereby allowing its transportation from where it is available to where the greatest overall benefits for the nation can be achieved.

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

Surface and groundwater is naturally of poor quality, which limits its utilisation. Where feasible, special management techniques may be applied to improve water quality to appropriate standards for particular uses.

Major dams of South Africa

Dam	Full supply capacity (10^6 m^3)	River
Gariep	5 341	Orange
Vanderkloof	3 171	Orange
Sterkfontein	2 616	Nuwejaarspruit
Nuwejaarspruit Vaal	2 603	Vaal
Pongolapoort	2 445	Pongolo
Bloemhof	1 264	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

Measures are to be introduced to ensure the most beneficial and efficient utilisation of water in the country from a social and economic perspective.

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

South Africa is mainly dependent on surface water resources for most of the urban, industrial and irrigation water supplies in the country. In general, the surface water resources are highly developed over most of South Africa. Groundwater, while also extensively utilised, particularly in the rural and more arid areas, is limited due to the geology of the country, much of which is hard rock. Large porous aquifers occur only in a few areas.

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

The total mean annual run-off of water in South Africa under natural (undeveloped) conditions is estimated at a little over 49 200 million m^3 per year, which includes about 4 800 million m^3 per year of water originating from Lesotho, and about 700 million m^3 per year originating from Swaziland, which naturally drain into South Africa. Agricultural irrigation represents close to 60% of the total water requirements in the country, while urban requirements constitute about 25% as the second-largest user sector. The remaining 15% is shared by the other four sectors (all standardised to 98% assurance of supply).

The total net abstraction of water from surface water resources amounts to about 9 800 million m^3 per year for the whole of South Africa, after allowing for the re-use of return flows. This represents about 20% of the total mean annual run-off of 49 200 million m^3 per year (all standardised to 98% assurance of supply). A further 8% is estimated to be lost

through evaporation from storage and conveyance along rivers, and 6% through land-use activities. As a national average, about 66% of the natural river flow (mean annual run-off) therefore still remains in the country's rivers.

Water-resource management, development and water services

The focus of the Department is to provide access to water to within 200 m of every South African household. By November 2004, 10 million people had access to a clean water supply.

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

By mid-2004, the Department was in the process of substantial restructuring, which is expected to be completed in eight to 10 years' time. The restructuring process includes:

- establishing catchment-management agencies (CMAs) to perform water-resource management functions currently performed by the Department's regional offices
- transferring the management of commercial plantations and indigenous forests to appropriate agencies and institutions
- transferring water-services delivery and operations to water-services authorities.

In the past, the Department has been an important financier of water infrastructure as well as operational and maintenance costs.

This responsibility will increasingly shift away from the Department and will be assumed by the Municipal Infrastructure Grant (MIG), the local government equitable share, and the Capacity-Building Grant. The Department of Water and Forestry's role will then be to ensure that water and sanitation projects are sustainable and that the agencies that manage these services can maintain and expand access to these resources.

The Department will remain focused on the phased implementation of the National Water Act, 1998, with a particular emphasis on implementing a new organisational structure, which includes:

- establishing, for the first time, the National Water Resource Strategy, which will set out the procedures, guidelines and overall strategy for managing water resources
- developing and testing a strategy for compulsory water-use licensing to facilitate equitable access to water resources for historically disadvantaged individuals (HDIs)
- enhancing water-use efficiency
- ensuring compliance with dam-safety regulations and enhancing public safety at water-resource installations
- investigating and implementing appropriate institutional arrangements for the optimal management of the interdepartmental Working for Water Programme
- building national capacity to monitor the state of water resources, so that accurate information is used in decision-making about the use and management thereof
- investigating the creation of a National Water Resource Infrastructure Agency to manage and develop national infrastructure.

Monitoring water resources

The oldest flow-gauging station still in operation in South Africa is on the Pienaars River near Pretoria. It celebrated a century of monitoring in August 2004.

River flow is being monitored at 1 200 flow gauging stations. In addition, some 260 major reservoirs are being monitored. The evaporation and rainfall station network consists of 360 stations.

A new initiative to monitor precipitation in mountainous areas has been launched. Twenty-one rainfall stations are operational in the mountains of the Western Cape and five stations are operational in the Mpumalanga Escarpment. Observations are relayed through the cellular short message system and the data is updated daily on the website of the Department of Water Affairs and Forestry (*www.dwaf.gov.za*).

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

By mid-2004, a special network focusing on groundwater levels (part of the Natural/Ambient Conditions Network) and rainfall was being designed. Rainfall quality is of importance to obtain chloride content in the precipitation to support the chloride balance assessment for estimation of groundwater recharge. The tritium and stable isotopes content of the precipitation is also monitored to support recharge estimation and groundwater flow path investigations.

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

One of the current water-quality monitoring programmes is the National Aquatic Ecosystem Biomonitoring Programme or, in short, the River Health Programme (RHP).

A key objective of the RHP is to generate and disseminate information on river health in order to ensure the ecologically sound management of the country's rivers, and inform and educate South Africans about the health status of rivers. The RHP primarily uses biological indicators (e.g. fish communities, riparian vegetation and aquatic invertebrate fauna) to assess the health of river systems.

This Programme is operational in all water-management areas focusing on rivers, but will be linked to wetlands/estuaries within the next five years to give a holistic picture of the resources' condition.

Preliminary findings of the RHP indicate that 9% of South Africa's rivers (based on biological indices) are in a very good natural state, while 30% are in a good state, 33% fair and 28% in a poor state. The main driving forces (stressors) on river health are water abstractions that are not based on reserve studies, the destruction of riparian vegetation, and invasion by alien species. With continued water-resource monitoring, trends will be identified, and management intervention success (or failure) can be measured.

Funding

Expenditure by the Department of Water Affairs and Forestry grew rapidly between 2000/01 and 2003/04, increasing from R3 billion to R4,6 billion. This represents an annual average increase of 15,1%. The increase in 2003/04 was due to transfer costs related to the transfer of water-services schemes to local authorities, with additional transitory costs being incurred in relation to the preparation, planning and implementation of the transfer; an increase in expenditure on the sanitation programme; and the writing off of water-user association debt.

