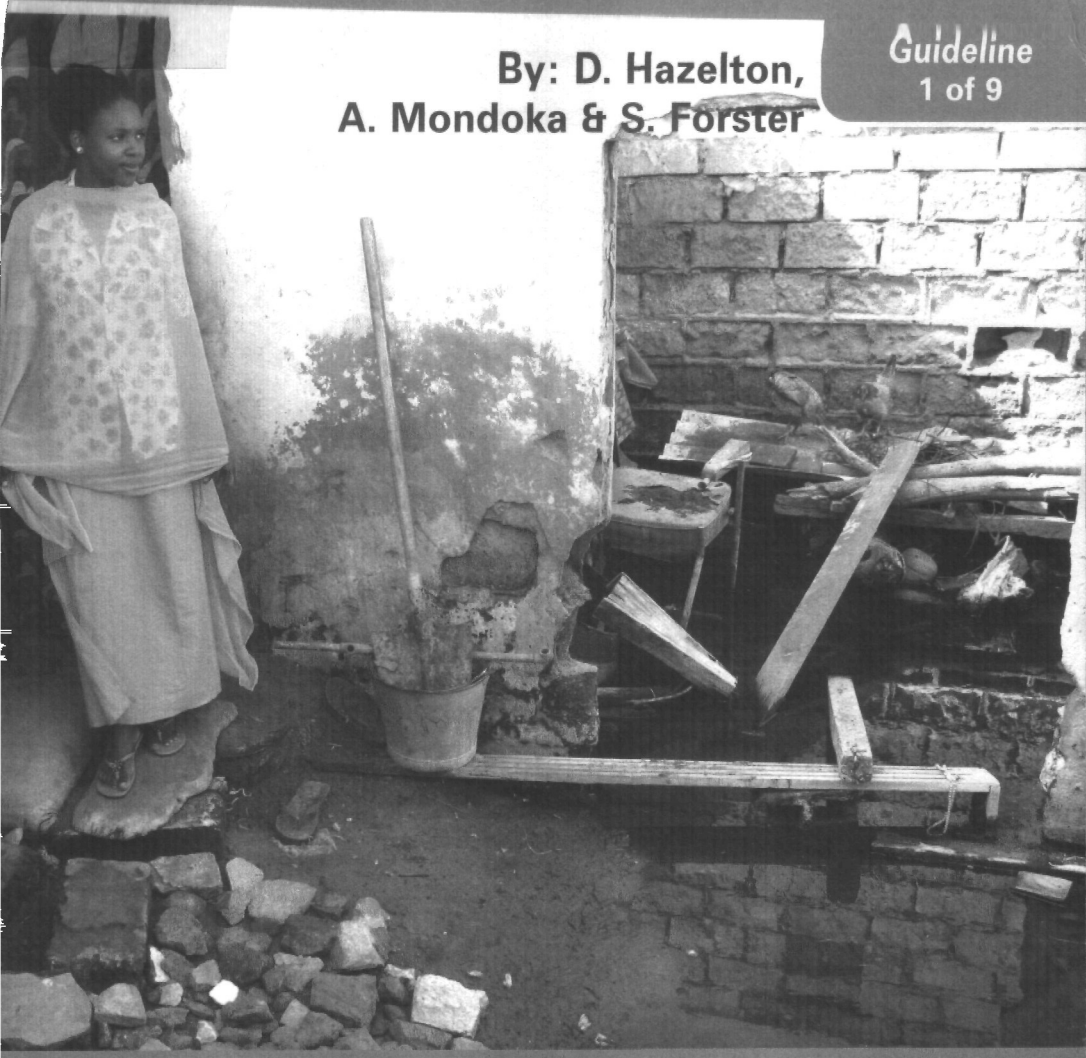
MAKERS, LEGISLATORS, REGULATORS

Guideline
1 of 9

By: D. Hazelton,
A. Mondoka & S. Forster



Building Awareness and Overcoming Obstacles to Water Demand Management

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IUCN South Africa Country Office
PO Box 11536
Hatfield
Pretoria
0028
South Africa
Tel: +27 (0)12 342-8304/5/6
Fax: +27 (0)12 342-8289
Website: www.iucn.org./places/rosa/wdm

Designed by Imibala Studio
E-mail: studio@imibalastudio.co.za

Preface

The IUCN-RoSA (World Conservation Union-Region of Southern Africa office) managed a Water Demand Management (WDM) programme between 1997 and 2002 to study WDM practices and applications within the SADC member states.

These studies indicated the urgent need for improved water resource and supply management in much of the region and the broad potential of WDM to be an important tool in achieving this aim.

Currently, IUCN-RoSA is committed to sharing the knowledge gathered in the studies to promote the adoption of sound WDM practices as a method of accelerating effective water resource and supply management throughout the region.

These guidelines on Building Awareness of and Overcoming Obstacles to Water Demand Management are a part of IUCN-RoSA's WDM sharing initiative.

They have been written by a multi-disciplinary team assembled from several countries in the SADC region.

The guidelines comprise 9 separate booklets, aimed at all the people who can influence WDM outcomes or who should be responsible for actively promoting or implementing WDM, within different water management, supply, and user sectors.

Since every water user and water resource or supply stakeholder can improve the quality of life for him/herself or others, by ensuring WDM plays an important role in his/her planning and actions, related to water management and usage, one or more of these booklets has been written with you in mind.

The titles are listed on the inside of the back cover. Check the titles, see which apply to your situation, and obtain copies. They will help you to do your job better.

In these guidelines, WDM includes all actions that improve the efficiency and equity of water use.

Efficient water usage includes using water in a manner that minimises pollution.

Thus, WDM is not about getting poor people with insufficient water to use less, but about, all users, using water wisely so that everyone has sufficient access. In this context, WDM is seen as an integral part of Water Resource Management (WRM) and Water Supply Management (WSM).

When implemented effectively, WDM will:

- Reduce water supply costs per unit volume, while assisting to create more financially sound water supply institutions, through:
  - Postponing the development of new sources,
  - Reducing water wastage, and
  - Equitably reducing unpaid water bills.
- Ensure the delivery of sufficient water to meet the reasonable demands of all users, for domestic and productive water, at a reasonable cost in both water abundant and scarce areas, while assuring ecological sustainability, or, in the few situations where this is not practical, WDM will maximise equity and minimise deprivation;
- Improve the assurance of supply through ensuring that the demand does nor exceed the yield of the source;
- Prepare users and supply institutions to manage with less water as scarcity arises, through population increase, general development or climate change; and
- The prevention of all ongoing serious water pollution.

By definition, WDM, on balance, always produces positive outcomes.

Preface

However, effective implementation requires:

- A good knowledge of current demands and usages;
- Planning and resources to introduce behavioural change within well-managed time frames; and
- *Communication with other stakeholders* upstream and downstream of your place in the water supply/usage chain.

These guidelines have been produced to assist you to plan vital WDM programmes and to motivate your superiors, colleagues, and other stakeholders to support you, as required.

They do not contain detailed advice on each WDM option but they do indicate where further *information and help can be obtained.*

Abbreviations and acronyms

AAA	SADC RSAP Priority Projects on Integrated Water Resources Development and Management (Note this AAA designation has replaced the original PCN, project concept note, designation)
CBO	Community Based Organisation
IRWR	Internal Renewable Water Resources
IUCN-Rosa	World Conservation Union – Region of Southern Africa office
JMP	The Joint Monitoring Programme on domestic water supply and sanitation administered by WHO and UNICEF
MDG	Millennium Development Goals
M&E	Monitoring and Evaluation
NEPAD	New Programme for Africa's Development
PSWC	Protocol on Shared Water Courses
RISDP	Regional Indicative Strategic Development Plan
RPSWC	Revised Protocol on Shared Water Courses
RSAP	Regional Strategic Action Plan for Integrated Water Resources Development and Management in the SADC Countries (1999 – 2004)
SADC	Southern African Development Community
SAWV	Southern African Water Vision
TRWR	Total Renewable Water Resources
UAW	Unaccounted for Water = the difference between the total measured and/or estimated volumes of water put into a water supply system and the total measured and/or estimated volumes of water delivered to authorised consumers who are contactable for payment purposes
WDM	WaterDemand Management
WSP	Water Services Provider. In this guideline the term includes all water delivery institutions including Water User Associations (WUAs)
WTO	World Trade Organisation

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1.1 Target readership

This Guideline has been written for Heads of State, and the Executive and Committee Members of national governments in the SADC region.

It has also been written for public servants, and consultants who advise national governments on issues pertaining to policymaking and implementation. The authors want to help ensure that this broader cadre of top leadership are motivated to give sufficient priority to water sector issues in response to the wishes of their people. The desired outcomes are adequate appropriate attention and funding to the water sector, so that water management, and, more especially, water demand management (WDM) promotion and implementation are satisfactorily integrated into the national ministerial portfolios covering:

- The office of the head and deputy head of state;
- Treasury;
- Water affairs;
- Agriculture, land affairs, livestock, and forestry;
- Environmental affairs, tourism and sport;
- Education, and broadcasting;
- Health, housing and provincial and local government; and
- Trades, and industry.

Foreign donors and other aid agency staff should also read this Guideline since they can support, audit, influence, or undermine local policy development and implementation initiatives significantly. Lastly, it should be read by other persons involved in policymaking and implementation at lower levels of government because that is where the majority of regulation takes place.

1.2 Aims of this Guideline

The aim of this Guideline is to raise the profile of the water sector generally, and water management in particular, within the leadership of the SADC community and to illustrate how this leadership should gainfully incorporate WDM into their policy making, legislation, and regulations to help achieve and surpass the Millennium Development Goals MDG with respect to the delivery of water supplies in a sustainable manner that maximises the net positive social gains at the lowest overall monetary and environmental cost. In any approach to poverty reduction, the right to adequate water needs to top the agenda, just before the right to adequate food.

It should be noted that IUCN-ROSA and the authors of this Guideline support the concept that in the SADC region as a whole a primary cause of environmental degradation is poverty and under-development (Abrams 2003).

Thus if the central messages of this Guideline are embraced enthusiastically by all, the quantity of water stored and used will increase overall, while the environment improves, water wastage decreases appreciably, and the financial costs for the unprecedented gains in the reliability and the expansion of services will be greatly reduced.

1.3 The Guideline character and content

The Guideline sets the whole question of water resources and demand management firmly within the broader international context while looking critically at the way in which the narrow and unimaginative interpretation of sound principles, such as that water is an economic good, is hurting the poor. Thus principles are examined within the context of the realities of the SADC region.

Generally, this examination reveals the potential effectiveness of most principles in facilitating development and equity. However, where broad benefits are unlikely to accrue, this is demonstrated, and readers are encouraged to reject these concepts. For example: should water be allocated to the highest bidder. Since 1998, when the first Regional Strategic Action Plan (RSAP) for Integrated Water Resources Development and Management in the

Sectorial background

SADC countries was drawn up the water sector has made impressive advances in the fields of:

- Building regional cooperation as demonstrated through the ratification of the revised Protocol on Shared Water Courses and the progress made towards strengthening individual transboundary River Basin Commissions;
- Training, education, research and knowledge sharing in the fields of Integrated Water Resource Management (IWRM) through the WaterNet and WARFSA initiatives; and
- Developing common RSAP implementation, and monitoring and evaluation (M&E) Strategies.

Unfortunately, this keen interest in IWRM is not matched by an equal interest in WDM. As a result, the development of policies, legislation, and regulations that would facilitate WDM's adoption across the region is generally low, although there are already some notable exceptions in individual countries, including Namibia, South Africa, and Botswana. In addition, there are signs of positive change in others. This is serious because of WDM's potential to improve water resource management and water supply delivery in the region, and because WDM is a prerequisite to truly successful IWRM.

Although not generally appreciated, such improvements in water resource management and water supply delivery are essential, even in areas where water resources are plentiful, for raising poor people's quality of live and livelihoods, and for fostering broader socio-economic development in the region without seriously damaging the environment, and without resulting in unnecessarily large financial investments and high ongoing operation and maintenance costs.

Foreign donors wanting to invest almost exclusively in eye-catching transboundary regional projects have aggravated the emphasis on centralised IWRM, at the expense of essential decentralised WDM within countries.

3.1 Prerequisites for successful WDM policy development and implementation

3.1.1 Water policy

Finances to build new and to refurbish old infrastructure, equitable cost recovery from customers, appropriate technology, quality workmanship, community empowerment, gender mainstreaming, ongoing water resources and supply infrastructure management, institutional capacity building, skills training, and creating informed customers, are all essential components for achieving and sustaining the MDGs with respect to effective water management and services delivery.

Box 1: What is water policy?

Water policy embraces the full range of political, social, economic and administrative systems that are (put) in place to regulate the development and management of water sources and (the) provision of water services at different levels of society.

Source: Dialogue on Effective Water governance, GWP, 2003

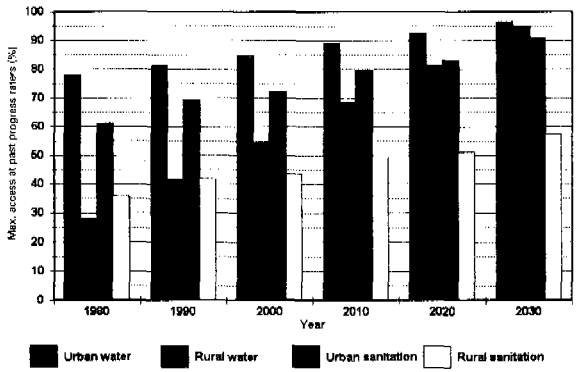


Figure 1: Scenario, based on best past progress, for expanding services in the SADC region

(Source: Figures in annexure 5)

One of the daunting things about the definition of water policy given in Box 1 is that it covers so many facets of governing. It may even cause us to ask the question: but how can the water sector be managed smoothly and beneficially in an unstructured environment of poverty?

There can be little or no development and definitely no equitable development in countries in a state of civil war, or where the government or 'rebels' use their power to weaken the rule of law and good governance, rather than strengthen them.

Good leaders will realise that no sector on its own can eliminate poverty, but that the water sector is the most effective place to start.

Rural areas will also be prioritised because regardless of the harsh conditions for many in our cities, the depth of poverty is still significantly higher in the rural areas and that is where the majority of our poorest citizens live. Thereafter, they will agree that the process of incrementally improving existing services is more likely to be sustainable, and will cost less.

This quest for best practice will also ensure that leaders develop policies that integrate activities as much as possible, particularly at the local level.

For example, if a community is aspiring to have water for an agriculture project, an agriculture extension officer will be available to advise on broader issues to minimise the risk of future failure.

This is not a call for sector specialists to stop doing water supply and sanitation or for them to get involved in a whole lot of other areas – it is a call for national policy makers and local managers to facilitate coordinated action, to avoid isolated sectors all working in their own little corners (Abrams 1999).

Lastly, this shift to prioritise the sound

development of the currently poorest areas will not mean neglect of the more developed areas. For financial sustainability alone, it is essential that developed areas be maintained at their current standard while the poorer areas receive special consideration to close the gap (Hazelton 2001).

