Water for all.
For life.

DEPARTMENT: WATER AFFAIRS AND FORESTRY
REPUBLIC OF SOUTH AFRICA
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Masiqede ubuphofu
ngokubambisana

Lets combat poverty
by working together

Contents

Minister's Message

I write this introduction on the eve of the World Summit on Sustainable Development in Johannesburg with the understanding that sustainable development globally can only be achieved through the eradication of poverty and underdevelopment.

As a Government we have made it patently clear that the sustainability factor confronting us as a world community is poverty. South Africa's serious recognition of this, and our commitment to the eradication of poverty, is very evident in our policies, legislation and programmes.

We have acknowledged that the main barriers to achieving a world in which the next generation 's inheritance is equal to or better than its predecessors is not only environmental but also social and political. Social, because while people are struggling on the breadline, they are not going to restrain their use of the natural resources they depend on for their survival, much less allow scarce funds to be used for environmental protection. Political, because there are limits to what can be achieved in changing the way we live and work, through the exercise of political power, while resources are few and many people are hungry.

Our basis for such assertions is that we are a Government that is not just committed to the ideal of sustainable development, but are implementing it. Since 1994, water and forestry resources have made significant contributions to eradicating poverty and underdevelopment in our country.

We have shown that it is possible to provide all South Africans with access to basic water and sanitation within the framework of sustainable development. Many countries talk about the importance of recognising this as a basic human right, while we are doing it. Since 1994, we have provided water supply infrastructure to 7.2 million people. At this rate we will wipe out the infrastructure backlog for basic water supply by 2008 and for sanitation by 2010. We have exceeded the target set by the Heads of State at the Millennium Assembly of the United Nations in 2000. They declared

that by 2015 the number of the world's population without access to basic water must be reduced by 50%.

We are committed to pushing back the frontiers of poverty. Our policy of Free Basic Water is ensuring that once we provide water infrastructure, everyone served will be able to use it. Already, more than 27 million people have benefited from the policy. With this policy we have completed the foundations to ensure that the constitutional right of access to a basic water supply and safe sanitation can be met on a sustainable basis.

To sufficiently meet the needs for water, we must have reliable sources of water. Our National Water Act, 1998 (Act 36 of 1998) addresses the need to manage our water resources for the social, economic and environmental benefit of all in our country. The National Water Resource Strategy published in July 2002 is the instrument that will address how we protect our water, allocate the right to use it, develop and manage it. It is our blueprint for survival. Simply put, we will use our water resources to meet the needs of our people - to create jobs and support sustained economic development while ensuring that aquatic ecosystems, on which all life depends, are protected.

We have approached our forests and trees as a truly national resource. A resource that requires protection and is to be used for the benefit of our people, especially for those communities that need it the most, our rural communities. Our endeavours have been to ensure that forests can be utilised by communities, in conjunction with the state, for their economic advancement. We have made great efforts to ensure that there is greater participation, in all aspects of forestry and the forestry products industry, by persons disadvantaged by discrimination in the past.

Our approach, of handing the operations over to commercial management, to the restructuring of state owned forests has proved very successful. This has greatly benefited rural communities by contributing to poverty reduction through jobs, business opportunities and income. The private companies concerned have recognised that they cannot operate effectively in rural areas without good relationships with their neighbouring communities. These restructuring processes have facilitated black empowerment and allowed the previously disadvantaged a share in ownership and control of the forestry companies.

Finally, but not least, is our Working for Water Programme. This aims to eradicate invasive alien plants and is one of the biggest conservation programmes in the world. The work of clearing such plants is done in a labour intensive manner, and this has given the programme its particularly strong focus on social development. This integration of environmental concerns with social justice issues has led to the Programme gaining international recognition as a model project embracing the goals of the World Summit on Sustainable Development.

We are committed to delivering safe water and adequate sanitation to all our people. We will also develop and manage our water and forestry resources in a sustainable way to secure the well-being of our economy and our people for all time. We are continuously striving to build a better life for all those who live in South Africa.

Ronnie Kasrils, MP

Minister of Water Affairs and Forestry

South Africa achieves millennium target

...and wins Globe Water Award.

In 1994 millions of South Africans were living without access to a safe, reliable water supply and without sanitation.

At this time it was estimated that 12 million people in rural areas had inadequate access to basic water supply services and that 21 million people did not have access to a basic level of sanitation. Basic water supply in South Africa is defined as 25 litres per person per day, within 200 metres of the home and of acceptable quality. Basic sanitation is defined as a ventilated improved pit-latrine (VIP) or equivalent. The magnitude of the task facing the South African government was immense, especially given that delivery was to take place in an environment of rapid and fundamental change in the institutional and governmental structures required to give effect to South Africa's new constitution.

Facing up to the challenge-The Community Water Supply and Sanitation Programme

Addressing the water supply and sanitation backlog was one of the first priorities of the new government. From the outset the intention of the government was clear - to provide a water supply and sanitation to the poorest of the poor in rural areas and to contribute to poverty eradication. With this in mind the following key targets were set:

- The elimination of the water and sanitation service backlog over a period of 10 years.
- Each individual to have available at least 25 litres of water per day within 200 metres of their home.

- Each household to have sanitation in the form of at least a ventilated pit latrine.

It was from the determination to achieve these targets that the Community Water Supply and Sanitation (CWSS) Programme was born with a mandate:

- To ensure, through programme support to all stakeholders including local government, that all South Africans have access to sustainable, effective, equitable and economical water supply and sanitation services.

Progress to date

Within seven years the CWSS Programme has halved to seven million the number of people without access to safe, potable water. This means that South Africa has more than achieved the rate of delivery required to meet the millennium water supply target set by the first meeting of the Heads of State at the United Nations in 2000. At this meeting our President, Thabo Mbeki, together with over 100 other Heads of Sate, committed to halving the number of people lacking safe water by 2015.

...health and hygiene practices and education are critical to the success of the sanitation programme.

In terms of sanitation, the CWSS has made significant inroads into delivery. The approach of the CWSS has been on more than just building toilets. It has recognised that health and hygiene practices and education are critical to the success of the sanitation programme. The government of South Africa is committed to clearing the sanitation backlog within the next ten years.

In recognition of it's outstanding achievements in the last seven years the Department of Water Affairs and Forestry was recently announced as the winner of the Water Globe Award in Linz, Austria. This demonstrated that South Africa's programme is held in high regard internationally.

Meeting the water security and sanitation needs of the poor are key elements of the CWSS approach enabling the generation of sustainable livelihoods.

The provision of a safe, sustainable water supply, as well as sanitation , is already having a fundamental, positive effect on the country in terms of reducing the vulnerability of the poor to disasters and improving their capacity to generate sustainable livelihoods. The delivery of water to within at least 200m of people's homes has already given back countless rural women and children hundreds of hours that were previously spent carrying water.

Life-cycle Planning

The CWSS has adopted a 'life cycle' approach to project planning and implementation to ensure sustainable and appropriate service delivery. The programme takes cognisance of all critical planning, design, construction, operation and maintenance, support and

mentoring elements necessary to sustain projects. This addresses the critical need in South African society for the empowerment of rural women, job creation and poverty alleviation. Incorporating *social, community, environmental, institutional and technical* aspects in the projects has led to a demand responsive approach to service delivery and the application of appropriate technology.

