



Reporting Water in Southern Africa

A Media Guide to Managing Our Water Resources

Written and compiled by

SARDC

Musokotwane Environment Resource Centre for
Southern Africa

with support from the Royal Danish Embassy



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Reporting

Water in Southern Africa

The water resources of the SADC region are vital for sustainable economic and social development of the region. Apart from sustaining a rich diversity of natural ecosystems, the region's water resources are critical for meeting the basic needs related to water supplies for domestic and industrial requirements, and for sanitation and waste management for about 250 million people. In addition, there is a need for increasing food security through better management of rain-fed and irrigated agriculture, aquaculture, and livestock production; and improving access and availability of cheap energy through hydropower.

The SADC region has 15 major river basins which are transboundary or watercourses shared by two or more countries. They range from the large Congo River Basin (3,800,000 square kilometres), the Zambezi River Basin (1,400,000 square kilometres covering eight SADC Member States) to the Umbeluzi River Basin (5,500 square kilometres) shared by only two countries. Thus one of the characteristic features in the region is shared watercourse systems, with complex water rights and potential conflicts over utilization of the shared resources. This common heritage also presents tremendous opportunities for cooperation in managing the shared resources for regional economic development and regional integration.

Since the mid 1990s SADC Member States have engaged in wide ranging and intense consultations on development of the water sector in the region. This has brought about a heightened awareness of the importance of water for socio-economic development, regional integration and poverty reduction. However, there are a number of institutional, technical, economic, social and environmental factors which, to one degree or another, still constrain effective management of the region's water resources. These include:

- Weak legal and regulatory framework.
- Inadequate institutional capacities of national water authorities, and regional or river basin organizations.
- Weak policy framework for sustainable development of national water resources.
- Poor information acquisition, management and dissemination systems.

- Low levels of awareness, education and training with respect to economic, social, environmental and political issues related to water resources development and management.
- Lack of effective public participation by all stakeholders particularly women and the poor.
- Infrastructure is inadequate and unable to meet the growing demands for service.

These issues are being addressed through a number of programmes and projects that form part of the Regional Strategic Action Plan for Integrated Water Resources Development and Management in the SADC Countries (RSAP-IWRM) which is now a component of the Regional Indicative Strategic Development Plan (RISDP). The RSAP is implemented by the SADC Secretariat through the Directorate of Infrastructure and Services' Water Division (DIS-WD).

The Regional Water Policy for the SADC region is aimed at providing a framework for sustainable, integrated and coordinated development, utilization, protection and control of national and transboundary water resources in the SADC region, for the promotion of socio-economic development and regional integration and improvement of the quality of life of all people in the region.

The policy was formulated through a highly participatory and consultative process, implemented over a period of about 12 months, involving diverse stakeholders including senior government officials from ministries dealing with economics, law, water resources, agriculture, energy, and environment. Other stakeholders included academic and research institutions, private companies, consultants in various disciplines, as well as representatives of local and regional NGOs, and community leaders.

From SADC Regional Water Policy, See Chapter 14 for Summary

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The participatory process in the preparation of this media guide is highly acknowledged. About 25 media professionals and water experts drawn from partner organisations and media institutions across the SADC region took part in the preparation of the guide.

Following the development of a content framework, wide consultations were held, with a review of the initial draft outline at the WaterNet Symposium held in Lilongwe, Malawi in November 2006. The participants included 10 journalists from across the region, and was intended as a needs assessment of the key issues and messages that the media practitioners wanted in the guide.

A follow-up review meeting was held at the Zambezi Stakeholders Dialogue Conference in Windhoek, Namibia later the same month. This gathering was attended by a mix of journalists and water experts, and was intended to fine-tune the outline of the guide to take into account the opinions of the media and water experts.

A research and writing team at SARDC IMERCSA compiled a draft manuscript as guided by opinion from the content review process. The draft manuscript had an external review from some of the region's eminent water experts as well as experienced journalists and other media professionals. Guided by the external review comments, the manuscript was revised and finalised for publication.

The guide was produced in partnership with SADC and supported financially through the SADC/Danida Regional Water Programme. Phera Ramoeli, who heads the SADC Water Division, and Hastings Chikoko, the SADC/Danida Regional Water Component Manager, also invested time in the review of the guide, providing valuable inputs and ideas.

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While it may not be possible to acknowledge all contributors by name, please know that your contribution helped to make this guide a useful reference for journalists, broadcasters and others reporting on issues of water resources and sustainable management in southern Africa.

SARDC IMERCSA

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INTRODUCTION

The function of water in our daily lives is a topic of increasing public interest and attention. Thus there is also increasing attention by the media in covering water-related matters, and other environmental issues. It is not uncommon to find stories in many media outlets, both print and broadcast, discussing the role of water in industrial production, agriculture, energy generation, sanitation, and transportation, among others.

A clearer understanding has emerged of water as one of the most critical resources for long-term development of people and their environment, not only in southern Africa but the world over. Despite its value in daily activities, many southern African countries and communities are experiencing water-related problems that are difficult to solve with conventional sector-based approaches to the management of water resources. These problems include drought, floods, excessive withdrawal of groundwater, water-borne diseases, industrial pollution, land and water degradation, poverty, and potential conflicts over water.

Due to the many challenges associated with access to and use of water, reporting about water management is becoming a challenging field for journalists, and there is growing awareness of the need to communicate effectively on the care and management of water resources.

This publication, *Reporting Water in Southern Africa: A Media Guide to Managing Our Water Resources*, is a response to the expressed need of many journalists and communicators who seek to strengthen their knowledge and reporting about water issues.

Most of the current water problems in southern Africa arise from inadequate or improper management of water resources, rather than shortages. Thus it is essential to raise awareness of water availability and use, and of management approaches that are sustainable.

A challenge for media practitioners when researching water issues is the problem that accessible sources of information tend to be cluttered with scientific and technical jargon. Statements commonly used in water expert circles often tend to be misunderstood or lose their meaning outside the profession, such as "...Water sustains ecosystems that provide valuable services to both the environment and people."

While water professionals and academics may get their information through peer-reviewed publications, specialist websites and

water workshops, the public obtains knowledge of water management from television, radio, newspapers, magazines and sometimes through opinion leaders in their communities. The Internet is also becoming a useful tool in the search for knowledge about water resources due to its ability to offer access to large and varied amounts of information, although this can also be a liability, causing information overload.

Integrated Water Resources Management (IWRM), which is a holistic approach to managing water and related resources, is widely discussed among water academics, practitioners and professionals involved in the management of water resources, who consider water an abundant “good” with social, economic and environmental value.

While the IWRM concept is not well appreciated among some policy makers and the public, the media is quickly catching on to reporting the many users and uses, and on the need to foster economic efficiency, social equity and environmental sustainability in water resources management.

Water experts and professionals tend to communicate the IWRM concept in a highly technical jargon as demonstrated in the following example:

The IWRM concept is generally struggling with two major weaknesses that cause most of its perceived failings these being the nature of the science which has informed its development as well as its ambiguous character in terms of current intellectual paradigms (Medema and Jeffrey, 2005). A journalist could simply communicate the above text as follows: While IWRM is derived from science, it continues to evolve so much that there is little agreement within new thinking.

It is thus the intention of this media guide to demonstrate that water reporting is not a technical specialisation but a bread-and-butter debate of today and tomorrow.

This guide does not intend to make scientists out of journalists or the public, but to offer a quick reference to the main issues and policies as applied in southern Africa, to suggest ways to cut through the jargon, and to provide further references for reading and contacts for interviews.

The media plays a key role in strengthening public involvement in the debate and decision-making on the region’s water management and usage. However, without a clear communication by the media of the water management issues, policies will be written, and new institutional arrangements will be laid out, but the main actors – the com-

munities – may not understand clearly their essential role in decision-making and management of water resources.

This guide aims to facilitate greater understanding of water resources management issues and communication to a wider audience by presenting a clear conceptual understanding to media and the public. The guide also provides a reference of knowledge sources and contacts for public understanding of water resources management and how it is being practiced.

The guide is designed for quick access by journalists seeking reliable information, and is divided into four parts.

PART I gives an overview of the state of water in the SADC region, as well as analysis of the key water issues affecting the region. It also discusses water management strategies in southern Africa in relation to major development targets such as the regional strategic plan of the Southern African Development Community (SADC) and the UN Millennium Development Goals.