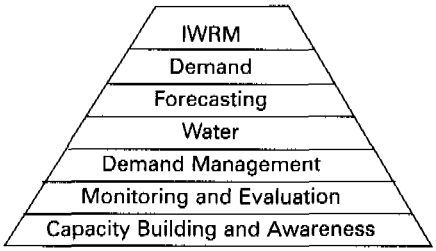


Figure 2: The water management pyramid

However, there will be one area in which the developed areas will still receive priority attention from the water policy makers, and that is in the area of policy development to ensure that the quality of the region's water resources, both surface and groundwater, are protected from would be polluters.

3.1.2 Understanding the water management pyramid

Figure 2 represents the five steps that need to be implemented to achieve the type of IWRM that leads to the delivery of quality services for all in a sustainable manner that maximises the net positive social gains at the lowest overall monetary and environmental cost. The steps in the figure are dependent on each other from the bottom up.

Thus:

- Without adequate capacity building and awareness creation no positive changes in how water services providers carry out their functions or in water users behaviour will take place;
- Without adequate ongoing M&E of all the sub-systems required to deliver water to users, and to return any effluent generated to the environment without causing unacceptable pollution, WDM cannot be implemented. Likewise,
- Without adequate WDM, forecasted demands will not be optimal, and:
  - Forecasts that are too high will cause excessive investment in water storage dams and delivery infrastructure which, in turn, will lead to high water charges and water service providers encouraging wasteful usage to recover costs, while:
  - Forecasts that are too low will cause unnecessary risks of water shortages which, in turn, will curtail food and industrial production and is likely to cause hardship and ill health to humans and livestock,
- Without accurate demand forecasting, IWRM is not possible.

Stated another way, IWRM is not possible without the active cooperation of all water users, and water services providers.

But, one of the attractions of both M&E, and WDM is that regardless of where stakeholders are situated in the water cycle, once capacity has been built up and awareness created, they can all check how they are valuing and showing consideration for this limited life giving resource and can therefore manage their water usage and/or delivery services.

To make sure that this happens; it is vitally important that national policy makers and other influential stakeholders develop policies that include capacity building, awareness creation, and laws and regulations which act as an incentive to all stakeholders, to implement WDM

and as a deterrent to those who don't.

3.1.3 The need to raise the profile of water management

To create an environment in which WDM policy can be developed and subsequently implemented to support effective water resource management, and water supply delivery, the profile of the water sector needs to be raised at the highest levels of government, the public service, and the donor community, so that adequate financial and human resources are allocated to ensure the sector's orderly and beneficial equitable development. At the latest evaluation, the importance of water supply and sanitation for poverty reduction was inadequately represented in the development of poverty reduction strategy papers (PRSPs) in Sub-Saharan Africa, and generally SADC countries scored even fewer points in this regard than countries further north (Mehta and Fugalsnes 2003) In 1998, South Africa's Financial and Fiscal Commission produced a report on public expenditure on basic social services, comprising basic education, health, water, sanitation, and social welfare.

Despite there being no water sector stakeholders among the seven authors or among the more than 30 participants who reviewed the draft document at a workshop, the only areas on which the report recommends additional spending are: water, sanitation and a pre-school nutrition programme. The report also comments that these services have benefits which far outweigh their costs (FFC 1998). Poverty is rising steadily in the SADC region and many reports by local and international economists and environmentalists recognise that if this trend is to be reversed, and people's quality of live is to be improved by for example by meeting the UN's MDGs or NEPAD's vision of eradicating poverty on the African continent, it is essential that water delivery to and consumption by the poorest sections of our societies will have to increase.

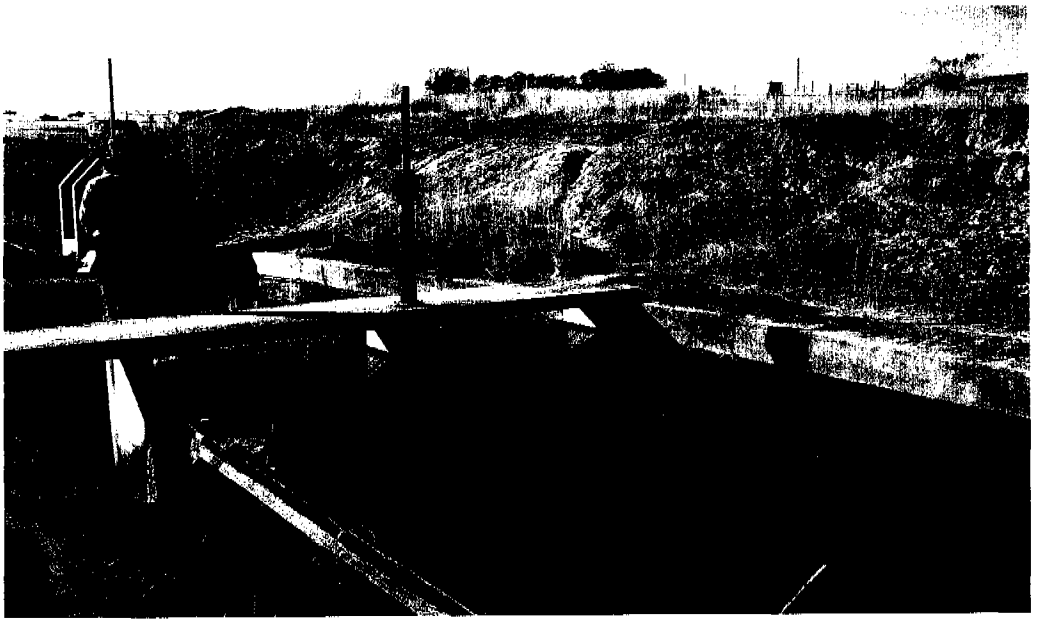
3.1.4 Better coordination beyond the sector

The sector needs to improve its coordination with other ministries in government, and with their national departments that help develop and implement ministries policies. Without this coordination, the sector's efforts to increase

water delivery to and consumption by the poorest sections of society and to foster general socio-economic development in southern Africa in a truly beneficial way, will fail.

Examples of necessary coordination include:

- The Office of the Head and Deputy Head of State and Treasury need to understand the water sector's objects and what it and other sector partners can achieve with an increased budget vote;
- Agriculture, Land Affairs, Livestock, and Forestry need to interact with emergent-farmers so that they know how to manage and make the best use of water resources and supplies;
- Environmental Affairs, Tourism and Sport policies need to be consistent with water sector policies, and legislation and regulations and need to contain necessary cross referencing so that split responsibilities do not reduce the effectiveness of either ministry;
- Education and broadcasting can be used very effectively for awareness creation, once the necessary coordination is in place;
- Health, and Housing need to reach consensus with the water sector on appropriate technology and hygiene requirements;
- Provincial and Local Government need to reach consensus on institutional structures;
- Industry needs to fully appreciate the water sector's policies, legislation and regulations regarding both pollution and WDM; and
- Trade needs to understand why the water sector in each country needs to retain sovereignty over institutional arrangements for the management and operation of water services when attending WTO and other trade negotiations.



3.1.5 Understanding the need for Water Demand Management to be implemented universally

WDM is often looked upon as a tool to be used exclusively in countries or areas where available water resources are close to being fully exploited. This is a completely false notion. Such improvements in water resource and delivery management are essential universally for achieving high-quality reliable services, for raising poor people's quality of life and livelihoods, and for fostering broader socio-economic development in the SADC region, without seriously damaging the environment, and without resulting in unnecessarily large financial investments and ongoing operation and maintenance costs. Thus every water services provider needs to:

- Control or reduce water system losses and UAW;
- Ensure strict credit control, after ensuring poor households have sufficient water for all their basic needs;
- Ensure no users are causing unacceptable pollution; and
- Monitor the water source, even when the supply is being delivered by handpumps.

Without such basic WDM, customers towards the end of distribution systems can suffer frequent disruptions to their supply caused by customers closer to the source taking too much, and the services providers themselves can be trapped into a downward spiral of financial in sufficiency as poor services lead to even lower cost recovery from customers who can pay (Hazelton et al 2002).

Good policy development, education, well publicised future water cost forecasts, targeted incentives, and general awareness creation will also ensure that stakeholders think strategically about WDM when making new investments related to industry, mining, agriculture, housing, and infrastructure; and when replacing worn-out equipment and infrastructure. As water demand approaches the current capacity of individual schemes, higher levels of WDM need to be implemented to minimise water price increases as sources close to the users become exhausted. All SADC countries should have a simple policy, supported by the necessary legislation, which affirms that licences for additional water allocations may not be issued until all agreed WDM options have been implemented, and that authorisations for the augmentation of water supply schemes, excluding temporary emergency schemes, may only be approved on the basis of certified net future additional demands, after all agreed WDM option have been taken into account. An important aspect of the above description of the universal need for WDM is that policy has to cater for the fact that implementation is not a once-off exercise, but that it contains three different categories which relate to three different timeframes:

- Basic WDM relating to water wastage and pollution control which requires urgent and ongoing implementation;
- Strategic WDM, which requires consideration when any investments related to water usage, treatment, or transportation are taking place; and
- Demand growth related WDM, which requires consideration in good time before any long-term water allocations or scheme augmentation projects are authorised.

Importantly, WDM policy also needs to include two additional aims: equity and care of the environment. In the few cases where the project costs of implementing WDM seem

higher, the hidden costs of not implementing it, such as health care, social stability, loss of biodiversity, the loss of livelihoods based on tourism and river resources such as fish, etc, need to be considered, but not necessarily calculated in detail, which is often difficult to do. Rather, policies need to include a broad values based system, so that when there is a doubt about the exact financial value of the hidden costs they are deemed to outweigh the direct cost advantages.

Box 2: Malawi Vision 2020

By the Year 2020, Malawi as a God-fearing nation will be secure, democratically mature, environmentally sustainable, self reliant with equal opportunities for and active participation by all, having social services, vibrant cultural and religious values and being a technologically driven middle-income country. Malawians aspire to have a diversified and middle income economy with a sustainable macro-economic environment able to produce competitively, goods and services for both the domestic and export markets. Malawians aspire to have adequate and accessible high quality social services. Malawians aspire for a well-developed and maintained economic infrastructure including air, rail, water, and road network in both rural and urban areas. Malawians aspire to have vibrant cultural values that support socio-economic development. Malawians aspire to have access to adequate and safe food at all times of the year to meet their nutritional requirements. Malawians aspire to have a fair and equitable distribution of income and wealth. Malawians aspire to have sustainably managed natural resources and environment.

(Source: Malawi Vision 2020, 1998)

3.1.6 Foreign donors and international agencies

The primary responsibility for ensuring equitable and sustainable water resources management and services delivery rests with national governments with the full active participation of all stakeholders, but especially the women and the poor who are often excluded from decision-making.

However, foreign donors and international agencies can play an even greater role than they are currently in supporting governments in the SADC region in drawing up and implementing their development plans. Similar to what is advocated in sub-section 3.1.1 with respect to the national governments of the region, the effectiveness of external agencies support for the water sector is seriously compromised if is not implemented within a broader equitable framework that acknowledges and acts upon the knowledge that:

- For countries still grappling to establish a minimum threshold of good governance, within which meaningful development can take place, the international community has serious obligations with respect to stopping the sale of all armaments to rebels and illegitimate governments, and with respect to the purchase of illicit diamonds, the proceeds of which are used to pay for them;
- Debt cancellation and reduction policies need to be more generous;
- Trade negotiations need to be more transparent, and agreements need to be more equitable and not interfere with a country's right to organise the provision of services as it considers appropriate;
- Developing countries need to be

compensated for the huge brain drain of talent and expertise to the developed world;

- There is a need to acknowledge that the free movement of capital hurts the developing countries deeply (Held 2004) and to find ways to develop an investment policy that actively promotes sustainable equitable economic activity in the poorest countries; and
- All countries, but especially the poorest, *need* to be able to borrow in their own currency.

Such a framework is essential for the majority of nations to be able to join the high growth nations and for all the countries of the SADC region, not just the poorer ones, to develop the type of society described in Malawi's Vision 2020, briefly described in Box 2. But donors, international agencies and the region's national governments need to be humble, and monitor and evaluate the wider results of any policy that is introduced.

Some of the above changes pose major challenges to the perceived self-interest of influential groups in the developed countries (Kasrils 2003) and satisfactory outcomes will take time to negotiate. However, once the poor nations have indicated their readiness to set up an enabling environment, there can be no excuse for the rich nations leaving them without the necessary funds to achieve the universally agreed MDGs.

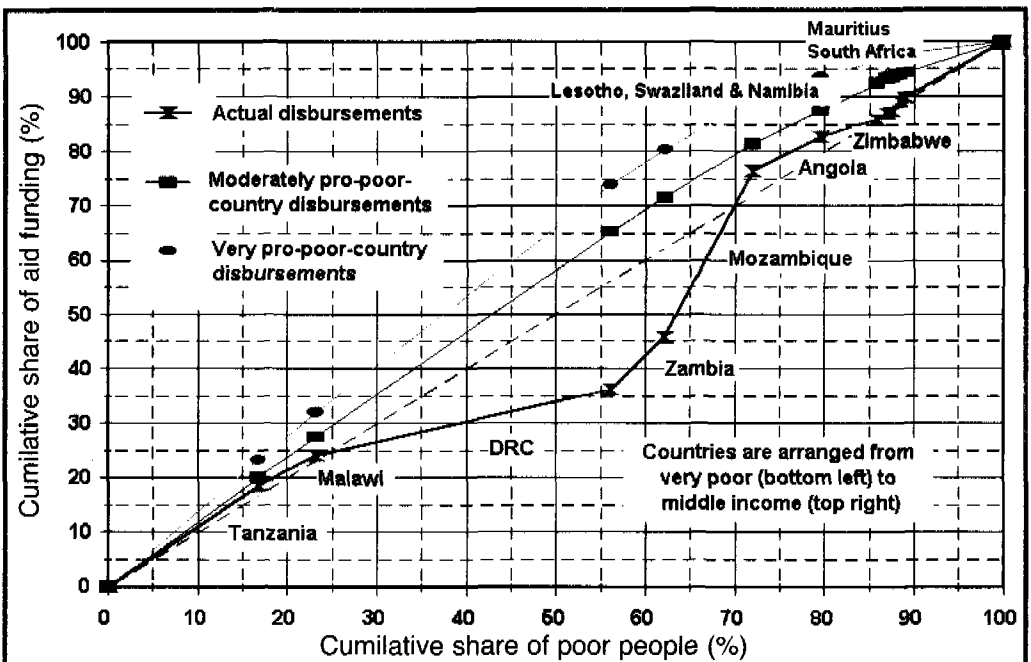


Figure 3: Share of aid to SADC countries versus their share of poor people in 2002

(Sources: Concept, Chronic Poverty Research Centre, UK; Share of aid, OECD DAC stats; share of poor people and country wealth status, estimated from Human

Once that enabling environment exists in a country, the majority of such development grants are best paid out as budgetary support to national governments with the aim of strengthening decentralised participatory democracy.

All donor assistance in the form of grants needs to be focused on poverty reduction. Under similar circumstances, the assistance disbursed per poor person needs to be higher in countries with low GDPs per capita since the gap between their ability to raise revenue and their expenditure needs will be greatest.

