

1 INTEGRATED WATER RESOURCE MANAGEMENT

In order to report efficiently on the objectives outlined in Chapter 3, they have been clustered into logical groupings and structured into , as outlined below and discussed accordingly in the sections that follow:

- Implementing policies, plans and programmes for integrated water resource management
 - Develop and implement national/ regional strategies, plans and programmes with regard to integrated river basin, watershed and ground water management (Chapter IV, 26(a) & Chapter VII, 66 (b))
 - Establishment of public-private partnerships and other forms of partnerships that give priority to the needs of the poor (Chapter IV, 26(g))
- Technologies for alternative water supply
 - Diffusion of technology and capacity-building for non-conventional water resources and conservation technologies to developing countries and regions facing water scarcity (Chapter IV, 26(e) & 28)
 - Programmes for energy-efficient sustainable and cost-effective desalination of sea-water, water recycling and water harvesting(Chapter IV, 26(f))
- Managing water resources in the context of extreme events
 - Programmes for mitigating the effects of extreme water-related events(Chapter IV, 26(d))
- Information generation and dissemination
 - Support regional, sub-regional and capacities for data collection and processing and for planning, research, monitoring, assessment and enforcement (Chapter IV, 27 & Chapter VIII, 66 (c))

1.1 Implementing policies, plans and programmes for integrated water resource management

1.1.1 Progress

As a result of South Africa's Reconstruction and Development Programme since the early 1990s, focusing on poverty eradication and social and economic development, together with fundamental shifts in the policy and legislation of various sectors in the country, including water, it was possible during the WSSD in Johannesburg during 2002 to indicate that some of the millennium goals in respect of water services for 2015 have almost been met at that stage (the water supply goal was met in 2004). South Africa's national water policies and legislation fully subscribe to protecting and managing the natural resource base of economic and social development as contained in Chapter IV of the JPOI. The water sector is focused on achieving the targets of the JPOI through their water resource management strategies. Projects and programmes are focused on job creation, gender mainstreaming, poverty alleviation and economic growth, whilst promoting sustainable water resource management.

An important contributing factor to this major achievement was substantial donations from a large number of donor countries in cash and in kind, together with the development of a sector wide approach to focus the strengths of the overall water sector towards harmonised delivery,

whilst effecting the efficient and effective incorporation of other relevant sectors of government, such as finance. During 1994 an estimated 59% of the population of around 38 million had access to basic water supplies. This has now improved to an estimated 86% of a total population of around 49 million people having access to at least basic water supplies by March 2007. In respect of sanitation an estimated 52% of the 1994 population of 38 million had access to at least basic sanitation services and this number has now improved to around 69% of a total population of around 49 million with such access.

The country furthermore indicated at the 2002 WSSD that it strives to have the overall backlog in respect of water provision eradicated towards 2008 and that of sanitation towards 2010. Due to various constraints it is uncertain whether these objectives will be fully met, but, over the past number of years, the country has been providing access to basic water supplies to an additional one million people per annum and sanitation services to an additional 200 000 households per annum.

DWAF maintains a wide spectrum of water services support programmes to municipalities, e.g.:

- Local authorities are obliged to develop and update Integrated Development Programmes (IDPs) to reflect their overall short to medium term development objectives. In terms of the **Water Services Act (Act 108 of 1997)**, IDPs must contain a chapter on water, called the Water Services Development Plan (WSDP). DWAF has developed extensive guidelines for municipalities to enable thorough water management planning to this end and furthermore provides direct assistance to municipalities in this respect;
- Municipal infrastructure are not adequately operated, maintained and refurbished due to lack of resources and capacity. This could largely be ascribed to inadequate or absent infrastructure asset management (IAM). DWAF is leading the way to establish an IAM strategy for water services; and
- The Department has a close working relationship with research institutions such as the Water Research Commission (WRC) and independent water management institutions such as the Water Institute of Southern Africa (WISA).

DWAF is the government department responsible for the formulation and implementation of policies governing South Africa's water and forestry sector. It strives to ensure that South Africans gain access to clean water and safe sanitation, and promotes effective and efficient water resources management to ensure sustainable economic and social development. Presently it is responsible for water resource management in terms of developing policies, implementing programmes as well as monitoring and regulating South Africa's water resources.

