WATER AS AN INSTRUMENT FOR SOCIAL DEVELOPMENT IN SOUTH AFRICA

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“Along the miles of steel
that span my land
threadbare children stand
knees ostrich-bulbous on their reedy legs,
their empty hungry hands
lifted as if in prayer.”

Dennis Brutus, 1962

Introduction

South Africa held its first democratic elections in 1994, emerging from a long history of colonial domination and racial segregation, which reached its culmination in the apartheid policies of the Nationalist government (1948 – 1994).

Apartheid policies left South Africa with a great disparity in wealth and access to both services and natural resources. South Africa is a middle income country, but a large proportion of the South African population are poor, or vulnerable to poverty. The Gini co-efficient of South Africa, at 0.58, is second only to Brazil. [May et al 1998]

Under apartheid, the white minority had access to a high level of services such as water, sewerage, transport, electricity and housing, equal in most cases to the service levels of the developed world. Large sections of the black community, on the other hand, had little or no access to basic services. It was estimated that at the time of the elections in 1994 at least 12 – 14 million South Africans did not have access to potable water.

The lack of access to services was compounded by a lack of access to natural resources. The apartheid government had forced the black majority onto less than one quarter of the land, through a variety of legislative instruments. The most notorious of these was the 1913 Land Act, under which at least 3 million black South Africans were forcibly resettled.

Although the legislation governing access to water in South Africa was not, in itself, overtly racist, access to water was linked to ownership of land through the concept of riparian rights, and “private” ownership of groundwater or small tributaries found on or under private land. Race based access to land therefore resulted in race based access to water, and the natural resources of the country were concentrated in the hands of a small, white minority.

The black population in South Africa suffered, therefore, under a double deprivation in relation to water: lack of water services was compounded by a lack of access to water for economic purposes, including irrigated agriculture.

The democratic government is committed to redressing the wrongs of the past, particularly in relation to racial and gender discrimination. It is also committed to the eradication of poverty. In relation to access to water and water services, this approach is outlined in a number of crucial policy documents, such as the Constitution of the Republic of South Africa, (Act 108 of 1996), the Reconstruction and Development Programme, (RDP) the White Paper on Water and Sanitation (1995), the Water Services Act (1997) (WSA), the White Paper on a National Water Policy for South Africa (1997) and the National Water Act (1998) (NWA).

The Reconstruction and Development Programme, the development manifesto of the ANC government, recognised that in order for a new, just South Africa to rise out of the ashes of
apartheid, a concrete programme of action was needed. The RDP is built on six fundamental principles and is an integrated and sustainable programme, based on the people, that provides peace and security for all and builds the nation, links reconstruction and development and deepens the democratisation of South Africa.

Meeting basic needs is one of the key programmes of the RDP, as well as developing human resources and building the economy. It recognises poverty as one of the most fundamental challenges facing South Africa.

With regards to water, the RDP states that “the fundamental principle of our water resources policy is the right to access to clean water – ‘water security for all’.

It also states that “Water management has three main goals: meeting every person’s health and functional requirements, raising agricultural output, and supporting economic development.” [RDP 1994]

The National Water Act, following on from the RDP, has substantially altered the framework for access to untreated bulk water. In particular, the legislation has divorced access to water from land ownership in the rural areas, and has removed the previous expectation of permanent rights to water. Under the National Water Act all water will be allocated through time limited licences.

The National Water Act establishes the Department of Water Affairs and Forestry as the custodian of the nation’s water resources, and recognises the need to use water beneficially in the public interest. The Act also sets the framework for a new pricing strategy which aims to charge a realistic price for water in a country where water has been, for too long, a cheap resource. However, the Act also has as one of its key governing principles, the

The Water Services Act, 1997 (Act 108 of 1997) also gives legal force to the mandate of the RDP. It is the governing legislation for water services and sanitation and provides for:

- the rights of access to basic water supply and basic sanitation
- the setting of national standards and of norms and standards for tariffs
- water services development plans
- a regulatory framework for water services institutions and water service intermediaries
- the establishment and disestablishment of water boards and water service committees and their powers and duties
- the monitoring of water services and intervention by the Minister or by the relevant Province
- financial assistance to water services institutions
- certain general powers of the Minister
- the gathering of information in a national information system and the distribution of that information

The new policy and legislative tools have enabled the government to make some major inroads in changing access to water and water services in South Africa. Since 1994 the government has brought water services to at least 8 million people in both rural and urban areas. At the same time, the National Water Act has given the Department of Water Affairs and Forestry the tools to make water available to previously disadvantaged communities for economic activities such as irrigated agriculture.

The question that needs to be examined is what impact access to water can, and has had on the social development potential or actuality of the lives of poor communities.

Social Development and poverty

Understanding social development requires analysis of a more complex set of indicators than those attached to simple economic growth. Social development must take cognisance of improvements to health, infant mortality rates, the position of women, and general education levels as well as economic development and levels of poverty. The ultimate aim of social development must be to lift individuals and communities out of poverty and into a realm in which fulfillment of the individual can be achieved. This concept is expressed in the Founding
Provisions of the Constitution of South Africa as the value of “human dignity, the achievement of equality and the advancement of human rights and freedoms.”

Social development must also take into account the environmental sustainability of any development which takes place since development needs to be sustainable in the long-term without undue damage to the natural resource base on which all human life and economic activity ultimately depends.