Figure 3 illustrates each SADC country's share of the total amount of aid received for all sectors in 2002, by the region as a whole, compared with each country's share of the total number of poor people living in the region. Where the slope is steeper than the straight dashed diagonal line, the corresponding countries' share of aid is higher than its share of poor people, for example Mozambique. Likewise, where the slope is less steep than the straight dashed diagonal line, the corresponding countries' share of aid is lower than its share of poor people, for example Democratic Republic of Congo (DRC). The figure is also drawn with the poorest SADC country, as measured by GDP per capita, on the bottom left corner. As one moves upwards and to the right the countries become less poor. As the poorest countries need more aid per poor person than the less poor ones, the amount of aid per poor person received by the poorest countries should be more than that received by the richer ones. The blue and green lines represent the degree to which aid would favour poor countries. On this basis, compared with 2002 figures, countries that require more aid, in order of estimated under-funding, are DRC, Malawi, Tanzania, Zimbabwe, Angola, Zambia and perhaps Lesotho and Swaziland. Funding to Mozambique needs to be checked to ensure that the level recorded for 2002 has been maintained. The high level may have been because of short-term flooding disaster relief programmes. Lastly, donors need to coordinate their funding better, preferably through a recipient country driven process as in Uganda (Tearfund 2004).

To be effective, donors also need to commit themselves to long-term continuous support to initiatives they finance. Generally recipients need commitments to be firm for three years into the future, to give them time to make arrangements for alternative external or internal funding as appropriate. (Hodgkin et al 1994).

But in relation to the water sector, what specific types of expenditure can recipient countries expect donor countries to support?

Annexure 2, which gives details of water resources in the SADC region, indicates a lack of knowledge concerning actual water inflows into the individual countries. These inflows depend on flows from shared water basins. Recipient governments can expect donors to have a keen interest in supporting IWRM at this level, which requires inter-governmental cooperation between the countries sharing each basin, to establish actual current inflows, and to negotiate equitable treaties to allocate water for future use. In countries with a high dependency on neighbours and in areas within countries where water withdrawals (refer annexure 3) have become a significant percentage of the TRWR, donors are also likely to be interested in quantifying the exploitable water resources as part of an IWRM initiative. An aim of this Guideline is to motivate recipient governments and their donors to extend their core interests to implementing WDM throughout the region, without which equitable IWRM is not possible.

Box 3: Bonn Freshwater Conference 2001: Recommendations for action

Water security for all is an achievable goal. There is enough water for everybody in the world, but only if we change the way we manage it. The responsibility to act is ours – for the benefit of the present and future generations.

3.2 Developing WDM policy around sound objectives

Before developing WDM policy, the region needs to be sure of its core values system and objectives. This is particularly true of the water sector where blind adherence to the market system for the allocation of resources for basic services will frustrate the region's critical need for poverty reduction; without which stability and sustainable growth is impossible. Another core value, which will help to overcome stakeholders' erroneous focus on large-scale water supply augmentation, is respect for the environment.

3.2.1 Water is an economic good

The often-quoted truth that water is an economic good is derived from the last of four guiding principles of the Dublin Statement on water and sustainable development (ICWE 1992). Since then neo-liberals have used this truth to promote the concept that all water should be managed as an economic good by ensuring that the market determines the price. An alternative interpretation is that water's value as an economic good is so central to poor peoples' well-being that, over and above water required for personal health and hygiene, it is patently unjust to deprive the poor of the basic quantities of productive water they need at a price they cannot afford (Black 2002). At current levels of development, this price will only cover a small fraction of the total cost of sustainable delivery in many areas.

3.2.2 Should water be allocated to the highest bidder?

Such a policy would be implemented through tariffs increases and/or tradable water allocations. Such a policy assumes that allocating water to the highest bidder is a good policy because the highest bidder is likely to be contributing more to a county's GDP than a user who cannot afford to pay the higher price. In crude terms, there will probably be a significant correlation between the two variables, but defining allocative efficiency in this narrow way is spurious because it ignores many other positive returns resulting from businesses that add less to a country's GDP, such as inputs to other businesses, high

employment levels for the total capital invested, food security and the likely negative effects of trying to achieve faster GDP growth through dispossessing one user to award another.

Such negative effects are likely to include greater unemployment and inequality.

However, the basic motivation for such action is usually a false exaggerated response to the first guiding principle of the Dublin Statement that fresh water is a finite and vulnerable resource, which is arrived at without reading the Action Agenda that forms an integral part of the same statement and realising that through the implementation of the full range of available WDM interventions, it is practically always possible to supply all water users with their essential requirements.

Such interventions include increasing user efficiency and the quantity of water available, sometimes though the use of non-traditional resources, However, WDM interventions do require policies that make good use of incentives, penalties, and regulatory tools in addition to the conventional pricing tools.

3.2.3 Using water efficiently to care for the environment

Natural water systems, especially in the form of wetlands, try to keep the water in rivers pure and clean for all forms of life, including humans, to use and enjoy. However, these systems cannot cope when humans behave badly. Poor industrial, agricultural and sanitation habits all cause natural water systems to become overloaded. The result is typically a rapid deterioration in the environment, which, in the worst cases, is very difficult to reverse even over a long period of time.

With respect to the agriculture sector, silt and phosphate rich run-off due to inefficient water use and other poor agriculture practices can easily degrade water quality and fisheries

substantially while salinisation of the farmland itself can create new deserts. Phosphate and other nutrient build-up in rivers due to diverse human activities can easily affect their ecosystems adversely as some organism are more sensitive to change than others. The all-too-frequent effect is the loss of sensitive species and an increase in weed species which ultimately leads to a loss of ecosystem biodiversity and sustainability.

A more and more frequently familiar scourge is the proliferation of algae blooms with a consequent bad smell and water taste, alien plant multiplication, such as water hyacinth. Where this occurs the rotting vegetation causes the removal of oxygen from the water, toxicity, and the death of fish and other aquatic life.

While much industrial and domestic effluent is now cleaned up before being returned to surface and underground water resources compared with a generation ago there is still a long way to go. The polluter pays rule needs to be legislated for and firmly implemented by policy makers in the region. Particularly when on-site treatment is used, companies can recover all the pollutants, including heavy metals and other toxic wastes, from their waste water treatment plant. Thereafter, the resultant recycling, and selling of byproducts, enables them to make full use of all input materials, including water. This will ultimately lead to cheaper unit production costs, as each company accepts its expected environmental responsibility to the rest of society and the economy. Recycling and the beneficial recovery wastes should not be seen as an exclusive benefit to industry only. On the domestic side, 50% of household waste water that currently goes down the drain could safely be put to beneficial use in watering gardens. There is a further important potential for all households, not just those in rural areas, to make a contribution towards efficient water usage and waste recovery, in the form of waterless eco-sanitation, in which wastes are recycled into valuable fertilisers and which avert the costs incurred to flush water, usually of drinking quality, into a sewerage system for off-site treatment. Wealthy and environmentally advanced Sweden is using more and more waterless forms of sanitation. Creating awareness of the benefits of waterless sanitation through leading by example, and reporting on Swedish practice, needs to be used by policy makers to overcome cultural resistance and prejudices.

Throughout the developed world research indicates that a new scenario is emerging with respect to the quality of water in rivers and subsequently the quality of water households drink. Mainly due to the incomplete treatment of industrial wastes the water contains endocrine disrupting compounds (EDCs) which appear to be affecting human, animal, and plant hormones resulting in reduced reproductive capacity. Thus sperm counts are lower than those of a generation ago, with outright sterility being a frightening ultimate threat. Apart from pollution, reducing the water flow in rivers by abstracting more water than is necessary also causes environmental damage. Abstracting groundwater can also reduce river water flows; especially base water flows. The South Africa Water Act of 1998 defines a reserve which indicates that sufficient water, of a suitable quality, must be left in all water resources to protect aquatic ecosystems and to supply households with the necessary basic water to support life and personal hygiene. The Act only allows water resources to be exploited for other purposes after the reserve has been allowed for. However, what is needed is a value system, accepted by all, which recognises that, apart from unavoidable losses, no water should be abstracted from rivers and groundwater that is not going to be used efficiently for beneficial purposes.

Such a value system is endorsed and promoted in this Guideline because, for example,

a reduction in water flow and quality is likely to lead to an increase in bilharzias among the local population. This reduces their quality of life, causes low paid workers, who can least afford it, to be absent from work, which in turn leads to loss of productivity.

Treatment of the bilharzias patients also increases health care costs. Likewise, rivers whose flow is cut off or lessened by dam building or the withdrawal of water for human use are often reduced to pools of stagnant water. This provides ideal summer breeding conditions for mosquitoes, which increases the spread of malaria with even more adverse socio-economic effects than those caused by bilharzias.

As indicated in the other guidelines in this series, all water sub-sectors can play their part in improving the quality and quantity of water in our rivers, to help ensure a healthy environment. Thus policy makers need to consider each of these sub-sectors.

Thereafter, with the participation of civil society and specialist sector advisors, they need to create awareness and, pass laws and promulgate regulations that will lead to a change of attitude on the part of all citizens and decision makers in agriculture, industry and domestic water provision.

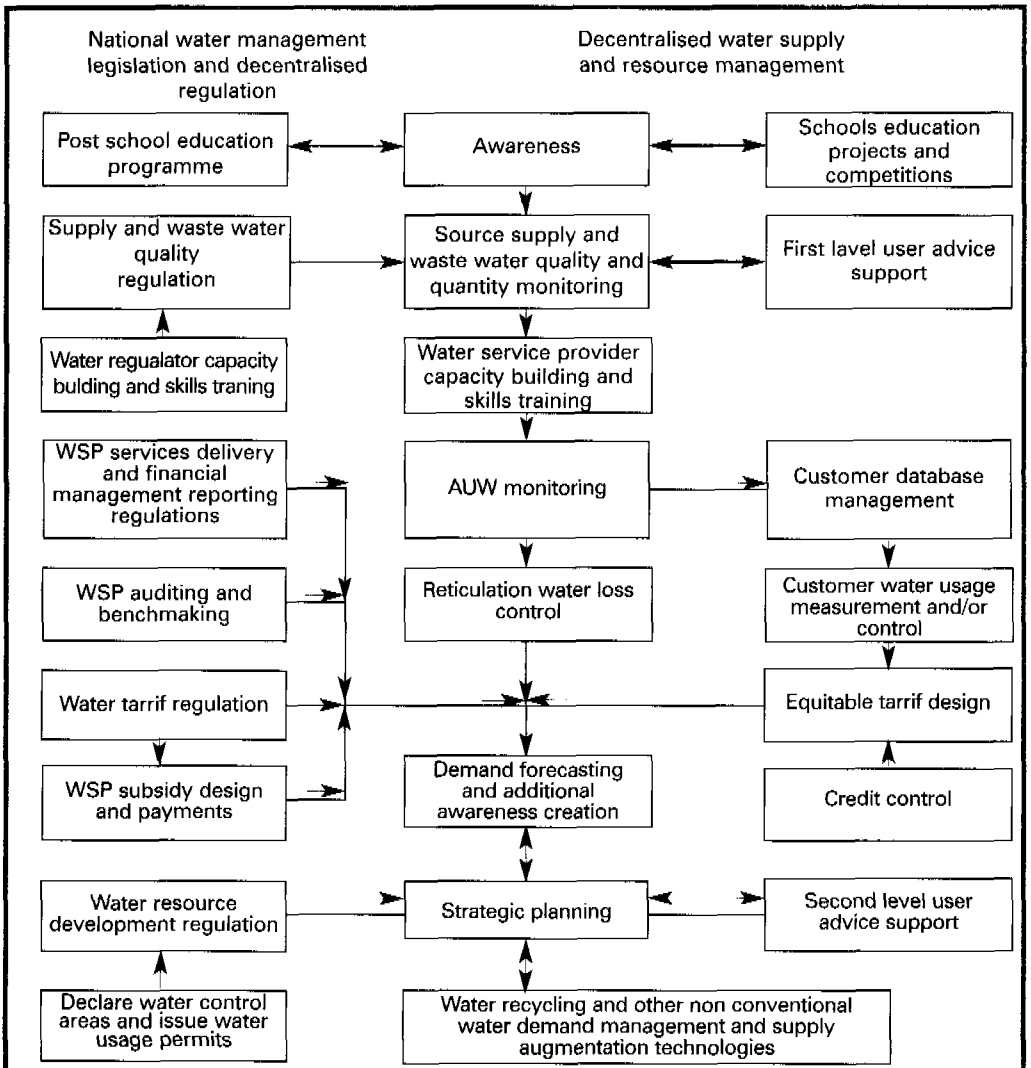


Figure 4: Framework of generic WDM options

4.1 Introduction

The individual sub-sector guidelines give details of the specific WDM options available to particular categories of water services provider. These individual options are not repeated here and what follows is a broad framework covering the generic options available for WDM. From a policy and regulatory perspective it is also important to note that the WDM framework relates intimately to each of the

four main stages of the water cycle. That is it relates to managing

- *The water resource;*
- Water supply and distribution;
- Water usage by end-users; and
- The quality of return water flows.

A critical emphasis of the framework is the need for regulations and for an institution or institutions to ensure that, once promulgated, the regulations are implemented in a gradual orderly fashion. Beneficial regulations can only be promulgated nationally *after the necessary* policies have been developed in a comprehensively participatory manner and follow-up legislation has been passed through acts of Parliament.