The country's first **Water Supply and Sanitation Policy**, approved during 1994 and followed by the Water Services Act (No. 108 of 1997), gave expression to the relevant reconstruction and

development objectives of the Government. The focus was largely on the provision of basic water and sanitation services to previously neglected communities and DWAF's direct role at that stage in the delivery of basic services to households. As a result of the completion of the country's local government transformation process towards 2000, thus empowering LAs to assume full operational responsibility for their constitutional mandate for water services, DWAF has been reviewing its role to be more of that of the sector leader, regulator and supporter. The consequent new Strategic Framework for Water Services was approved by Cabinet in September 2003 and the Department is currently leading the process to revise the 1997 Water Services Act (No. 108 of 1997) to reflect these new water services stances.

In terms of water resource management, the first National Water Research Strategy (NWRS) was approved in September 2004 fulfilling the requirements of the National Water Policy and National Water Act, No 36 of 1998. This strategy provides a framework to protect, use, develop, conserve, manage and control South Africa's water resources. A key approach to this strategy is the promotion of self regulating CMA's and other water management institutions, thereby shifting DWAF's role to a sector leader, regulator and supporter. Currently the Department is developing guidelines for Catchment Management Strategies (CMS's) for each CMA. The **NWRS** was approved in September 2004 and strives to:

- Provide a national framework to manage the country's limited water resources equitably, sustainably and efficiently, focusing on poverty eradication, the well-being of water ecosystems and honouring international obligations through harmonious best joint use of water in shared river basins;
- Provide a vehicle whereby the South African society could be informed of the Departments mandate in respect of water resource management. In this respect, the NWRS may only be established when the Minister is satisfied that everyone who wishes to comment has been afforded the opportunity and that these comments have been given careful consideration for possible incorporation into the Strategy;
- Provide a framework for development of catchment management strategies for delineated water management areas, of which there are currently 19 covering the whole of South Africa; and
- Identify areas for social and economic development opportunities where water is available and also areas where water will form a constraint.

Increasing water use and demands in South and southern Africa has resulted in an increased need for projects and programmes focused on job creation, gender mainstreaming, poverty alleviation and economic growth, whilst promoting water resource management. One successful initiative achieving these goals is the **Working for Water (WfW) programme** which to date currently runs over 300 projects in all nine of South Africa's provinces (please see Box 5). The provision

of clean drinking water and adequate sanitation to all the people of South Africa is another key strategy to promote poverty eradication. The Department has put considerable effort and resources into supporting Local Authorities to fulfil water delivery and sanitation requirements, and during 2005/2006 approximately 200 000 households housing approximately a million people were provided with water and sanitation (DWAF, 2006).

Box 5: Working for Water Programme

The WfW was initiated in 1995, and since then has become an internationally appraised project. It works in partnership with local communities, Government departments including the DEAT, DoA, and Trade and Industry, provincial departments of agriculture, conservation and environment, research foundations and private companies.

The programme involves the clearing of alien invasive species, and to date it has cleared more than one million hectares of invasive alien plants. It has provided jobs and training to approximately 20 000 people, per annum, from among the most marginalized sectors of society. Of these, 52% are women. The WfW programme currently runs over 300 projects in all nine of South Africa's provinces.

A key characteristic of WfW is its commitment to the development of people as an essential element of environmental conservation. Consequently it promotes environmental rehabilitation and protection, as well as social development through the promotion of an enabling environment for skills training, in the communities wherever it works. It also implements HIV and Aids projects and other socio- development initiatives as part of its objectives.

Another programme which has growing success in the delivery of water is called **Water Allocation Reform (WAR)**. This is a proactive approach towards redressing race and gender inequalities regarding water-use, through the promotion of economic development purposes. It is very dependent on a co-ordinated approach to ensure that water of adequate quality and quantity is readily available for South Africa's citizens for these purposes. Apart from dealing with equity in water use among the big water users, WAR also focuses on helping smaller users and poor people use water productively to give them the opportunity to be able to participate in the economy as well. It specifically deals with water use that goes beyond domestic water provision. The WAR programme amongst others is implemented through provincial and local government through their provincial growth and development plans and IDPs.

During the period of the Community Water Supply and Sanitation implementation by the Department of Water Affairs and Forestry (period between 1994 and 2003) issues of

empowerment of women and gender equity were integrated into project implementation. Guidelines were put in place and monitored to ensure that women participated meaningfully in all structures including decision making levels. They benefited from project related training as well as a few life skills training. Plans are being developed to integrate women's empowerment programmes into current infrastructure initiatives like the De Hoop dam in Limpopo. The Masibambane 111 theme of water for growth and development also creates opportunities to develop focused attention to empowerment issues without affecting the overall gender mainstreaming mandate adversely. The practice of recognizing and appreciating contributions of women in Water, Sanitation and Forestry by means of annual awards is an integral part of the departments overall programme.