During 2003/04, once-off additional allocations were made for the Department's restructuring, flood damages, drought relief and the writing off of loans.

In terms of the Division of Revenue Act, 2004 (Act 5 of 2004), funds for water supply and sanitation investment, previously managed by the Department of Water Affairs and Forestry, will now be allocated to local government.

The funds will be transferred through the MIG, which is administered by the Department of Provincial and Local Government. The water services budget of the Department of Water Affairs and

In April 2004, government announced the beginning of a six-year programme to provide clean water and sanitation facilities to the 2 800 rural schools in KwaZulu-Natal.

This will be done by installing 40 playground roundabout play pumps at these schools.

The Department of Water Affairs and Forestry and Roundabout Outdoor raised funds from donors for the initial 20 play pumps, with the provincial Department of Education pledging R20 million. The KwaZulu-Natal water utility, Umgeni Water, was also involved.

This kind of project first became a reality in 2000 with the signing of a partnership agreement between the South African Government, Roundabout Outdoor and the United States' Kaiser Family Foundation.

In 2001, the first play pumps were installed in 40 rural villages throughout the country.

Tapping the energy of children at play, the pumps can generate 1 400 litres of water per hour at a depth of 40 m, and are effective to a depth of 100 m, making them more effective than typical hand-pump installations.

Forestry was thus reduced from R2 608 million to R1 334 million.

Water for all

According to the Constitution of the Republic of South Africa, 1996 (Act 108 of 1996), it is every person's right to have access to clean water.

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.

In 1994, the new Government inherited a backlog of 14 million people without clean, safe water while 21 million people did not have access to adequate sanitation. By November 2004, five million people still lacked access to clean safe water while 16 million lacked access to adequate sanitation.

Government is on target to eradicate the backlog in water infrastructure and sanitation facilities by 2008 and 2010, respectively.

It has long exceeded the target set by the Millennium Assembly of the United Nations in 2000, which declared that by 2015 the number of the world's population without access to basic water must be reduced by 50%.

The Department continues to collaborate with the departments of Health and of Education to improve sanitation in schools and clinics. Some R40 million will be spent on clinic-sanitation programmes and R150 million on school sanitation.

Municipal Infrastructure Grant

To eradicate backlogs in access to water and sanitation by 2008 and 2010 respectively, future funding for water and sanitation is expected to increase.

The MIG intends to facilitate and ensure more effective and integrated service delivery.

Working through local government, the Department of Water Affairs and Forestry will seek to ensure that funds are made available through the MIG to eradicate the backlog of water supply for the remaining five million rural people who have no access to formal infrastructure.

Similarly, there will be a focus on the promotion of improved sanitation for the 14 million South Africans who do not yet enjoy such amenities.

Policy and legislation

Free Basic Water (FBW) Policy

The FBW Policy was officially launched in July 2001.

By March 2004, some 155 of the 170 water-service authorities claimed to be providing FBW. The total number of people receiving FBW at that stage was some 30,5 million.

Under the FBW Policy, each household receives up to 6 000 litres (*l*) of clean water per month. The target for 2003/04 was 70% of the population, while the actual percentage of the total population served by March 2004 was 65,6% – a slight shortfall.

National Water Resource Strategy

In September 2004, Cabinet approved the National Water Resource Strategy, which will ensure that South Africa uses its limited water resources to achieve a better life for all.

With its adoption of this Strategy, South Africa reached one of the first targets set in the Johannesburg Plan of Action, adopted at the 2002 World Summit on Sustainable Development, namely to develop national water-resource management plans.

The Strategy outlines how the water resources of South Africa will be protected, used, developed, conserved, managed and controlled in accordance

National Water Week 2004 was celebrated from 22 to 28 March under the theme *Water Washing Away Poverty*. The purpose of Water Week 2004 was to celebrate the success of government's water-delivery programme.

Major events that took place during the Week included the Women in Water Awards Ceremony on 19 March, the Johannesburg Water Festival on 23 March, and the *Baswa le Meetse* (Youth in Water) Awards Ceremony on 26 March.

with the requirements of the National Water Policy (1997) and the National Water Act, 1998.

The Strategy contains estimates of present and future water availability, present and future water requirements, and proposes actions to be taken to achieve a sustainable balance between water availability and requirements.

While the actions proposed include the construction of new storage dams and transmission infrastructure to the value of R21 billion over the next 20 years, most attention will be paid to arrangements for the careful management, use and protection of water resources.

Water Services Act, 1997

The Water Services Act, 1997 (Act 108 of 1997), aims to:

- ensure and define the right 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 fair and transparent provision of water services
- create effective and financially viable statutory institutions to assist local government to fulfil its obligations under the Act.

In November 2004, a workshop was held in Pretoria to look into ways of using space technology to manage water resources in Africa.

The three-day workshop brought together experts from Europe, Canada, the United States of America and 150 others from more than 20 African countries, to put the Space for Water Initiative into action.

It was the second Committee on Earth Observation Satellites workshop focusing on 'Tiger', a specific action launched by the world space agencies in response to water needs identified during the World Summit on Sustainable Development in 2002.

The long-term aim of 'Tiger' is to provide sustainable access to satellite data for all stakeholders in water-resource management in Africa.

The Water Services Act, 1997 requires the production by water-service authorities (the designated municipalities) of Water-Service Development Plans, within the framework of Integrated Development Plans, required by municipal legislation.

The Water Services Act, 1997 provides a comprehensive framework for the oversight and regulation of the water boards, established as a family of regional public utilities under the authority of the Minister of Water Affairs and Forestry. It also provides a framework for the collection and publication of information about water services, which may come to be one of the more powerful regulatory tools available to national government.

The Department has initiated a process to review and amend the Act to ensure that it is aligned with the Strategic Framework for Water Services (SFWS) approved by Cabinet in September 2003. In the process, all other sector legislation will also be looked at to ensure alignment of all legislation within the sector.