4.2 Basic WDM

Figure 4 gives an overview of these generic WDM options within a framework indicating the main legal and regulatory requirements. The framework is in line with figure 2, the water *management pyramid. Thus it shows that to* implement WDM one has to start with awareness creation. It is only by having one's voice heard and explaining the benefits of WDM that one will get one's message across to the people whose behaviour one wants to change. There is also a need to find the most effective methods of interacting with the target water suppliers and *users in a way that builds up support for* WDM rather than making *people feel apprehensive* and threatened. Listening; knowledge sharing; empowering; gender, culture and youth issues; and negotiating are all words that are linked with successful motivating interactions. Practical relevant illustrations of successful WDM programmes are a good form of awareness creation. Figure 5 illustrates the results of a

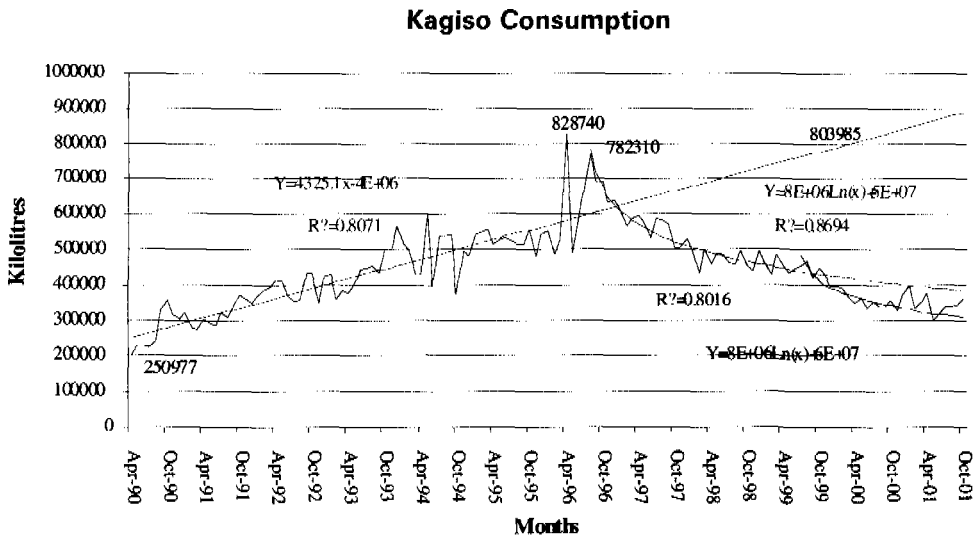


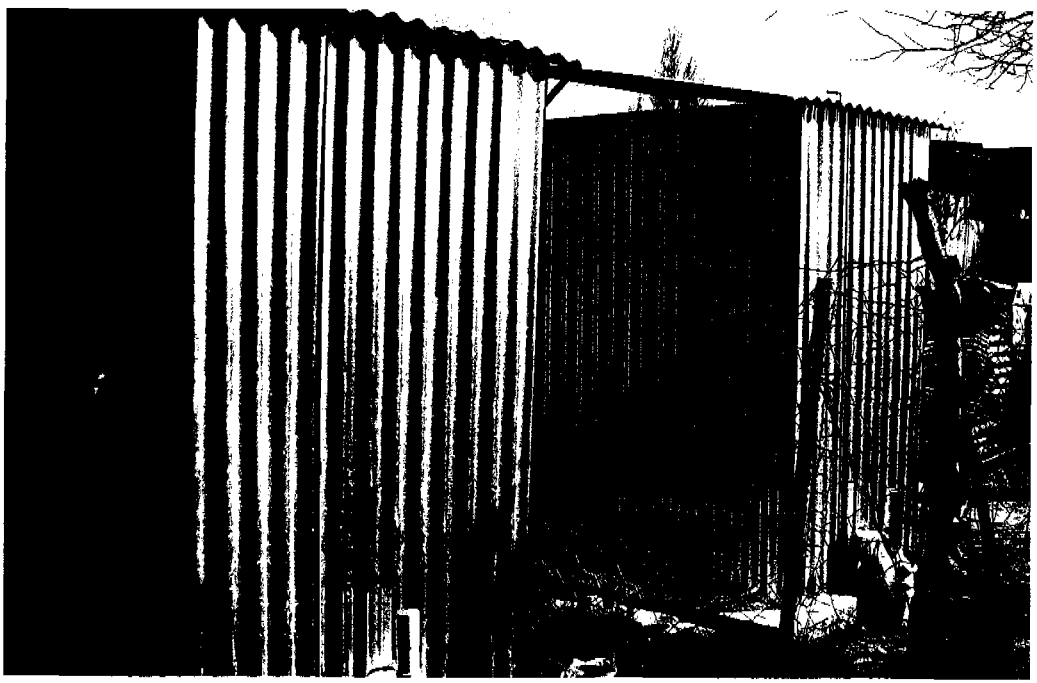
Figure 5:Water delivered to Kagiso, kilolitres per month, from April 1990 to October 2001
(Source: Mogale City Local Municipality, July 2001 to June 2002 water sector business plan)

WDM introduced in a low to lower middle-income urban residential area in Gauteng, South Africa. An important aspect of this example is that it took five years of focused implementation and many improvements in services delivery and management to achieve the results indicated. Well-publicised local pilot projects in schools and elsewhere can also help people to become familiar with how to manage water.

Very close to the need for awareness creation is the need for sound monitoring with subsequent evaluation and, where necessary, corrective action. It is not possible:

- To create equity without knowing where the people live who are currently being deprived of their fundamental right to have a water supply that covers all their basic needs;
- To stop the deterioration of the quality of water sources and the degradation of agricultural land, without knowing the source of the pollution;
- To ensure that sources are not over exploited, with the likelihood of complete failure of the supply in time of drought, without monitoring the source;
- To manage UAW, to strengthen a utility's financial position and prevent unnecessary money being spent to develop new resources and increasing the capacity of water delivery infrastructure, without knowing where UAW has got out of hand;
- To help people manage their water usage so that they can pay their bills without monitoring bad debts.

Monitoring requires institutional capacity, skills and financial resources. Policy makers need to



ensure that these prerequisites are available. Of course weighing sheep does not make them fat. Therefore, regulations to give institutions the necessary authority to enforce follow-up action are also required. Monitoring staff need to observe that enforcement and corrective action takes place.

Otherwise they are likely to become demoralised. When this happens their enthusiasm for their work is very difficult to re-establish.

First level user advice support refers to helping water users to manage their water usage and fix leaks on their property so that they can pay their bills. In the short term, provided the current water source, and the existing water delivery and effluent treatment infrastructure has significant spare capacity, it often makes sense not to promote WDM in areas where customers pay their bills promptly without hardship.

4.3 Preparing for higher orders of WDM

Once WSPs get into the custom of implementing basic WDM within a sound policy and regulatory framework they will be well prepared for moving on to the next level. This will be necessary once monitoring reveals that, sometime in the future, the existing water source or infrastructure will not be able to meet the demand. From the perspective of WSPs sharing the same water catchment, accurate demand forecasting, additional awareness creation and strategic planning now become an additional focus. The purpose of this focus is always to ensure sufficient water is available sustainably at the cheapest environmentally satisfactory cost to all users who need it, and will use it efficiently in a non-polluting way. WDM is therefore there to support all equitable development that is beneficial to the majority, and leaves nobody, but especially the poor and weak, worse off. It is never there to curtail such development.

Second level user advice support refers to this need to help high volume users, to prepare for water becoming a scarcer or, alternatively, a more expensive resource. For high volume domestic and industrial users, this preparation can usually be facilitated by gradually adjusting tariffs upwards, before any decision is made to increase the availability of water. This will help WSPs to prejudge what the demand will be at the higher price, and to build up some reserve funds in case new infrastructure is required. For industrial and, to a lesser extent, for domestic water users it is often advantageous to have realistic, 25-year water charge forecasts, as this can influence, for example, the relative importance they give to saving water and energy when selecting processes, and occasionally may even be important in relation to where an industrialist should locate their a facility to ensure its sustainability in a competitive environment.

Farmers, however, can rarely meet the cost of paying a higher volumetric water prices, unless they can obtain the same agricultural output using less water. Sometimes WSPs may be able to assist in this regard through second level user advice support, but if this is not sufficient to overcome the farmers' difficulties there needs to be a policy in place that allows a regulatory authority to share out the available low cost water between competing users. Thereafter, it is often advantageous for the economy as a whole if government can make available low-interest finance to enable farmers to convert their operations to a more water efficient irrigation methods, so that they can grow the same type and quantity of crops with less water. Such concessionary finance is also the obvious choice if it can free up water for other users at a lower cost than developing new water sources.

A second need for a regulatory framework is to ensure that no new water resources are developed until all basic WDM procedures

have been implemented. The second strategic priority contained in the Report of the World Commission on Dams (WCD 2000) goes further when it recommends that a comprehensive and participatory assessment of the needs for water, food and energy, and of all the alternative options available, with respect to policy, institutional, management, social, environmental and technical matters, be made and reviewed before a decision is made to proceed with any option or mix of options. Such action is needed to protect water users from having to pay higher costs to monopoly water suppliers because of their inefficiencies, to prevent directly wasteful water resource exploitation that causes unnecessary environmental damage and sometimes to ensure that other potential water users are not deprived of a scarce resource.

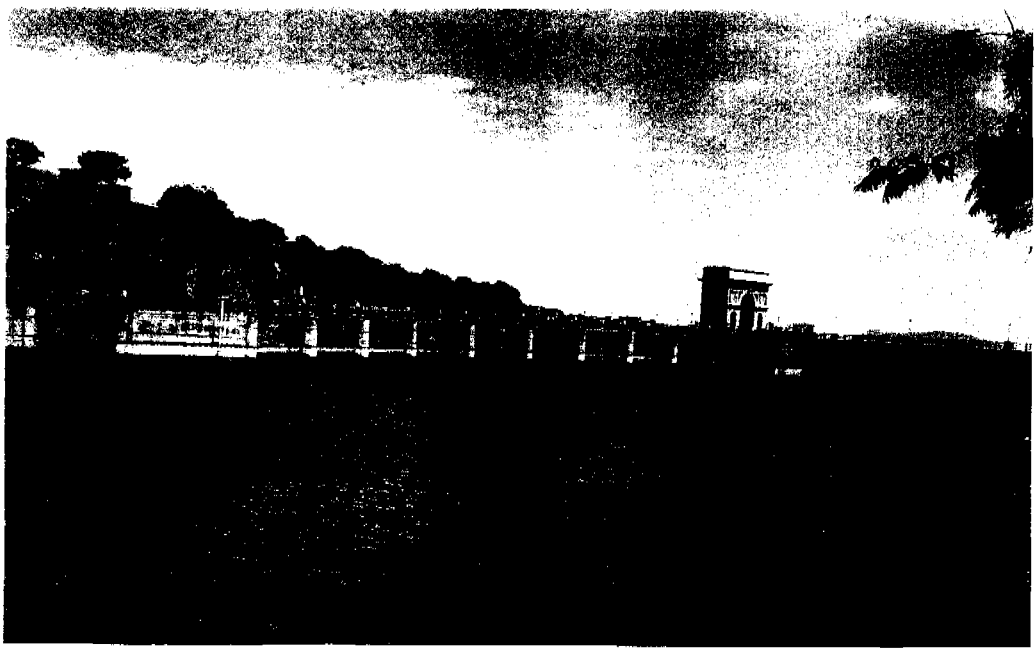
Lastly, WSPs themselves need to plan strategically for implementing non-conventional water supply augmentation technologies long before such technologies are implemented.

4.4 Higher order WDM

Higher order WDM comprises a number of different strategies. One is to introduce new non-conventional technologies that use substantially less water to achieve the similar outcomes. Examples are:

- Non-evaporative water-cooling for industrial plants where feasible within a framework that optimises operational efficiency, capital costs and the demand for both water and energy; and
- Modern waterless composting toilets for the disposal of human faeces and urine.

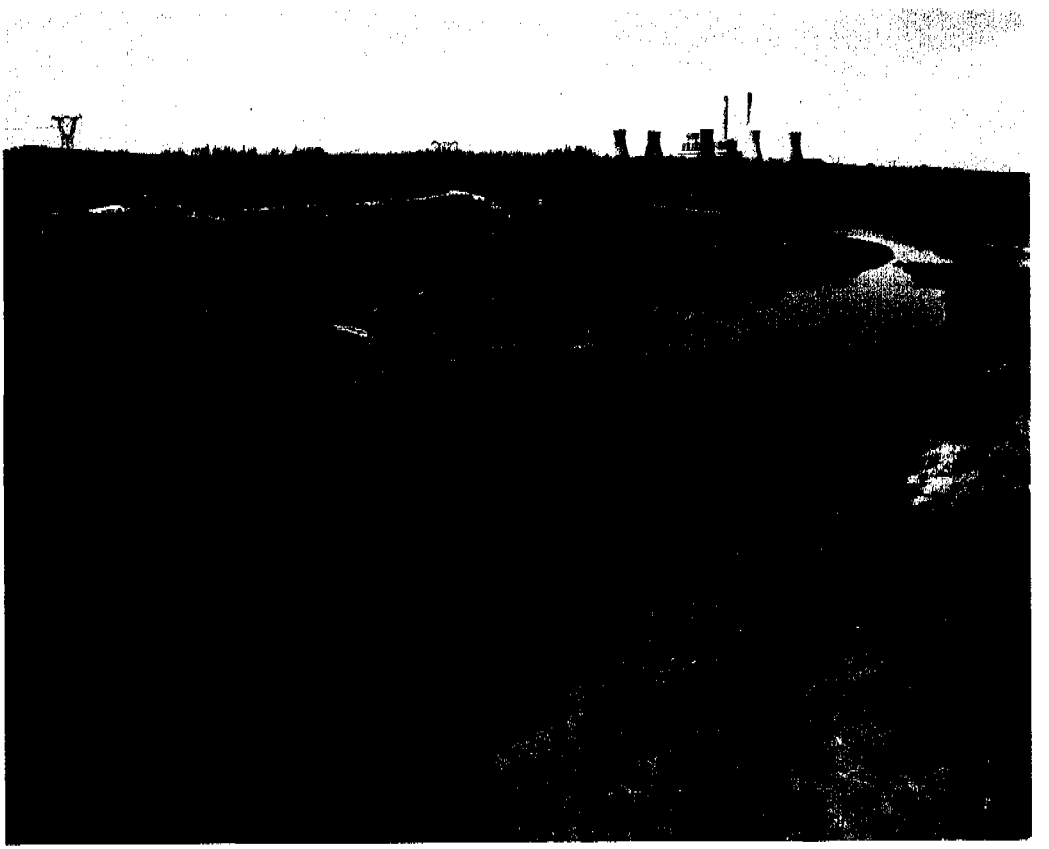
A second is to reuse water a second time before returning it to its source so that the water is managed in a way that allows a smaller quantity to satisfy a greater demand.



Others are artificial groundwater recharge and technologies ranging from simple rainwater and fog harvesting to various types of desalination plants.

4.5 Postscript

All countries and localities within SADC need to have or formulate, and implement, policies to ensure that all households use sufficient water of adequate quality to cover all their basic domestic and productive needs as soon as practical. The same universal urgency applies to having or formulating, and implementing policies related to all aspects of basic WDM. However, different countries within SADC and different regions within these countries have widely differing responsibilities with respect to implementing, as distinct from having or formulating, higher order WDM policies. For example, despite its obvious leadership in the disciplines of IWRM and WDM, declining water and wetland quality, deforestation, overgrazing, and soil erosion and salination, are all still issues of major concern in Namibia today because of its fragile environment (UNDP 2002). Each country in the region needs to have or develop a clear understanding of the situation applying to every different area within it.



Developing WDM policies

5.1 The approach used

The SADC countries already have existing policies covering water management and pollution control, most of which have been updated since independence from colonial powers or internal minority governments.

Policy should always be dynamic, as countries learn by doing and responding to new situations. However, it is equally true that policy should not keep on changing radically, since such discontinuities undermine development planning and the day-to-day operation and maintenance of water supply schemes and user facilities.

5.2 Choosing a broad strategy

Water resource management, water supply management and water pollution control are often addressed in separate policy documents. In developing WDM policy the governments of the SADC region will have to decide if a new policy document is to be published or if an earlier document or documents are to be replaced by a new document.

One possibility is to produce a single water supply and effluent control management policy white paper. If this approach is adopted it is wise to refer back to earlier policy documents and transfer all the good policy therein to the new document, especially if the good policy has not been implemented due to a lack of motivational follow-up, for example. Thereafter, the new white paper should clearly state which policy documents or sections thereof have been repealed.

There has been a growing movement in Africa to produce white papers that are attractively presented and written in easy-to-read everyday language. Where specialist technical terms have to be used, these are clearly explained in a glossary.

This movement needs to be maintained and extended to countries where it is not already the *accepted practice*, but equally importantly it needs to be extended to law making.

White papers and Acts of parliament should give a brief inclusive overview of policy associated with a set of related topics.