Affordable Access to Water Supply and Sanitation

South Africa has one of the most advanced constitutions in the world in terms of the protection of human rights and the promotion of human dignity. It provides explicitly for "access to sufficient food and water" as a social right. The practical fulfilment of these rights, in terms of water supply and sanitation, is are being met by the implementation of South Africa's policy of "Free Basic Water". This is a pro-poor policy for equitable access which recognises the necessity of meeting basic water and sanitation needs if poverty is to be eradicated.

As of February 2002, 66% of the total population in the country who have access to water infrastructure are benefiting from this policy. 26 Million people currently have access to 6000 litres of free water per household per month. On 1 July 2002, with the new financial year of local government, 24 more local authorities implemented the free basic water policy. This will ensure that 76,5 percent of those who have access to water infrastructure will be benefiting from the policy.

The 70 outstanding municipalities to still introduce free basic water will be targeted for support to ensure that they can implement the policy as soon as possible. The CWSS Programme also provides a household grant for a basic sanitation system. In most cases this results in a bucket system or inadequate pit latrine being replaced with at least a Ventilated Improved Pit Latrine (VIP). Inter-departmental co-operation is key to the sanitation programme and this is effected at National, Provincial and Local level by co-operation between the Departments of Health, Education, Environment and Local Government.

Targeting the poorest of the poor

In order to ensure that the CWSS benefits those most in need, project prioritisation is done through a process of on-the-ground consultation with local communities and local government which identifies areas of greatest need. The success of this approach is evidenced by the fact that 90% of rural projects will have been identified and prioritised in the local Integrated Development Planning processes of local government.

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Lasting Benefits for communities

Employment creation and training have been a particular focus of the programme. The schemes implemented leave communities with more than just physical infrastructure, but also with additional skills and experience. To-date over 430 000 employment opportunities

have been generated in the delivery of water supply and sanitation systems under the CWSS. These benefits have been targeted towards women and the youth. Of the employment opportunities generated by the programme, 50% have gone to women and around one third to youth.

Future priorities of the CWSS, Masibambane-support to the water sector

Masibambane is a Water Services Sector support programme initiated by the Department of Water Affairs and Forestry with the support of donors. It signals a new way of working together in the water services sector. The name Masibambane, which is an isiZulu word meaning "lets work together", captures the spirit of this process with it's key feature of joint-decision making. Masibambane is a government led sector-wide initiative.

A central theme within Masibambane is a shift from nationally driven water and sanitation infrastructure delivery to the building of a decentralised sector. The Masibambane approach is also designed to harness the resources of the sector to tackle sanitation and water supply backlogs in a way that both delivers services and builds local government capacity. This will be achieved through institutional support by assisting various levels of public sector institutions to fully perform their functions.

Achieving sustainability while addressing poverty

The South African Working for Water Programme.

The Working for Water programme is one of the biggest conservation programmes in the world. Starting in 1995 with a budget of R25 million, the programme has grown to an annual budget of over R400 million and a cumulative budget that will go past the R2 billion mark during the 2002 financial year.

The focus of the programme is on combating invasions by alien plant species. Work to clear invading alien plants is done in a labour-intensive manner, and this has given the programme its particularly strong focus on social development. This integration of environmental concerns with social justice issues has led to WfW gaining international recognition as a model project embracing the goals of the WSSD.

The programme is a Government-led initiative which has three core Departmental partners-Water Affairs and Forestry (the lead agency), Environmental Affairs and Tourism, and Agriculture. It has additional partnerships with Government agencies, Non-Government Organisations, the private sector and civil society.

The bulk of the funding comes from the Government's Poverty Relief Fund (R330m). This illustrates the contribution that the programme is making to the issues of poverty, employment and training. It should be stressed that a failure to address the threats posed by invading alien plants would greatly exacerbate poverty and unemployment, in addition to the obvious bio-physical impacts.

The Working for Water programme has 313 projects across the country, and provides temporary employment to over 20 000 people. The bulk of the work being undertaken is the clearing of invading alien plants and follow-up work to maintain these cleared areas. Most of these areas are in targeted water catchments, although clearing is done for a variety of reasons which define the choice of area in which work is done. Some work is also done in aquatic systems, dealing with water-weeds. The programme has a specific component that deals with wetland rehabilitation (dubbed the Working for Wetlands programme). This extends beyond the clearing of invading alien plants in wetlands, to physical rehabilitation work in these areas.

The social development focus of the work has led to policies that ensure that the WfW programme reaches the "poorest of the poor". This includes those living within the Government-defined "poverty nodes", women, youth, the disabled, single-headed households, those living with HIV/AIDS, those fostering orphans, ex-offenders released from prison, ex-combatants and other marginalised groups in society.

The social development focus of the work has led to policies that ensure that the WfW programme reaches the "poorest of the poor"

The social development focus further seeks to ensure that there is an adequate focus on the needs of workers. WfW has a policy of providing child-care for the children of workers. It also has a very successful pilot initiative on Sexual and Reproductive Health, an increasing emphasis on helping those living with HIV/AIDS, an emphasis on ways to prevent the further spread of the HIV/AIDS virus, quality-of-life considerations such as substance abuse and violence in the home, and many other interventions.

This twin focus on a technical environmental problem, and social development problems, has gained the Working for Water programme widespread recognition. The programme has been associated with 28 national and international awards. It has also supported several related initiatives, most notably the Santam/Cape Argus Ukuvuka Campaign (combating fires along the Table Mountain chain); the Integrated Fire Management programme in six pilot sites across the country, and the Working for Wetlands initiative.

The Programme's Mission Statement states: Through the control of invading alien plants, we shall:

a) Enhance water security.
This refers to reducing the impact that invading alien plants are having-and, importantly, will increasingly have- on water necessary for the "water reserve", and for human use, both in terms of quantity and quality.

b) Improve the ecological integrity of natural systems.
This refers to mitigating the impact of invading alien plants on biological diversity, including the extinction of species, the impact on the ecological functioning of natural systems, specific impacts such as the intensity of fires and of floods, and a particular emphasis on aquatic systems.

c) Restore the productive potential of land.

This refers to restoring the capacity to use land for productive purposes, either through natural harvesting or conventional farming, that have been lost-and which will otherwise be lost-to invading alien plants.

d) Invest in the most marginalised sectors in South Africa and enhance their quality of life through job creation.

This refers to the developmental aspirations of the programme-the added benefits created for groups that have been marginalised by poverty, unemployment, discrimination (e.g. race, gender, disability, age and health), social circumstances, violence and other factors, and the ways in which these are approached.

e) Develop economic benefits from wood, land, water, and trained people.

This refers to the development of "secondary industry" opportunities-wood used for crafts, furniture, building materials, etc; water and land that is used productively; trained people who successfully exit the programme.