South Africa has adopted the principles of IWRM into their national policy and legal framework. IWRM calls for integration at a regional, national and local level, and implementation of its policies and strategies to promote sustainable development in South and Southern Africa. The **SADC Protocol on Shared Watercourses promotes regional cooperation towards regional and basin-wide cooperation**. In South Africa this approach is imperative as eleven of the nineteen Water Management Agencies (WMA's) in the country share international rivers. A good example of implementing an integrated river basin and watershed management strategy is that of the ORASECOM. This is an agreement between Botswana, Lesotho, Namibia and South Africa which requires that all basin-wide matters relating to the development, utilisation and conservation of the water resources in the river system are jointly discussed in ORASECOM. The SADC protocol, however, still lacks a framework designed to manage groundwater resources between South and southern Africa, and the significance of this gap requires attention. South Africa has an important role to play as a negotiator within the SADC region. On a more continental scale the Department represents the SADC on the Technical Advisory Committee of the AMCOW.

1.1.2 Challenges and opportunities

The implementation of water resource management has shifted over the years into a more cooperative governance framework. This framework promotes local level management of resources which requires both financial resources and capacity at a local level. During the year 2005-2006 it was reported that a water summit was held in each province to ensure the alignment of provincial and local government strategies for water resource management with IWRM and DWAF objectives. This is a key theme to ensuring that programmes are aimed at achieving national policies. Ensuring stakeholder willingness requires that both government and civil society understand the necessity surrounding water resource management, however the skills shortage in the Department may impact on its ability to effectively monitor the local level situation. The development of the Framework Programme for Research, Education and Training in Water (FETWater) should assist in awareness creation and capacity building.

The programmes developed for capacity building at a government level and awareness training at a local level will promote water resource management from a bottom up approach. DWAF must continue to monitor these strategies, whilst simultaneously monitoring non-compliance.

The greatest challenge centres on difficulties to access adequate financial resources to address targets. The second challenge identified is the minimal skills and capacity of water sector practitioners (engineers and technicians) as well as the Civil Society Organisations operating in the sector. The African Network for Water and Sanitation is, however, playing an active role in the water and sanitation field and is both experienced and capable. This challenge also poses a threat to sustainability of services which have to be ensured by among other things proper ongoing maintenance and operations systems of completed schemes.

In order to address the skills and capacity challenges the government of South Africa made seed funding available from the European Union donor funding to initiate capacity building and lesson sharing programmes in the region. This seed funding helped regional stakeholders undertake processes of consultations, putting together proposals for the SADC, secretariat's approval, developing training modules as well as translation of documents into French and Portuguese (languages used in Angola, Mozambique and the Democratic republic of Congo) The SADC water division raised funds for the pilot training and capacity building programme in seven (7 countries)

The South African Institute of Consulting Engineers (SAICE) and the African Engineers Forum (AEF) played a leading role in developing training modules for practicing engineers and Technicians as well as organising training programmes in various countries during the pilot phase. The Network for Advocacy on Water Issues in Southern Africa (NAWISA) currently housed by the Kalahari Nature Conservation in Gaborone carried the responsibility of developing Business plan for the Civil Society capacity building programme which will soon be implemented. Working together with the Water Division this programme managed to obtain minimal financial support from DANIDA.

Capacity building and training of Engineers and Technicians. Training Courses have been developed to address needs identified by the practitioners:

- Small water treatment plants
- Preventative maintenance in water and sanitation infrastructure
- Socio economic assessment
- Principles of water demand management

Planning for the provision of water in South Africa is hampered by the need to provide services to a significant number of refugees in the country, by unprecedented economic growth and by the lack of suitably skilled staff to implement projects.

1.2 Technologies for alternative water supply

1.2.1 Progress

Programmes implemented to promote water recycling and water harvesting are being researched by various institutions. To date the most effective programme developed has been the warm cloud seeding methodology. This strategy uses of hygroscopic substances released at the base of convective thunder storms through flares fixed to aircrafts to enhance rainfall. This seeding typically leads to a doubling of the amount of rain precipitating from convective thunder clouds and the methodology is highly acclaimed at the international level. On an area basis, it would appear that the average rainfall could be increased from 5 to 8%. Other types of unconventional water resources still require further research, and this should be implemented to promote alternative methods for access to water as a programme to reduce pressures on South Africa's water resources.