Based on 1994 data, the UNDP listed South Africa as 90 on the Human Development Index (Medium Human Development). Based on those figures South Africa’s HDI value was given as 0.716, close to those of Peru, Oman and the Dominican Republic [UNDP 1999]. The most recent UNDP listings however, place South Africa as number 101 out of 174 countries. This fall is attributable mainly to the AIDS epidemic.

What such figures do not show is the inequality within the country in different sectors of the community. Such figures do not reveal the poverty, lack of education, health care, jobs and housing for, in particular, the black community.

The eradication of poverty is the most profound challenge facing South Africa today. High levels of poverty are compounded by high levels in inequality, and lack of access to natural, political and financial resources in certain sectors. Those facing the highest risk of poverty and marginalisation are women, women-headed households, the young, the elderly, African and rural people.

In addition to this, South Africa suffers from high levels of unemployment and low levels of education. There is a strong correlation between levels of education and levels of poverty.

May et al define the poorest 40% of households (just under 50% of the population) as being poor, with an average monthly household expenditure level of R353 per adult equivalent ($60). A high percentage of South African children are sufficiently undernourished to find difficulties concentrating in school, and suffer from stunted growth, ill health and other problems arising from lack of nutrition. The national stunting rate among young children ranges between 23% and 27%, and among the poorest 20% of households the rate is 38%. 33% of children display marginal vitamin A status. [May et al 1998]

Women, and women-headed households, are amongst the poorest of the poor. Apartheid policies, which facilitated the movement of able bodied black men into the urban environment in order to provide a ready labour pool, lead to a disproportionate number of women and women headed households in under-developed rural areas. Women in the Arabie Olifants area, when talking of their reasons for continuing to grow crops despite the withdrawal of government assistance, run their thumbs down their throats, indicating hunger. [de Lange pers comm]

In 1996 33.9% of the population between 15 and 65 years were unemployed, with unemployment rates for African women being 52.4%, African men 34.1% and African people 42.5%. 26% of the employed earn R500 or less per month (<$85) while 62% of the employed earn less than R1501 per month (<$250).[Census 1996]. Access to water was one of the key needs identified by poor communities in 1994, as well as jobs, housing, health care and education. Only 44.7% of South Africans households have a tap inside their dwellings. 16.7% have a tap in the yard, 19.8% fetch water from a public tap, and over 14% access water from dams, river, boreholes, rainwater or water carriers or tankers. In the 1998 Speak Out on Poverty Hearings organised by the South African National Coalition of Non-governmental Organisations, access to water, land healthcare, housing and education were, once again, raised as crucial issues by the poor themselves. They also, however, raised the need for development, not hand-outs. As Violet Nevhri from the Northern Province told the hearings: “We want to be taught and resourced to fish. We don’t just want fish to eat.” [Sangoco 1999]
South Africa suffers from extremely high levels of HIV infection. It is uncertain what the impact of AIDS will have on rates of urbanisation, however it appears that the AIDS epidemic could have a significant impact on overall population levels and population growth in particular. The HIV/AIDS epidemic will have a considerable impact on development indicators such as life expectancy and infant and child mortality and may reverse gains made in the past. The most recent UNDP Human Development Index predicts that by 2010 life expectancy in South Africa will have dropped to 48, mainly as a result of AIDS. AIDS may also cause a major block to enhancing quality of life and eradicating poverty. For poor households, the possible loss of a breadwinner through AIDS will push them further into poverty. The impacts may last for many years as significant numbers of AIDS orphans suffer lack of nutrition, nurturing, education and role models [Dept of Health 1998].

Development programmes

The post-apartheid government has designed some key strategies aimed at reducing poverty and socio-economic inequality through meeting people’s basic needs for social security, education, employment, housing, infrastructure and basic services. These strategies are based on the understanding that economic growth is a prerequisite for human development and the eradication of poverty in South Africa. There is, however, a realisation in many areas that relying on the “trickle down” of the benefits of economic growth to the poor is not effective, and that the government has a responsibility to take effective action to ensure that this redistribution of wealth takes place.

The government has developed a number of major programmes targeted at reducing poverty and inequality. These include a housing programme, land reform, electrification, a community based public works programme, a primary school nutrition programme, a welfare programme, a poverty relief fund, and a rural community water supply and sanitation programme.

The latter aims to provide 25 litres of potable water per South African within 200 metres of their dwellings. To date the programme has provided water to 4 million South Africans.

The Land Reform and Restitution programme aims at restoring land to black South Africans who were deprived of the right to land or forcibly resettled during the apartheid era.

May et al suggest that there are three important criteria against which policy should be measured in terms of its impact on poverty and social development:

- the extent to which policy strengthens the complex asset base of the poorest section of the population;
- the extent to which policy promotes human development by improving the well-being of the population in terms of their health, nutrition, education, safety and choice;
- the extent to which these policies are sustainable in terms of financial, institutional and human capacity as well as in terms of their environmental and macro-economic impact.” [May et al, 1998, p3]

The criteria are useful in the evaluation of programmes and projects as well.