The programme has identified three core strategies to achieve its principal goal of controlling invading alien plants. The associated objectives are:

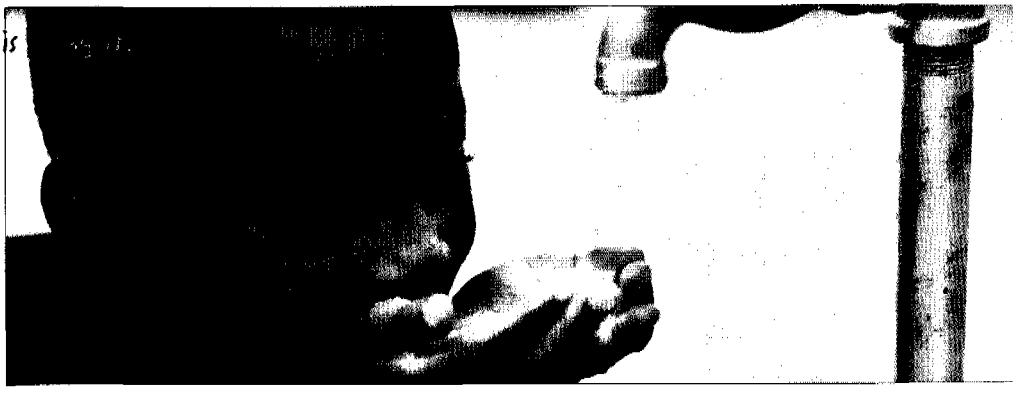
- clearing invading alien plants (using labour-intensive, chemical, mechanical, biological and environmental control methods);
- developing an enabling legislative environment for land owners and others who influence the risk of invasions (including those bringing materials into our country);
- raising awareness of the problems and risks associated with invading alien plants through publicity and communication.

There has been a strong emphasis on the first strategy, and within this on the use of labour-intensive controlling of invading alien plants. The programme is now attempting to place a more suitable emphasis on other components of an integrated strategy to take control of the problem of invading alien plants.

Invasive species are certainly one of the least recognised threats to the concept of sustainable living, and to the goals of the WSSD. It is clear that the Working for Water programme will have to reach greater heights if the scourge of invading alien plants is to be contained. It can only be done through partnerships - local, regional, national and international.

Water is a human right

South Africa is



The Free Basic Water policy is part of a wider strategy to ensure that the South African government's aim of poverty eradication is realised, thereby ultimately addressing sustainability.

The impact of the past inequalities and the lack of access to basic services for the majority of South Africans is a reality that will be here to stay if the problem is not addressed. A major component of poverty eradication is ensuring that people are not denied access to a basic water supply, if they are unable to afford it.

Why change the policy?

Over the past few years the South African government came to the realisation that although there existed provisos in the Water Services Act No 108 of 1997 covering access to water for poor persons, this was not being implemented successfully. The fact remained that although schemes were being built many poor people still did not have ongoing access to water because they could not afford to pay. Something had to be done and the outbreak of cholera in 2000 gave this initiative added urgency. Thus government, in line with it's vision of eradicating poverty and improving people's livelihoods, initiated the free basic water programme.

Since the announcement of the policy by President Thabo Mbeki in September 2000, many local authorities have heeded the call to realise the vision and begun with implementation. The Department of Water Affairs and Forestry, in close co-operation with national

counterparts, provincial and local governments and many other role players, developed support mechanisms to ensure that local governments now had the necessary tools to implement the policy. Local governments now have until July 2003 to ensure, that in areas where there is infrastructure, all poor people benefit from this policy. At the same time the government is committed to ensuring that by 2008, the seven million people who do not at present have access to water are addressed via an intensive capital works programme.

What progress has been made

The policy, though at first greeted by critics with doubt and concern that it could lead to severe problems in the water sector, is steadily gaining acceptance.

Prior to 1 July 2001 a survey was conducted on 97 municipalities (approximately 10 from each province) which showed that only 19 provided some type of free basic water. The following table reflects the steady progress of implementation on a national scale.

Period	% of population
01 July 01	51%
10 Sept 01	55%
1 May 02	58%

How was this achieved

The Department of Water Affairs and Forestry initiated a strategic approach towards the development of the policy and produced national strategy and guideline documents with local flexibility. This was linked to an intensive workshop and communication campaign that focused on support to local authorities. The Department has secured donor funding to establish Provincial Support Units to proactively assist local authorities to implement the policy.

How has the policy affected the lives of people?

Health benefits

A primary benefit of providing a basic amount of free potable water is that it ensures that people do not have to resort to unsafe sources of water, thereby preventing the spread of water borne diseases.

The policy enables people to better themselves and to utilise money that would have been used for water to be used for other essential activities...

Poverty alleviation

The policy enables people to better themselves and to utilise money that would have been used for water to be used for other essential activities, such as buying food or developing informal sector job opportunities.

Socio-Political

It has reinforced the commitment from government to the people it has promised to serve and it has instilled a sense of hope for the millions of South Africans who were deprived of access to services in the past. It has also assisted in alleviating the plight of poor woman who, despite having physical access to nearby water schemes, would walk long distances to fetch water from affordable but unsafe sources. They now can use this time and effort for other activities which can have an impact on improving the livelihood of their

families. Children in the rural areas who previously had to sacrifice precious educational hours to fetch water from afar, now have the opportunity to use the time profitably for their studies.

What lessons have been learnt?

The policy decision came at a time when local government was being transformed (December 2000 local government elections). This process brought with it many changes ranging from institutional and financial to legislative challenges. It has, however, also resulted in a range of lessons being learnt along the way. The role of communication and the need for sector co-ordination have emerged as key strengths for the successful implementation of any policy.

From a technological perspective, it has resulted in the need for appropriate technologies to be developed to implement the policy effectively. As a result of the need to control and measure water, and in line with current regulations, there is an urgent need to ensure that metering and control systems are in place. This has obvious implications for water conservation.

Conclusion

The South African government has initiated a policy that is necessary for it's specific circumstances. There are obviously challenges being experienced, but these will eventually result in the establishment of a stable environment from within which the needs of the poorest of the poor can be realised. The steady rate of implementation is proving that local governments are addressing the plight of the poor and ensuring that no one is denied access to a basic water supply. This sets the climate for development, as water is seen as the entry point for sustainable economic growth.

South Africa's strategy for managing water quality effects from settlements

The Kliptown case.

Pollution from densely populated and often under-serviced settlements is perhaps one of the most important pollution problems facing developing nations.

This is known to have severe impacts on both community health and on the quality of nearby water resources. However, this is perhaps one of South Africa's most intractable problems.

Pollution from poor areas is typically underlain by a complex interaction of social, political and institutional problems. Often, and especially in South Africa, the problem may also relate to a history of deprivation and inadequate services. As such, this problem has not often been successfully and sustainably addressed. The Department of Water Affairs and Forestry embarked on a project, funded by the Danish Co-operation for Environment and Development (DANCED), to develop approaches for managing the water quality effects of settlements. To test the strategy, nine test cases were identified nationally and the approach developed was implemented with varying success.

One such test case was the *Freedom Charter Square* informal settlement in Kliptown. One of the oldest settlements in the Gauteng Province, it is also the site of the historic signing of the Freedom Charter, one of the founding documents of the African National Congress, signed at the Congress of People on 26th June 1955.

The community of Freedom Charter Square is an integral society in an area west of Kliptown station and railway, bordered by the Klipspruit on the West. There are approximately 2700 dwellings with an estimated population of over 15000. The original brick houses with limited services, i.e. water supply and bucket-type sanitation, were overtaken in the 1980's when the area became more densely occupied by informal residents.

Typical dwellings are now informal and densely packed with pedestrian lanes between the houses. There are a few unsurfaced roads through the area, some of which are the original roads of Kliptown. The Local Authority has provided an estimated 252 fibreglass type bucket-system toilets and standpipes. These are located throughout the area to supply water and sanitation.