They should refer to, or allow for the development of, additional regulations, standards, and possibly by-laws to augment the Acts where such subordinate legislation would be useful.

The language of this subordinate legislation can be kept simple if *implementation guidelines* are included with the text. Where specific concepts that were defined in the Acts or appeared in a glossary are used, these definitions or explanations can be repeated, in boxes, at the first mention.

In this way each piece of subordinate legislation becomes a stand-alone document (for example DWAF 2002).

Finally this attractively presented and simply written legislation should be translated into local languages.

5.3 Policy objectives

Like much other water sector policy developed in the SADC region, WDM policy needs to be focused on just two core objectives:

- Improving equity for justice sake and the reduction of poverty; and
- Caring for the environment to improve the quality of life for current and future generations.

Any policy developed, and the manner in which it is implemented, needs to promote both these objectives simultaneously.

All the contents of any approved policy document, Act of parliament, and supporting regulations and standards need to support the achievement of these aims.

5.3.1 Equity

Equity can be measured in two ways. One is by examining how the inequality in per capita usage, including or excluding the quantity of water used to provide the goods people buy, is changing over time. The second is by measuring the number of people that do not use sufficient water of an adequate quality to meet their basic domestic and productive needs on a daily basis.

The first is obviously important, because no country will be sustainable if the poorest sections of the population continually use less water, as time go on, while the richest sections continue to use the same amount or more. However, it is probably more important for the sector to focus on the second measurement, provided each country measures and responds to some overall inequality key indicator such as changes in shares of total income or consumption. For example, it is clear that if the reported 1991 – 1996 trend in the change in household income in South Africa, as shown in figure 6, continued indefinitely, the country would not be sustainable.

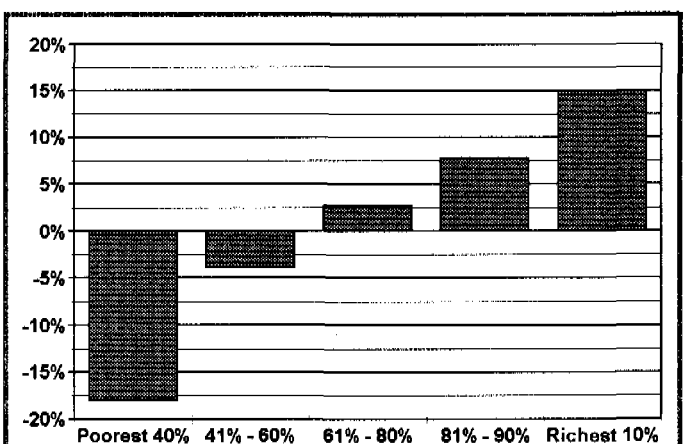


Figure 6: Percentage changes in different households income in South Africa from 1991 to 1996
(Source: adapted from DoSC 2002)

The concept of the second measurement is familiar to many stakeholders in the SADC region since it corresponds to the idea of basic access defined by the Joint Monitoring Programme (JMP) administered by WHO and UNICEF. The JMP defines basic access as having at least 20 litres per person per day from an 'improved' (= safe from a quality viewpoint) source within one kilometre of the users dwelling (SADC 2003 or WHO-UNICEF 2003). However, from WHO's own literature (Howard & Bartram 2003), it must be emphasised that this definition does not create equity for a number of reasons:

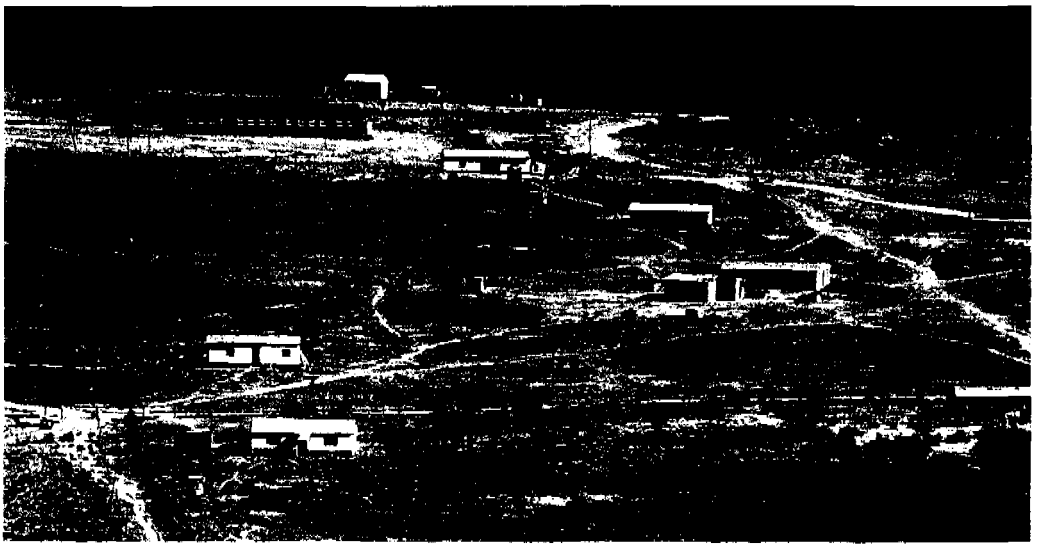
- Households that have to travel more than about 100 m or spend more than 5 minutes on a return trip when collecting water are likely to use less than 20 litres per person per day.
- A usage of 20 litres per day still represents a high level of health concern. This level of concern only becomes low when sufficient water is assured for laun dry and bathing.
- Affordability and reliability are also required to assure that access is transformed into daily usage.
- It is increasingly recognised that additional water for productive uses is often essential for low-income communities to meet nutritional requirements. Surprisingly, this aspect is stressed by WHO in relation to low-income urban dwellers.

Despite the above reality the highest priority still needs

to be given to ensuring that each individual (rather than each household) has basic access to a quality of water that is safe to drink and that access is not threatened by reliability or affordability constraints. In addition, government policy needs to reflect this. As customer satisfaction and health benefits do not appear to correlate closely with the time taken to fetch water, it is recommended that governments consider accepting the JMP's figure of one kilometre as the maximum distance to an access point, and adding the figure of 250 persons as the maximum number of persons per access point. The latter will help governments attain a similar level of basic service, at a similar cost per person, regardless of the population density in different areas. Where practical, a higher level of service could be considered for households with old or permanently ill members. Responding to the need for productive water could be on the basis of demand, coupled with land availability and the prevalence of malnutrition in different areas.

The purpose of starting with these meagre definitions of a basic water service is to bring everyone up to this minimum level of service as quickly as possible (by 2020 at the latest for all SADC countries). Once these minimalist standards have been achieved, for full health benefits to be realised, countries need to move on immediately to ensuring everybody has water within 100 m of their homes, and then to access at yard level (Howard & Bartram 2003). When affordability and willingness to pay are not an issue, customers on average use about 15, 30 and 50 litres of water per person from these different levels of supply for domestic purposes, excluding water for waterborne sanitation, and productive purposes, such as livestock watering and food production

Mauritius, Botswana, Zimbabwe and South Africa already need to consider how to define a higher level of service as they go beyond supplying all with a basic level of service. Could this initial minimum higher level of service be defined by reducing the number of persons per access point further?



Developing WDM policies

Of course, in many areas, management is inadequate and, until systems start failing badly through this poor management and poor maintenance, customers can use as much water as they like without paying for it or by tampering with the metering system. This is also unacceptable.

Therefore careful consideration needs to be given to ensuring that all poor customers with access to sufficient water to cover their basic needs actually use that amount, within a framework of sound policy that is implemented rather being ignored, or abused. The amount will vary depending on (Inocenencio 1999):

- Household size
  (Basic needs = 35 litres per person per per day);
- Additional users from the same delivery point (Allow 15 to 35 litres per person per day depending on their distance from the delivery point);
- The number of ill households members
  (Required basic additional demand unknown);
- The type of sanitation used
  (For waterborne sanitation without grey water recycling basic need = an addition al 20 litres per person per day);
- Whether it is a weekday or a weekend, with or without a funeral or other celebration
  (Additional demand unknown); and
- The need for water for productive use
  (Required basic additional demand unknown).

For justice to prevail in the water sector the average water usage by all communities, except

perhaps a few small communities living deep in dessert conditions, should be not less than 100 litres per person per day over a 12-month period. If 100 litres per person per day is the target figure 50% of people will still be using less than this figure, with some only using about 35 litres to cover all their basic needs.

Policy needs to look at how best to deliver such amounts of water progressively and cost effectively to the poor.

Finally, policy should be robust enough to ensure a reasonable degree of uniformity of implementation countrywide while allowing some flexibility so that services providers can agree the final details through additional local negotiations. WDM needs to be firmly imbedded in the policy. But for newly developed areas, perhaps reticulated waterborne sanitation should be considered an obsolete system from the past?

A major challenge in terms of implementing such a policy will be ensuring that urban areas do not get preferential treatment and negotiating acceptable forms of non-reticulated sanitation to tie in with the lower levels of water supply services. This is where a countries leadership needs to lead the way. When will we see the water supply and sanitation systems associated with the government buildings housing departments related to water supplies being upgraded and disconnected from the sewage reticulation system?

Political leaders should be pioneering the use of various modern non-reticulated sanitation systems, to encourage wider acceptance in new housing schemes built for rich and poor alike. Careful consideration also needs to be given to developing a policy that caters for the speedy provision of higher levels of service, within a WDM framework, to those who can afford it.

Although not strictly a WDM concern, policy must ensure that all water supplies are fit for purpose, with respect to quality. The JMP currently defines a safe improved domestic water supply in terms of the technology and the level of service provided. Improved supplies include household connections, public standpipes, boreholes with handpumps, protected dug wells, protected springs and rainwater collection.

5.3.2 Care of the environment

WDM policy needs to establish, encourage, and enforce an understanding amongst all parties of the importance of caring for the environment. Sustaining the environment entails conserving several elements, including water quality, water flow in rivers above a certain minimum level, the physical characteristics of water courses, riverine biota, fisheries, upper catchments, wetlands, and deltas (Abrams 2003).

These criteria tend to focus on surface water. However, there is an equal need to care for groundwater.

The principle that care of the environment is a core WDM function will include policies on:

- The protection of land against erosion, and salination;
- The eradication or control of invasive alien plant species (<www.dwaf.gov.za/wfw>)
- The quality of run-off from agricultural land and of water that has been in contact with, human or livestock, urine or excrement, to prevent nutrient build up, or other pollution, in water resources, which introduces the need to treat previously pure water before use, increases the cost of other treatment and causes the spread of water hyacinth; and
- The quality of water flows from all other sources affected by the presence of humans.

5.4 The development process

5.4.1 The policy development team

Policy development requires extensive input from a team of four to six broadly experienced sector professionals with analytical aptitude, listening skills, and verbal and written communication skills. If practical, half the team members should be public service staff members.

On the one hand the team must be authorised to proceed by politicians from the highest level of government, must understand that they are working for and on behalf of government, and that, through adequate interaction, the final outcome needs to be a clear expression of what a government wants to achieve and will, therefore, have the motivational will to implement.

On the other hand, politicians need to encourage civil servants at the highest level to appoint a team consisting of complementary skills, and encourage the members to communicate their findings and recommendations openly, which, if differing from the politicians anticipated outcomes, need to be debated thoroughly in a frank way before the final policy document is written.

Any specialist skills, related to interfacing technical and final production matters such as information technology, health, education, agriculture, law, writing, layout and presentation skills, found wanting in the team can be obtained through part-time appointments. Foreign personal may be considered for such positions, but care must be taken not to choose persons too closely aligned to First World governments, businesses or any funding agencies.

While learning from foreign experience and other SADC members can be valuable, full control should be retained in the home country. Likewise, donor funding should not be allowed to control any of the outcomes or who advises the development team.

5.4.2 Understanding the weaknesses of current policy

It is impossible to update policy satisfactorily without having a high-quality understanding of the current situation. Ideally, this needs an effective system for the continuous monitoring of the operation, maintenance and performance of all water improvement projects after completion, and all parties having access to the resulting information. To ensure objective reporting by WSPs, the monitoring system needs to include a module where customers' reports of service problems are recorded along with the WSPs

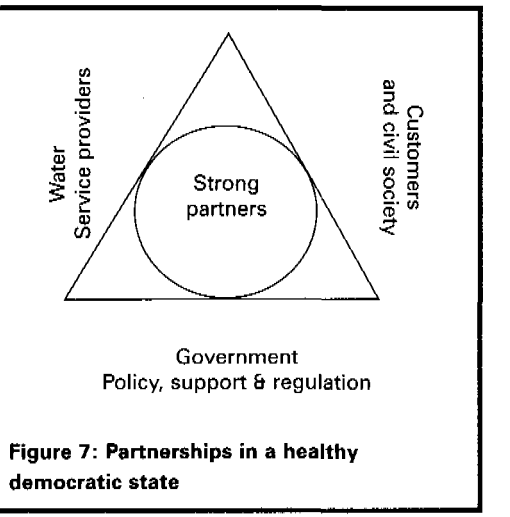


Figure 7: Partnerships in a healthy democratic state

actions to address the complaints. The core of such a system should be comprehensive unified flexible national information management systems maintained by national agencies, but with each WSP countrywide being responsible for providing the required information on a regular basis and taking action locally to improve its own performance. The need for such a system was outlined at the first regional consultation on the Africa 2000 initiative for water supply and sanitation meeting held in Brazzaville in 1996 and attended by 12 of the 13 SADC member states.

The findings in this regard were recorded in the Conclusions and Recommendations section of the meeting's report outline (WHO 1996), but no comprehensive working system is currently operating in the region. It is recommended that the SADC, as a region, start about three interlinked indepth pilot projects to test how best to develop such national systems that can be used in assisting to develop and implement the following round of updates. In the meantime, policy development teams will have to make use of a comprehensive up-to-date grey literature search and well-designed representative surveys to get the best possible understanding of the current situation before drafting discussion documents. One important aim of such surveys would be to find out to what extent current problems in the sector are due to poor policy or, alternatively, to the poor implementation of current sound policies and how WDM initiatives can help to overcome them. With respect to the latter, the surveys need to establish the causes of poor implementation.

5.4.3 Making use of a comprehensive participatory process.

Regardless of the development team's confidence in understanding the current situation, it is essential to check the validity of that understanding through interviews and public meetings with a comprehensive range of stakeholders. Such interviews and meetings are also needed:

- To obtain additional ideas on policies and policy implementation tools to overcome current problems and inefficiencies;
- To gauge different stakeholders reactions to proposed policy changes, especially with respect to WDM in so far as it is a new policy intervention;
- To discuss objections openly, to check the extent to which they are well-founded;
- To creatively negotiate acceptable compromises, and implementation time frames, which will be supported by all stakeholders;
- To check that proposed policy is not inconsistent with any current policy, leg islation, regulations or standards; and
- To identify what supporting legislation, regulations or standards need to be developed to support the implementation of the proposed policy if it is adopted by government.

A truly representative sample of the full range of individual stakeholders, associations, CBOs and NGOs that are likely to be affected by the proposed policy update needs to be covered by the participatory process. As it will only be a sample that will participate, through the team going out to meet stakeholders, the process also needs to be widely advertised in the media, so that other stakeholders become aware of the process.