PART II looks at the concept of Integrated Water Resources Management (IWRM), contrasting it with other forms of water management, including traditional strategies.

PART III focuses on the practical aspects and angles of reporting on water resources management, such as ecological and economic values of water resources, as well as gender dimensions.

PART IV demonstrates the commitment of the SADC region to IWRM by analysing the various regional and international laws to which Member States are party, as well as assessing the institutional arrangements to implement water management in the region.

The guide includes a Bibliography and List of Further Reading as well as an Appendix of key reference materials and institutional contacts at national and regional levels. See also the Glossary at back of the book.

This media guide and other information on water resources is available electronically in searchable format through the Virtual Library for Southern Africa www.sardc.net Knowledge for Development.



Map of the Southern African Development Community

PART ONE

OVERVIEW OF FRESHWATER RESOURCES IN SOUTHERN AFRICA

1

State of Freshwater in Southern Africa

The availability of and access to freshwater help to determine the management strategies that should be applied. Such management strategies are important in the protection and sustainable use of water resources, and are also a means for ensuring peace and stability, economic security and social wellbeing of countries.

More than 60 percent of the population in southern Africa live in rural areas where they depend on agriculture for their livelihood. Agriculture alone uses as much as 80 percent of the region's water resources. Water also plays a vital role in industry, mining, hydropower generation, and tourism, as well as in commercial fishing. Urban areas are dependent on good management of water resources for the health and wellbeing of the inhabitants.

Unlike in other parts of the world where water availability comes in various forms including glaciers, snow and rainfall, water resources availability in southern Africa is entirely dependent upon rainfall, which is seasonal. An exception is the fertile area around Mt Kilimanjaro in northern Tanzania that accesses sparkling fresh runoff from the famous mountain; and another is the humid rain forests of the Democratic Republic of Congo (DRC) which receive rainfall throughout the year.

The regional rainfall is influenced by global air circulation, topography and ocean currents, and comes mainly from evaporation over the Indian Ocean, as well as wind systems originating from outside the region.

Rainfall is unevenly distributed across time and space within countries and across southern Africa. Across most of the region, the year is divided into a dry season without rain, and a wet season when rain may occur. The length of each season varies with the geographical location of countries. Seasonality of the rainfall is reflected in both biological and cultural processes such as ripening of indigenous fruits and migration of wild and domestic animals between dry and wet season pastures.

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Most parts of the region receive a 5-7 month wet season during the October to April summer months. However, there are exceptions. The Western Cape in South Africa receives its rainfall during the April to September winter months.

Some parts of Tanzania have two distinct annual rainfall seasons. In the south, west and central regions of Tanzania there is one rainy season, which occurs between December and April. In the northern and eastern regions of the country there are two rainy seasons. The “short rains” or *Vuli* last from October to December, and the “long rains” or *Masika* last from March to May.

In the DRC, the rainfall varies with distance from the equator, which lies across the north of the country. North of the Equator, the rain falls from April to October with a pronounced dry season from December to February. South of Equator the wet season lasts from November to March with the dry season coming April to October. Along the equator the rainfall is fairly regular throughout the year.

Madagascar has two seasons: a hot, rainy season from November to April; and a cool, dry season from May to October. However, there are large variations in rainfall dictated by the range of mountains that run down the length of the country.

Rainfall ranges from 10mm per year in some parts of Namibia to about 1,500 mm per year in the north of DRC and about 2,800 mm per year in some parts of Angola, Malawi and Tanzania. In most parts of the region, potential evaporation is twice as high as rainfall totals. This has a dominant influence on the overall water balance, with the consequence that generally less than 15 percent of the rainfall contributes to runoff, river flow and infiltration to groundwater.

Southern Africa is mostly semi-arid and experiences variation in rainfall, both over time and between countries. The region is expected to experience further variability and reduction in rainfall, and increased evaporation due to climate change.

Southern Africa’s main freshwater resources are found in surface water bodies such as lakes, rivers and wetlands, as well as underground aquifers found in layers of rock, sand or gravel.

**Rainfall and Evaporation Statistics of
Selected SADC Member States**

Table 1

Country	Rainfall range (mm/year)	Average rainfall (mm/year)	Potential evaporation range (mm/year)	Total surface runoff (mm/year)
Angola	25-1600	800	1300-2600	104
Botswana	250-650	400	2600-3700	0.6
Malawi	700-2800	1000	1800-2000	60
Mozambique	350-2000	1100	1100-2000	275
Namibia	10-700	250	2600-3700	1.5
South Africa	50-3000	500	1100-3000	39
Swaziland	500-1500	800	2000-2200	11
Tanzania	300-1600	750	1100-2000	78
Zambia	700-1200	800	2000-2500	133
Zimbabwe	350-1000	700	2000-2600	34

Source Hirji, R., Johnson, P., Maro, P. and Matiza Chiuta, T. (eds) 2002. *Defining and Mainstreaming Environmental Sustainability in Water Resources Management in Southern Africa*, p 33

Most river basins in southern Africa spread across national boundaries. There are 15 major internationally shared river basins in the region, of which the four largest river basins are the Congo, Zambezi, Orange/Senqu, and Limpopo.

The combined drainage of the 15 international river basins covers 78 percent of the region's continental land area. Most of the continental countries within SADC lie entirely or largely within international river basins.

The Zambezi is the largest river basin wholly within the SADC region and also the most shared, draining a total area of almost 1.4 million square kilometres across eight countries: Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia and Zimbabwe.

There are two major artificial lakes on the river, Lake Kariba on the border between Zambia and Zimbabwe, and Lake Cahora Bassa in Mozambique. Both are created by important dams that generate electricity. At its mouth, the Zambezi River splits into a wide, flat and marshy delta. The annual discharge of the Zambezi flowing to the sea is estimated at 106 cu km.

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The Congo river basin (3.7 million sq km), which lies partly within the SADC region, is the largest in Africa and second in size in the world only to the Amazon basin (5.87 million sq km) in South America. (see Table 2)

The SADC region contains some of the major aquatic ecosystems on the African continent including key wetlands, as well as three of the largest natural lakes.

Lake Victoria is the largest of the African lakes in area and the second widest freshwater body in the world. The lake, shared by Tanzania, Kenya and Uganda, covers an area of 68,800 sq km and is shallow when compared to the other two lakes, with a maximum depth of 84 metres. The lake is a source of water, navigation, recreation and fisheries. Several major towns rely on the lake for domestic and industrial water supply, including Bukoba, Mwanza and Musoma in Tanzania.

Lake Tanganyika is the second largest lake in Africa in area and the second deepest and longest lake in the world. The lake is 670 km long, with a maximum depth of 1,471 m. The surface area is 32,000 sq km. Of 214 native fish species in the lake, 176 are endemics found only in this lake. Among SADC countries, the lake is shared by Tanzania, DRC and Zambia. It is generally used for fisheries and navigation, and has vast tourism potential.

Lake Malawi/Nyasa/Niassa has a different name in each country that shares it and is the southernmost of the deepwater lakes associated with the formation of the Rift Valley that stretches from North Africa all the way down to central Mozambique. It is the third largest natural lake in Africa, with a maximum depth of 700 m at its western shore making it the third deepest lake in the world. The lake is 560 km long, covers an area of 6,400 sq km, and is an important resource for people of the United Republic of Tanzania, Malawi and Mozambique who depend on it for water, transportation, fisheries and tourism. It has the largest number of fish species in the world, estimated at over 600, half of which have been identified. The most important species biologically, and in terms of local livelihoods, are the more than 400 cichlid species, of which all but five are endemic.