The urban / rural relationship

South African settlement patterns have historically been characterised by a high level of internal migration. A number of factors contributed to this process, including the migrant labour system of the apartheid era, and influx control measures which did not allow families to move to urban areas but only those with work. Apartheid labour and settlement policies thus resulted in the movement of largely able bodied men from the depressed rural areas into urban areas, leaving a predominance of women-headed households, children and old people in the rural areas. However, strong ties remained between rural and urban areas.

1 A recent Department of Health report states that “based on Antenatal Survey data, it is now estimated that over 3.2 million South Africans are HIV infected. In the overall South African adult population aged 15 – 59, between 12 and 14% of people are HIV infected.” [Dept of Health 1998, p9] Figures for HIV infection in South Africa have not yet levelled off.
In the 1950s the level of urbanisation in South Africa was around 40% and a stringent policy of excluding blacks from urban areas through decentralisation and influx control, kept it at this level for some decades. In 1991 an estimated 48.6% of the population lived in formal urban areas (proclaimed towns with some form of local authority) [UNFPA 1998]. However, the functional urbanisation level was around 58%, counting people living in areas adjacent to formal towns and in other settlements of more than 5,000 people. By 1996, 53.7% of South Africans lived in legally declared urban areas [Census 1996].

The growth of urban areas has been estimated at 2.5% per annum, which would suggest that by 2010 a further 10 million people may be living in urban areas, bringing the total to around 62% [UNFPA 1998]. 92% of whites and 87% of people of Asian origin are estimated to be living in urban areas. Thus the majority of people living in rural areas, and the majority of new immigrants to urban areas are black (Africans). About 79.3% of the rural population live in the former homeland areas while just over 20% live in commercial farming areas. [UNFPA 1998]

The removal of the influx control measures and other restrictions on movement have not, however, lead to the enormous influx into major towns expected by some [Department of Welfare 1999]. Todes [1999] reflects the movement of people closer to areas of higher income and employment opportunity (including metropolitan areas) but also into areas with “weak, declining, or non-existent economic bases (especially smaller towns”). She also notes limited movement out of old resettlement areas and that “wholesale out-migration from rural areas seems unlikely over the short to medium term” [Todes 1999]

The division of South Africa into apparently clearly differentiated areas defined as either “rural” or “urban” is unhelpful in the analysis of the links between access to water and social development. The reality of the situation in South Africa, and in most developing countries, is that there is a continuum between the large metropolitan areas, through peri-urban areas and small towns, to “rural” areas where people live in low density, widely scattered communities. There are, in South Africa, increasing grey areas between rural and urban settlements. Around Pretoria, for example, an extremely large peri-urban area stretches from north west to north east. Levels of poverty are extremely high, and while many of the residents of these areas are dependent on incomes from the city (however small) many households also use plots for cultivation of basic foods, and use wood fuel harvested from the surrounding areas. In some areas of this nature, water is still fetched from natural resources, be they springs or rivers, and carried to households in a variety of vessels. Dependency on natural resources in these peri-urban areas is, therefore, extremely high.

At the same time, the rural areas are characterised by small towns which are fully integrated into and dependent on the rural economy.

It is, therefore, more useful to consider the problem of access to water from the perspective of levels of poverty, and the potential to overcome such poverty, than through the somewhat artificial lens of the urban/rural divide.

**Water resources in South Africa**

South Africa is a semi-arid country, with an average annual rainfall of approximately 500 mm, slightly more than half the world average. To complicate matters, this rainfall is irregular in both time and space. While the eastern side of the country is relatively wet, as one moves west it becomes progressively drier, and large areas of the western part of the country are both arid and hot. Evaporation exceeds rainfall in large areas of the country.

At the same time, South Africa experiences frequent, if unpredictable, droughts and floods, sometimes in different parts of the country in the same season.

The total annual surface run off of South Africa averages around 50 150 x 10^6 m^3/a. Of this, 41% is already used. It is estimated that a further 13 250 x 10^6 m^3/a could be available for use, mainly through the construction of further large dams. The remaining 33% represents water lost through evaporation and through flood spillage in excess of what can be controlled by dams. Greater regulation in order to capture these unpredictable flood water losses is not economically
Predictions are that unless current consumption patterns are significantly changed, we will face increasing inability to meet the growing demands. Within 20 – 25 years the problem could be extremely severe.

The NWA requires the government of South Africa, through the Department of Water Affairs and Forestry, to protect the functioning of the aquatic ecosystems of the country, through the creation of an ecological reserve. In many water resources the ecological sustainability has already been exceeded, and ways to address this are being investigated.

In some catchments, current water usage is already unsustainable and will have to be reduced if the commitment to an ecological reserve is to be met. This is partly a result of high levels of development having occurred in the central region and adjoining areas as a result of the presence of minerals in these areas, while the highest levels of water availability are in the eastern region. In such catchments ways will have to be found to redress the historical imbalance in access to water despite the current over allocation.

South Africa is also facing increased pressures on water quality, both through increasing industrialisation, agriculture, mining and inadequate sanitation facilities. Fragile soils combined with inappropriate land use practices have lead to high level of soil erosion which further impacts on water quality.

It is thus within a context of significant water constraints that the South African government is faced with the challenge of making water available to previously deprived communities, both in terms of potable water and in terms of water for economic development and job creation.

The water shortages faced by South Africa mean that our urban and rural areas are mutually dependent on efficient, effective use of our scarce water resources, beneficially in the public interest. As shortages increase, a high allocation of water to irrigated agriculture, for example, may result in downstream urban areas facing water restrictions, water shortages, and increased tensions arising from this.