1.2.2 Challenges and opportunities

Seeking environmentally acceptable and cost efficient water supply technologies remains a challenge to South Africa. In this regard, opportunities for improved water resource management include:

- Developing alternative resource supplementation for consideration in the future (such as desalination);
- Assessing groundwater as a potentially available resource in the future;
- Assessing and implementing alternative sanitation technologies that are socially and environmentally acceptable; and
- Increasing compliance and integration of cleaner water technologies and demand management.

1.3 Managing water resources in the context of extreme events

1.3.1 Progress

South Africa has developed a **Disaster Management Act (No. 57 of 2002)** which calls for a preventative and proactive approach to disaster management. Mitigating the effects of extreme

water-related events requires that the three spheres of government (namely DWAF, LA and Catchment Management Areas (CMA's) implement a cooperative governance framework aimed at dealing with water-related disasters in a practical manner. Early warning systems must be developed to ensure the effective management of water-related disasters, thereby reducing their impacts on communities and South Africa's water resources.

Strategies for managing South Africa's water resources have been developed to take account of the country's variable and unpredictable climate and the resulting limited availability of unevenly distributed water. The strategies, which are described in the NWRS, scheduled to be established in terms of the National Water Act, No. 36 of 1998, during 2004, provide a sound basis to address the anticipated effects of climate change without the need for special programmes or projects. However, the effects are likely to manifest themselves at different times in different parts of the country, and to vary in magnitude from area to area. A better understanding of these issues is expected from ongoing research programmes funded and managed by the WRC, which will facilitate prioritising intensified interventions in areas where the effects are greatest and/or will occur soonest. It will be necessary to improve meteorological and hydrological monitoring systems to detect the onset and development of the effects of climate change on water resources.

1.3.2 Challenges and opportunities

Climate change continues to have the potential to impact on South Africa's water resources significantly, and long-term planning and water management decisions must incorporate both the current water demands whilst still implementing strategies to minimise the impacts of climate change on future water resources. Approaches to water resources management that will facilitate adaptation to a changed climate, include:

- Comprehensive and integrated planning across river catchments allowing for co-ordinated solutions, using an appropriate mix of demand and supply-side interventions, to the problems of water quantity, water quality and water supply;
- Replacing in-perpetuity riparian water rights with a system of time-bound administrative authorisations to use water that are subject to regular review will provide flexibility to adjust water allocations to account for changes in the availability of water.
- The demand for water may be reduced in all user sectors through a range of measures that encourage efficient water use. These include implementing the pricing strategy for water use charges prescribed in the National Water Act (No. 36 of 1998), promoting the use of water-efficient technologies and practices, mandatory water auditing and accounting, and education in water conservation and demand management.
- Water conservation measures such as clearing alien invasive vegetation from infested catchments will increase the amount of surface water runoff and recharge to groundwater,

whilst water harvesting in agriculture and homes, especially those in rural areas, could reduce reliance on supplemental irrigation by optimising the effectiveness of rainfall.

1.4 Information generation and dissemination

1.4.1 Progress

DWAF manages a number monitoring programs to assess the status of water resources in the country, and has instituted a significant program of institutional reform to establish water resources management at a catchment level. Water resources information structures in DWAF are also adapting to this approach to provide an effective Water Resources Information Service to the future decentralized institutional environment as a national service. The following have been implemented:

- A total of 9 national water quality programs covering chemical, biological, toxicity and radioactive contamination are operational, or being implemented. Results from these and other, local monitoring programs (e.g. compliance monitoring) are maintained in a computerized database for storage, dissemination and presentation, called the Water Management System. Plans are underway to replace this database as the first module of a new Integrated Water Resources Information System;
- A number of surface flow gauging stations are also in operation to monitor river flow and reservoir status. The expansion of this program has received additional funding for this year and the next three years. Surface flow and evaporation information is available on the Internet from the Surface Flow Database. This service also includes 320 real time stations for operational and disaster management purposes, as well as the database for the real time network, covering all Southern African countries;
- A number of groundwater programs are also underway, including integrated programs monitoring the relationship between rainfall and surface water status and related groundwater resources. This, and related information is available for the National Groundwater Archive which will soon be launched as a Web portal (for both capturing and dissemination);
- The programs to monitor, register and license water uses in support of demand management is also progressing well with related information maintained in the Water Authorization Registration;
- A comprehensive GIS service for the water sector, including remote sensing and land information services to support a variety of functions; and
- Information Centre is being established to ensure accessibility of information to the public.