FRESHWATER RESOURCES

Major International River Basins in Southern Africa

Table 2

River basin	Basin states in southern Africa	Basin area within southern Africa (sq km)	River length (km)
Buzi	Zimbabwe, Mozambique	27 900	250
Congo	Angola, D.R. Congo, Tanzania, Zambia	2 942 700 of total 3 699 100	4 700
Cunene/ Kunene	Angola, Namibia	110 300	1 050
Cuvelai	Angola, Namibia	100 000	430
Incomati / Nkomati	Mozambique, South Africa, Swaziland	46 200	480
Limpopo	Botswana, Mozambique, South Africa, Zimbabwe	415 000	1 750
Maputo	Mozambique, South Africa, Swaziland	31 300	380
Nile	D R Congo, Tanzania	142 000 of total 3 038 100	6 700
Okavango	Angola, Botswana, Namibia	708 600	1 100
Orange / Senqu	Botswana, Lesotho, Namibia, South Africa	947 700	2 300
Pungwe	Mozambique, Zimbabwe	32 500	300
Ruvuma / Rovuma	Malawi, Mozambique, Tanzania	152 200	800
Save	Mozambique, Zimbabwe	116 100	740
Umbeluzi	Mozambique, Swaziland	5 400	200
Etosha- Cuvelai	Angola, Namibia	167 600	430
Zambezi	Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zimbabwe, Zambia	1 420 000	2 650

Source Hirji, R., Johnson, P., Maro, P. and Matiza Chiuta, T. (eds) 2002. *Defining and Mainstreaming Environmental Sustainability in Water Resources Management in Southern Africa*, p 30

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Artificial lakes were created by the construction of hydroelectric dams by the same name. These include Lake Kariba, which covers an area of 5,100 sq km and has a total storage capacity of 160 cu km while downstream, Cahora Bassa in Mozambique has a surface area of 2,665 sq km and stores 52 cu km of water.

Dams play a major role in providing secure sources of water for domestic and industrial uses, due to the variability of rainfall between countries and across time in southern Africa.

Dams are built to store excess river runoff during the rainy season and provide a secure long-term water supply. Water from dams is often transferred over long distances to areas of scarcity and high demand.

In South Africa, the Gauteng province imports water from the Lesotho Highlands where the Katse and Mohale dams were built for this purpose. Botswana's North-South Water carrier is aimed at linking dams and major wells in the north of the country to Gaborone via a large diameter 400 km pipeline.

Major wetlands in the region include the Okavango Delta in Botswana, Kafue Flats in Zambia and the St Lucia Wetlands on the east coast of South Africa, but there are many smaller wetlands as well. Wetlands are valuable for their socio-economic benefits and serve as habitat for a variety of species.

Wetlands are some of the most productive natural ecosystems in the region, and communities derive great benefit from them.

Wetlands (*or dambos*) provide freshwater for human consumption, pasture for livestock and, fertile soils for agriculture. They yield a major harvest of fish protein and support wildlife. They trap sediments and nutrients, which then support other life as well as human livelihoods through growing of crops. Wetlands are also essential in controlling floods, especially in flood prone areas of the Zambezi basin. (*see Table 3*)

Groundwater supports the livelihoods of the majority of people in the region. The United Nations Environment Programme (UNEP) estimates that groundwater is the main source of water for about 60 percent of both rural and urban residents throughout southern Africa, through wells and boreholes.

FRESHWATER RESOURCES

Freshwater Ecosystem Types of Southern Africa

Table 3

Types	Major examples	Country	Some uses
Floodplain	Barotse	Zambia	Wildlife, fisheries, livestock grazing
	Pongolo	South Africa	Wildlife, fisheries, livestock grazing
	Liuwa	Zambia	Fisheries, agriculture
	Luangwa Rufiji	Zambia Tanzania	Wildlife, agriculture Wildlife, agriculture, fisheries
Palustrine wetland	Okavango Delta	Botswana	Wildlife, agriculture, fisheries, tourism
	Linyanti/Chobe	Botswana Namibia	Wildlife, agriculture, fisheries, tourism
Floodplain wetland	Kilombero	Tanzania	Wildlife, agriculture, fisheries, tourism
	Malagarasi	Tanzania	Wildlife, agriculture, fisheries, tourism
	Kafue Flats	Zambia	Wildlife, agriculture, fisheries, tourism
Riverine	Zambezi	Angola, Botswana Malawi, Mozambique, Namibia, Tanzania, Zambia, Zimbabwe	Wildlife, fisheries, hydropower, water supply, navigation, tourism
	Orange/Senqu	Lesotho, Namibia, South Africa	Wildlife, hydropower, water supply, tourism
	Okavango	Angola, Botswana, Namibia	Water supply, wildlife, tourism
	Limpopo	Botswana, Mozambique, South Africa, Zimbabwe	Water supply, wildlife,
	Congo	DRC, Tanzania, Zambia	Wildlife, hydropower, water supply, tourism
Shallow lake	Mweru	DRC, Zambia	Fisheries
	Mweru Wantipa Rukwa	Zambia Tanzania	Wildlife, agriculture, fisheries Wildlife, agriculture, fisheries
Shallow lake and wetland	Bangweulu Chilwa	Malawi, Mozambique, Zambia	Wildlife, agriculture, fisheries Fisheries

... continued →

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Deep lake	Malawi/ Nyasa/Niassa Tanganyika Victoria	Malawi, Mozambique, Tanzania DRC,Tanzania, Zambia Tanzania	Wildlife, agriculture, fisheries transportation, tourism Fisheries, transportation Fisheries, transportation
Artificial lake	Kariba Cahora Bassa	Zambia, Zimbabwe Mozambique	Hydroelectric power, wildlife, agriculture, transportation, tourism, fisheries Hydroelectric power, fisheries,
Pans	Makgadikgadi Etosha	Botswana Namibia	Mining, wildlife, tourism Wildlife, tourism
Estuarine delta	Zambezi Delta Limpopo/ Inkomati	Mozambique Mozambique	Fisheries, agriculture Wildlife, fisheries
Source Hirji, R., Johnson, P., Maro, P. and Matiza Chiuta, T. (eds) 2002. <i>Defining and Mainstreaming Environmental Sustainability in Water Resources Management in Southern Africa</i> , p 65			

A large part of the region is characterised by small towns, villages and dispersed rural settlements where access to the delivery surface water resources is limited due to the high costs and long distances that need to be covered in order to establish infrastructure for formal water services.

Major groundwater resources are found in the Kalahari-Etosha, Kalahari Precambrian Belt (Namibia); Karoo, Cape Fold Belt (South Africa); the coastal basins of Mozambique and Tanzania; and Nyamandhlovu aquifer in Zimbabwe.

Groundwater is available in variable quantities throughout the region. Groundwater also supports base flows of perennial rivers during dry seasons and during periods of surface water drought.

Key Freshwater Issues

Increasing populations and growing demand for water for industrial, domestic and agricultural purposes is putting pressure on available water sources. Total population in the SADC region rose from 212 million in the year 2000 to 236 million in 2004, according to SADC Statistics 2004, and was projected to pass 260 million in 2008. This strains available water resources because the total annual freshwater resources remained the same in that period, and in some cases declined due to pollution. Extensive use of agro-chemicals is a major cause of reduction in water quality.

Water stress occurs where there are large concentrations of people and hence higher demand for water, while **water scarcity** occurs when the amount of water withdrawn from lakes, rivers or groundwater is so high that water supplies are no longer adequate to satisfy all human or ecosystem requirements. Access can vary within and between countries. Proper management and utilisation of available water resources is essential.

Water is already scarce in a number of countries in the region. By 2025 it is expected that Malawi and South Africa will be facing absolute water scarcity, partly due to population distribution and weak infrastructure; and Lesotho, Mauritius, Tanzania and Zimbabwe will be water stressed; while Angola, Botswana, Democratic Republic of Congo, Mozambique, Swaziland and Zambia are likely to experience water quality and availability problems in the dry season. (Hirji et al, 2002: 8,9)

A growth in demand for water coupled with rapidly expanding population will increase stress on already limited water supplies. If left unchecked this could result in increased competition and even conflict between the sectoral users of water. Increasing population necessitates the expansion of land under irrigation to ensure food security. This in turn requires an increase in the amount of water used in agriculture, thus putting stress on available water resources. In addition, pesticides and fertilisers released into rivers from irrigated lands can increase water pollution, thus by reducing the amount of water of usable quality available for domestic purposes.

Water is also a *vulnerable resource* in southern Africa, and its vulnerability stems from a variety of factors, which include

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extreme climate variability and climate change. Climate change can cause negative impacts, particularly in rural communities that depend largely on rainwater for food production.

Climate change is likely to have significant impacts on the water sector in southern Africa. The region is expected to experience gradual warming, with the most significant warming expected to occur over Botswana, eastern Namibia and Angola, and western Zimbabwe and Zambia where temperatures are predicted to rise by more than two degrees Celsius (Hirji et al, 2002:41).