On the other hand, the removal of water from rural areas, particularly from irrigated agriculture, can have significant impacts on the stability of rural areas and on food security. Increasing rural instability may result in increased urbanisation, with the implications that may have for increased urban poverty, unemployment and instability. It may equally result in increased poverty in already depressed rural areas. At the same time, decreased food security is a concern that faces not only South Africa, but the world as a whole.

Sandra Postel, in her seminal work Last Oasis: Facing Water Scarcity, notes that per capita irrigated land reached its peak in 1978 and has declined by nearly 6% since then. Similarly, according to Postel, per capita grain production has been falling by 1% per annum since 1984.

Currently there are 1.2 – 1.3 million hectares of agricultural land under irrigation in South Africa. This number is increasing in spite of significant use shifts between agriculture and industry in areas like Gauteng and KwaZulu-Natal. The Department of Agriculture estimates that there is potential for a further 200 000 ha of irrigated agriculture to be developed.

\[2\] The National Water Act defines the Reserve as “the quantity and quality of water required – (a) to satisfy basic human needs by securing a basic water supply, as prescribed under the Water Services Act, 1997 (Act No. 108 of 1997) for people who are now or who will, in the reasonably near future, be – (i) relying upon; (ii) taking water from; or (iii) being supplied from, the relevant water resource; and (b) to protect aquatic ecosystems in order to secure ecologically sustainable development and use of the relevant water resource.” [NWA, 1998, p16]

\[3\] The National Water Act provides for a number of ways to achieve this: trading of water rights (mediated through the Department of Water Affairs and Forestry; equitable reduction of existing water use allocations in order to prevent further deterioration of a water resource; expropriation. [NWA 1998 Sections 25 and 49]
Case Studies

This paper will examine case studies from the South African post-apartheid experience, looking at water services delivery to rural and urban communities and irrigation options for previously disadvantaged farmers. It will also look briefly at sustainability of water supply through water demand management initiatives and the provision of a lifeline tariff. These case studies will show that the South African government has made some remarkable strides in providing water services to poor communities and to emerging farmers. The case studies will also show, however, that the full potential of water as an instrument for social development has probably not yet been realised.

They will show that the provision of clean water on its own has a limited impact on social development, and that unless provision of water is part of an integrated development strategy, the full potential of water provision cannot be realised. They will also show that the South African context is a very particular one, and that not all of the lessons from the South African situation are applicable in other developing countries.

Domestic water supply

Assumptions are often made that the provision of clean, potable water will greatly enhance the health status of a community. Indeed, the provision of clean water is thought to be one of the major factors in the reduction of infectious diseases in Europe and America in the last 130 years. However, experience from across the world has shown that such assumptions are not necessarily accurate. A recent study of diarrhoea in children in poor communities in South Africa in fact revealed that there was little direct link between the provision of clean water and rates of illness. Factors such as poor knowledge of food handling and hygiene, attendance at a day care centre or crèche were far more important than the provision of clean water alone. [WRC K5/562]

The study did, however, reveal higher levels of diarrhoea in situations where a communal tap was used than on-site taps. This seems to imply that an on-site tap lowers the risk of water borne disease. Communal taps require water to be carried and stored and higher contamination levels were observed after handling and storage.

A further issue is that long queues for water, and the need to carry water from communal taps, often result in lower levels of water consumption than are needed for proper hygiene. Thus the actual level of consumption is as important as the actual provision of water with regards to improvements in health indicators. [WRC K5/562]

Such problems are compounded in situations where the design of stand-pipes or communal taps provides for health risks. A study by Mvula trust of a number of South African water supply projects [Breslin 1999] reveals stand-pipe designs without soakaways, which result in pools of stagnant water standing around the stand-pipe. In a country where mosquito borne disease is spreading, this could possibly introduce a further disease vector into already vulnerable communities.

The design of the standpipes is also important. A South African engineering company recently developed a document entitled “Design of water delivery to reduce health risks”. This document provides guidance that includes how to design standpipes that have proper soakaways, minimise damage to spine and neck as a result of lifting heavy containers from ground level, and minimise erosion problems.

Breslin [1999] reports that the health and hygiene components of the 56 projects evaluated were “uninspired and ineffective” [p17].

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4 Diarrhoeal disease remains the leading cause of infant and child morbidity and mortality in developing countries. In South Africa it is estimated that there are around 1.5 million cases of diarrhoea in children under five, each year [WRC K5/562].

5 It should be noted that the projects that Breslin was evaluating were ones which were recognised by the Department of Water Affairs and Forestry to be problematic and that they do not reflect the overall level of project implementation and impact.
What this evaluation does highlight, however, is the need for an integrated approach in which provision of water, improved sanitation and hygiene/health education go hand in hand. These need to be followed by appropriate levels of O&M in order to maintain the quality and quantity of water provided to households and to the community. It also raises the need to develop local health education programmes to maximise the impact of water supply provision. A further issue is the use of local labour so as to maximise local benefit from employment opportunities.