National Water Act, 1998

The National Water Act, 1998 provides for:

- integrated management of surface water and groundwater
- sustainable use of surface and groundwater
- devolution of surface and groundwater to catchment and local level
- government to play a support role through functions such as promoting awareness, information provision and capacity-building.

The Act aims to control the use of water resources, protect them from being impacted on or exploited and polluted, and ensure that every person has equitable access to them.

The Act gives the Department of Water Affairs and Forestry the tools to gather the information that it needs to optimally manage the country's water resources. The registration of water-use is one of these tools.

All water users instructed to register have the statutory obligation to do so. There are strict penalties, prescribed in the Act, for those who do not comply.

All water users who do not receive their water from a service-provider, local authority, water board, irrigation board, government water scheme or other bulk supplier, and who are using water for irrigation, mining purposes, industrial use, feedlots or in terms of a general authorisation, must register.

This includes the use of surface and groundwater.

Other uses of water that must be registered include:

- Diversion of rivers and streams.
- Discharge of waste or water containing waste.
- Storage. This includes any person or body storing water for any purpose (including irrigation, domestic supply, industrial use, mining, aquaculture, fishing, water sport, aesthetic value, gardening, landscaping, golfing, etc.) from surface run-off, groundwater or fountain flow in excess of 10 000 m^3 or where the water area at full supply level exceeds one hectare (ha) in total on land owned or occupied by that person or body and is not in possession of a permit or permission.
- Stream-flow reduction activities (afforestation). All afforestation for commercial purposes, including communal forestry for commercial gain, that took place prior to 1972, must be registered. Forest owners who have permits issued under forestry legislation need not register.
- Local authorities and other bulk suppliers with their own water sources and purification works.
- Controlled activities such as irrigating with waste, power generation with water, atmospheric modification or recharging an aquifer.

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

The implementation of the National Pricing Strategy for Raw Water began in 2002 to ensure that, as far as possible, the costs of the management of water resources and water-supply infrastructure are borne by water users.

The majority of water users are paying the water-resource charge or cost for which they are accordingly billed. However, there is still a considerable underrecovery of costs.

Action has been taken against a number of illegal water users across South Africa in response to growing concern about an apparent increase in the rate of illegal water-use in some catchment areas.

During 2002/03, the Water-Use Authorisation and Registration Management System was augmented with a billing facility. Some 52 000 invoices were sent to water users, resulting in the collection of R46 million from the Water-Resource Management Charge.

At the end of 2003/04, the National Register of Water Use included more than 63 987 water users.

Strategic Framework for Water Services

The SFWS was approved by Cabinet in September 2003.

The SFWS is what was previously referred to as the *White Paper on Water Services.* It consolidates all policy changes since 1994 and puts forward a framework for its implementation.

The document is a comprehensive strategic framework for the water-services sector as a whole.

The key challenges highlighted in the introduction to the SFWS are inequality, the provision of basic services, the provision of higher levels of service and the sustainable provision of services (including sustainability of the institutions responsible).

The key policy themes in the SFWS are:

- Eliminating the backlog in basic services provision.
- Providing higher levels of service. Water services-authorities are strongly encouraged to provide intermediate and higher levels of service (for

The 2020 Vision for Water Programme seeks to empower the youth with knowledge and water-management skills, and in turn enable them to participate in the Integrated Water-Resource Management and other environmental programmes.

The Programme demonstrates the Department of Water Affairs and Forestry's commitment to Outcomes-Based Education.

example, water on-site) wherever it is practical and provided it is financially viable and sustainable to do so. In addition to government funding, water-services authorities should put in place appropriate financing mechanisms to make this possible. This means that, where higher levels of service are provided by water-services authorities, households will be expected to pay a greater proportion of the total cost of service provision to ensure that service provision is financially sustainable.

- Free basic (water supply and sanitation) services should be addressed as a national policy.
- Credit control. In the first instance, and after following due process, domestic water connections must first be restricted and not disconnected, ensuring that at least a basic supply of water is available. Domestic consumers may only be disconnected if the system is tampered with or the integrity of the system and therefore public health is compromised.
- Institutional reform of water-services providers. The future role of water boards is addressed in this process. The process recognises that constitutional responsibility for water-services provision rests with water-services authorities. The reform is a 'bottom-up' process, but relies on national leadership and oversight. A national institutional reform strategy based on the policies and principles set out in the SFWS will be developed as a matter of priority.
- Decentralised fiscal framework. The decentralisation of funding via the MIG, equitable share and Capacity-Building Grant forms the foundation for the financial framework. These are the primary national mechanisms for redistribution.
- A long-term vision for regulation. The distinction between local (the water-services authority) and national regulation is defined. In response to strong demands from all key role-players in the sector, the long-term vision is to investigate an independent regulatory function with strong emphasis on economic regulation. However, in the short and medium term, the Department of Water Affairs and Forestry will be the national regulator of water services.

Water-resource management

Water-resource 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-resource management. The objective of this policy is to manage water resources in an integrated manner to ensure a healthy, stable water-resource base to meet the current and future needs of South Africa.

Water-management institutions

The National Water Act, 1998 sets out the framework for the management of water resources in South Africa. This framework provides for the establishment of water-management institutions, which include CMAs and Water-User Associations (WUAs).

Catchment management agencies

CMAs aim to ensure equitable, efficient and sustainable water-resource management. They are required to establish governing boards, which are responsible for integrated water-resource management and the development of a Catchment Management Strategy.

The boards have to represent the various sectors of society within that specific water-management area and will consist of water users, potential water users, local and provincial government, and environmental interest groups.

The Department aims to establish CMAs in all 19 water-management areas across South Africa, as required by the National Water Act, 1998.

The first CMA at Umkomati in Mpumalanga was established on 30 March 2004.

Three other CMAs were also set to be established in 2004/05 in the Umvoti/Mzimkhulu (KwaZulu-Natal), Breede (Western Cape) and Crocodile West/Marico (North West) water-management areas.

The Department will devolve administration to the local water users and communities, accompanied by vigorous capacity-building, so that historically excluded communities can participate in water management. Some R28 million was budgeted for this purpose in 2004/05.

Internal strategic perspectives (ISPs) have been developed for all 19 water-management areas.