The 2007 Intergovernmental Panel on Climate Change (IPCC) Working Group One Report indicates that southern Africa is expected to experience increased incidence of floods and more intense droughts as a result of warming temperatures.

The United Nations Environment Programme (UNEP 2002) predicts the potential impacts of climate change on freshwater resources in southern Africa to include an overall reduction in rainfall by as much as 10 percent across the region and up to 20 percent in some parts of South Africa. As a result of higher temperatures the evaporation rates are expected to increase by five to 10 percent leading to reduced runoff.

In the Zambezi River Basin at the Victoria Falls, the 90-year long record of flow has generally been far below average since 1980, and the year 1995 had the lowest ever recorded flow.

Over the last two decades, heavy floods have devastated many parts of the region, resulting in considerable structural damage, loss of life and destruction of safe water resources. Water-borne and water-related diseases such as malaria and cholera are associated with floods and have been increasing across southern Africa.

The January to March 2000 floods caused by Cyclone Eline had a profound impact on southern Africa, especially in Mozambique, where more than 700 people died. The damage caused by the floods was estimated at US\$600 million. The Mozambican government reported that GDP grew by only three per cent compared to six per cent predicted before the floods, while agriculture grew by only two percent compared to nine per cent in 1999.

The 2000-2002 floods caused widespread damage in several countries. In Malawi, the national food security situation worsened and the country was declared a food-disaster nation by

February 2002, a situation which was rectified in the 2008 season when Malawi reaped the results of a “green revolution” through the production of a food surplus.

Long-term records show that southern Africa is prone to droughts with at least two occurring per decade. A drought often triggers serious water-related imbalances, causing loss or damage to crops, shortage of water for people, livestock and wildlife, as well as famine and disease.

Chronology of Droughts and Floods in Southern Africa

Table 4

2005 – 2006**	Parts of southern Africa received very heavy rains resulting in flooding that caused considerable structural damage, destroying schools, crops, telecommunications and roads.
2001 – 2002**	Southern Africa experienced abnormally high rainfall and disastrous floods causing damage to infrastructure and loss of lives and property.
1999 – 2000	Cyclone Eline hit the region and widespread floods devastated large parts of the Limpopo basin (southern and central Mozambique, south-eastern Mozambique, parts of South Africa, Botswana and Zimbabwe).
1994 – 95	Many countries in the SADC were hit by a severe drought, surpassing the impacts of the 1991 to 1992 drought in some regions.
1991 – 92	Worst drought in living memory experienced in southern Africa, excluding Namibia
1986 – 87	Drought conditions returned to the region.
1983	This year saw a particularly severe drought for the entire African continent.
1982	Most of sub-tropical Africa experienced drought.
1981 – 82	Severe drought occurred in most parts of southern Africa.
1967 – 73	This 6-year period was dry across the entire region. Some records show a severe drought in 1967. The equatorial region (including the DRC) experienced above-average rainfall.
1930 – 1950*	Southern Africa experienced dry periods alternating with wet seasons and in some years the rains were very good. The 1946 – 47 season experienced a severe drought.
1921 – 1930*	There was a severe drought in all of southern Africa.
1875 – 1910*	There was a marked decrease in rainfall in southern Africa, and 1910 experienced a severe drought.
1844 – 1849*	Southern Africa experienced five consecutive drought years.
1820 – 1830*	This was a decade of severe drought throughout Africa.
Source Adapted from Hirji, R., Johnson, P., Maro, P. and Matiza Chiuta, T. (eds) 2002, p32; *Adapted from Chenje, M. and P. Johnson (eds.). <i>Water in Southern Africa</i> , 1996, p35; ** <i>The Zambezi</i> , Vol 6 No 3	

3

Water Management and Development Goals

Water is critical to southern Africa's sustainable development and lies at the centre of all life, touching every aspect of human endeavour, from environmental protection to food security, from the empowerment of women and the education of girls to productivity losses due to malnutrition.

Water is essential to meeting the Millennium Development Goals (MDGs) by the target date of 2015.

The MDGs are dedicated to eradicating poverty and hunger, achieving universal primary education, promoting gender equality and women's empowerment, reducing child mortality, improving maternal health, combating major diseases, improving environmental sustainability, and facilitating a global partnership for sustainable development.

In addition to global goals such as the MDGs, water is central to the achievement of regional goals such as the SADC Regional Indicative Strategic Development Plan (RISDP).

The RISDP was approved by SADC leaders to provide a clear framework for SADC policies and programmes over a 15-year period, and outlines the targets to be achieved for the attainment of SADC's regional integration and development goals. The RISDP also provides a logical and coherent implementation programme for the main activities of the SADC Water Division. (see Part 4 for more information about regional plans)

The RISDP considers sustainable water use as key to the improvement of human livelihoods.

The Millennium Development Goals

Table 5

There are eight Millennium Development Goals (MDGs). For each goal one or more targets have been set, most for 2015, using 1990 as a benchmark.

♦ **Eradicate extreme poverty and hunger**

Targets 2015 Halve the proportion of people whose income is less than one dollar a day, and
Halve the proportion of people who suffer from hunger.

♦ **Achieve universal primary education**

Target 2015 Ensure that all girls and boys will be able to complete primary school.

♦ **Promote gender equality and empower women**

Targets 2005, 2015 Eliminate gender disparity in primary and secondary education preferably by 2005, and at all levels of education no later than 2015.

♦ **Reduce child mortality**

Target 2015 Reduce by two-thirds the mortality rate of children under five.

♦ **Improve maternal health**

Target 2015 Reduce by three-quarters the ratio of women dying in childbirth.

♦ **Combat HIV and AIDS, malaria and other diseases**

Target 2015 Halt and begin to reverse the spread of HIV and AIDS, and the incidence of malaria and other major diseases.

♦ **Ensure environmental sustainability**

Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources.

Target 2015 Reduce by half the proportion of people without access to safe drinking water.

Target 2020 Achieve significant improvement in the lives of at least 100 million slum dwellers.

♦ **Develop a global partnership for development**

Develop an open, rule-based, predictable, non-discriminatory trading and financial system that includes a commitment to good governance, development and poverty reduction – nationally and internationally.

Address the special needs of the least developed countries, and land-locked and small island developing states.

Deal comprehensively with the debt problems of developing countries.

Develop decent and productive work for youth.

In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries.

In cooperation with the private sector, make available the benefits of new technologies – especially information and communications technologies.

Source www.undp.org

*Reporting Water in Southern Africa***Contribution of Water Towards Meeting MDGs****Table 6**

MDGs and relevant targets by 2015	Contribution of domestic water supply and sanitation	Contribution of sound water resources management and development
Poverty To halve the proportion of the world's people whose income is less than \$1/day	Household livelihood security rests on the health of people, with the sick being less productive; illness caused by unsafe drinking water and inadequate sanitation incurring health costs and claiming household's income; and more time being spent collecting water instead of income generating activities.	Water is a factor of production in agriculture, industry and other economic activities that provide livelihoods. Investment in water infrastructure can be a catalyst for local/regional development, while a reduction in ecosystem degradation and vulnerability to water related disasters make livelihood systems more secure.
Hunger To halve the proportion of the world's people who suffer from hunger	Healthy people are better able to absorb the nutrients in food than those suffering from water and sanitation related diseases, particularly worms, which rob their hosts of calories.	Water is a direct input for agriculture. Reliable water supply for subsistence agriculture, home gardens and livestock increases output ensuring availability of cheaper food to reduce hunger. Sound water resources management results in sustainable production of fish, tree crops and other foods gathered in common property resources (also reduces poverty when such goods are sold for income).
Primary Education To ensure that children everywhere complete a full course of primary schooling	Improved water and sanitation services relieve school children from water fetching duties, allowing them to attend school. Reduced water-related illnesses improves school attendance. Water and sanitation facilities closer to home give women and girls more time to study and attend school	Improved water management reduces the incidences of catastrophic events like floods that interrupt educational attainment.
Gender Equality To ensure that boys and girls have equal access to primary and secondary education	Improved sanitation, safe drinking water sources and greater quantities of domestic water for washing reduce infant and child morbidity and mortality. Sanitation and safe water in health care facilities reduce neonatal deaths.	Community-based organisations for water management can improve social status of girls and women by giving them leadership and networking opportunities and building solidarity among them. Improved nutrition and food security reduces susceptibility to diseases.