Some projects and communities have shown creative responses to some of the problems encountered. In Hlanganisa in the province of KwaZulu Natal, a “tap co-ordinator” system is evolving. Currently the tap co-ordinator is collecting tariffs from participating households, but in future will keep the standpipe area clean and free from stagnant water, and will replace broken taps and fix leaking pipes connected to the tap. [Breslin 1999a]

In Mogukubu in the Northern Province a similar system has evolved where all the households using a communal tap elect a “keyholder”. The keyholder is always a woman, and she is responsible for management of the water point, to which she has a key. Households can be fined or prevented from collecting water if they break the communal rules regarding use of the tap. The keyholder is paid R2.50 ($0.16) per month from the tariffs collected for use of that tap.

While most village level O&M operators are men, most of the “tap managers” or “keyholders” appointed by households to look after a particular tap are women. The role of women in the maintenance of water supply is increasingly being recognised. Many of the most effective community based water committees in South Africa are those in which a large number of women are involved. Equally, within the household, the mother or eldest woman is often responsible for water management [Breslin 1999b]

The ability to maintain schemes and to ensure the sustainability of water services provision is central to the ongoing improvement of development indicators as a result of such schemes. The failure of schemes will result in the poorest households once again having to fetch possibly contaminated water from long distances, with the parallel potential for increased rates of diarrhoea and malnutrition.

A study conducted by Mvula Trust [Breslin 1999b] indicated that within the Seokodibeng community in the Northern Province, poor households that had to pay R15 ($2.50) per month for water would suffer. In particular, household members pointed out that women and children would suffer the most through decreased food intake and having to collect water from the river or springs some distance away. Women in this community indicated that the men had a “drinking/smoking” budget which amounted to around R50 ($8) per month, but that this amount could not be reduced. Some women indicated that they would be beaten if they tried to reduce this figure. [Breslin 1999b]

Agriculture and social development:

Irrigated agriculture in South Africa shows two distinct faces: relatively successful commercial white agriculture, well supported over previous decades by the white minority government, and irrigation schemes in the former homeland areas lacking suitable support from development agencies and former homeland governments [May et al 1998].

52% of current water use in South Africa goes to agriculture, primarily to the established white farmers. Small scale irrigation makes up 4% of the total irrigation in South Africa. 1.3 million ha of land is irrigated, and water constraints make it unlikely that irrigation will grow by more than a further 12% or 200 000 ha.

The process of returning land to black South Africans is being dealt with through the government’s land reform and land restitution programmes. A number of rural communities, forced off their land by the apartheid government, have returned to their original land, sometimes after decades of alienation and absence.

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6 The figures do not take into account the potential impact of increased water efficiency and water demand management in making more water available for irrigation, industry or domestic use.
In such situations, access to water, for domestic needs, for stockwatering and in many cases for irrigation is necessary to ensure that people are not being returned into a trap of perpetual poverty.

In the mid 19th century, some of the most successful farmers of the Eastern Cape were black. However, years of dispossession and alienation have robbed many of the descendants of black farmers of their skills, knowledge and understanding. It is thus necessary for the South African government, in returning agricultural land to black communities, not only to make water and access to capital available, but also to assist in restoring basic farming skills.

In some cases the National Water Act has provided the leverage that has allowed the Department of Water Affairs and Forestry to encourage established white farmers to find land and water for emerging black farmers, and to provide the technical and marketing support required to get such projects off the ground. In recent months several approaches have been made to the Department of Water Affairs and Forestry for assistance in and approval of share equity schemes which include the provision of a water allocation for the project. One such project, where the impetus came from the state rather than from the farming sector is the Blyde River Irrigation Board project.

**Blyde River Irrigation Board**

During 1998 the Blyde River Irrigation Board, representing successful and established white farmers on the Blyde River in Mpumalanga, approached the Department of Water Affairs and Forestry to support a R150 million ($25 million) which they wished to take from a local merchant bank. The intention of the loan was to enable them to move from an earth-lined canal system to a system of pressurised pipes. This would significantly reduce the close on 50% of water lost in the conveyancing system. Their intention was to use the “saved” water to irrigate further areas on members’ farms.

According to the National Water Act, however, water not used during the two years prior to the Act coming into force (ie. prior to October 1998), is not considered existing lawful use, and there can be no legitimate expectation of being granted a licence to use such water. The Department of Water Affairs and Forestry therefore managed to achieve an agreement with the Blyde River Irrigation Board that, should they wish to be granted authorisation to use the “saved” water, they would have to assist in finding land, making part of their quota of water available, and providing technical and marketing support to emerging black farmers to be developed in the area.

The first meeting with the Department of Water Affairs and Forestry with regard to this matter was held in late 1998, and agreement was reached within a matter of months. A committee consisting of the Department of Water Affairs and Forestry, the Blyde River Irrigation Board, and the Department of Land Affairs has been established to investigate the best way to move forward.

Currently this programme is in its very early stages, but it creates an interesting scenario as to how access to water can be used as a lever to promote rural development.

However, experience in other “share equity schemes” in South Africa has raised a number of problems that must be addressed to ensure that the benefits, and not only the risks, accrue to the emerging farmers/ farm worker members of the scheme. “Share equity schemes” are agricultural (predominantly irrigation) schemes in which erstwhile farm labourers use a R16 000 ($2 666) grant from the Department of Land Affairs to buy into a point project with a white farmer or group of white farmers.

The Department of Water Affairs and Forestry also makes a subsidy available to emerging farmers, paying a certain percentage of the costs of off-farm water infrastructure development. Emerging farmers will also pay a lower tariff for water when the new pricing strategy is put into place in April 2000.