1.4.2 Challenges and opportunities

Major expansions to the country's river flow gauging infrastructure are required for the country to come on par with international flow gauging standards. In addition, South Africa needs to undertake consistent data collection throughout the country in which data from the local, provincial and national monitoring programmes are integrated and made available to all water resource management institutions.

Research is being undertaken by institutions such as the WRC and independent water management institutions such as the WISA. South Africa realises the limits of this resources and has developed much research into the sector. It is imperative that this research guides policies and programmes implemented in the sector, to promote effective water resources management.

Table 2: South Africa's contribution to meeting the targets of Chapter II of the Johannesburg Plan of Implementation (CSD-13)

CSD - 13	ISSUE	PROGRESS
	Need to mainstream sanitation plans and policies with integrated water resource management	South Africa has a well developed strategic planning process that is applied at all levels of government and closely interlinked with its budgeting processes. This process ensures that strategic priorities and objectives are recognised and cascaded down to operational levels where it is balanced with bottom up needs established through the local government integrated planning processes. The Department of Water Affairs and Forestry (DWAF) is the Water Sector leader and as such sets policy, regulates and supports water and sanitation service delivery.
	Multi-stakeholder approach to planning and implementation	Multi-stakeholder approach to planning and implementation for Water and Sanitation is achieved through dedicated Water Services Development Plans, that forms part of the local government integrated planning processes.
	Decentralised provision of sanitation services	South Africa's National Sanitation Programme is planned and implemented through its 155 Water Service Authority Municipalities, thereby achieving the decentralisation goals.
	Capacity building, including training in formulating and negotiating contracts, financial administration and cost recovery mechanisms	Through its Operation Gijima and Masibambane support programmes, the Department of Water Affairs and Forestry provides hands on support to Water Service Authority Municipalities. His support includes inter alia, Capacity building, including training in formulating and negotiating contracts, financial administration and cost recovery mechanisms
	Implementing sustainable sanitation solution systems	As Water Sector leader the Department of Water Affairs and Forestry provides policies and guidelines to ensure sustainability of sanitation solutions. An appropriate technology programme has been launched

CSD - 13	ISSUE	PROGRESS
		recently, supported by an information dissemination project to ensure that Water Service Authority Municipalities are fully aware of all the latest developments, information, guidelines and policies related to sanitation planning design and implementation.
	Active involvement of the poor in infrastructure and service planning and Cross-subsidisation of charges for sanitation	South Africa is very proud of its achievements in respect of Free Basic Service provision. To this effect the Department of Water Affairs and Forestry has developed a Free Basic Policy for both Water as well as Sanitation Service provision.
	CBOs catalyst for improved hygiene and sanitation in rural communities	The widespread use of Sanitation Resource centres in some of the larger provinces with high percentages of rural populations was found to be very effective in mobilising the community to ensure improving sanitation as well as health and hygiene in these areas.
	Improved sanitation service delivery through setting of targets	The Department of Water Affairs and Forestry, together with the Departments of Health and Education have set early targets for the achievement of eradication of service backlogs in schools and clinics. Similarly, did the Department of Water Affairs and Forestry set early targets for the eradication of the unacceptable bucket systems. Setting these targets and ensuring that matching funding is available has ensured that success has been achieved in these areas.
	Regular surveys	The levels of sanitation services are determined through targeted questions included in the 10 year Census as well as annual household surveys conducted by the Statistics South Africa. This provides independent verification of the performance of National programmes such as the National Sanitation Programme.

Table 3: Sanitation Review

JPOI Target	ISSUE	PROGRESS
8 (a)	Develop and implement efficient household sanitation systems;	South Africa has implemented a National Sanitation Programme with sub-programmes in each of the 155 Water services Authority Municipalities. South Africa has superseded the 2015 MDG of halving the proportion of people without access to safe drinking water. As from 1994 to 2007, access to basic water supply has increased from 59% in 1994 to 86% in 2007 and access to basic sanitation has increased from 48% to 71%. The Sanitation Bucket Eradication Programme is at its close and about 84% of the 252 254 systems in the formal areas originating prior 1994 have been eradicated as at March 2008.
8 (b)	Improve sanitation in public institutions, especially schools;	South Africa has launched a final programme to eradicate sanitation backlogs at Schools and Clinics. The Clinics backlog was cleared in 2007/08 and funding is available to clear the Schools backlog by 2009/10
8 (c)	Promote safe hygiene practices;	South Africa has implemented a very successful Health and Hygiene programme that s totally integrated with the sanitation service implementation programmes. These interventions have succeeded in drastically reducing incidents of cholera outbreaks I the Eastern Provinces of the country .The health & Hygiene strategy was launched during 2007 sanitation week .
8 (d)	Promote education and outreach focused on children, as agents of	South Africa has implemented an integrated approach and the Department of Education is actively partnering with the Department of Water Affairs and the Department of Health to ensure that appropriate Health and