FRESHWATER RESOURCES

Contribution of Water Towards Meeting MDGs

Child Mortality To reduce by two-thirds the death rate for children under five	Accessible sources of water reduce labour burdens and health problems resulting from water portage, reducing maternal mortality risks. Improved health and nutrition reduce susceptibility to anaemia and other conditions that affect maternal mortality.	Well-managed water resources help poor people make a decent living and reduce their vulnerability to shocks, which in turn gives them more secure livelihoods and opportunity to care for their children. Malaria is a leading cause of death among children, and better water management reduces mosquito habitats.
Maternal Mortality To reduce by three-fourths the rate of maternal mortality	Safe drinking water and basic sanitation help prevent water related diseases, including diarrhoeal diseases, <i>schistosomiasis</i> , <i>filariasis</i> and <i>trachoma</i> .	Improved nutrition and food security reduces susceptibility to diseases that can complicate pregnancy. Malaria is particularly dangerous to pregnant women, and better water management reduces mosquito habitats.
Major Disease To halt and begin to reverse the spread of HIV, malaria, and other major diseases	Adequate treatment and disposal of excreta and wastewater contribute to less pressure on freshwater resources.	Improved water (and wastewater) management in human settlements reduces transmission links of mosquito-borne illness like malaria and dengue fever. Improved health and nutrition reduces susceptibility to/severity of HIV and AIDS and other major disease.
Environmental Sustainability To stop the unsustainable exploitation of natural resources	Inadequate access to safe water and inadequate access to sanitation and other infrastructure are two of the main defining characteristics of a slum.	Improved water management, including pollution control and water conservation, is a key factor in maintaining environmental flows and ecosystem integrity. Integrated management within river basins allows for approaches that preserve ecosystem health.
Slum Dwellers To improve the lives of 100 million slum dwellers	Slum dwellers have little access to improved water sources, thus exposing them to water-borne diseases.	Slum settlements are often built on sites vulnerable to water-related disasters.
Source: Adapted from UN Millennium Project Task Force on Water and Sanitation. <i>Health, Dignity and Development: What Will it Take? Achieving the Millennium Development Goals</i> , 2005		

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Sample Article 1

Water and the Achievement of the MDGs**Basin states progress towards water and sanitation target**

by Egline Tauya

Zambezi Basin states have registered significant progress in meeting the safe drinking water and sanitation target set out in the Millennium Development Goals (MDGs).

In adopting the MDGs, the basin states, like the rest of the world, pledged to reduce by half, the proportion of people without access to safe drinking water and basic sanitation, between 1990 and 2015.

According to 2006 report of the WHO/UNICEF Joint Monitoring Programme (JMP), Angola has made huge strides in expanding its drinking water coverage, but needs to raise basic sanitation levels.

In the period 1990 to 2004, the proportion of people with access to drinking water increased from 36 to 53 percent of Angola's total population.

During the same period, Angola's access to basic sanitation dropped from 62 to 56 percent in urban communities, and from 19 to just 16 percent in rural areas.

Aurora Jeremias, a mother of five living in Angola's Mavinga district, has noticed a sharp improvement in her family's quality of life.

"Children used to die here, but nobody really realised that it was because of water. They had diarrhoea or scabies. We had a lot of these diseases, but not any more," she said in a report carried by the Angola Press Agency.

The Botswana Press Agency reports that Botswana, as it celebrates 40 years of independence, is also on course to ensuring universal access to safe drinking water.

The proportion increased from 77 percent of the country's population in 1990 to nearly 98 percent in 2004, while sanitation in the same period increased from 38 to 42 percent.

Access to safe drinking water in Malawi increased from 40 percent in 1990 to 73 percent in 2004.

In an effort to reach the safe drinking water target, the government of Malawi is planning to increase the number of boreholes and water schemes, and to intensify the maintenance of existing boreholes and water schemes through active involvement of communities in water management.

Malawi is among the best performers in the region for improving access to basic sanitation with an increase from 41 percent in 1990 to 61 percent in 2002.

Floods experienced in early 2006 in Malawi however reduced the level of sanitation as many children under 5 years were affected by diarrhoea.

According to the Mozambique National Human Development Report 2005, the national average for safe drinking water increased from 35 percent in 1990 to about 42 percent in 2005, whilst sanitation increased from 20 to 34 percent in the same period.

The great majority of the population is served by “onsite” solutions, improved latrines or septic tanks, or by hybrid solutions, built essentially by private initiatives and not effectively listed, the report noted.

In the United Republic of Tanzania, 43 percent of the rural population had access to clean safe water in 1990. Since then the government has improved water supply to rural communities through the provision of new boreholes and rehabilitation of existing ones, and the development of pipelines.

As a result the proportion of the population in rural areas with access to safe water has almost doubled. In urban areas access to safe water is almost universal.

Progress in provision of basic sanitation has however been slow. In 1990, 15 percent of the rural population had access to basic sanitation such as flush toilets or a ventilated improved pit latrine. In 2004 that share increased to 21 percent.

At least 56 percent of Zambians have no access to safe water supply, and as much as 90 percent have no access to satisfactory sanitation facilities, according to the Ministry of Finance and National Planning.

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Access to safe water supplies is estimated at 86 percent of the population in urban areas and 37 percent in rural areas.

Lack of safe drinking water and unhygienic street vending of fruit and vegetables have been identified as main causes for the spread of cholera.

In Zimbabwe, the movement of people under the land reform programme has disturbed the provisional safe water and sanitation. However, the national MDGs progress report for 2004 states that 81 percent of the total population has safe drinking water while 56 percent has access to safe sanitation.

These figures represent a rise from the 1990 figures of 50 percent and 44 percent for safe water and sanitation coverage, respectively.

The target for Zimbabwe is to reach 100 percent for households with access to safe water and sanitation by 2015.

For almost all the basin states, the rapid urbanisation, resulting in informal settlements, has reduced the level of sanitation.

Other challenges include lack of involvement of users in the design and implementation of the water and sanitation projects; lack of empowerment of women as powerful agents of change in hygiene practices; and low priority given to water and sanitation.

Source: *The Zambezi* Vol 6.3, SARDC 2006

PART TWO
WATER RESOURCES MANAGEMENT

4

Integrated Water Resources Management

The management of water resources is often portrayed as an engineering profession, with a main focus on technical and financial solutions for problems faced by users in the domestic, industrial and agricultural sectors.

Water management has also been characterised by sectoral fragmentation where activities are managed within the narrow scope of agricultural, industrial or domestic consumption, and with little coordination between the sectors.

The shortcomings of this sectoral approach have been reflected in the glaring potential for conflict between the different users and uses of water.

Many uses of water impact on other uses, while water development projects may have unintended social and environmental consequences. This is especially true for river basins where upstream water and land practices impact directly on the quantity and quality of water downstream.

Sectoral approaches fail to recognise the inter-linkages between different users and uses of water. As water becomes scarcer, it becomes increasingly inefficient to manage without recognising the inter-dependence between agencies, jurisdictions, sectors and geographical areas.

Traditionally, there has been little social participation in the development and management of water resources, and decisions are often taken by authorities with little consideration of the views and inputs of local communities. Top-down approaches have dominated the approaches to water resources management, including the development of water supplies, provision of water services, and regulation of water uses.

The current approaches to water resources management have not been fully effective as they place emphasis on increasing supply rather than managing demand.

The need to find new and innovative approaches has led to the concept of Integrated Water Resources Management (IWRM), which moves away from the sectoral approach to a more holistic management of water resources.

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The commonly used definition for IWRM is that presented by the Global Water Partnership at the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002, as “a process, which promotes the coordinated development and management of water, land and related resources in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.”

Expressed in this definition is the need for water development which enhances socio-economic development, while keeping the environment healthy.

The objective of IWRM is to ensure the sustainable use of water resources for economic and social development, while protecting and improving the value and integrity of the environment.

By taking note of vital ecosystems in the IWRM definition, it is considered that water should also be managed in a basin-wide context, under the principles of good governance and public participation.

IWRM seeks to reconcile the multiple interests and priorities of the various users within a river basin. In doing so, it draws together an understanding of water-related needs of the ecosystems within a river basin, identifies the human activities that have important water implications and explores possibilities for re-directing human activities in ways that generate harmony between human, social, economic and developmental needs and those for the environment.