While construction was being undertaken awareness training was begun in the community.

Apart from the inadequacy of the number of standpipes and their locality, there is a complete lack of drainage facilities for the water from these taps. Household sullage is discarded onto the roads, and washing occurs in the streets at the taps.

Drainage from the standpipes flows onto unpaved roads. Puddles and channels of water therefore collect on these roads as the water travels over the surface down to the Klipspruit. The water is polluted with soap, dirt, food waste and animal faeces as well as possible leakage from the chemical toilets, creating a major health hazard and an access problem for the elderly and small children across the streamlets. Some attempt has been made to put in storm pipes and channels where access was required over the gulleys. Blockages, especially at the lower end of the Klipspruit, caused the sullage to flow into the reed beds. Due to the lack of toilets and poor positioning of toilets, bush toiletting was also evident along the banks of the spruit.

Chemical and microbiological analyses were done on the sullage streams as well as the Klipspruit and the results indicated gross pollution. Analysis of the sullage indicated values of faecal coli as high as 60 000/100ml. Diversion of the pollution source was therefore essential, not only in terms of the ecological disaster but also in terms of the community's health. The suggested intervention included the installation of concrete aprons, grids and wash-throughs at 50 points, of 50mm drain pipes from central taps, as well as some 100 mm collector pipes. Stormwater pipes of 200mm diameter would be used under drives, roads, and in other areas where there was a stormwater problem.

In order to involve the community as much as possible, members of the community were trained on site in trench digging, laying of PVC water-pipes as well as concrete handling and placing for the construction of the wash slabs. On completion, community members would then take responsibility for maintaining the system to ensure sustainability of the project. Another important aspect of the project that will help to ensure sustainability is the running of awareness campaigns. Once again the community was trained so that they would be able to run workshops and awareness campaigns

within their own community and elsewhere. While construction was being undertaken awareness training was begun in the community. The success of this test case and the implementation of the chosen interventions has been a broad educational experience which the community is now applying to other endeavours.

Sustainable waste Management

Sustainable waste management must ensure the control of waste from generation to final disposal in order to ensure that the environment and specifically the quality of the national water resource is protected and improved. This will ensure that water of a sufficient quality is supplied to all recognised users on a sustainable basis.

This requires a balance between three different factors, namely: economic, ecological and social. To achieve this, The Department has embarked on a set of Minimum Requirement documents which set graded standards for different classes of waste disposal sites. These Minimum Requirements are widely used. The Department of Water Affairs and Forestry has handed out approximately 6000 sets of its Minimum Requirement documents which ensure an organised system to assess waste disposal facilities and to ensure that the permitted sites are acceptable against international standards. This Waste Management Series is currently being extended to include a document on Minimum Requirements for Waste Disposal Site Operation, Auditing and the Training of Operators and Managers of Waste Management Facilities.

The waste disposal site permitting function was assigned in 1989 to the Department of Water Affairs and Forestry in terms of section 20 of the Environment Conservation Act, 1989 (Act 73 of 1989) (ECA). No person may dispose of waste unless under the authority of a permit issued in terms of section 20 of the ECA.

Since the promulgation of section 20 of the ECA, a total of 459 waste disposal site permits have been issued. This figure represents approximately 55% of the general household refuse sites in South Africa (and excludes the approximate 15 000 communal waste disposal sites in rural areas and industrial sites). All the commercial hazardous waste disposal sites in South Africa are now controlled via a permit in terms of the above-mentioned legislation. The Department has nine remediation projects operating in Gauteng, one in the Western Cape and one in the North West Province. Most of the remediation is being done in highly industrialised areas as can be seen from the number of projects in Gauteng.

The National Waste Management Strategy (NWMS) was completed towards the end of 1999 by the Department of Water Affairs and Forestry and the Department of Environmental Affairs and Tourism,

with financial support from the Danish Co-operation for Environment and Development. This NWMS addresses the key issues, needs and problems in the waste management hierarchy experienced in South Africa in the past.

Based on the statistical data under Chapter 21, the following data was obtained from the baseline studies as part of the NWMS during 1997. South Africa's total waste stream amounts to 539 million tonnes per annum, of which industrial and mining waste amounts to about 487 million tonnes per annum (90%). Non-hazardous waste amounts to approximately 50 million tonnes. Waste from urban areas (domestic and trade) varies considerably from local authority to local authority depending on the socio-economic level of the community. Per capita generation is much higher in communities with a higher income.

...in order to ensure that the environment and specifically the quality of the national water resource is protected and improved...

Recycling is encouraged nationally. National waste plans and programmes and other waste management initiatives are all addressed in the different action plans of the NWMS, the implementation of which started during 1999 and is ongoing.

The Department has taken the initiative to look at controlling the medical waste stream in South Africa. The Human Tissues Act requires that all human parts be incinerated. Furthermore, all infectious waste must be sterilised prior to landfilling at Hazardous Waste Disposal sites or alternatively incinerated at an approved facility.

The current policy of the Department requires that all medical waste (as well as sanitary waste collected in large quantities) must be incinerated. However, if an alternative technology exists, which has the same (or better) effect than incineration, the Department will evaluate its acceptability as an alternative.

In this regard, several non-incineration technologies have been submitted to the Department for evaluation as alternative technologies for the treatment of medical waste. These include microwaving, electrothermal deactivation and autoclaving. Microwaving and electrothermal deactivation have been accepted by the Department as suitable alternatives to incineration.

Sanitary waste collected in large quantities is mostly sterilised by chemical treatment at the point of generation, prior to disposal at landfill. Three sanitary waste management companies have submitted documentation regarding their treatment system and have been accepted by the Department as suitable for the treatment of this waste stream with an environmental and health risk small enough to be disposed of by landfill if the necessary procedures are implemented. It is expected that other companies will follow.

The South African River Health Programme

From monitoring
management act

The River Health Programme was initiated by the Department of Water Affairs and Forestry in 1994 with the *specific aim of reporting on the ecological state of the country's river systems.*

A key objective of the Programme is to package and disseminate information on river health in such a way that water resource managers can usefully apply the information to manage South Africa's rivers in an ecologically sound way. As such, the Programme:

- Identifies river areas of sustainable water use and areas of unacceptable ecological deterioration.
- Develops the information base to support scientifically and ecologically sound decision- making regarding the utilisation of the country's river systems.
- Audits the effectiveness of management strategies and actions related to water resources.
- Educates the public regarding the health of the country's rivers.

The River Health Programme produces it's best results based on assessments of the condition of the biological communities of rivers (i.e. fish, aquatic invertebrates and riparian vegetation) as well as of river habitats. These assessments provide an integrated measure of the integrity or health of river systems. The programme is a collaborative venture with partnerships established at local and national levels. At the national level, these partner organisations support the development and the ongoing improvement of the

monitoring protocols and tools and the implementation procedures that make up the Programme. These tools and procedures are published and training courses are offered by a variety of role players.

Implementation of the Programme is co-ordinated at a provincial level where collaboration also plays a crucial role. Each province has a network of implementers who work together, usually under the leadership of a Provincial Champion. The composition of the implementation teams reflects the diversity of institutional capacities across South Africa. A mixture of the Department's regional offices, provincial government departments, universities, conservation agencies and private sector organisations participate. Through actively working together, and sharing skills and resources, implementation teams achieve goals that would not otherwise be possible for any organisation working alone.