These are the forerunners of the Catchment Management Strategies that will be prepared by the CMAs when they are established. They describe the water availability and water requirements in each area, and outline the approaches to be adopted for managing water resources. In particular, they provide general principles for the CMAs to authorise water-use. These ISPs were expected to be finalised and published in 2004.

Water boards

Water boards have been established as service-providers that report to the Minister of Water Affairs and Forestry. These boards manage water services within their supply areas and provide potable water at cost-effective prices.

By March 2003, some 15 water boards were in operation.

Irrigation boards and Water-User Associations

In 2003/04, subsidies to the value of R28,4 million were awarded to water irrigation boards and WUAs. These were increased to R30 million in the 2004/05 financial year.

The Department of Water Affairs and Forestry, in partnership with the Department of Agriculture, has developed a strategy to create opportunities for poor farmers on irrigation schemes, by providing them with access to water for high-value crops.

Water is available to irrigate 12 000 ha in the Eastern Cape, Free State and Northern Cape.

The Department of Water Affairs and Forestry is working with the national and provincial departments of Agriculture to implement schemes to utilise these allocations.

Financial assistance is provided to emerging farmers for water infrastructure as well as operational and maintenance costs. Some 458 farmers received financial support from the Department of Water Affairs and Forestry in 2003/04.

Some R28 400 million was budgeted in 2004/05 to assist another 4 500 historically disadvantaged households.

All irrigation boards were in the process of being transformed into WUAs to fall under the ambit of the National Water Act, 1998.

Working for Water Programme

Alien plants have invaded over 10 million ha of South Africa – or 8% of the land – and their number is projected to double in as little as 15 years. These plants threaten the country's rich biodiversity by competing for water, light, space and nutrients –

Natural mean annual run-off and ecological reserve (million m/a)

Water-management area	Natural mean annual run-off [1]	Ecological reserve [1,2]
Limpopo	985	156
Luvuvhu/Letaba	1 185	224
Crocodile West and Marico	855	165
Olifants	2 042	460
Inkomati [3]	3 539	1 008
Usutu to Mhlatuze [4]	4 780	1 192
Thukela	3 799	859
Upper Vaal	2 423	299
Middle Vaal	888	109
Lower Vaal	368	48
Mvoti to Umzimkulu	4 798	1 160
Mzimvubu to Keiskamma	7 241	1 122
Upper Orange	6 981	1 349
Lower Orange [5]	502	69
Fish to Tsitsikamma	2 154	243
Gouritz	1 679	325
Olifants/Doring	1 108	156
Breede	2 472	384
Berg	1 429	217
Total for country	49 228	9 544

1) Quantities refer to the water-management area under consideration only, thus water that originates or is required in that water-management area.
2) Total volume given, based on preliminary estimates, impact on yield being a portion of this.
3) Includes Komati catchment in Swaziland (mean annual run-off = 517 million m/a).
4) Includes Pongola catchment in Swaziland (mean annual run-off = 213 million m/a).
5) Includes contributions from Sengu and Caledon rivers in Lesotho (mean annual run-off = 4 765 million m/a).

Source: Department of Water Affairs and Forestry

to the detriment of indigenous flora and water reserves.

The Programme is a labour-intensive initiative to clear invasive alien plants.

The Working for Water Programme is a multidepartmental initiative led by the departments of Water Affairs and Forestry, of Environmental Affairs and Tourism, and of Agriculture. It started in 1995 with a budget of R25 million and has grown into one of government's key poverty-relief-fund initiatives.

Over the last nine years, more than a million ha of invasive alien plants have been cleared, which has yielded an estimated release of 48 – 56 million m^3 of additional water for alternative uses annually.

This has created jobs for and trained some 20 000 previously unemployed people.

The Programme has spearheaded a massive catchment rehabilitation programme of 303 clearing sites, in addition to work on aquatic weeds and the use of biological control agents, and has established programmes in eight fire-prone regions of South Africa.

Flood and drought management

In terms of the South African Disaster Management Policy, there is a major shift 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.

In October 2004, Cabinet approved the construction of a R2,1-billion water project that will pump water from the Vaal Dam to link with existing water supply networks near Secunda in Mpumalanga.

This project will ensure water supply for Eskom's power generation, Sasol's synthetic fuel industry and other urban and industrial users until 2030.

The project forms part of the Department of Water Affairs' investment programme, as outlined in the National Water Resource Strategy, to ensure that economic infrastructure keeps up with the demands of the growing economy.

The project is expected to create hundreds of jobs.

In response to serious drought affecting many parts of the country in December 2003/January 2004, government announced the distribution of emergency assistance to help municipalities to maintain domestic water supplies.

An amount of R109 055 million was distributed to 36 municipalities in eight provinces in December 2003.

Where possible, the funds were used to provide emergency water resources, which could later be used as a permanent source of supply. Some funds were also used to cart water by tanker to severely affected communities where local sources were inadequate.

The worst-affected provinces were Limpopo (which received R32 924 million), KwaZulu-Natal (R21,6 million) and Mpumalanga (R15 989 million).

As a precautionary measure, some R40 million was held back to be allocated in the rainfall season as needs changed. The use of the funds was monitored by the regional offices of the Department of Water Affairs and Forestry.

Dams and water schemes

The Department of Water Affairs and Forestry recently undertook a number of new infrastructure projects while more projects were being initiated in 2004/05.

Departmental policy ensures that water-demand-management programmes are implemented before embarking on new infrastructure development.

Planning studies and an environmental-impact assessment have been compiled on the proposed Skuifraam Dam on the Berg River near Franschhoek in the Western Cape. The Dam was also reviewed against the World Commission on Dams' Guidelines, with satisfactory results. The construction contract was awarded in June 2004.

The Levuvhu Water Scheme will eventually provide drinking water to more than a million people in Limpopo.

The storing of water up to the rising completion level commenced in February 2004. Thereby, the water supply to the recently completed Xikundu Water Supply Works became ensured.

The construction of the Water Treatment Works at Nandoni started in October 2003 and is expected to be completed in 2006/07.