The apartheid history of South Africa has exacerbated the imbalance of power relations in rural areas. This, as well as lack of education and financial and management skills, makes it extremely difficult for farm workers to participate as equals in a share equity scheme. Often
share equity schemes do not, in fact, transfer real power and decision making to the workers. [Fast 1999]

There is a further complexity when one investigates intra-household relations. In the share equity schemes studied by Fast [1999] the development and empowerment of women was seen in a very limited light as relating to representation on the workers’ legal body. However, the development of economic opportunities for women, which would ensure the real empowerment of women, has been largely ignored, or even undermined by discriminatory wage structures.

One problem in relation to this was the registration of the man’s name first and the listing of the woman’s name as “co-applicant”.

While some share equity schemes have created new jobs, on some schemes jobs have been reduced through improved productivity of workers. The impact of share equity schemes on rural development and on the quality of life of the poor is not necessarily without question. None the less, it remains an option that needs to be investigated and taken forward, within clear guidelines that protect the interests of the poor.

Should a share equity scheme which involves the commitment of the R16 000 land grant by workers go under, the impact on the workers is devastating. They have no further recourse to finance, while the white partners still have assets and access to refinancing, and therefore an ability to rebuild their lives.

Many irrigation developments in underdeveloped communities in Africa have failed, in part because it was expected that participants would learn the trade on their own, simply from the process of involvement in the project [DWAF 1995]. One of the strengths of the proposed Blyde River emerging farmer scheme is that the intention is for existing farm workers who understand the business of farming to be targeted for the project. At the same time, the established farmers have committed themselves to providing technical and marketing assistance to the emerging farmers. This resource will be available to the emerging farmers consistently and over a long period of time as opposed to government sponsored initiatives which tend to be of a more limited duration.

Gender, water and social development

A concern of development initiatives is that in undertaking rural development, one should not replace indigenous, female oriented survival and economic practices with “imported” male focused practices. In South Africa, a number of examples have shown that the role of women in the management of water is particularly crucial to sustainability and sound management.

In the Arabie/Olifants irrigation scheme, an estimated 90% of the farmers (as decision makers and main cultivators) are women. Partly this is as a result of traditional cultural practices in which women were responsible for cultivation, while men focused on cattle rearing, land clearing and plowing. A second reason is the greater tendency of men to migrate towards urban areas in search of jobs.

While a number of plots of land are, unusually, registered in the names of the women working the land, some of the land is registered in the (often absent) husband’s name. The latter has given rise to a number of problems, including cheques made out in the man’s name which cannot be cashed by the female farmer. The local chief has approved of the registration of the land in the women’s names.

When a new legal entity was to be formed in the area, to manage the irrigation scheme, the mainly male extension officers and committee members decided to that membership should be according to the “permission to occupy” lists. This would, in a number of cases, give membership to men who are not present on the land, and who are not the active farmers, rather than the female farmers. However, van Koppen notes that most respondents to whom she spoke on the matter recognised that there were a number of advantages to official membership for women farmers.

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7 This practice is showing some reversal as a result of high unemployment rates in urban areas, and in some areas men are beginning to return to the rural areas. [van Koppen, 1999]
Internationally, experience has shown that women tend to have good repayment records on loans, and this is a further reason why the predominance of women farmers on any institutional structure is important.

The experience of the Department of Water Affairs and Forestry in the field of domestic water supply has shown that the substantial presence of women on water committees is more likely to result in a well managed and sustainable project. The reasons for this are various, and some self-evident. As the carriers of water, and the custodians of family health, women are more likely to benefit directly from a closely located tap than their male counterparts, and therefore more likely to play an active role in maintaining the service.

**Financial assistance and water pricing**

Underlying the potential success or failure of a number of the domestic and irrigation water provision projects in South Africa is the question of financial sustainability. This operates on two levels: the structure and affordability of tariffs, and the provision of subsidies or targeted financial assistance.

The Department of Land Affairs makes a grant of R16 000 ($2 666) available to emerging black farmers for the purchase of land. In some cases emerging farmers have pooled their grants to purchase land jointly, as in Ebukhosini in Mpumalanga Province where 110 workers pooled their grants to buy three farms worth R 1 500 000 ($250 000) [Fast 1999].

The Department of Water Affairs and Forestry offers a subsidy scheme which finances a percentage of off farm water infrastructure development costs for emerging farmers. The new water pricing strategy also makes allowance for lower tariffs for emerging farmers, with these increasing over 5 years from issuing of a licence or registration of water use to reach cost recovery of O&M costs.

Problems have, however, arisen with co-ordination between departments in terms of providing financial and technical assistance. Initiatives are currently under way to ensure synergy between the different departments and the Land Bank so as to provide the maximum financial support to emerging farmers.

The affordability of domestic water supply to impoverished communities is more complicated. As has been pointed out above, the payment for potable water may put an unsustainable strain on household resources in poor households. In order to avoid this, households may return to fetching untreated water from natural sources. Despite an intention to achieve cost recovery on urban and rural domestic water supply, this is far from the case in many areas. In some areas poverty is sufficiently extreme for it to be unlikely that cost recovery will ever be achieved. In such cases the state will have to continue to subsidise even O&M costs for many years to come. [Breslin 1999]

The national government provides a proportion of nationally raised taxes to local authorities, called the “equitable share”. The intention of this provision is to enable local authorities to provide services, including water services, to communities that cannot afford to pay for these services.