The programme is a collaborative venture with partnerships established at local and national levels.

Health categories and river protection

The information collected during river surveys is typically assessed to reflect different levels of river health. A specific health category can then be allocated to each river reach. The health categories that are used by the River Health Programme are termed natural, good, fair and poor. If a river is described as natural, it means that it is relatively untouched by human impact and it's in-stream and riparian habitats and associated biota show minimal modification. Such natural systems are important to conserve bio-diversity and for providing a benchmark of what "natural" really looks like. However, very few rivers in South Africa qualify as truly natural systems, and these are most likely located in protected areas such as national or provincial parks. Because of the longitudinal character of rivers, even a lower reach of river that flows through a protected area may be impacted through the developments that are taking place in it's upper catchment, if that falls outside the protected area.

A river in a poor state is usually characterised by high human densities or direct resource exploitation. This often results in a decline in habitat diversity and availability, with mostly only tolerant species present. Such species that are present often have diseases, and their population dynamics may have been disrupted (e.g. they can no longer breed or alien species have invaded the ecosystem). Poor river health is unacceptable from a resource management perspective. When a river is in a poor state, management intervention is needed to improve river health, for example to restore flow patterns, river habitats or water quality. The good and fair river health categories are regarded as environmentally sustainable systems- with the fair category showing loss of certain sensitive species although still sustainable- and the good category showing very few signs of impacts.

Linking monitoring results with management actions

The results obtained through the River Health Programme are presented by means of State-of-Rivers reports or posters for large

catchment areas. State-of-Rivers products have been produced for the following river systems:

- Crocodile, Olifants and Sabie River Systems in Mpumalanga Province.
- Modder River in the Free State Province
- Letaba and Luvuvhu River Systems in the Limpopo Province.

State-of-Rivers products are explicit about the ecological state of a river and health categories can be compared for different survey sites on the same river as well as between different rivers. The interpretation of these results and what actions should be put into place to improve the situation is not a simple process. Sustainable improvement of river health is attained by following an adaptive monitoring and management cycle. Key steps in such a cycle are to set goals and objectives, implement management actions, monitor and report on the state of the river, and audit the monitoring results against the set goals and objectives. The information and new insights gained during the execution of this cycle is then used to review, update and refine the goals and actions for the next round of the cycle. The adaptive monitoring and management cycle provides the framework for systematic experimentation, learning and continuous improvement.

Education and river health

The River Health Programme has an educational portfolio, where secondary schools are encouraged to collect data on aquatic status. Educational programmes within the curricula for science, biology and mathematics are all relevant to the River Health Programme, which gives an ideal context for fieldwork and practical measures for improving community involvement.

Conclusion

The vision of the River Health Programme is that the information generated through its river surveys and State-of-Rivers reports becomes fully integrated in decision making related to water resources management. In other words, the RHP should be an essential tool to achieve better understanding and management of river ecosystems, and not a programme that conducts monitoring for the sake of monitoring.

Implementing sustainable forest management in South Africa

South Africa has a
Forestry Programm
detailed inventory
planted forests.

During the Rio Summit of 1992, South Africa signed the Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests.

Following the achievement of democracy in South Africa in April 1994, South Africa started developing a forest policy that embraced the Rio principles and provided for the reconstruction of the forestry sector in South Africa. This culminated in the passing of South Africa's National Forest Act in 1998.

The Act seeks to:

- Promote the sustainable management and development of forests for the benefit of all
- Provide special measures for the protection of certain forests and trees
- Promote the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes
- Promote community forestry
- Promote greater participation in all aspects of forestry and the forest products industry by persons disadvantaged by unfair discrimination

In order to achieve these objectives, and most especially the promotion of greater participation by South Africans who had been disadvantaged by Apartheid, the Department of Water Affairs and

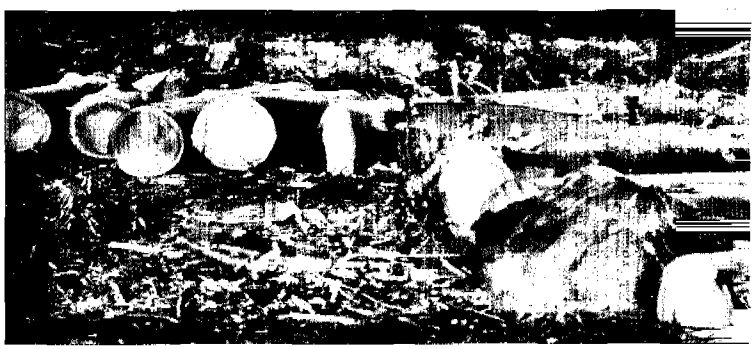
Forestry developed a policy of Participatory Forest Management (PFM). This form of co-management draws on international models and is now well developed and implemented in many parts of the country.

South Africa has also adopted a National Forestry Programme and has embarked on a detailed inventory of all natural and planted forests. Voluntary certification has also played a major role in the development of South Africa's forest sector over the last decade. Almost 80% of South Africa's plantation forests now have certification with either the Forestry Stewardship Council or through the International Standards Organisation. This is one of the highest rates of certification in the world. There is no doubt that certification has had a positive impact on environmental management practices in the plantations, and has also enabled South African companies to access and retain specific markets.

...serious commitment to managing our forests in a sustainable manner and to meeting our international obligations.

Until now, certification has only been achieved in the plantation sector. But now, certification has spread to indigenous forests as well. For many years, the Department of Water Affairs and Forestry has been harvesting logs in the indigenous forests of the Southern Cape (Knysna and Tsitsikamma). This harvesting takes place on a selective basis - trees and ferns are only harvested in a quarter of the total area of the region's forests. Only single trees are harvested from different sites in the forest, and these trees are carefully selected according to set criteria which include species and age. The harvesting and extraction techniques aim to ensure the minimum possible disturbance and have been developed over many years of research and monitoring of the ecosystem. The Department has now started the process of getting certification under the Forestry Stewardship Council for these forests. We look forward to achieving certification and to the benefits that this will bring, not only in terms of monitoring, but also in terms of market access.

South Africa has also embarked on a process to establish a national set of criteria and indicators of sustainable forest management. This is a further illustration of our serious commitment to managing our forests in a sustainable manner and to meeting our international obligations.



Making decisions that ensure sustainable development

Strategic Environmental Assessment (SEA) in the water sector.

South Africa is a water scarce country, which has successfully exploited the bulk of its more easily available water.

The country has dammed its major rivers and successfully constructed complex inter-basin transfer schemes to redistribute supplies, primarily for irrigation and urban/industrial development. Some 52% goes to irrigated agriculture, and another 7% is estimated to be used by commercial plantations.

The use of water has been critical to the development of the country's industrial base and wider economy and will remain so in the future. But, past exploitation neglected the needs of many ordinary people in rural areas and failed to give adequate protection to the environment, both of which are essential to the nation's survival. For too long decisions with regard to the use of water were taken on the basis of availability and exploitability, with little regard for the consequences. This is now changing and the national Department of Water Affairs and Forestry has embraced the approach embodied in the process of Strategic Environmental Assessment (SEA). The SEA brings with it a consideration of the cost and the benefit - on the natural environment, on society, and on the economy - of decisions regarding water resource use. The Department is determined to seek the best use of land and water for the benefit of the country and its people.