It is important that weaker voices in poor rural and urban areas are as well heard as powerful interests. An aim of the policy development process should be to encourage the building of strong partnerships between all three groups of stakeholders: government at all levels, WSPs, and customers and civil society as a whole. These essential partnerships are shown diagrammatically in figure 7.

Currently, in the SADC region the links between government and civil society are very weak and need strengthening. The other links are generally stronger, but there is still the need to change the nature of the relationships so that they are built more on trust and respect, while retaining honest, robust and open discussions, which are essential for conflict resolution and the development of sound policy that can be implemented. Over-sensitivity to criticism is an enemy of progress. Although this guideline has been written primarily for top-level politicians,

the above comments do not in any way reduce the responsibility of civil society leadership to improve its partnership development skills.

5.5 The essential requirements of a successful WDM policy

5.5.1 Promoting an efficient sector

As can be seen from section 4, WDM is a core tool in creating an efficient sector. Thus, policy development teams need to consider carefully all the WDM options relevant to each water sub-sector in their respective countries and ensure they are included in some prominent water or water supply management policy document. Truly, improved efficiency is necessary in developing countries to make adequate water delivery services affordable nationally, regardless of the depth of poverty currently existing in many households.

There is much promise to be gained from twinning these equity and efficiency objectives. Policy needs to promote WDM efficiency gains as a universal win-win situation to be embraced by WSPs, civil society and WSP customers.

Once twinned, neither the concept of equity or efficiency should cause any tensions.

It is only what costs are to be recovered from different stakeholders that need thorough debate.

The results of this debate, plus the level of efficiency achieved, will, in turn, affect how much water is delivered to those who cannot (or are unwilling to) pay the full costs, and at what levels of service both water and sanitation are to be delivered.

5.5.2 Getting the right balance of incentives and penalties

Effective WDM implementation requires the right balance between incentives and penalties. One issue that needs to be covered by incentives and penalties is liquid pollution, and other related environmental damage control.

With respect to pollution control associated with mining, industry and domestic households, it is proposed that the only incentives that should be applied are awareness creation and education, and ensuring that these entities pay the full costs of treating any effluent that is forwarded to an external treatment works.

The latter is classified as an incentive because it encourages water users to consider the full costs of their not using water efficiently. Where pollution occurs, the principle that the polluter pays all the reasonable costs of remediation needs to be firmly established and implemented. In cases where extreme negligence or fraud, such as caused by the secretive release of polluting effluents takes place, criminal charges should be laid.

Water-related pollution caused by farmers is usually more gradual and less easily detectable. Therefore, awareness creation and education must be the first defence against such environmental damage as nutrient run-off and salination. Thereafter, should education not be sufficient, developing policies that facilitate the provision of conditional loans, grants or subsidies to encourage investment in drip-irrigation, in environmentally sensitive areas, could be considered as worthwhile incentives (UNDP 2002). Having an additional penalty option of being able to reduce or cancel water permits may also need to be considered.

But such incentives should not be limited to areas where environmental degradation is a threat. They should be intelligently targeted at all stakeholders, from ordinary farmers to a country's top politicians and industrialists, to use water more wisely. If water is a key to development in the SADC region then WDM is a mechanism by which valuable water can be

made available for continued growth and wellbeing, without incurring more indebtedness, Yes it can postpone the construction of augmentation schemes, but equally the WDM implemented by one irrigation farmer can mean the difference between a single handpump supplying an entire village and that same village having a reticulated supply with yard pipes. The introduction of penalties needs to be treated with caution. For example, government may be convinced that once a community has a basic level of water supply, the next priority should be to bring sanitation services up to an equivalent level, before any further improvements are made to the water supply. No matter how valid government's priorities may be, such a top down paternalistic approach is unlikely to lead to improved hygiene practices. Therefore, where the demand for sanitation is low, government needs to create awareness in an imaginative way and use genuine incentives to motivate

Box 4: Examples of legislation imposing excessive controls on the public sector

When South Africa's Local Government Municipal Systems Act (DPLG 2000) was passed, it allowed local government the choice of a range of for-profit and not-for-profit instruments, including private companies, trusts or other funds, to enable it to set up municipal entities, to ring-fence different services delivery sectors for accountability purposes. In 2003 the Act was amended (DPLG 2003).

This amendment restricts municipal entities to for-profit private companies. This leaves them with no choice. If local government wishes to supply a service using an external services provider, including a municipal entity, the Water Services Act of 1997 (DWAF 1997), the original Municipal Systems Act (DPLG 2000) and the Amended Act (DPLG 2003) all severely curtail local government's ability to do so. Even worse, these Acts make no distinction between multi-national corporations and CBOs. These, together with other local companies, are grouped together as a part of the private sector. Basically, a narrowly defined form of public sector services delivery is designated the preferred option.

Box 5: Policy issues related to governments using an external services provider

With respect to governments using an external services provider to deliver services some important policy issues are:

- The decision to go external should be through an inclusive participatory process;
- If confirmed, the decision should be followed by an open, equitable, and transparent appointment process;
- The appointment needs to be by means of a formal, limited period, contract between the parties, with or without an option for renewal;
- The contract needs to ensure that the services provider is subject to all the current and future legislation applicable to an internal mechanism; and
- Both parties need to have reasonable rights with respect to re-negotiating the contract if the operating environment changes and to terminating it in the case of non-performance.

households to improve their own sanitation facilities. Another example is water prepayment meters. being an excellent water management and WDM tool, using this technology to solve perceived social problems by not giving customers a broad coercion-free choice with respect to how they wish to have their water supply regulated or metered is clearly a bad customer relations practice and may even be contrary to a household's or community's basic rights. At the same time, it needs to be realised that carefully designed incentives and penalties, supported by adequate monitoring, are central to achieving behavioural change (Forster 2002).

5.5.3 Restrained on controls – strict on accountability

One shortcoming of much policy in the SADC region is that national governments tend to develop policy that places excessive controls on the public sector. Policy should be restrained and flexible with respect to direct controls. Unless carefully designed, controls discourage public sector staff from thinking imaginatively about improved management and services delivery, lower motivation, and encourage the best staff to move to the private sector. Box 5 gives two examples of excessive controls taken from South African legislation pertaining to local government. Certain controls are necessary, and some of these are suggested in box 4.

Although policy needs to be restrained with respect to controls that instruct institutions or people how to perform their duties, there is a critical need for policies that ensure transparency and accountability. Accountability needs to cover both financial and quality of service issues. Good policy will ensure clear concise reporting to one institution using a unified, flexible information management system as described in section 5.4.2. This will ensure that the minimum load is placed on the reporting organisation, and that it will be collecting little or no information that is not used internally as a monitoring and evaluation management tool.

Accountability includes planning for the future. Thus, for example, policy should require water supply institutions, regardless of the sub-sector to which they are supplying water, to have WDM plans against which they report implementation practices and achievements.

Worldwide, governments appear to be realising this need for accountability to expose poor performance and corruption quickly before it causes too much harm.

However, vertical accountability, of local government to national government for example, is being emphasised at the expense of ensuring horizontal coordination, transparency and information sharing (UNCSD 2004). As well as ensuring that locally collected information is made available locally, so that local institutions are accountable to the people they serve or in whose midst they operate; policy also needs to ensure that collated information, collected by higher levels of government, is also be made freely available so that the public knows what progress is being made in implementing policy, and how their local situation fits into the broader picture. Such horizontal information sharing will help to ensure services delivery and environmental protection through civil society demands.

5.5.4 Markets, pricing and regulatory approaches

The SADC countries need to develop a sound regulatory policy, backed by targeted incentives and penalties, and to increase the capacity of their regulatory institutions, so that once a policy is approved it is implemented gradually and the outcomes carefully monitored.

In some countries, subsidies for irrigation water are high and an increase in charges is long overdue to free up funds for more urgent poverty reduction and equity creating programmes.

However, the cost of irrigation water is a significant input for such farmers, and care needs to be taken to ensure that they do not implement unwanted survival measures. It is not beneficial if too many farmers switch to high value or export crops instead of starting programmes to increase the efficiency of water usage on the farm to produce a greater output of the same low value staple crop that is required by the local population or just to keep their water bills constant. Alternatively and even worse, they may just stop irrigating altogether.

Thus, the optimum basis of water management for the agricultural sector, in areas where water resources are becoming scarce, or the existing infrastructure is reaching its capacity, is likely to be licensing. Incentives can then be introduced so that farmers who introduce WDM are allowed to irrigate more land or, where advantageous, can even be allocated additional water, while farmers using water inefficiently or, even worse, causing environmental damages can have their existing allocations reduced or taken away.

A critical aspect of any water licensing system is the requirement to measure or regulate the water usage, even if the resultant information is not used for billing purposes. The existence of measuring or regulating facilities, together with scheduling, will always strengthen any WDM efforts and make them more effective.

The domestic water supply sector presents a varied picture. Charging the full cost of supplying anything but the most basic service will cause a substantial portion of these people to abandon the improved water supply and revert to unsafe sources, or to stop using sufficient water, despite many of them having a good understanding of the serious health hazards involved (refer figure 8).

Thus, apart from the hardship, a policy of full cost recovery from all would impose on such customers it would also have many hidden costs due to illness, care of the sick, high debt collection costs, etc and would not achieve long-term sustainability in areas where the majority of customers are poor.

5.5.5 Price elasticity and the poor

To implement a policy that ensures the poor use sufficient water to cover their basic needs adequately, while still using water wisely, without putting undue strain on national governments, other policies need to ensure that customers who can comfortably pay for their water do pay at least the full cost for moderate usage and a premium for extravagant usage. But the aim should never be to charge high costs for moderate usage. It is important to realise that the price increases in eThekwini occurred despite internal increases in operational efficiency, which decreased the costs of supplying water to the customers being considered in figure 7. The increases were due to two developments. Firstly; expenditure on bulk water supply infrastructure to cater for the increasing total demand for water in the Umgeni water supply area. A combination of better demand-forecasting, and better overall WDM, could have reduced and possibly eliminated these increases. Secondly; increases were due to eThekwini Municipality upgrading and extending services in very poor areas. It should be noted that since 1998 eThekwini Municipality does not charge any domestic customers using 6 kilolitres per month or less for water. The Municipality now sends out no very low bills, since a customer consuming 7 kl in a month is charged for the whole 7 kl, (contrary to South Africa's latest national policy document (DWAF 2003), through the application of a fixed charge.

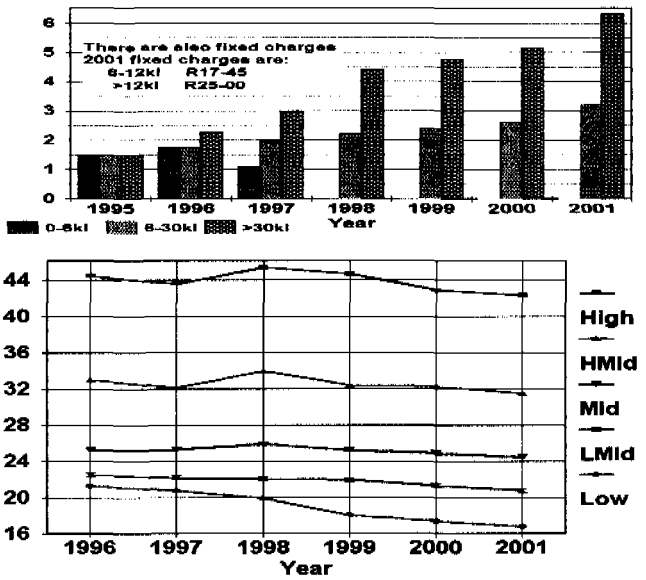


Figure 8: Changing water tariffs and resultant change in water demand for different income groups with individual full pressure household connections, eThekwini Municipality, South Africa.

(Source: eThekwini Municipality, personal communication)

family units. Thus, changing the free basic allowance so that it is calculated on a per person basis would immediately improve equity, but it would also increase the administrative costs. In addition, 6 kl/mth is not sufficient water to overcome all the health problems of large family units; especially those with waterborne sanitation unless they recycle all grey water efficiently which in turn can cause the sewers to block, because of the low flow volumes. If a municipality wishes to increase significantly the free, or highly subsidised, amount of water available to poor families, it is anticipated that, throughout the SADC region, the only way of making financial sustainability feasible in the long term is by using a targeted, rather than a universal, method of allocation.

Thus, the decision to supply this basic amount of water free does not mean that customers consuming more water have to pay higher subsidies to maintain the water supplies to existing low volume consumers, but rather that upgrading and extending services in poor areas to new low volume consumers results in higher subsidies being required. Thus, in eThekwini Municipality's case, not charging for the first 6 kl/mth delivered to domestic consumers made sound financial sense. However, it is not an ideal solution for the poorest customers themselves since they generally live in larger

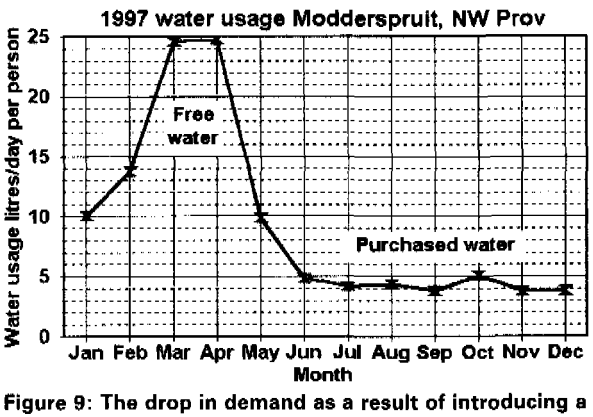


Figure 9: The drop in demand as a result of introducing a modest volume based tariff on a shared standpipe system in a poor area

(Source: DWAF 2000)

Figure 8 includes low-income households with a high level of service, but does not indicate the overall willingness to pay/affordability situation in poorer areas with shared standpipes. Such an example is therefore included in figure 9, which depicts such an area where customers were allowed access to free water for two months while an electronic prepayment system incorporating a volume-based tariff was being commissioned. Within two months, the demand dropped from a modest average consumption of 25 litres per person per day to approximately 5. Such an outcome is unsatisfactory because the health benefits expected from the scheme will not be achieved and the operating costs will not be recovered. For shared standpipe schemes therefore, a flat-rate tariff may be preferable to a volume-based one.

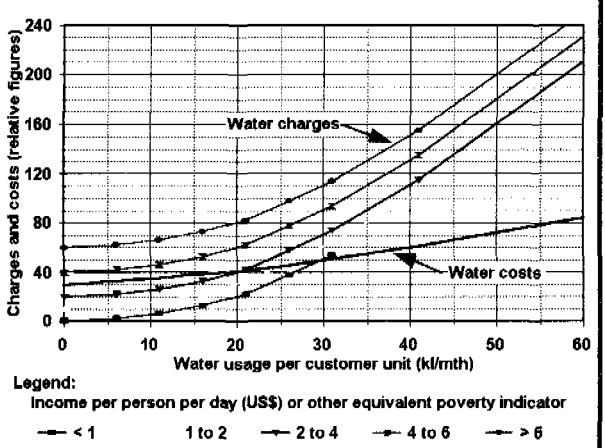


Figure 10: An approach to designing optimised tariffs that cater for the poor

(Sources: adapted from van der Linde 1997 and Sohail 2004)

5.5.6 Subsidies: a challenge to the international community and SADC governments

Policy makers and implementers in the SADC region have truly daunting and highly important challenges ahead of them to manage all water users. A primary aim of this management, besides pollution control, is to redistribute water from the wasters to the deprived, no matter who the wasters or deprived are. This will mean raising the profile of the water sector to ensure that adequate quality investments in all the essential aspects of water management, including: the operation, maintenance, and refurbishment of existing infrastructure, human resources development, pollution control, WDM, the construction of new infrastructure and equitable cost recovery from users. This requires a fine tuned balancing act, because even investments in urgently required new infrastructure will be money poorly spent if adequate resources are not ensured to maintain it and manage the water demand in the long term.