JPOI Target	ISSUE	PROGRESS
	behavioural change;	Hygiene practices are embedded in families through the education of children. Health & hygiene is incorporated in school curriculum from grade R-9 .
8 (e)	Promote affordable and socially and culturally acceptable technologies and practices;	As a result South Africa uses other alternative technologies of sanitation like Ventilated Improved Pit Latrine (VIP). The effort of providing alternative sanitation has spin offs of providing jobs while making use of labour intensive construction methods. In the process of delivery of alternative sanitation programme there are some linkages with other developmental programmes that benefit rural communities such as income generation, skills development and job creation programmes.
8 (f)	Develop innovative financing and partnership mechanisms;	South Africa has established the municipal infrastructure grant programme, which is aimed at providing all South Africans with at least a basic level of service by the year 2013 through the provision of grant finance aimed at covering the capital cost of basic infrastructure for the poor. The MIG programme is a key part of government's overall drive to alleviate poverty in the country and, therefore, infrastructure is to be provided in such a way that employment is maximised and opportunities are created for enterprises to flourish.
8 (g)	Integrate sanitation into water resources management strategies.	South Africa has for several years been pursuing an Integrated Water Resource Management Strategy to, inter alia, integrate sanitation into water resources management strategies

Table 4: South Africa's contribution to meeting the targets of Chapter IV of the Johannesburg Plan of Implementation

JPOI Target	ISSUE	PROGRESS
25 (a)	Mobilize international and domestic financial resources at all levels, transfer technology, promote best practice and support capacity -building for water and sanitation infrastructure and services development, ensuring that such infrastructure and services meet the needs of the poor and are gender-sensitive;	Through the very successful Masibambane Programme, South Africa has succeeded to Mobilize international and domestic financial resources at all levels, transfer technology, promote best practice and support capacity -building for water and sanitation infrastructure and services development, ensuring that such infrastructure and services meet the needs of the poor and are gender-sensitive
25 (b)	Facilitate access to public information and participation, including by women, at all levels in support of policy and decision -making related to water resources management and project implementation;	South Africa is recognised as a leader in promoting gender equality, and this has also been implemented on water and sanitation projects by ensuring a minimum level of participation by women in Project Steering Committees, responsible for planning and oversight of project implementation.
25 (c)	Promote priority action by Governments, with the support of all stakeholders, in water management and capacity -building at the national level and, where appropriate, at the regional level, and promote and provide new and additional financial resources and innovative technologies to implement chapter 18 of Agenda 21;	<p>These goals are being actively pursued b the South African Government, and in Sanitation for example, stakeholder involvement at all levels have been achieved through the National, Provincial and District Sanitation Task Team Structures (NSTT; PSTT; DSTT) that have been mandated to coordinate the provision of sustainable sanitation services to all households and institutions.</p> <p>In addition, South Africa uses other alternative technologies of sanitation</p>

		like Ventilated Improved Pit Latrine (VIP). The effort of providing alternative sanitation has spin offs of providing jobs while making use of labour intensive construction methods. In the process of delivery of alternative sanitation programme there are some linkages with other developmental programmes that benefit rural communities such as income generation, skills development and job creation programmes.
25 (d)	Intensify water pollution prevention to reduce health hazards and protect ecosystems by introducing technologies for affordable sanitation and industrial and domestic wastewater treatment, by mitigating the effects of groundwater contamination and by establishing, at the national level, monitoring systems and effective legal frameworks;	South Africa has since the beginning of its Community Water Supply and Sanitation Programme implementation I 1994 insisted on the performance of a Ground Water Protocol as part of the design of any sanitation project. Where it is found that traditional Ventilated Improved Pit Latrines (VIP) cannot be used, alternative more ecological friendly solutions are required.
25 (e)	Adopt prevention and protection measures to promote sustainable water use and to address water shortages.	Water is South Africa's scarcest resource and it has long been recognised that, despite the wishes of the population, waterborne sanitation services cannot be sustainable provided for all. Hence the massive focus on dry-site sanitation solutions, such as the VIP.