SEA was first considered (in late 1997) as a useful tool that could provide a structure for the broadening of decision-making with regard to the issuing of water use licenses for new afforestation. The challenge facing Department of Water Affairs was, and is, to balance the social and economic benefits with the environmental and water use costs. Issues also need to be evaluated at many scales, evident from typical considerations for an afforestation application:

- The value of the forestry sector in meeting the global need for fibre;
- The viability and contribution of forestry within South Africa; and
- The importance of the new plantation to local industry and community.

It was soon recognised that the SEA approach should not be confined only to commercial forestry, but was equally useful in consideration of a range of water uses. The 4000 km² Mhlathuze catchment on the eastern coast of the KwaZulu-Natal province provided the pilot study area (funded by DWAF and the UK Department for International Development) for the introduction of these ideas. The Department has broadened the basis of its own decision-making over the years, but the advantage of the SEA is that:

- It provides a framework for sustainability planning and decision-making; and
- The process has no boundaries or taboo areas, which constrain or exclude it.

Information for decision-making in the Mhlathuze catchment includes not only hydrology but also social, economic and environmental data together with the issues, concerns and visions of stakeholders.

Combining these information sets, an assessment of the water use in the catchment in the context of its social make-up, made it very clear that existing allocations of water do not accord with the extent of communal land tenure and the numbers of people living on the land.

The SEA in the Mhlathuze looked at the economics of resource use in terms of income generated, and the benefits to society in terms of jobs. The Mhlathuze is a 'stressed catchment', meaning that there is not enough water for further allocations, and in practice more water has already been allocated to users than is actually available - at least during dry years. There is an urgent need for water re-allocation to meet the newly acknowledged needs of the aquatic environment, and the clear demands for equity.

Protection of bio-diversity is another real challenge.

Protection of bio-diversity is another real challenge. The construction of an 'environmental surface' which values bio-diversity in terms of the cost of any new loss to the remaining plant and animal species (in other words values its 'irreplaceability') offers a powerful tool to decision-makers - with the cost of this loss weighted against potential benefits. The communal lands (about 50% of total land area), have seen far less development and consequent transformation, and now contain prized bio-diversity refuges - all the more valuable because of development elsewhere. If past inequities

are to be redressed on these lands (through agricultural, forestry and social development, etc.), then bio-diversity now viewed as 'irreplaceable' will be lost - yet this has become valuable only because of prior privileged development.

The decisions accompanying re-allocation where water is scarce are probably more difficult than deciding on new licenses where there is still enough water. The SEA provides a comprehensive set of information (social, environmental, economic) at a range of scales, and the decision-maker has to assimilate this in reaching a conclusion as to what is best. Multiple Criteria Decision Analysis (MCDA) has been built into a decision-support tool (DSS) which allows this information and the weighting of these elements to be considered in an open and visually transparent way together with communities. In this way SEA becomes a process which benefits not only the decision-maker but also those most affected by decisions.

An SEA approach ensures that decisions are based on both the social and scientific disciplines, and on wide scales of time and space. The unconstrained approach often brings surprises and unexpected benefits. People are able to voice their concerns and their visions, in order to inform decision-making processes. All information is shared, the voices must be heard, and there must be transparency in the decision. The adoption of SEA principles and approaches offers the assurance that the allocation and re-allocation of South Africa's water resources, upon which the sustainability of the country depends, can be achieved.

Ground water

Hidden treasures for sustainable development.

Throughout the developing world the perception has grown over the past 20 years that rural water supply is best managed and organised by the local communities who will use the water.

This requires a sustainable water source within walking distance. And there has been the further recognition, that in about all cases such a source is available. However this vital resource, groundwater, is hidden and requires appropriate approaches for its sustainable use and protection. Developers, worldwide, are struggling to put this, usually low cost and community friendly option systematically into practice, despite many individual success stories. Why?

The South African Situation

Under the new government in 1994 community water supply became one of the highest government priorities. In a highly effective programme, 7 million people have been served with a basic minimum supply by 2001, representing the halfway mark in the country's effort to wipe out the massive backlog in the delivery of water. This has been a major achievement, seeing that a widespread concern in Africa and elsewhere, is that population growth will overtake coverage and the number of people not served will actually increase. A further concern is that the initial service drive has addressed the densely populated areas, largely with bulk water supply solutions, while the remaining rural areas will require hundreds of local, more time consuming and costly, solutions.

Like most of the African continent, South Africa is underlain by ancient geological formations, in which groundwater occurs predominantly in hard rock and in limited quantities. However, macroplanning has indicated that the small amounts of groundwater required for rural community water supply, would be available to 90% of the approximately 14 000 villages which are still largely unserved.

A lot of lessons have been learned during the International Drinking Water Supply and Sanitation Decade of the eighties, the most important one probably, that communities need to be empowered if a sustainable supply is to be achieved. Local groundwater offers this opportunity and a lot more: a dispersed source, not requiring long distribution pipelines; generally requiring little or no water treatment; schemes can be extended locally as demand increases; water flowing from the tap can be achieved more rapidly, schemes are less capital-intensive; larger expenditure on bulk water supplies can be delayed; and a greater chance of community involvement and payment for the lower cost, local option exists.

Showcase: Ubombo Family Wells Programme

In 1995 Mvula Trust commissioned a 3-year study on appropriate design and implementation of wells in Maputaland in northern KwaZulu-Natal. A typical finished product is shown in the attached figure.

To be able to reach a greater depth below the water table and thus a greater security against drought, the programme also introduced a tube well. This is drilled with a hand-turned sand auger developed in Zimbabwe, called the 'Vonder Rig'. Depths of 20m can be reached and the technology has also found application in weathered granites i.e. in the typical basement rock formation occurring in large parts of Africa.

Zululand district municipality water source status

Total number of working water sources:				3110	(83%)
Total number of non-working water sources:				635	(17%)
Water source	Type	Working	Not working	Working	(% of Total)
Borehole	673	(53.6%)	583	(46.4%)	21.6%
Spring	1576	(98.5%)	24	(1.5%)	50.7%
Well	22	(88.0%)	3	(12%)	0.7%
Dam	32	(94.1%)	2	(5.9%)	1.0%
River	262	(98.1%)	5	(1.9%)	8.4%
Stream	438	(99.5%)	2	(0.5%)	14.1%
Other	107	(87.0%)	16	(13.0%)	3.5%

By 1999 about 300 family wells had been completed. The average cost of a tubewell of between 8-14m depth was about R2 700.

Construction teams were locally recruited and the technology has shown great opportunity for wider replication.

Protected springs

Springs are extremely important as a source of community water supply, because they occur widely in many rural areas and are often the traditional source. They require little maintenance and are therefore more reliable than more advanced supply technologies. This is illustrated through a recent survey in KwaZulu-Natal.

Handpumps

International experience has shown that handpump installations can be one of the most effective, reliable, low-cost solutions for community water supply if there are appropriate design technologies and implementation policies which provide for community participation, management and ownership.

Despite this, handpumps have played only a minor role in the implementation of South Africa's Reconstruction and Development Programme (RDP), in particular because a large density of pumps would be required to achieve the RDP standard of 25 litres per person per day within a walking distance of 200m. Their utility can, however, be clearly seen from pre-RDP statistics from the ex-Lebowa and- Venda areas of the Northern Province, which indicate that over 50% of all known borehole pumps installed in these areas were handpumps. An even higher percentage of the rural population in both KwaZulu-Natal and the Eastern Cape is served by handpumps. A specific form of handpump, the playpump, has also recently been established in a number of primary schools in KwaZulu-Natal.