This managing of demand includes ensuring that all customers supplied by the new infrastructure use an adequate managed amount of water. It is inefficient and inequitable if, after the infrastructure is built, up to 50% of the people living in the area (Hodgkin et al 1994), which is not uncommon, make little or no use of the new supply due to their poverty and/or household gender power balances. Policy therefore with respect to poor and vulnerable customers should be based on providing water at a high quality of service, universally and cost effectively, at the highest level of service possible within a framework of global, national and customer affordability combined.

Overall therefore, in the domestic water sector, for example one expects services providers, among other good management practices, to manage sales to the poor so that they have

Developing WDM policies

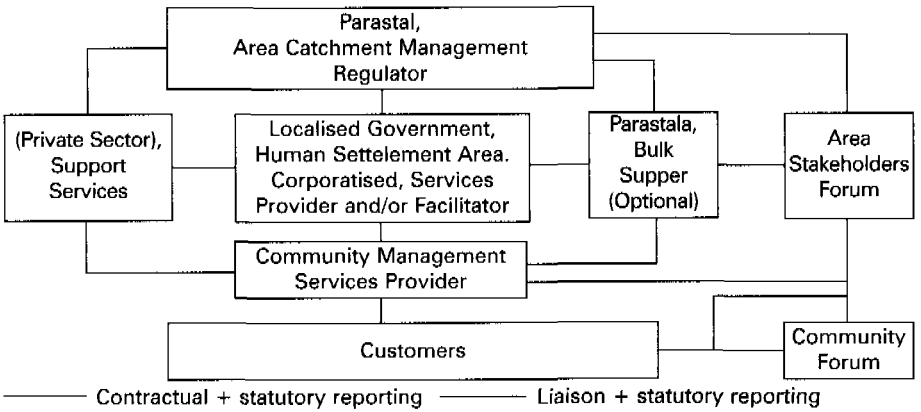


Figure 11: Institutional arrangement for water management and services delivery

sufficient water for all their basic needs but do not waste water, and to make a surplus on all above moderate demands.

Thus, cross-subsidisation becomes an integral item when calculating the service providers required subsidy. In addition, if this is not done, apart from favouring rich service providers, it encourages them to seek short-term surpluses through encouraging rich customers to waste water rather then them to use it wisely.

Sound signals from national governments, based on the manner in which subsidies are calculated are a good incentive to water services providers to deliver sufficient water to the poor while encouraging the rich to use water wisely. All subsidies need to be fully transparent and external subsidies, as distinct from internal cross-subsidisation, need to be well regulated. Once regulated it should make no difference whether the service provider is a public or a

private enterprise. But how does one structure tariffs to optimise the requirements of caring for the poor, minimising external subsidies, and encouraging WDM and that result in water services providers recovering all reasonable long-term costs? It is possiblle to give a definite answer to this question.

5.6 Policy implementation provisions

5.6.1 Institutional arrangements

National governments that adopt a policy to empower communities to manage their own water services and directs all regional institutions to carry it out are laying firm foundations for effective services delivery and sustainability (Hodgkin 1994). Such a policy should apply to all small stand-alone schemes and separately isolatable community-sized distribution components of large schemes, to domestic water supplies and to productive water schemes. It should not only apply in rural areas, since urban areas offer the greatest unexploited potential for community management (Brooks 2002).

It is only at this level of management that services providers can give each community member a sense of ownership of the scheme, can truly respond to each member's demands, and can know which families are poor and what their basic needs are. There is a great myth about size bringing about greater economies of scale. A study carried out by Mvula Trust in 1995, and used in their policy documents to allow for higher per capita capital subsidies for small communities, showed conclusively that, as a community's population rises from 500 people to 1 500 people the per capita cost to built water supply schemes approximately halves (Mvula 1996). However, provided a bulk water source is available locally, no further efficiency or economies of scale gains are realised when the population is larger than 15 000. Further, in relation to water distribution projects the 1 500 size-economies-of-scale-ceiling is universally applicable, and is also valid for ongoing operation and maintenance costs. In fact, even for smaller schemes the ongoing operation and maintenance costs can be kept remarkably constant per customer served, partially through employing some staff members part time but, more importantly, real efficiency and quality service gains are made through multi-tasking. For a community-managed scheme, no employee just reads water meters. The meter reader becomes a customer services officer (CSO) who is also responsible for delivering bills, replacing broken meters and warning customers when water is being wasted on their property. With good management, these CSOs can also do simple jobs like replacing tap washers and toilet cistern controls for customers. Apart from government, it is also important that the Trade Union movement supports, rather than frustrates, the development of community services providers. With the correct approach the employees of community services providers will become union members.

At the same time, it is equally important for community management institutions to know that they are not on their own but part of a greater caring whole. Figure 9 sets out an ideal set of institutions and their interrelationships to ensure sound water resource and water delivery management. Each of these regulatory, service provider and support services agents are linked to each other by formal contracts setting out the responsibilities of and between the parties. Policy needs to allow the government services provider/facilitator and the community services providers flexibility in the manner in which they share responsibilities, while encouraging the government party to

give the community organisations as much responsibility as they can assimilate (Hodgkin 1994).

Support Services Agents (SSA) can be NGOs or conventional consultants, but they should always have a strong community and public service development ethos.

5.6.2 Financial resources

Another central policy issue is mobilising sufficient financial resources to supply persons living in a country with sufficient water to cover all their basic needs. Additional central issues in relation to this policy are:

- Getting the right balance between finances for new works and the management of existing schemes. As indicated previously in this Guideline, having no ongoing subsidies for the management of existing schemes results in poor house holds being deprived of a basic right, in equity component of WDM be frustrated, and health costs increasing as a result. But such as policy is even damaging for international donors. In Lesotho, for example in the past, at least, donors insisted on communities in the poorest areas paying the full ongoing costs of the operation, maintenance, and management of schemes once constructed. In addition, no funds were provided for regulatory monitoring costs, or for human resources development. As a result, the quality of service from the majority of such schemes deteriorated rapidly and finally donors had to replace completely failed infrastructure prematurely.
- This method of providing subsidies is known as allowing self-selection because the customer can only claim such subsidies by complying with the terms and conditions. For example, in South Africa most urban households can claim 6 kilolitres of water free, but as they use more water the tariff increases so that the household using moderate amounts of water have already paid back the subsidy. For these reasons targeted subsidies, rather than universal subsidies available to all through self-selection are recommended.
- Governments in the SADC region should not pay the full costs of such targeted subsidies. Rather policy should be based on subsidies being calculated on the basis targeting weak services providers.

  For both capital and recurrent subsidies this means basing subsidies on an objective measurement of the water services providers minimum needs-capacity gap (Reschovsky 2001) where:

Minimum needs-capacity gap = Total minimum objective normal expenditure needs less total maximum objective revenue-raising capacity. Objective expenditure needs means that subsidies must not cover any costs related to activities or lack of activities that do not add value or reduce value in relation to proving a quality service to customers, for example, high costs caused by a lack of activity in managing UAW.

Likewise objective revenue raising capacity means that low revenue figures caused by poor credit control or bad tariff design must not be used as a basis for calculating revenue raising capacity, rather the regulator needs to estimate what a utility's revenue would be assuming first class credit control and high-quality tariff design. Tough objective recurrent subsidy regulations are necessary to ensure that subsidies are used effectively and that they do not take away funds from other high priority needs.

However, such regulations must not lead governments or donors into denying the current

real need for special turnaround projects, when water supply schemes are in a downward spiral of non-sustainability. The word normal has been added to Reschovsky's definition of the needs capacity gap because subsidies must not distort the overall market by giving additional advantages to large cities as they expand, through national governments subsidising the abnormal costs of importing additional water from distant resources. To make the separation of normal and abnormal costs possible policy should instruct bulk water suppliers to adopt a multi-tier pricing system with water being sold on the basis of the development of new and newer resources each reflecting their true price tag.

- Subsidies should have clearly defined ceilings.
  The ceiling should be high enough to ensure quality design and workmanship with respect to new infra structure and quality management, operation and maintenance with respect to ongoing costs without being over generous.
- Subsidies with respect to new works should also be well prioritised.
  Firstly, on the basis of articulated demand and assessed need. Thereafter, project go-ahead should be given:
  - Without the community selecting their own preferred option for services delivery based on a workshopped multi-option feasibility study;
  - Until the community has demonstrated it has the motivation and capacity to manage the scheme after completion; and
  - A satisfactory project proposal and design has be produced submitted.

Once a project has been prioritised on the basis of articulated demand and assessed need, government policy should assist communities to fulfil the readiness based criteria as quickly as practical.

5.6.3 Institutional capacity building and skills training

Having the correct institutional arrangements and financial resources will come to nothing without the necessary capacity and skills being in the institutions. Government policy needs to facilitate this through both incentives and minimum requirements. It is important that such institutional capacity building and skills training does not rely solely on formal training courses and learnerships. Such training is essential but it need to be supported by:

- Institutional teambuilding workshops;
- Internal mentorship with a special emphasis on the need for such mentor ship if overseas advisors are used to manage line functions as an interim measure; and
- On the job training and competency evaluations.

5.6.4 Monitoring and evaluation

To carry out the recommendations in sub-section 5.4.2, and replicate the pilot studies throughout the region, assuming immediate motivation, will take about ten years. In the meantime there a way for the region to start simply, in the sense of gathering data for a few focus areas, but very broadly, in the sense of gathering data from a wide range of services providers. SADC governments introducing a policy that requires all water services providers to submit data on a few focus areas can achieve this. To start selecting focus areas SADC can refer to IBNET, the DfID-WorldBank, Water and Sanitation

International Benchmarking Network initiative, with its own website at <www.ib-net.org>. Once this reporting is established, the data entered and outcomes related to following two key indicators could be added:

- Water coverage % and
- Total water consumption litres per person per day.

Assuming moving 12 monthly figures are submitted every month, both government regulators and services providers will get familiar with the process quickly.

The next steps will be to capture the various refinements catered for in IBNET related to the above key indicators and for government, services providers, and civic associations to get together and define other data and key indicators not catered for.

With respect to refinements catered for in IBNET, with respect to non-revenue water, for example, as well as expressing as a percentage, which can be very misleading, IBNET allows it to be expressed as:

- m^3 per kilometre per day, and
- m^3 per connection per day.

As the word benchmarking in its name suggests, IBNET encourages data sharing between participants as a key component of adding value to data collection and key indicator compilation.
Accountability also demands that the information be freely available to all.

Local information could be profitably shared at community and area stakeholders forum meetings (refer 5.6.1)

This sub-section is the last in the Guideline. The author and publishers truly hope that SADC governments will take up the challenge of introducing and implementi a policy of sound monitoring and evaluation in the region, to assist them in refining their overall WDM and other water resource and water supply management policies.

6.1 Recommended further reading

- The other guidelines in this series, but especially the guideline on the Monitoring and Evaluation of Water Demand *Management programmes*
- Arntzen J, 2003, Incorporation of Water Demand Management in National and Regional Water Policies, IUCN, Pretoria, June, pp 44. Available from: <www.iucn.org/places/rosa/wdm/outputs/research2.html>
- Buckle H Dabeesing B., Louwrens., Mander M, and Nyoni N, 2003, Illustrating the benefits of water demand management in Southern Africa, IUCN, Pretoria, January, pp 184. Available from: <www.iucn.org/places/rosa/wdm/outputs/research2.html>
- Clanahan R and Hughes J, 2003, Key dam issues in the SADC region, GTZ July pp 52, Available from: <www.gtz.de/laender/ebene3.asp?Thema=1108ProjectId=313&Reihenfolge=5&spr=2>
- EC, 1998, Towards sustainable water resources management: A strategic approach European Commission, *September, pp 354.* Available from:<europa.eu.int/comm/development/body/publications/water/en/frontpage_en.htm>
- Hazelton D, Nkhuwa D, Robinson P, Mwendera E, et al, 2002 Overcoming constraints to the implementation of water demand management in southern Africa:
  - Synthesis report, May, pp 35
  - South Africa country report, July, pp 57
  - Case study: past present and future WDM in Mogale City, Gauteng, RSA, June pp 22
  - Advocacy note: Overcoming WDM constraints in the forestry sector, January, pp 4
  - Advocacy note: An illustration of the benefits of applying WDM to urban domestic water supplies and the consequences of not doing so, March, pp 4
  - Implementation tool: The management of customer delivery points, January, pp 10
  - Implementation tool: Charging methods and credit control for different levels of service, January, pp 7
  - Implementation tool: Water tariffs and targeted subsidies, January, pp 14 IUCN, Pretoria. Available from: <www.iucn.org/places/rosa/wdm/outputs/constraints.html>
- Krugmann H, and Mwasambili R, 2003, Institutional requirements for Water Demand Management, IUCN, Pretoria, August, pp 67, available from: <www.iucn.org/places/rosa/wdm/outputs/analytical2.html>
- Mkhandi SH, *2003, Discussion paper:* Assessment of water resources in the SADC region, IUCN, Pretoria, May, pp 38 Available from: <www.iucn.org/places/rosa/wdm/outputs/research2.html>
- Rothert S and Macey P The potential of water conservation and demand management in southern Africa: An untapped river, Original available as several separate files from:<www.irn.org/programs/lesotho/ws.report/ws.exec.shtml>
- WaterAid-Tearfund 2003 Advocacy guide to private sector involvement in water services pp 40. Available from: <www.wateraid.org.uk/documents/PSPAdvocacyguide.pdf> or <www.tearfund.org/uploads/documents/Privatisation.pdf>
- UNESCO, 2003, Water for people – Water for life, The United Nations World Water

Development Report, March, pp 576. Available from: <www.unesco.org/water/wwap/wwdr/table_contents.shtml>

- WCD, 2000, The Report of the World Commission on Dams, November, pp 404, Available from: <www.dams.org/report> Chapter 8, pp 213 – 257, Strategic priorities – A new policy framework for the development of water and energy resources is especially recommended.