While this brings some improvement to the situation, it is not sufficient. In some local authorities it appears that the equitable share is not reaching its target market adequately. Other, more creative solutions need to be found for making water services financially sustainable.

Two interesting and innovative approaches have been recently been developed to attempt to solve this problem. The first is a programme of leak detection and repair by Rand Water in East Rand townships in Gauteng. The second is a new approach to tariffs and water demand management by the Durban Metro.

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8 The Land Bank is the major provider of loans to farmers, and has recently introduced a scheme to provide smaller loans to emerging farmers.
Tembisa leak detection and repair programme

The domestic “water-wise” programme initiated by the Rand Water Board is one of the more unique and successful demand management initiatives implemented in the former “black townships”. The programme is currently being implemented in eight former “black townships” in the Rand Water supply area. The two completed that have been completed to date are Tokoza and Tembisa East.

Initial evaluations of both completed projects indicate a significant reduction in consumption and very high cost benefit ratios. The direct cost benefit ratio in Tembisa is estimated at 1:20 and in Tokoza at 1:22.

Project objectives

The project set out to meet the following objectives:
- Reduce the water consumption and water wastage
- Increase the level of service to the community
- Increase the affordability of water
- Increase the level of payment
- Empower the community
- Educate and inform the community
- Reduce the financial burden of local authorities
- Improve relationships between the community and the local authority
- Assist the local authorities to implement a better water management system

The two major goals were set, to reduce water wastage in Tembisa by 20% and increase the level of payment by 20%.

Project administration and staffing

The success and sustainability of the project depended on its being driven and owned by the community of Tembisa. The project structure and resourcing was therefore designed to accommodate this. The following are some of the key aspects regarding the administration of the project.

a) Management team

A project management team was established which was accountable for the project funds and the overall success of the project. The management team contained officials from Rand Water with the following skills; project management, engineering, community relations, and marketing.

b) Steering committee - Community involvement

One of the most crucial components of the projects is the full involvement of the community in management and implementation. Once the project was identified a steering committee was formed consisting of representatives of key stakeholder groups, including Councillors and officials from the local authority and at least two community representatives from each ward in the township. One of the first functions of the steering committee, following a two-day workshop, was to develop a detailed business plan.

c) Technical committee

A technical committee was formed to review engineering and other technical issues between local authority officials and the project management team.

Project staffing

Thirty staff members were recruited from the community for the implementation of the project. These individuals were used as plumbers, assistant plumbers, store-man, clerk, liaison officers, inspectors, a communications co-ordinator and a project co-ordinator. Various training courses were developed for the recruited staff.
Project methodology and scope of work

The project began with a detailed house by house investigation of domestic leaks. This was followed by a detailed and comprehensive communication and awareness campaign. This included posters, pamphlets, road shows, community theatre, workshops for the community and presentations at schools. The issues addressed in the communication and awareness campaign included information about the project, the value of water, the value chain of potable water, the need to conserve water, the need to pay for water, and how to make minor repairs to plumbing installations. Bulk district meters were installed in the water reticulation system and repairs were carried out to all plumbing on the consumer side of meters, excluding hot water geysers and effluent pipes.

Leaking or broken toilet cisterns were replaced with water efficient 6/3 litre dual flush cisterns. Inspectors were trained to carry out volumetric consumer meter tests in the presence of the owner and to also verify the billing data. If discrepancies were found they were reported to the local authority who were committed to rectifying the problems.

Results of the project

Most of the objectives were met. The overall consumption was reduced from 47ML/day in 1995 to a current consumption of 27.5ML/day. This represents a drop in consumption of 41.5%. The average consumption per household dropped from an estimated 45 kl/month to 25 kl/month.

The direct financial savings to the local authority where estimated at R 20 million per year if savings for the operating costs of treating the waste-water are included.

The project directly benefited consumers by reducing water bills. This in turn increased the level of payment for water. Overall, the project contributed substantially to the sustainability of water services in this area, ensuring the long term viability and predictability of water provision. The project also provided jobs and training to community members in an area of high unemployment, thereby bringing direct benefits to the community.

Durban Metro lifeline tariff

While the Tembisa project reduced the level of household water bills by reducing on site leaks, there are some groups in South Africa who have made an argument that with the appropriate structure of tariffs, it is possible to provide the first amount of water to all water users in a local authority area free of charge. This is particularly true in the larger metropolitan areas where the potential for cross subsidisation from wealthier users is high.

Proposed regulations on tariff structures under the Water Services Act of 1997 recommend a block tariff in which the first block should consist, at the maximum, of O&M costs only. However, one municipality in South Africa has taken this one step further and provided a lifeline tariff free of charge. At the same time, Durban Metro has introduced a far reaching water demand management programme.

Background

The compounded growth rate of water demand for the last ten years for the Durban Metro area has been approximately 6% per annum reducing to 4% over the past five years. The population served is estimated at 2.6 million of which approximately 600 000 do not have access to adequate water services. The metropolitan area consists of both urban and rural settlements.