The construction of the Nandoni Dam started in May 1998 and was expected to be completed in March 2005.

The total cost of the project will amount to more than R900 million. The Scheme will stabilise the water flow in the Levhuvhu River for irrigation and environmental flow requirements and will also alleviate the water shortages in the Kruger National Park.

The Olifants River will be developed to cope with the increasing water demand generated by platinum-mining developments in Limpopo and Mpumalanga.

This development will enable considerable mining expansion and will bring about local employment, much-needed economic growth and other benefits. It will also create the opportunity for water-services providers such as municipalities to supply water to many communities.

During the first phase of the Olifants Project, the Flag Boshielo Dam, situated on the Olifants River near Marble Hall in Mpumalanga, will be raised by five metres at an estimated cost of R234 million.

The construction of the Dam commenced in June 2004. Impounding of additional water will commence at the end of 2005 and will be completed in March 2006.

This will increase the Dam's present storage capacity from 100 million m^3 to 188 million m^3, allowing 72 million m^3 of water to be used annually, compared with the present 56 million m^3 per year.

In the interim, the additional water to be secured by raising the Flag Boshielo Dam will be made available to new mining ventures in the Lebalelo supply area.

This will enable water entitlements, currently leased on a temporary basis by these mining ventures, to be returned to the small farmers, whose irrigation schemes are now being rehabilitated.

During the second phase of the Olifants Project, a large dam at De Hoop – 30 km south of Steelpoort town, on the Steelpoort River, a tributary of the Olifants River – will be built.

The main part will, however, consist of long pipelines and associated pump stations, which provide water to the existing Olifants-Sand Transfer Scheme, which in turn, supplies water to Polokwane.

Other planned pipelines include:

- a branch pipeline to Jane Furse and Nebo Plateau
- a pipeline from Flag Boshielo Dam to Pruizen, near Mokopane.

The yield of the Dam will be at least 50 million m^3, depending on the final planning.

The cost of the scheme will be more than R3 000 million.

Lakes and pans

Except for Lake Fundudzi, which was formed by a huge landslide in the Soutpansberg in Limpopo, 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, Lake Chrissie and Lake 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 the basic water needs of communities, groundwater has become a strategic resource for village water supply in the wetter parts of the country, because of its cost-effectiveness in a widely scattered small-scale-user situation.

Underground water sources also contribute to river flow. This requires 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 6 000 million m^3 a year.

Regional and international co-operation and initiatives

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

- Mozambique and Botswana (Limpopo Dam)
- Botswana, Lesotho and Zimbabwe (Orange River)
- Lesotho Highlands – a New Partnership for Africa's Development (NEPAD) flagship programme
- Swaziland and Mozambique (Komati).

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

The African Ministers' Council for Water was established in December 2003. It has become a platform for the Ministers of Water on the continent to share their experiences on all matters relating to water.

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 especially in rural areas. Forestry represents a massive investment in the country and plays an important role in the Integrated Rural Development Programme.

South Africa has developed one of the largest planted forests in the world. Production from these plantations amounted to more than 16,6 million m^3, valued at almost R3,3 billion in 2002. Together with the processed products, the total industry turnover was about R13,8 billion in 2002, including R8,6 billion worth of wood-pulp.

More than 9,4 million tons (Mt) of pulpwood, mining timber, matchwood and charcoal, and almost five million m^3 of sawlogs, veneer and poles, were sold in this period.

Collectively, the forestry and forestry products sector employs about 151 000 people.

An equivalent of about 60 000 full-time staff are employed in the primary sector (growing and harvesting), while the remainder are employed in the processing industries (sawmilling, pulp and paper, mining timber and poles, and board products).

The organised forest industry claims that each job created within the sector results in four others in supporting industries, through the multiplier effect. The sector thus contributes about 600 000 jobs to the economy.

About half of the more than 1 700 indigenous tree and shrub 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 are spread over the interior plateaux.

The yellowwood tree (*Podacarpus*) is South Africa's national tree. Yellowwood trees can grow to a height of more than 40 m with a girth of 8 m, 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.

National Arbour Week is celebrated annually at the beginning of September to encourage the greening of South Africa. Two different Trees of the Year are nominated annually: a common variety and a scarcer, possibly endangered, species. The 2004 Trees of the Year were the white seringa/mountain seringa (*Kirkia acuminata*) and the *witsering/bergsering* (*K.wilmsii*).

Activities during national Arbour Week included the launch of the Siyathuthuka Project in Soweto on 31 August and the Arbour City Awards in Botshabelo (Free State) on 3 September 2004. *Trees are our Heritage* was the theme for Arbour Week 2004.

Managing the forests

The overall goal of the Department 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.

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

The Department has made good progress in transferring government's commercial plantations to private management.

Of the 140 000 ha managed by the Department in 1994, more than 100 000 ha have been transferred.

Following the restructuring of plantation forests in the Eastern Cape and KwaZulu-Natal, the management consortia have been paying lease rentals for the use of the land. Some R40 million held in trust will be paid to the communities concerned as soon as they establish structures to get the benefits to the right people.

The Department's policy in terms of indigenous forests is to delegate or assign management responsibility to appropriate agencies. In this regard, good progress is being made with the transfer of forests to the South African National Parks (SANParks) and other agencies. The delegation of 97 000 ha of the Knysna forests to SANParks is almost finalised.

In the Western Cape, the Department is negotiating with Western Cape Nature Conservation to take responsibility for some 761 900 ha of mountainous areas west of the Touws River, which are managed under forest legislation, for other conservation purposes.

In the Eastern Cape, the Department is negotiating to assign 413 000 ha of natural forests to the province. In Mpumalanga, the Department is working with the Department of Environmental Affairs and Tourism, the provincial Department of Agriculture, Conservation and Environment, and the Mpumalanga Parks Board to assign some 15 600 ha of natural forest and commercial plantations to the proposed Blyde Canyon National Park.

The Department's Forestry component is organised into the following subprogrammes:

- Plantation Restructuring develops and supports policies to ensure the sustainable development

In August 2004, the Department of Water Affairs and Forestry released a new national list of tree species declared protected. This protection is afforded in terms of the National Forests Act, 1998 (Act 84 of 1998).