> ...democratisation in South Africa has created an independent tier of government at local level which is becoming the water services authority.

Lessons learned

Sustainability remains one of the biggest issues in community water supply, illustrated by the fact that 40-80% of handpumps in Africa become inoperative within 3 years and pollution of groundwater sources frequently occurs within a short time.

This statistic is confirmed by the recent survey in Zululand which revealed that 46% of boreholes were no longer operative.

For development to be sustainable, it must be demand-driven and participative. As part of the process, people must be empowered to become more self-reliant and they must be willing to accept 'ownership'.

Demand driven approaches establish a clear link between what users want and what they are willing to pay for in cash, kind, labour and time. This approach will also, in most cases, go further than a basic domestic water supply and will address relevant productive needs like stockwatering, community gardens or brick-making. In this way water services projects can become a catalyst for community development.

Rudimentary schemes, ranging from improved traditional schemes to handpump schemes, are still extremely important in Africa, to serve both lower density rural communities as well as higher density areas where piped water supplies have failed for various reasons.

It has, however, also become clear that it takes years of hard work to achieve community ownership of water supply. The support approaches should work towards integrated development, with a focus on health, water, technical support and education. The general problem for replication is that the necessary capacity to underpin

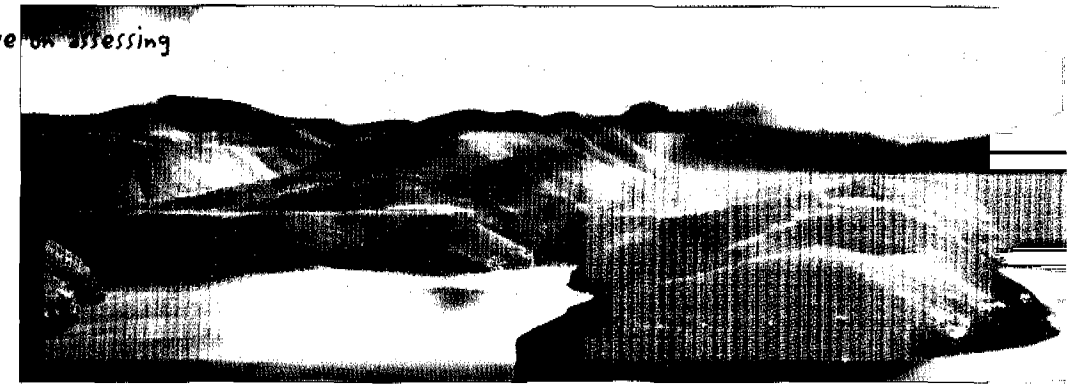
such community-based approaches seldom exists. This is clearly the case in South Africa.

Outlook

South Africa, despite its past neglect of rural communities, has tremendous opportunities for succeeding where other developing countries continue to struggle. The national Department of Water Affairs and Forestry has taken a dynamic leadership role for the water services sector. Most importantly, democratisation in South Africa has created an independent tier of government at local level which is becoming the water services authority. With investment into local government capacity and skills integration, it could grow into the integrated facilitation and support function which is so crucial for sustainability of community-based development. The time is right for groundwater to play its role. The department is looking for new and appropriate delivery mechanisms. Developing people through developing the hidden treasure, groundwater, is one such option that is being explored.

The Lesotho Highlands Water Project

A new perspective on assessing dam options



Rivers are living ecosystems, sculptured by daily, seasonal and annual fluctuations in the amount of water flowing through them.

Unnatural changes in this flow, such as those resulting from the construction of a dam, will alter a river from a pristine condition to some other state. The more the flow is changed, the greater the change in the river, with a range of possible costs, such as collapsing banks, sediment-filled reservoirs, loss of fisheries and poor quality.

The trajectory of change in river conditions can be predicted, and flows managed to limit potential degradation to a level acceptable to society. In essence, society can (and should) decide on the trade-off between benefits gained from damming the river and the costs of its degradation.

In the past, only the engineering and economic costs and benefits of water projects have been considered by decision-makers. In the Lesotho Highlands Water Project (LHWP) another dimension was added, by employing an environmental flow assessment to detail the ecological and social costs of planned and existing dams.

In the LHWP five major dams and some smaller structures were originally planned for the rivers of Lesotho, with the aim of abstracting water, primarily for use in South Africa. The LHWP is planned in four phases, and Lesotho and South Africa committed themselves to Phase 1 in a treaty signed in 1984. The other phases remain as future

possibilities. Together, or in isolation, the structures could substantially alter the flow in the downstream rivers.

The LHWP environmental flow assessment began in October 1997, several months after the closure of Katse Dam, and was completed in December 2000. The key challenges were as follows:

- To gather meaningful information within a limited time and financial window about rivers that were largely unstudied and inaccessible.
- To capture in a succinct and holistic way the links between rivers and their flows, and the complexity of interactions of riparian people with the rivers.
- To detail how a variety of dam construction and operating options could be expected to change the rivers, and how these changes would impact riparian subsistence users.
- To provide this information as a number of possible options that could be understood and used by decision-makers. Each option must detail how much of the natural flow would continue to flow down the river, the river changes that would result, the expected impact of the river changes on subsistence users and the yield of water that would remain in the dam.
- To link to each option the monetary costs of possible mitigation and compensation for the subsistence users.

Building on established flow-assessment approaches, a new approach (DRIFT) was developed to meet the needs of the project. DRIFT facilitated multi-disciplinary interaction and information sharing among 23 different disciplines, to produce a database on the rivers and their subsistence users. This was used to produce four options for the decision-makers, and more could be provided on demand.

Key statistics of the flow-assessment study*

Client: Lesotho Highlands Development Authority

Consultant: Metsi Consultants (Joint Venture: Southern Waters ER&C and SMEC International)

Cost to date: 1% of total budget for Phase 1

Duration: Three years

Study area: 5980 km² (a 10-km wide corridor along 568 km of river)

Study rivers: Senqu, Malibamatso, Matsoku and Senqunyane Rivers

Rural population using the study rivers for subsistence: 150 000 people

Number of scientists involved: 25

Number of socio-economic specialists involved: six, plus data gatherers

Number of reports produced: 22

*First phase of study.

Specialists involved in the Lesotho Environmental Flow Assessment Channel included:

- Hydrologists, hydraulic modellers, sedimentologists, fluvial geomorphologists, and physical habitat specialists.
- Aquatic chemists; microbiologists, biology botanists for riparian fringing and aquatic plants; zoologists for fish, invertebrates, frogs, reptiles, water birds and terrestrial wildlife.
- Subsistence use sociologist, anthropologist, public health medical doctor, animal health veterinarian, water-supply specialist.
- Economist, resource economist.
- Process flow assessment facilitators and scenario builders.

Two other essential processes were linked to the DRIFT project. These were, first, a macro-economic assessment of each DRIFT option to indicate the implications of available yield for, for instance, water prices. Second, a Public Participation Process to allow other stakeholders to express the level of acceptability of each option. Thus, a more comprehensive picture of the implications of a water-resource development was developed than is usually available for decision-makers.