Although we can go back several centuries to find the forerunners of the present IWRM, the roots of the modern concept can be traced to the United Nations Conference on Water in Mar del Plata, Argentina, in 1977, which stressed the need for coordination that recognises the multiple competing uses of water resources.

The Mar del Plata Action Plan, was the first internationally coordinated approach to IWRM. The conference considered water management on a holistic and comprehensive basis, an approach that recognised the key contemporary IWRM issues.

The coordination within the water sector, as advocated at Mar del Plata, was seen largely as a task for national governments.

However, among the major concerns expressed was the need to build a more effective framework within which the different national positions and interests could be harmonised to facilitate cooperation over shared water resources.

To provide safe water and sanitation facilities to all, and accelerate political will and investment in the water sector, the conference recommended designation of the period 1980-1990 as The International Water Supply and Sanitation Decade.

This was further emphasised by the Brundtland Commission in their report, *Our Common Future*, in 1987, which made the first call for development that would not compromise the needs of future generations – **sustainable development**.

In January 1992, the International Conference on Water and the Environment (ICWE) was held in Dublin, Ireland, to serve as a preparatory event with respect to water issues to be discussed at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil (Earth Summit).

The Dublin Conference formulated water policies and an action programme that were considered at the Earth Summit, setting out recommendations for water resources management at the local, national and international levels, based on four guiding principles:

- 1 Recognising fresh water as a finite, vulnerable, and essential resource that should be managed in an integrated manner.
- 2 Suggesting a participatory approach involving users, planners and policymakers at all levels of water development and management.
- 3 Recognising women's central role in the provision, management and safeguarding of water.
- 4 Suggesting that water should be considered as an economic good.

The Dublin Conference focused on the necessity for Integrated Water Resources Management and active participation of all stakeholders, from the highest levels of government to the smallest communities, and highlighted the special role of women in water management.

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The Dublin Conference recommendations were later consolidated into Chapter 18 of Agenda 21, a global plan of action emphasising sustainable use of natural resources which came out of the Earth Summit held in Brazil in 1992.

Selected sections of Chapter 18, Agenda 21

Table 7

Application of integrated approaches to the development, management and use of water resources

18.8 Integrated water resources management is based on the perception of water as an integral part of the ecosystem, a natural resource, and a social and economic good, whose quantity and quality determine the nature of its utilisation. To this end, water resources have to be protected, taking into account the functioning of aquatic ecosystems and the perennial nature of the resource, in order to satisfy and reconcile needs for water in human activities. In developing and using water resources, priority has to be given to the satisfaction of basic needs and the safeguarding of ecosystems. Beyond these requirements, however, water users should be charged appropriately.

18.9 Integrated water resources management, including the integration of land and water-related aspects, should be carried out at the level of the catchment basin or sub-basin. Four principal objectives should be pursued, as follows:

- (a) To promote a dynamic, interactive, iterative and multi-sectoral approach to water resources management, including the identification and protection of potential sources of freshwater supply that integrates technological, socio-economic, environmental and human health considerations.
- (b) To plan for the sustainable and rational use, protection, conservation and management of water resources based on community needs, and priorities within the framework of national economic development policy.
- (c) To design, implement and evaluate projects and programmes that are both economically efficient and socially appropriate within clearly defined strategies, based on an approach of full public participation, including that of women, youth, indigenous people, local communities, in water management policy-making and decision-making.
- (d) To identify and strengthen or develop, as required, in particular in developing countries, the appropriate institutional, legal and financial mechanisms to ensure that water policy and its implementation are a catalyst for sustainable social progress and economic growth.

Source UNEP. "Protection of the Quality and Supply of Freshwater Resources: Application of integrated approaches to the development, management and the use of water resources". *Agenda 21: Programme of Action for Sustainable Development*.

Subsequent international water conferences consolidated the IWRM concept. The Second World Water Forum and Ministerial Conference held in the year 2000 in The Hague, Netherlands, concluded that IWRM could achieve: food security, ecosystem protection, empowerment, risk management, peaceful boundary and transboundary river basin management, basic water demands, and wise water management.

The Second World Water Forum also acknowledged that the right to land and access to water are key to breaking out of poverty. The Forum also emphasised that water could empower people, women in particular, through a participatory management process.

In preparation for the Second World Water Forum, the Southern African Development Community (SADC) charged their Water Division to produce the **“Southern African Vision for Water, Life and the Environment in the 21st Century”** which was formally approved by the SADC Sectoral Committee of Ministers of Water in December 1999.

Southern Africa's water vision is:

“an equitable and sustainable utilisation of water for social and environmental justice, regional integration and economic benefit for present and future generations.”

The Vision forms part of the Regional Indicative Strategic Development Plan (RISDP), which is SADC's blueprint for economic and social development up to 2015.

The World Summit on Sustainable Development held in Johannesburg, South Africa in 2002, put IWRM at the top of the international agenda. The **Johannesburg Plan of Implementation** includes IWRM as one of the key components for achieving sustainable development.

The Plan provides specific targets and guidelines for implementing IWRM worldwide, including:

- developing an IWRM and water efficiency plan by 2005 for all major river basins of the world;
- developing and implementing national/regional strategies, plans, and programmes with regard to IWRM;

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- ♦ improving water use efficiency;
- ♦ facilitating public-private partnerships;
- ♦ developing gender-sensitive policies and programmes;
- ♦ involving all concerned stakeholders in a variety of decision-making, management, and implementation processes;
- ♦ strengthening education; and,
- ♦ combating corruption.

In view of the various stages in the development of the IWRM concept, it can be deduced that water management is not only a social, economic and environmental issue, but also a political issue. The multiple uses of water, and the many means for managing the resource imply that effective communication is important in achieving the objectives and principles of IWRM. Thus there is an important role for the media in communicating IWRM, and many story angles about water issues.

Integrated *versus* Other Approaches to Water Management

Water, needed by all living things, is often considered a renewable resource which will always be available, but in fact, it is finite, and the water supply must be well managed to ensure that there is enough for people, animals and plants, and to replenish the lakes and rivers.

An integrated approach to water resources management offers the means of reconciling competing demands for the water supply, and the needs of people as well as the environment. In southern Africa, which has 15 shared river basins, water resources are also viewed as an integrating factor.

At the World Summit on Sustainable Development in 2002, leaders from 193 countries committed themselves to the targets that they set out in the Johannesburg Plan of Implementation. One of the targets is to develop and implement plans for Integrated Water Resources Management (IWRM). The introduction of a participatory method of water resources management was a significant departure from previous management approaches that were largely top-down and prescriptive.

Decentralisation and participation are key to understanding IWRM, which is a bottom-up approach, recognising the experience, knowledge and understanding of various users of water, including local groups and communities. Their participation and inclusion facilitates more informed decision-making, and more effective implementation.

The inclusive nature of this participation offers communities the opportunity to claim their rights while also meeting their responsibilities. Through IWRM, the government retains the responsibility to create and maintain an “enabling environment” through policy formulation and implementation. The role of government is one of leadership aimed at facilitating and coordinating the development and transfer of skills, and assisting with the provision of technical advice and financial support.

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River basins are recognised as the most appropriate units for water resources management. Previous water management systems have often resulted in geographic fragmentation and disputes resulting from the difference between administrative and natural boundaries.

The rationale in using a river basin as the basic unit of management is that the basin provides a natural framework within which to undertake holistic, or integrated, planning and management.

This means that water should not be viewed or managed simply through extraction or demand, as has been the norm in previous water management frameworks, but must be related to planned access to water supply. This approach recognises the individual components as well as the linkages between them, and that mismanagement at one point in the system will be translated to other parts of the system.

An integrated approach to water resources management identifies water as an economic “good”, thus reflecting its scarcity and value. Linking user management to systems of cost recovery for water delivery are thought to promote greater efficiency of use, which ensures greater return per drop and promotes conservation of the water supply.

Emerging out of the IWRM framework is the concept of benefit sharing. Benefit sharing emphasises the potential of sharing the environmental and socio-economic benefits rather than simply equal allocation of the water in a shared water body.

Community benefits from collectively managed water resources could include revenue from fisheries, water for agricultural production, and hydroelectricity. Collective decision-making that preserves upstream wetlands, for instance, could benefit communities further down the river by mitigating flooding.