Tree species listed as protected may not be cut, disturbed or damaged or their products transported or sold without a licence. Listing certain species as protected is not primarily aimed at preventing the use of a tree species, but rather at ensuring sustainable use through licensing-control measures.

The list of protected tree species include camel thorn (*Acacia erioloba*); grey camel thorn (*Acacia haematoxylon*); pepperbark (*Warburgia salutaris*); marula tree (*Sclerocarya birrea*); baobab (*Adonsonia digitata*); pod mahogany (*Afzelia quanzensis*); torchwood (*Belanites subsp.maughamii*); powder-puff tree (*Barringtonia recemosa*); shepherd's tree (*Boscia albitrunca*); msasa (*Brachystegia spiciformis*); matumi (*Breonadia salicina*); black mangrove (*Bruguiera gymnorrhiza*); Swazi onionwood (*Cassipourea swaziensis*); bushman's tea (*Catha edulis*); Indian mangrove (*Ceriops tagal*); false tamboti (*Cleistanthus schlechteri var. schlechteri*); Pondo weeping thorn (*Colubrina nocholsonii*); leadwood (*Comretum imberbe*); assegai (*Curtisia dentata*); Bushveld saffron (*Elaeodendron transvaalensis*); Bushveld red balloon (*Erythrophysa transvaalensis*); ebony guarri (*Eucleapseudebenus*); swamp fig (*Ficus trichopoda*); silver tree (*Leucadendron argenteum*); Tonga mangrove (*Lumnitzera racemosa var. racemosa*); Pondo bushman's tea (*Lydenburgia abottii*); Sekhukhuni bushman's tea (*Lydenburgia cassinoides*); coastal red milkwood (*Mimusops caffra*); Lebombo wattle (*Newtonia hildebrandtii var. hildebrandtii*); stinkwood (*Ocotea bullata*); Gariep resin tree (*Ozoroa namaquensis*); Apple-leaf (*Philenoptera violacea*); cheesewood (*Pittosporum viridiflorum*); Breede River yellowwood (*Podocarpus elongatus*); Outeniqua yellowwood (*Podocarpus falcatus*); henkel's yellowwood (*Podocarpus henkelii*); real yellowwood (*Podocarpus latifolius*); saddleback sugarbush (*Protea comptonii*); serpentine sugarbush (*Protea curvata*); red stinkwood (*Prunus africana*); wild teak (*Pterocarpus angolensis*); red mangrove (*Rhizophora mucronata*); marula (*Sclerocarya birrea subsp. caffra*); violet tree (*Securidaca longependunculata*); white milkwood (*Sideroxylon ierme subsp. inerme*); Pondo fish poison pea (*Tephrosia podoensis*); pepper-bark tree (*Warburgia salutaris*); Clanwilliam cedar (*Widdringtonia cedarbergensis*); and Willowmore cedar (*Widdringtonia schwarzii*).

and management of plantation forestry to achieve equitable economic and social benefits, particularly in rural areas
- Indigenous Forest Restructuring develops and promotes policies to support the sustainable development and management of indigenous forests to optimise their social, economic and environmental benefits
- Forestry Oversight develops policies in support of sustainable forest management (SFM), oversees the sector and ensures that policy at all levels of government is coherent
- African Forestry Liaison promotes sustainable forest management in Africa in support of NEPAD
- Community Forestry develops and promotes policies to empower communities and disadvantaged groups to make use of tree and forest resources to support sustainable livelihoods
- Forestry Management Support provides efficient general administration and management support
- Plantation Management supports the sustainable development and management of plantation forestry at regional level to achieve equitable economic benefits, particularly in rural areas
- Indigenous Forest Management supports the sustainable development and management of indigenous forests to optimise their social, economic and environmental benefits
- Forestry Governance supports SFM in South Africa by overseeing the community forestry sector
- Community Empowerment helps disadvantaged communities and groups to make use of tree and forest resources to support sustainable livelihoods
- Forestry Support Services provides support services for regional forestry activities in management, human resources, finance and general administration.

South African Forestry Company Limited (SAFCOL)

SAFCOL, a wholly-owned State enterprise, was formed in 1992 and acquired the Department of Water Affairs and Forestry's forestry assets and related business with effect from 1 April 1993.

SAFCOL's objectives were to enhance the development of the local forestry industry and to optimise the State's forestry assets through running the business according to accepted commercial management practices and SFM principles.

At the time of its creation, SAFCOL managed 256 000 ha of world-class softwood sawlog plantations, and six small sawmills and pole-treating plants. Its annual roundwood production of 3,3 million m^3 represented a significant contribution to the industry's total output and provided the sawmilling industry with 75% of its fibre requirements.

In 2003, the SAFCOL group of companies reported a net profit before tax of R140,1 million. The Company declared a dividend of R50 million which was paid to shareholders in December 2003.

The Company had no government guarantee as at 30 June 2003, but it did have an agreement with the Department of Water Affairs and Forestry to receive a transfer payment of R14 million per year for four years, with the last payment due on 1 April 2005.

The purpose of this transfer payment is to cover the funding shortfalls resulting from SAFCOL's taking over the loss-making operations of the Department of Water Affairs and Forestry in 2001, and also to cover certain residual liabilities associated with the Cape Conversion Process and the rehabilitation of exit areas in the vicinity of the Greater St Lucia Wetland Park.

A special restructuring dividend is payable to government as the sole shareholder of SAFCOL upon successful completion of each transaction.

The restructuring process also has further benefits for government and the people of South Africa in the form of annual lease rental payments of about R20 million, which is generated from the land leases, as well as various socio-economic undertakings that the successful bidders for the various packages have committed to as part of the restructuring transactions. Finally, the shareholding of each of the successful bidders includes significant Black ownership, varying between 10% and 50% of the bidding vehicles.

The decision by government to restructure its forestry assets, not only those managed by the

Department of Water Affairs and Forestry, but also those managed by SAFCOL, has had a marked impact on the company and the local industry.