Prior to the change in local authority demarcation boundaries in 1995, water services in the Durban Metro area were managed by a number of local authorities. Some of these local authorities did not have adequate capacity and resources for effective water services delivery, which resulted in high levels of unaccounted for water and inefficient water usage. With the consolidation of smaller service providers into a much larger “Durban Water and Waste” the opportunities for effective service delivery management increased considerably.

Water Demand Management Measures

Durban Water and Waste has undertaken and identified a number of water demand management measures over the last two years which can be classified into the following five categories:
Passive operational and maintenance measures on the distribution system
Pro-active maintenance measures on the distribution system
Customer demand management measures
New consumer demand management measures
Return flow management

While all measures in the programme have had a high positive social impact, two stand out prominently. One of these relates to new consumers who are at the lower end of the market and who live in areas with little infrastructure.

The approach adopted in supplying these communities with new water services is developed according to the affordability level and preference of that community. Various options of service delivery are given to new consumers and extensive public participation is done to ensure the acceptance of most people in that community of the preferred option. Community participation in the operation and maintenance of the system is also a key element of the approach adopted.

One supply option of choice is the non-pressurised water supply to poor communities through water tanks. Each consumer receives a 200 l water tank (or a number of tanks) that is serviced by a water bailiff every day. This system results in a low level of unaccounted for water because of the low pressure and results in effective customer demand management. The overall water consumption through such a service delivery system is estimated to be up to 50% less than conventional systems to communities of similar profile. The approach nevertheless provides sufficient water to households to maintain a basic level of hygiene and health.

**Lifeline tariff**

The second novel intervention is one that challenges the conventional wisdom surrounding the disbenefits of subsidisation, a view expressed strongly by influential experts and organisations including the World Bank. Durban supplies the first 6kl/household/month free to the consumer to accommodate use for basic hygiene and consumption. The net effect is a drastic decline in levels of illegal connections as well as an increase in payment levels.

**Achievements**

The introduction of water demand management measures by Durban Metro since 1997 has reduced the current demand growth to 0% and it is envisaged that further opportunities for water demand management can offset the natural growth in demand and maintain a 0% growth for another 7 years. Unaccounted for water has been reduced from a calculated 41 % in January 1998 to 30 % by May 1999.

An additional reduction of up to 35 % of the total consumption is estimated to be possible: 15% from reducing water leaks and 20 % from the implementation of customer incentives and an increase in water use efficiency. In addition to reducing existing water demand it is expected that the natural growth in demand will also be reduced from an estimated 4% to a maximum of 3%. The reduction in water demand by recycling to industry could also introduce further savings of up to 15%.

**Social impact**

Since the lifeline tariff is a relatively recent innovation, there is not yet any evidence of the social development impact of a free lifeline supply of water. It is, however, possible to assume that not having to pay for water decreases the pressure on household budgets and could, therefore, contribute to an improvement in the nutritional status of household members. At the same time, a regular supply of water, not dependent on ability to pay, means that poor households have sufficient water to meet basic hygiene needs. In the light of the evidence that the amount of water used by a household is crucial to hygiene and health levels, and to the reduction of diarrhoea [WRC K5/562], this could be an important contribution to higher levels of health.

While the example of Durban Metro is instructive, it must be borne in mind that this is a well-established local authority with a large number of consumers who can afford to pay for services
and can afford to cross-subsidise the provision of water to the extremely poor. This does not apply in a large number of local authorities, particularly smaller towns and rural areas.

**Conclusion: Lessons from the past for the future**

The provision of domestic water supply and of water for irrigation purposes to emerging farmers has, without question, brought benefits to a large number of historically disadvantaged and impoverished South Africans. The provision of water for domestic and agricultural purposes can also be a useful lever in the drive for social development. The provision of water has not, however, necessarily maximised the potential social benefits.

A more integrated programme in which a number of different aspects are well co-ordinated, would serve to optimise the development potential that can be gained from providing water to impoverished communities. In particular, financial assistance and subsidies must be synchronised and rationalised to provide maximum benefit to impoverished communities. There are requirements for improved inter-departmental planning if the full potential of water as an instrument for social development is to be realised, particularly between the departments of agriculture, water affairs and land affairs.

A recent investigation into problematic water services schemes in South Africa showed the need for strengthened and decentralised community involvement and management in water services schemes [Breslin 1999]. It also showed that training and capacity building for community management “has been token and ineffective to date” [Breslin 1999 p6]

Considering the history of disempowerment and lack of education of the black population in South Africa, the provision of both domestic water supply and irrigation water requires appropriate and committed capacity building. Capacity must be built in communities and in individuals around issues such as health and hygiene, financial management, operation and maintenance of water supply systems, farming and marketing. This cannot be achieved in a short space of time, but requires the dedication of funds and capacity from government departments.

In particular, capacity building and empowerment must benefit women if the transfer of benefits to community and other household members is to be maximised. At the same time, women must be involved in management and decision making structures, and must be listed as farmers, landowners or household heads where appropriate.

There are a number of lessons to be learned from the South African experience which, if applied, could enhance the social development potential of making water accessible to the poor. The creativity, commitment and understanding of water managers is key in how water is used to promote or retard social development and transformation in South Africa, and how these lessons are applied in future.
References


DWAF 1997: Overview of Water Resources Availability and Utilisation in South Africa; M.S. Basson, Department of Water Affairs and Forestry, Pretoria, 1997