Sharing of benefits among local communities encourages their involvement in water resources management and acts as a conflict prevention mechanism.

At regional level, the adoption of benefit sharing for trans-boundary water resources promotes regional cooperation through hydropower generation, environmental stewardship, tourism, agriculture and other areas of socio-economic development.

Sample Article 2

Application of Benefit Sharing

Can benefit sharing be given a chance in the Zambezi River Basin?

by Leonissah Munjoma

The concept of “benefit sharing” has featured in the international water debate for some years.

Advocates say that this concept approaches an international watercourse through equity in sharing of all water resource benefits as opposed to just water allocation and water rights, and yields more peaceful and sustainable solutions.

“I think shifting focus from sharing water to sharing benefits derived from its use does provide far greater flexibility even though it is perhaps the most difficult and sensitive challenge in cooperative management of transboundary water resources,” said Jeffer Sakupwanya, Water Resources Expert for the Zambezi Action Plan Project 6, Phase II (ZACPRO 6.2).

Southern Africa has 15 transboundary river basins with a combined drainage area that covers 78 percent of the region’s continental land area. Some of the major international rivers in the region include the Congo, Zambezi, Okavango, Limpopo, Orange, Ruvuma, and the Cunene.

The Zambezi River Basin has a population of more than 40 million people. This makes benefit sharing and other arrangements to deal with transboundary basins key development imperatives.

Anton Earle of the African Centre for Water Research has noted some of the benefits from water as environmental and socio-economic including hydropower, high value agriculture, industry, rural development, and tourism.

He identifies some of the pre-requisites for benefit sharing as security, economic development and the environment, adding that this echoed the SADC founding vision as well as the Protocol on Shared Watercourses.

Francisco Alvaro from Mozambique identified some important factors in benefit sharing as confidence and trust building as well as commitment and compliance.

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“Let us take the concept to the communities and let us see how it works. The degree of success at local level relates to degree of success at transboundary level,” says Montshiwa Monty Montshiwa, Project Manager for Every River has its People Project.

He said benefit sharing should not be seen as an exchange of tangible benefits that should take place at the same time. One state could forego the benefits to allow another to utilize the natural resource.

“It is a question of losing today and winning tomorrow,” said Montshiwa.

Some national examples of benefit sharing could be seen in the case of the Lesotho Highlands Water Project. The Khatse Dam built in Lesotho by South Africa provides hydropower for Lesotho while South Africa gets the water.

“But even when cooperation can generate greater gains for all actors, inequities in the distribution of gains may make those scenarios unacceptable,” Sakupwanya said.

“In all this, I think the local impact, mediated through national processes, has to be a key driver of decision-making on benefit sharing and cooperation.”

Source: *The Zambezi* Vol 7.1, SARDC 2006

PART THREE

WHAT TO WRITE ABOUT – PRACTICAL ASPECTS

Principles of IWRM

Effective management of southern Africa's water resources also depends on a clear analysis and reportage by the media of the key water issues affecting the region. Key questions that some journalists may want to ask are:

What are we communicating? Why are we communicating? Why now?

Reporting IWRM is centred on the Dublin Principles that recognise and assert the ecological, institutional, gender, and economic dimensions of water resources management.

Principle 1 Ecological

Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment.

Principle 2 Institutional

Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels.

Principle 3 Gender

Women play a central part in the provision, management, and safeguarding of water.

Principle 4 Economic

Water has an economic value in all its competing uses and should be recognised as an economic good.

The many water-related challenges faced by southern Africa today are proving difficult to solve with conventional single-sector approaches to water resources management.

Solutions to the problems of drought, floods, water-borne diseases, degradation of the environment, poverty, and competition over water, among others, require more coordinated management approaches.

An IWRM approach enables the identification and implementation of effective solutions for the holistic management of these related challenges. The IWRM principles help to answer critical questions such as:

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- How to develop reliable sources with sufficient water for domestic supplies?
- How to ensure adequate water quality, and protect sources from pollution?
- How to minimise the impacts of over-use of water resources and of wastewater pollution on?
- How to conserve water resources in a changing environment?
- How to use rainfall more effectively in agriculture?

The Dublin principles seek to achieve the key goals of social equity, economic efficiency, and environmental and ecological sustainability, which are central to poverty reduction.

Role of the Journalist

Past methods and local traditions -- indigenous knowledge -- can be one avenue for a journalist to research and articulate water issues, showing the relevance of water to all forms of life.

The SADC region is rich in both oral and written history, which can provide an insight into the way of life and relationship with water over generations. Articles could show how such history has influenced and continues to influence the way we use and manage our water resources.

There are human-interest stories behind every statistic. An enterprising journalist can inject life into tables of data, providing timely analyses that can help society to understand the socio-economic and environmental developments behind such figures.

Water issues provide unlimited story angles. The relationship between people and water can be explored, to show how they impact on each other. Journalists can look at this in the context of freshwater or marine and coastal.

The impact of marine fisheries on stocks may be of greater interest to a journalist from a country with a coastline, while the same fisheries may be of interest to a journalist from a landlocked country because of its impact on food security and nutrition. How are fisheries managed in the major lakes and rivers?

What laws and regulations are in place to deal with toxic substances and are they enforced? How effective is the enforcement?

Forests and woodlands help to stabilise the land by reducing soil erosion. This allows for more water to be "captured" and kept

within the system, which could otherwise get lost where there are no forests. Areas protected by forests also act as a source of water for the local communities.

Forests are a source of fuel wood for the majority of rural people in the SADC region. Yet the continued loss of forests poses a serious challenge to rural households. The indigenous knowledge regarding the role of trees in African culture is also important in trying to find solutions to better managed forests in the region.

Protected areas are synonymous with water and wildlife management in the SADC region. Vast areas have been set aside as protected areas, sometimes causing confrontation with local communities, thus emphasising the importance of including communities in the decision-making to improve the management of water resources.

Legislation is key to water management, therefore essential that journalists writing about water issues should be fully conversant with the laws and policies governing water management in their country and region. Greater understanding of these laws will enable a journalist to assess and monitor the enforcement of regulations and help the public to understand such laws and policies.

Sample Article 3 IWRM Initiative in Southern Africa

IWRM awareness initiative for SADC Water Division

by Hastings Chikoko

The Water Division of SADC has developed an awareness creation initiative targeted at senior decision-makers in all sectors and the media in southern Africa.

The initiative on Integrated Water Resources Management (IWRM), supported by Denmark under the Regional Water Sector Programme, plans to raise awareness of key aspects of the IWRM concept and its relevance to social and economic development in the SADC region.

A recent global survey on IWRM revealed that many SADC Member States have initiated the process for the development of national IWRM strategies.

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The report, released by the Global Water Partnership (GWP) in February 2006, shows the status of water management reform in southern Africa since the 2002 World Summit on Sustainable Development (WSSD) in Johannesburg.

At the time of the WSSD, three of the then 14 SADC Member States – Namibia, South Africa and Zimbabwe – were already advanced in their preparation of water resources management strategies and had enacted legislation that is consistent with IWRM principles.

Today, seven more countries are in the process of preparing national strategies or plans but require additional work to live up to requirements of the IWRM approach.

Zambia and Malawi are developing national plans scheduled for completion by September 2007, thus increasing the number of basin states that have fully embraced IWRM.

At the Johannesburg Summit, it was agreed that IWRM principles are fundamental to sustainable development.

To this end, Article 25 of the WSSD Plan of Implementation called on all countries to “develop Integrated Water Resources Management and water efficient plans by 2005.”

The GWP report states that preparation of IWRM policies, strategies and plans has been hampered by a lack of financial and human resources.

Urgent support is therefore needed to assist SADC Member States in the implementation of IWRM plans and strategies, especially in those countries that have not made much progress in formulating their plans.

SADC is providing an effective strategic framework for IWRM through the Regional Strategic Action Plan (RSAP).

The RSAP was approved by SADC Member States to ensure that water resources management and development adequately contributes to poverty eradication, regional integration and socio-economic development in a sustainable manner.

“Our regional IWRM strategic plan, the RSAP, focuses on water resources development planning and management, infrastructure development, water governance and capacity building,” says Phera Ramoeli, Senior Water Programme Manager in the SADC Water Division.

Source: *The Zambezi*, Vol 7.2, SARDC 2006

Ecological Value of Water Resources

Freshwater is a finite and vulnerable resource, essential to sustain life, development and the environment.