Once the process is complete, SAFCOL will warehouse the minority interests in the privatised entities on behalf of government, its shareholder.

Progress in the restructuring of the commercial forestry assets of the State in 2002/03 centred around three significant forestry assets, namely Komatiland Forests (Pty) Ltd, Mountain-to-Ocean Forests (Pty) Ltd and Amatola Forestry Company (Pty) Ltd. These are three of the four special-purpose vehicles formed to assist in the restructuring process; the other one being SiyaQhubeka Forests (Pty) Ltd.

Industry and exports

The industry was a net exporter to the value of over R4,8 billion in 2003, more than 97% of which was in the form of converted value-added products. This trade surplus represented 30,1% of the country's entire trade surplus of R16,1 billion in 2003.

The forest-products industry ranks among the top exporting industries in the country, having contributed 3,63% to the total exports and 1,97% of total imports in 2003.

Capital investment in the industry amounted to some R21 billion in 2003. Investment totalled R16,3 billion in 2001 and R9,7 billion in 1999.

The value of forest-product exports has grown significantly over the past decade, from R2,3 billion in 1992 to R9,9 billion in 2003, a growth of 324%. In real terms (taking inflation into account), this growth was 93% or a compounded real growth of 6,2% per year over that period. As imports did not increase to the same extent as exports, the net trade balance in foreign trade in forest products increased even more, by 427% in nominal terms (141% in real terms) to R4,9 billion in 2003.

In 2003, paper exports were the most important (R3,585 billion or 36% of the total), followed by solid wood products (R3,312 billion or 33% of the total), pulp (R2,831 billion or 29% of the total), and other products (R0,311 billion or 3% of the total). Woodchip exports, which are exported mainly to Japan, accounted for 58% (R1,909 billion) of the total solid wood products exports.

Stringent environmental codes of practice are implemented in all plantation and processing 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 developing local criteria, indicators and standards for SFM and makes recommendations on how public access to State-owned forests can be improved.

Sustainable forest management

The commercial forestry industry in South Africa is committed to practising SFM and is a world leader in forest certification. This is demonstrated by the fact that over one million ha, or over 80% of the entire area of commercial forestry plantations in South Africa, is currently certified by the Forest Stewardship Council (FSC) and the ISO 14001 certification schemes as being sustainably managed.

South Africa has one of the largest areas 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 that their land is man-

In October 2004, the Minister of Water Affairs and Forestry, Ms Buyelwa Sonjica, launched the third annual Weedbuster Week in Rustenburg, North West.

Weedbuster Week aims to protect South African plants and raise public awareness about alien plants. It is also part of the annual Working for Water Programme spearheaded to prevent and manage invasive alien plants.

Ms Sonjica called on individuals, communities and governments to collectively focus on protecting and respecting the country's natural resources under the theme *Safeguarding Our Natural Heritage*.

aged 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.

There has also been a large increase in the number of non-corporate growers who have become certified. This has been for a number of reasons, among others, the acceptance by the FSC of 'group-certification schemes' and the availability of local FSC auditors, both of which have reduced the cost of certification considerably.

Another development has been the introduction of Small Low Impact Managed Forests audits which enable small and community forestry schemes to be FSC-certified. As part of its commitment to the practice of SFM, the forestry industry is also involved in the NFAC's Committee for SFM, whose primary responsibility it is to develop criteria, indicators and standards for SFM, tailored to meet South Africa's specific conditions.

The Institute of Natural Resources, which was contracted by the Committee for SFM to develop these criteria has, after an extensive consultative process, developed a draft set which was being tested in mid-2004.

Through the Forestry Industry Environmental Committee, a set of environmental guidelines was published in 1995 to encourage and facilitate timber growers to practise SFM through the implementation of best environmental practices.

These guidelines were not only highly acclaimed, but widely used both within South Africa and abroad. A second updated, and far more comprehensive and user-friendly edition of the guidelines was published in July 2002. These are being used by the certification agents for the auditing of the physical environment component of their FSC audits.

The indigenous forests of the southern Cape received FSC certification, which is a first on the continent for high forests. This is a major step towards the sustainable management of the country's natural forests.

Legislation

The restructuring of the forestry sector is supported by the National Forests Act, 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. By mid-2004, the criteria, indicators and standards that were being developed for SFM were piloted for testing.

The Act ensures 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-canopy forest

There are about 530 000 ha of indigenous high forest in South Africa, amounting to about 0,45% of the country's land surface.

These forests occur mainly on the eastern and southern slopes of mountain ranges from the Soutpansberg in Limpopo to the Cape Peninsula in the Western Cape.

High forest is normally found in isolated pockets, varying in size from only a few hectares to several thousand hectares.

The largest area of high forest (36 000 ha) lies within a strip some 220 km long and 26 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 occurs mainly 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 Limpopo, 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.

Systematic timber harvesting occurs in areas of the production management class. Harvesting is concentrated on overmature trees, with logs being sold by tender and/or on public auction. On average, 3 750 m^3 of round logs are harvested annually (150 m^3 of stinkwood, 750 m^3 of yellowwood, 2 500 m^3 of Australian blackwood and 350 m^3 of other species). Timber harvesting in Knysna amounts to 2 600 m^3. 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 Limpopo, 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 livestock. The tree growth along much of the coast is classified as coastal scrub, with the exception of patches of high forest at Alexandria and along the Eastern Cape coast.

Planted forests

During the 1930s, 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 established large plantations of pine, eucalyptus and wattle trees.

The private sector owns 1 028 877 ha (or 76%) of the total plantation area of 1 351 402 ha as well as virtually all the processing plants in the country. The remaining 24% (322 525 ha) is under public ownership. The extent of public ownership will decrease significantly once the restructuring process is complete.

In 2003, the capital investment in these plantations stood at R15 billion, 55% of which was attributable to investment in trees. A further 23,3% was tied up in land, 13% in roads, 7,2% in fixed assets and 1,4% in machinery and equipment.