6.1 Useful websites

- <www.awwa.org/waterwiser> American Water Works Association (AWWA), Water Conservation Division
- <www.nwl.ac.uk/ih/www/research/bdemandman.html>, The Centre for Ecology & Hydrology (CEH), Wallingford England
- <www.cohre.org/water>, Centre on Housing Rights and Evictions (COHRE), Right to Water Programme, Geneva
- <www.genderandwateralliance.org>, Gender and water alliance (GWA)
- <www.gwpsatac.org.zw/swf/index.htm>, Global Water Partnership (GWP) Southern Africa
- <www.ib-net.org/asp/home.asp>, Water and Sanitation International Benchmarking Network (IBNET)
- <web.idrc.ca/en/ev-23582-201-1-DO_TOPIC.html>, International Development Research Centre (IDRC), Canada, Publications, Books Online, Natural Resources
- <www.iucn.org/places/rosa/wdm>, IUCN (The World Conservation Union), Water Demand Management Programme (WDM), Pretoria
- <www.wssinfo.org/en>, WHO/UNICEF water supply and sanitation Joint Monitoring Programme (JMP)
- <www.un-urbanwater.net/index.html>, Managing Water for African Cities
- <www.ncwsti.co.za>, The National Community Water and Sanitation Training Institute (NCWSTI), South Africa
- <www.premiers.qld.gov.au/About_the_department/publications/policies/Governing_Queensland>, Queensland Government, Australia, Department of the Premier and Cabinet, Policy and Legislation Guidelines
- <www.sadc.int/index.php?action=a1001&page_id=is_water>, SADC, Infrastructure and Services (I&S), Water
- <www.un.org/esa>, United Nations Department for Economic and Social Development, UNDESA, Home page
- <www.un.org/esa/sustdev/documents/agenda21/english/agenda21toc.htm>, UNDESA, the Rio Agenda 21 document
- <www.unicef.org/wes>, United Nations Children's Fund (UNICEF), Water environment and sanitation
- <www.iwsd.co.zw/resfund/index.html>, Research Fund for Integrated Water Resources Management in the SADC Region
- <www.dundee.ac.uk/law/iwlri/index.php>, International Water Law Research Institute
- <www.thewaterpage.com>
- <www.waternetonline.ihe.nl>, WaterNet, Regional network of university departments and research and training institutes specialising in capacity building for water resources management in southern Africa
- <www.who.int/water_sanitation_health/licy/en>, World Health Organisation (WHO) Water Sanitation and Health Policy,

Act of Parliament: A national law containing major policy provisions.

Civil society: Non-governmental and community organisations, and social movements which have poverty eradication, justice and peace as core aims.

Eco-friendly water allocation: A two-pronged approach to water allocation that regulates allocation, firstly, in a manner that acknowledges nearly all water abstracted from a source has some negative effects on the environment and that inefficient usage and wastage generally needs to be discouraged.

Secondly, eco-friendly allocation looks carefully at what return-flows will be generated by satisfying a demand, and ensures that the user will be held fully responsible for cleaning up any unacceptable pollution and will be encouraged to adopt a policy of zero effluent discharge (ZED). Typical sources of unacceptable return flows are industry, commercial farming, and domestic supplies that are used for waterborne sanitation.

Efficient water allocation: Is closely tied in with eco-friendly water allocation and Insists that no additional allocations from sources are made without ensuring that uses from existing allocations have been optimised.

Optimisation includes ensuring that water losses from infrastructure, inefficient usage, and the possible beneficial reuse of effluents are all taken into account before additional allocations are made. Such a policy presupposes that existing allocations are conditional and can be reduced or cancelled due to non-optimal water usage and that the interpretation of what constitutes optimal usage can change and become more stringent as the demand for water in an area increases.

Equitable water allocation: Means ensuring that sufficient water of adequate quality is available to, and used by, all households, to ensure its members health, and productivity, without compromising the environment. This definition is necessarily qualitative rather than quantitative to make it sufficiently flexible to apply in different environmental, hydrological, socio-economic, and occupational/lifestyle contexts. It therefore discourages policy makers setting fixed amounts such as 25 or 50 litres per person per day as adequate amounts for basic living. Nor does the definition define a uniform adequate quality, except for that part of the allocation required by humans for drinking, and other similar uses, such as washing food that is going to be eaten uncooked. However, in terms of eco-friendly and efficient water allocation, after ensuring equitable water allocations, governments have an obligation to manage demand by regulation, charges, and/or incentives (adapted from Black 2002).

Policy: Policy is a clear expression of what a government wants to achieve and is therefore a key factor driving the activities and institutions of government. Policy is usually developed through discussion papers, which lead to the preparation of 'white' papers and "bills" which are discussed and debated, by a Parliamentary Committee, and then by Parliament itself, before being passed as Acts of Parliament.

Regulations: Means any subordinate legislation, passed by national cabinet, local government, or other government agency, consistent with powers delegated in Acts of parliament. Regulations include rules, ordinances, standards, bylaws, etc, which are promulgated to clarify and to help with the implementation of existing broader legislation.

Unacceptable pollution: Means any pollution that adversely affects the environment and/or adds to the costs incurred by downstream users when treating water for domestic, commercial, or industrial uses

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Water Demand Management (WDM): A management approach to increase the availability of water cost-effectively, through more equitable, efficient and eco-friendly allocation and usage, chiefly attained through the promotion of sound policy and the application of selective incentives, to influence and regulate the demand, based on maximising the participation, accountability, and responsibility of both political and civil society stakeholders (adapted from Hazelton et al 2002)

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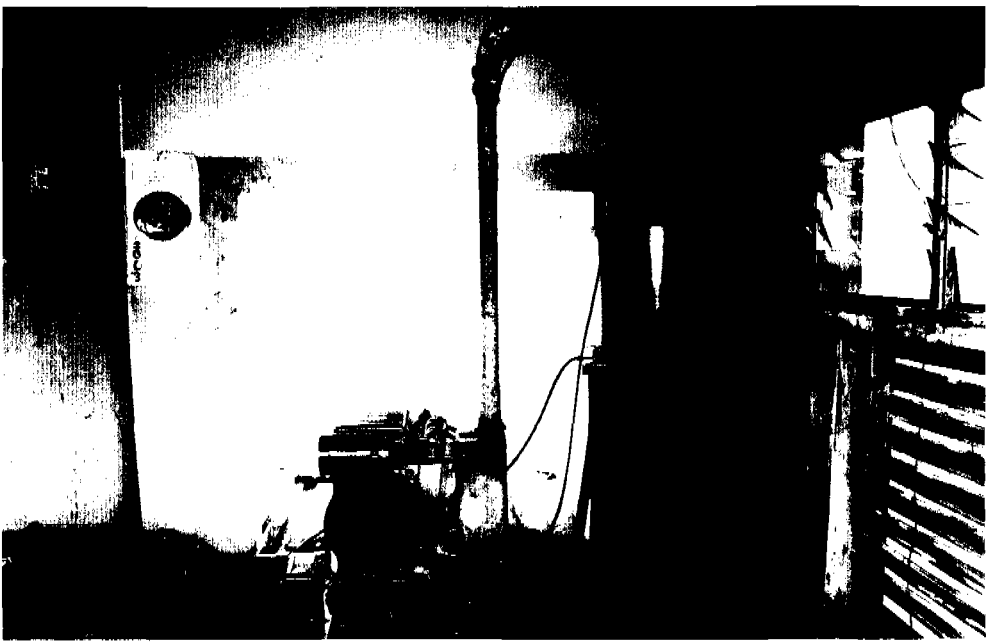
ANNEXURE 1: GENERAL DEMOGRAPHICS

Country	Area	Population	Per capita GPD	Urbanisation	Adult HIV/Aids 15-45 years	Life Expectancy Years		HDI ranking	
	km²	millions	US$/yr	%	%	1995	Latest	1995	Latest
Angola	1247 000	14,00	2040	31	2,8	47,4	40,2	164	164
Botswana	**582000**	**1,74**	**7820**	**46**	**38,8**	**51,7**	**44,7**	**74**	**125**
D R Congo	2435 409	54,90	680	29	4,9	52,4	40,6	143	167
Lesotho	**30355**	**2,20**	**2420**	**17**	**31,0**	**58,1**	**38,6**	**131**	**137**
Malawi	118484	11,50	570	15	15,0	46,3	38,5	157	162
Mauritius	**2040**	**1,22**	**9860**	**43**	**0,1**	**70,9**	**71,6**	**60**	**62**
Mozambique	799380	18,10	1140	23	13,0	46,3	39,2	167	170
Namibia	**842269**	**1,83**	**7120**	**27**	**22,5**	**55,8**	**47,4**	**108**	**124**
South Africa	1219 090	46,40	11290	56	20,1	64,1	50,9	95	111
Swaziland	**17364**	**1,10**	**4330**	**23**	**33,4**	**58,8**	**38,2**	**124**	**133**
Tanzania	945200	33,60	520	30	7,8	50,6	44,0	147	160
Zambia	**752**	**10,70**	**780**	**35**	**21,5**	**42,7**	**33,4**	**136**	**163**
Zimbabwe	390757	11,63	2280	34	33,7	48,9	35,4	121	145

(Sources: SADC website; Human development reports 1995 & 2003; SARPN website regional poverty indicators)



ANNEXURE 2: WATER RESOURCES

Country	Rain-fall	Natural IRWR			Approximate current		Depen-dancy	Natural outflow	Approximate current per capita availability
		Surface water	Ground water	Net total	Inflow	TRWR			
	mm/ yr	km³/yr	km³/yr	km³/ yr	km³/ yr	km³/yr	%	km³/yr	m³/day
Angola	1010	182,0	72,0	184,0	0,0	184,0	0,0	119,0	36,0
Botswana	**416**	**0,8**	**1,7**	**2,4**	**9,8**	**12,2**	**80,4**	**0,6**	**19,3**
D R Congo	1543	889,0	421,0	900,0	383,0	1283,0	29,9	2,0	64,0
Lesotho	**788**	**5,2**	**0,5**	**5,2**	**-2,2**	**3,0**	**0,0**	**5,2**	**3,8**
Malawi	1181	16,1	1,4	16,2	1,1	17,3	6,6	16,2	4,1
Mauritius	**2041**	**2,4**	**0,9**	**2,8**	**0,0**	**2,8**	**0,0**	**0,0**	**6,2**
Mozambique	1032	97,0	17,0	99,0	117,1	216,1	54,2	0,0	32,7
Namibia	**285**	**4,1**	**2,1**	**6,1**	**11,8**	**17,9**	**65,7**	**12**	**26,9**
South Africa	495	43,0	4,8	44,8	5,2	50,0	10,4	9,3	3,0
Swaziland	**788**	**nd**	**Nd**	**2,6**	**1,9**	**4,5**	**41,5**	**4,5**	**11,2**
Tanzania	1071	80,0	30,0	82,0	9,0	91,0	9,9	12,8	7,4
Zambia	**1020**	**80,2**	**47,0**	**80,2**	**25,0**	**105,2**	**23,8**	**105,2**	**26,9**
Zimbabwe	692	13,1	5,0	14,1	5,9	20,0	29,5	20,0	4,7

Notes: IRWR = Internal Renewable Water Resources and TRWR = Total Renewable Water Resources

(Source: FAO AQUASTAT booklet 1995, 2001 revision)

ANNEXURE 3: WATER WITHDRAWALS

Country	Total with-drawals	Percentage of TRWR	Per capita with-drawals	Sectoral withdrawals			
				Domestic	Per capita domestic	Industrial	Agri-cultural
	km³/yr	%	l/day	%	l/day	%	%
Angola	**0,48**	**0,26**	**104**	**14**	**14,6**	**10**	**76**
Botswana	0,11	0,90	192	32	61,4	20	48
D R Congo	**0,36**	**0,03**	**19**	**61**	**11,7**	**16**	**23**
Lesotho	0,05	1,65	62	22	13,7	22	56
Malawi	**0,94**	**5,44**	**233**	**10**	**23,3**	**3**	**87**
Mauritius	0,36	13,09	836	16	133,7	7	77
Mozambique	**0,61**	**0,28**	**92**	**9**	**8,3**	**2**	**89**
Namibia	0,25	1,39	395	29	114,4	3	68
South Africa	**13,31**	**26,62**	**789**	**17**	**134,1**	**11**	**72**
Swaziland	0,66	14,63	1827	2	36,5	2	96
Tanzania	**1,16**	**1,27**	**96**	**9**	**8,6**	**2**	**89**
Zambia	1,71	1,63	438	16	70,1	7	77
Zimbabwe	**1,22**	**6,10**	**287**	**14**	**40,2**	**7**	**79**

Note: TRWR = Total Renewable Water Resources

(Sources: Pacific Institute, World Water Book 1998 – 99 edition Table 2. The same information is available in the Water Research Institute, World Resources Book 2000 – 2001)

ANNEXURE 4: PRGRESS TOWARDS REACHING THE WATER ASSSOCIATED MDG GOALS

Country	Nourish-ment	Primary education		Eliminate gender education disparity		Under 5	Water
	Halve hunger	All	All reach	Primary school	Secondary school	2/3 reduction	Halve
Angola	On track	No data	No data	No data	No data	Slipping back	No data
Botswana	Slipping back	Slipping back	On track		Achieved	Slipping back	No data
D R Congo	Slipping back	No data	No data	No data	No data	Far behind	No data
Lesotho	Lagging	Slipping back	No data		Achieved	Far behind	On track
Malawi	On track	No data	No dta	On track	On track	Lagging	Lagging
Mauritius	On track	On track	On track		Achieved	On track	On track
Mozambique	On track	Slipping back	No data	Far behind	Far behind	Far behind	No data
Namibia	Far behind	On track	No data		Achieved	Far behind	Lagging
South Africa	No data	On track	No data	On track	Achieved	Slipping back	No data
Swaziland	Far behind	On track	Far behind	On track	On track	Slipping back	No data
Tanzania	Slipping back	Far behind	Far behind	On track	On track	Far behind	Far behind
Zambia	Far behind	Slipping back	No data	On track	No data	Slipping back	On track
Zimbabwe	Far behind	No data	No data	On track	Far behind	Slipping back	On track

Key to progress from highest to lowest: Achieved – on track – lagging – far behind – slipping back

(Source: UNDP Human Development Report 2002 Table A1.3 or UNESCO World Water Development Report 2002 Table 23.6)

ANNEXURE 5: ACCESS TO IMPROVED DRINKING WATER AND SANITATION 1980 TO 2000

Country	Water						Sanitation					
	Urban			Rural			Urban			Rural		
	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
Angola	90	75	40	10	30	24	37	26	46	14	18	20
Botswana	90	97	100	20	80	87	87	98	98	12	45	37
D R Congo	43	64	79	10	30	57	5	27	24	10	10	6
Lesotho	40	80	73	10	62	73	15	15	40	13	21	40
Malawi	75	82	92	44	44	47	89	95	70	81	70	55
Mauritius	100	99	99	95	99	100	100	99	100	87	99	99
Mozambique	50	23	56	7	12	43	57	68	69	10	18	26
Namibia	nd	93	99	nd	49	68	nd	72	99	nd	12	18
South Africa	nd	99	97	nd	66	78	nd	87	93	nd	82	75
Swaziland	31	82	65	33	42	50	56	75	80	33	35	55
Tanzania	89	81	85	44	39	48	87	89	92	56	76	85
Zambia	67	77	84	26	44	33	91	77	98	46	39	51
Zimbabwe	nd	96	100	35	86	72	nd	90	73	10	30	57

Note: "nd" = no data.

(Source: Adapted from WHO/UNICEF 2001 country reports on Joint Monitoring Programme for Water Supply and Sanitation Coverage Estimates 1980 – 2000

Notes