In response, the LHWP authorities developed a decision-making process that can incorporate the information generated by the environmental flow study, include stakeholder concerns and consider trade-offs between benefits to off-stream users and impacts on subsistence users. The selected option will guide operating rules for all dams already built, determine the fate of Phases 2 to 5, aid calculations of compensation and mitigation measures, and set goals for a monitoring programme. At the time of its completion, the LHWP flow assessment represented one of the most comprehensive such assessments undertaken anywhere in the world. Major lessons learnt were as follows:

- Impacts of water-resource projects on rivers can be mitigated, providing a flow assessment is done at the earliest stage of planning and given the same level of importance as engineering and economic assessments.
- The level of subsistence use of an ecosystem (terrestrial or aquatic) cannot be assumed but requires comprehensive investigation. In the case of the LHWP, contrary to the expectation of local experts, the rivers were found to be central to the lives of 150 000 riparian people.
- The development of a 'common language' between specialists from a wide variety of disciplines needs to be invested in from the earliest stage of flow assessment if the full implications of water resource development are to be revealed.
- Decisions on water projects that are based on economic analyses may capture the direct-use value of rivers to subsistence users, but will fail to capture values not amendable to economic analysis such as indirect use, bequest value or existence value. There is a moral imperative to incorporate these values into decisions.
- Monitoring the outcome of managed flow releases is essential, as is flexible adaptive management based on its findings.
- Options need to be presented by river scientists in a way that allows water managers, water engineers, dam owners and dam operators to understand both the nature and limitations of flow assessments, and the implications at all scales from local to international flow releases in order to manage river health successfully.
- Release of environmental flows requires new kinds of dams to be designed that can deliver the right quantities and qualities of water at the right times for river maintenance.

Monitoring the outcome of managed flow releases is essential...

Negotiations between Lesotho and South Africa regarding environmental flows are ongoing. In March 2002, the LHDA approved a follow-up study to substantiate the mitigation and compensation linked to their preferred environmental flow option for Phase 1. No decisions have been made about Phases 2 to 4.

Water Education Programme ensures sustainable development

In order to achieve sustainability, DWAF promotes water management by stakeholder participation including participation by communities.

As legal custodian of South Africa's water and forestry resources, the Department of Water Affairs and Forestry must ensure that these resources are sustained for intergenerational equity.

In order to achieve sustainability, The Department of Water Affairs and Forestry promotes water management by stakeholder participation including participation by communities. Community participation will be effective only if citizens of our country are empowered with knowledge and skills that will enable them to understand and accept that:

- South Africa is a water scarce country, hence water must be used efficiently.
- Their involvement and participation is crucial in water resources management.

On that basis The Department of Water Affairs and Forestry has undertaken various strategic capacity building initiatives.

Background

In 1996 The Department of Water Affairs and Forestry launched a schools-based education programme called 2020 Vision for Water.

This Programme is aimed at empowering learners with knowledge and skills that will enable them to use water efficiently, conserve natural resources, participate in water resource management, make informed decisions and then transfer the knowledge to their parents. The youth have been identified as a target group because they are the future leaders of this country, with a key role in changing the mindset of the communities to which they belong.

In 2002 the 2020 Vision for Water Programme was integrated with the Working for Water schools-based programme and renamed the Water Education Programme (WEP).

During 2001 the National Department of Education revised the school curriculum and invited various stakeholders to participate. The Department of Water Affairs and Forestry participated in this process with the aim of integrating water education into the revised curriculum. Environmental education is now part of the school curriculum, which includes water as a component.

The programme is done in partnership with the Department of Education at all levels. Nationally WEP is managed by a programme leader and at regional level it is managed by regional co-ordinators. Service providers are responsible for the capacity building of educators.

Environmental education is now part of the school curriculum, which includes water as a component.

From 1997 to date, 10 000 teachers (teaching grades 5 to 9) from 10 000 schools have been capacitated.

Key Objectives

- Incorporate environmental education (of which water is a component) into the formal curriculum
- Develop appropriate resource material which promotes integrated environmental management
- Capacitate education and other relevant practitioners to be able to do water activities
- Participate and support the initiatives of the integrated school environmental management policy which focuses on healthy and sustainable use of resources
- Establish an international network
- Participate in the development and empowerment of our communities through positive use of our natural resources.

Programme Approach

The programme has adopted a skills and knowledge transfer and active learning approach. Educators are capacitated on water-related issues through workshops in collaboration with the Department of Education. They will transfer knowledge to learners through implementation of water projects in schools.

Programme Components

Learners undertake water-related research projects / activities such as:

- Water quality studies - where learners test the quality of water (using water testing kits) to see if it is healthy for consumption. If it is not fit for consumption, they inform the nearest local authority
- Plant studies
- Water quantity studies - learners determine the amount of water used, identify areas of excessive water usage and make decisions on corrective measures. This teaches them efficient ways of using water that will save water and money for their school.

- Wetlands monitoring
- Competitions and awards

Achievements and contribution to sustainable development

- The project has resulted in collaborative partnerships with various stakeholders nationally and internationally such as the Departments of Education, Environmental Affairs and Tourism, Health, NGO's and water institutions.
- It has facilitated the integration of water education into the formal school curriculum, and created awareness about water conservation and other water-related issues in approximately 5 000 schools. Water consumption in some of these schools has decreased and money has been saved on water bills.
- The project has also provided opportunities for learners to interact with others both nationally and internationally through competitions.
- The project has exposed learners to water research related projects, provided schools with educational materials related to water, increased awareness and enhanced the interest of learners in water-related careers.

Case studies

1. Awards

WEP encourages learners to do projects that will improve the living standards of their communities. The Department of Water Affairs and Forestry, in partnership with Old Mutual has awarded the following schools:

1999: Gwabeni Primary School in Peddi, Eastern Cape, won an award of R10 000 sponsored by Old Mutual. After completing a water quality audit they "sensitised" the community to water problems. The money was used to buy water tanks for their school and community.

2000: Alpha Primary School in De Aar, Northern Cape, won R10 000. After conducting a water quantity audit they started a vegetable garden project with the purpose of helping the poorest of the poor from the community.

2. South African Youth Water Prize

The Department of Water Affairs and Forestry, in collaboration with the Stockholm Water Foundation in Sweden, runs a national competition called the South African Youth Water Prize (SAYWP). The competition aims to encourage the youth to participate in and contribute to the development of integrated water resource management.

- Provide the opportunity for learners to use innovative ideas and methods to solve water-related problems through practical projects in the field of science, technology and applied research.

- Present South Africa's concerns and achievements regarding water resources and environmental management nationally and internationally.
- Stimulate interest of the youth in water and environment careers.

The National winner represents South Africa at the annual Stockholm Junior Water Prize. In 1999 three learners from the 52nd Boy Scouts designed a low cost solar pasturing plant that could be used in the rural areas and informal settlements of KwaZulu-Natal. In 2000 three learners from the Good Hope College in Khayelitsha, Western Cape, won the prize with a community-based awareness project in Khayelitsha.

In 2001 Lorain-Marie le Grange of Voortrekker High School in Bethlehem, Free State, won the prize with a research project assessing consequences of artificial higher water flow in the As River ecosystem of the Saulspoort Dam.

Our water and forests - truly a national resource that can and is being protected and used for the benefit of all our people