The forestry industry is promoting rural development and economic empowerment through a small-grower afforestation programme. By mid-2004, there were more than 20 000 small emerging Black timber growers, the vast majority of whom operated through schemes run under the auspices of Sappi Forests (Project Grow), Mondi Forests (Khulanathi) and the Wattle Growers' Association. Combined, these growers, most of whom were women, cultivated 48 000 ha of plantations.

Plantation yields

Of the 1 351 402 ha of plantations in 2002, 52% were softwood species and 48% hardwood species. Thirty-seven percent of the plantation area was

In February 2004, the Ministry of Water Affairs and Forestry launched the national Working on Fire Programme, which is aimed at bringing wild fires under control.

The Programme was developed by the Working for Water Programme, the Forestry Division of the Department of Water Affairs and Forestry, and the National Disaster Management Unit in the Department of Provincial and Local Government.

The Programme aims to create eight pilot fire-fighting regions in Mpumalanga, KwaZulu-Natal, the Free State, Limpopo, southern Cape, Western Cape and the Eastern Cape.

Government has invested R24 million from the Working for Water budget into the Working on Fire Programme. An additional R35 million was allocated for the 2004/05 financial year.

By the beginning of February 2004, the first batch of 22 youths had completed training in basic fire-fighting skills, helicopter procedures and fire prevention.

managed mainly for saw-log production, 56% for pulpwood and 4% for mining timber, while the balance of 3% was grown for the production of poles, matchwood (poplar) and other minor products. Plantation yields vary from an average of 16 m^3 per ha per year for softwood, to 21 m^3 per ha per year for eucalyptus and 10 m^3 per ha per year for wattle (timber and bark).

Likewise, the rotation ages vary from a maximum of 30 years in the case of pine saw-logs, to six to 10 years in the case of eucalyptus pulp and mining timber.

The production from plantations amounted to some 16,6 million m^3 or 14,6 Mt in 2002.

Primary wood-processing

South Africa has 182 primary wood-processing plants, 161 of which are owned by the private sector and only six of which are owned by local and State authorities. Of these, some 103 are sawmills; 12 mining-timber sawmills; 41 pole-treating plants; 20 pulp, paper and board mills; one match factory; and five charcoal plants. The total roundwood intake in 2002 was 17,2 million m^3 valued at R3,3 billion. The value of sales of timber products produced by these primary processing plants totalled R13 807 million. An amount of some R20 billion was invested in primary roundwood-processing plants (at book value). At market value, this increased to an estimated R30 billion.

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.

The Minister of Water Affairs and Forestry, Ms Buyelwa Sonjica, launched the Ga-Mashishi Woodlands Project in Limpopo during National Arbour Week in September 2004.

The Project is a partnership between the Department of Water Affairs and Forestry and the local community.

The people from Ga-Mashishi and surrounding communities benefit from the Project in terms of firewood, wild fruits and vegetables, grazing for their livestock, fencing material, medicine, water and soil conservation.

Research and training

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

Degrees in forestry are offered by the Faculty of Agricultural and 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 University of Technology, George (Saasveld Campus). The Natal University of Technology offers a diploma in Pulp and Paper Technology. The 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.

Community forestry

The *White Paper on Sustainable Forest Development in South Africa* states that community forestry is 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 tree-centered projects in urban and rural areas, woodlots and woodland management by communities and individuals. Community forestry has gained impetus through more focused core functions, particularly in urban greening and forest enterprise development.

Participatory Forest Management (PFM) in the Department of Water Affairs and Forestry has emerged as an integrated approach that contributes to achieving the goal of the SFM of South African forests.

Elements of PFM were initially developed for indigenous State forests, but the aim is to use PFM

as an approach for the management of all forest types where feasible (indigenous forests, plantations, woodlots and woodlands) and where different types of ownership and management (State, provincial, communal, private and community) exist.

The PFM Policy covers all forest resources in South Africa that are under the jurisdiction of the National Forests Act, 1998. For forest land under State ownership, custodians are requested to adhere to the principles of SFM, including the PFM Policy.

The PFM Policy involves keeping in line with and supporting other policy developments on local economic development, the protection and management of natural resources and biological diversity, the transfer of management of government assets, forest-enterprise development, and support for HDIs and the constitutional rights of all South Africans.

The more detailed approach and priorities for the actual implementation of PFM are guided by the forthcoming strategies for PFM and for Forest Enterprise Development.

PFM is aimed to be:

- the best practice for the management of all State forests
- a key element in the management of the State-owned commercial plantations managed under a private lease
- part of the scope for forest enterprise development
- implemented with communities in the management of woodlots and woodlands.

The PFM Policy is subject to policy directions as set out in the:

- *White Paper on Sustainable Forest Development in South Africa*
- National Forestry Action Programme
- National Forests Act, 1998
- Framework for the PFM Programme
- Policy and Guidelines on Access to State Forests
- Policy and Strategy for Management Devolution of State Natural Forests to other Agents.

Food and Trees for Africa (FTFA)

FTFA is the sub-Saharan African partner of the International Global Releaf greening organisation.

In 2003, the FTFA trained some 637 community and government representatives, planted 29 398 trees with a survival rate of more than 80%, and facilitated some 34 urban greening projects in the greater Johannesburg area.

The Urban Greening Fund is managed by the FTFA, the departments of Water Affairs and Forestry and of Agriculture, and the Institute of Environment and Recreation Management. It was set up with donor funds, which included R1,2 million from the Department of Water Affairs and Forestry.

It is a collective fund that supports partnerships aimed at sustainable development through tree planting, parks and food-gardening projects and environmental education.

Organisations, companies and individuals can contribute to the Fund to help disadvantaged South Africans to create a greener, healthier and more secure food life.

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. EduPlant provides greener environments conducive to learning. It focuses on permaculture and has received a R2 million grant from the Department of Water Affairs and Forestry.

Through the Eduplant Programme, schools are able to grow their own food using permaculture principles. This contributes to food security and poverty alleviation.

The Eduplant 2004 Awards Ceremony took place on 28 September 2004. The annual event celebrates the achievements of all educators and learners who participate in the Eduplant Programme.

Between 1995 and September 2004, Eduplant reached 14 500 educators from more than 12 000 schools around South Africa.

Acknowledgements

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