Principle 1 of IWRM advocates a holistic approach to water resources management that is built around the three pillars of sustainable development: economic development, social welfare, and environmental protection.

Principle 1 of IWRM encourages the integrated management of all sectors that use and/or affect water, and the coordinated efforts between local, regional, national, and international water user groups and institutions.

Recognising the catchment area or river basin as the most appropriate unit for water resources management, the principle calls for coordination across the broad range of human activities that use and affect water in a given river basin.

Why now? Recognition of the vulnerability of water resources has increased with population growth, improved living standards, industrial development, environmental awareness and food security goals as these factors have increased pressure on the finite water resources.

Availability of water in the SADC region is predicted to decline from 8,922 cubic metres per person to 5,449 cubic metres per person between 2000 and 2025. (Hirji, et al, 2002)

A key factor is that the securing of economic and social benefits for people is dependent upon environmental sustainability.

Communities living close to water and other natural resources are often the first to recognise that improved freshwater management is essential to enhance their livelihoods and that sustainable freshwater resource management cannot be approached as a separate activity, but as part of a holistic approach.

In rural contexts, environmental and social/economic sustainability are closely linked and local resource-users are more aware of the benefits of attributing equal priority to the three pillars of sustainable development.

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In urban areas, where the management of water resources is entrusted to distinct authorities, communities may not recognise the importance and inter-relatedness of socio-economic and environmental sustainability.

Sample Article 4

Water is a Finite and Vulnerable Resource

SADC book calls for sustainable water resources management

by Leonissah Munjoma and Munetsi Madakufamba

Sustainable water resources management should strike a balance between meeting needs now and protection of the resource base for future needs, says a book recently launched by the Southern African Development Community (SADC) at the World Summit on Sustainable Development in Johannesburg, South Africa.

The book entitled *Defining and Mainstreaming Environmental Sustainability in Water Resources Management in Southern Africa* says effective development and management of water resources are essential for sustainable growth and poverty reduction.

The main goal of the technical report is to inform policy and decision makers about the complex dimensions of environmental sustainability in the water sector and to underscore that sustainable management of water resources must incorporate, at an operational level, the ecological, economic and social considerations into water resources planning and management.

It is the most comprehensive book on produced to date on water resources management in the SADC Region.

The publication was produced by SADC in partnership with IUCN-The World Conservation Union Regional Office for Southern Africa (ROSA), the Southern African Research and Documentation Centre (SARDC) Musokotwane Environment Resource Centre for Southern Africa (IMERCSA), the Africa Water Resources Management Initiative (AWRMI) and the Environment Department of the World Bank, with financial support from the Swedish International Development Cooperation Agency (Sida).

Lesotho's Natural Resources Minister, Honourable Monyane Moleleki and Honourable Lebohang Nts'inyi, that country's

Minister of Tourism, Culture and Environment, launched the report in their capacities as chairpersons of their respective ministerial committees of SADC.

The two hailed the successful partnership noting that the technical report was a SADC contribution to the World Summit and the New Partnership for Africa's Development (NEPAD).

The key messages in the report are that:

- effective development and management of water resources are essential for sustainable growth and poverty reduction in SADC; and
- sustainable water resources management must balance between the short term needs of the people for their social and economic development and the protection of the natural resource base.

The report supports the integration of environmental quality objectives into the implementation of the SADC Protocol on Shared Watercourses and the Regional Strategic Action Plan for Integrated Water Resources Development and Management, and demonstrates the linkages between water, environment and poverty.

"First, strategies to reduce poverty should not lead to further degradation of water resources or ecological functions and services, and secondly, sustainable water use and improved environmental quality should contribute to reducing poverty."

The report provides policy guidance, practical approaches and operational tools for developing and managing water, the region's basic and vital resource, in an environmentally sustainable manner. It has brought to fore the importance of downstream communities whose voices are often not heard during the planning and operations of major hydraulic infrastructure.

It highlights the necessary role of community-based water management if sustainable water resources management is to be achieved.

The importance of considering environmental flow requirements for water is a focus of the book, as well as the need to value the resource in economic terms, when planning or operating any hydraulic infrastructure.

The book notes that southern Africa is ahead of other developing regions in the search for environmentally sustainable solutions for managing its limited and fragile water resources.

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However, much needs to be done to have effective policy and an institutional framework and practices that reflect effective integration of sustainable management principles.

The 318-page full colour book is divided into four parts and has 11 chapters that discuss the principal areas of environmental management in relation to the water sector and presents methodologies and approaches to address the major challenges in each of the key areas. It draws lessons and best practice information and recommends specific actions to effectively integrate environmental sustainability.

Source: *The Zambezi*, Vol 4.2, SARDC 2002

Key Water Dates

Table 8

Certain days of the year are designated to acknowledge the importance of particular aspects of water resources, and these days provide many angles from which to approach stories about water resources management. The dates also provide an opportunity for assessing progress on the objectives contained in water-related agreements.

2	February	World Wetlands Day
22	March	World Water Day
23	March	World Meteorological Day
22	May	International Day for Biological Diversity
5	June	World Environment Day
17	June	World Day to Combat Desertification and Drought
22-30	September	World Maritime Day during this week
Second Wednesday	October	International Day for Natural Disaster Reduction
6	November	International Day for Preventing the Exploitation of the Environment in War and Armed Conflict
2005 – 2015		International Decade for Action on 'Water for Life'

8

Economic and Cultural Value of Water Resources

Water has an economic value in all its competing uses and should be recognised as an economic “good”.

Treating water as an economic “good” means trying to promote higher value uses of water.

The approach reflects the scarcity of water and emphasises the importance of economic tools in helping to achieve efficient and equitable use of water resources.

The human right to access clean water and sanitation at affordable prices must be recognised, but the scarcity of water requires that economic perspectives should not be ignored. In conditions where water is especially limited and increasing the supply is not a feasible option, economic tools should play a larger role in determining how limited water resources should be distributed efficiently and equitably.

Managing water as an economic “good” is also key to achieving financial sustainability of water service provision, by making sure that water is priced at levels that ensure full cost recovery, while protecting access by sectors of the population who may not be able to afford the price.

Why now? The increasing costs of water supply and the widespread inefficiencies in water service delivery in many parts of the region demand that proper attention should be given to the economic value of water. To achieve long-term economic sustainability, water must be priced at its full cost, accounting for the cost of withdrawing and delivering the water, as well as the opportunity cost and both economic and environmental externalities associated with using that water.

Laws and policies should establish clear water use rights and allow water to be used by those sectors for which it has the greatest value while still protecting social and environmental concerns.

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To achieve financial sustainability of water service delivery, user fees should at a minimum cover overhead and maintenance costs of service provision, so that water service providers can achieve cost recovery and still satisfy the public water needs. Often, short-term policy targets must be limited to financial sustainability of water services, but full economic sustainability is the long-term goal of IWRM.

Some countries in the region have introduced cost-effective recycling technologies to reduce the demand for freshwater use. A good example is Windhoek, the capital city of Namibia, where recycled wastewater is successfully used to top up drinking water supplies.

Other management techniques being encouraged in the region include water re-use, promoting water-use efficiency and water conservation among irrigators. The employment of a dual supply system that makes good use of poor quality water and alleviates pressure on good quality water supplies by freeing it for only high value uses is implemented in countries such as South Africa.

In recognising water as an economic “good” there is a risk of fostering the notion that water is a commodity, thereby shifting public perception away from a sense of water as a common good whose management is a shared responsibility.

Water is a basic human need and access to minimum quantities of safe water (20 litres per person per day, according to the World Health Organisation) should be everyone’s right. Lack of access to safe drinking water, sanitation, and irrigation is directly related to poor health and poverty.

Ensuring universal access to safe water and sanitation is critical for meeting the UN Millennium Development Goals (MDGs), especially but not only goal 7’s Target 10 – *Halve, by 2015, the proportion of people without sustainable access to safe drinking water and sanitation.*

The broader goals of eradicating extreme poverty and hunger, achieving universal primary education, promoting gender equality and women’s empowerment, reducing child mortality, improving maternal health, combating major disease, and improving environmental sustainability, also require a change in access and management of water resources.

WHAT TO WRITE ABOUT

The application of economic principles to the allocation of water provides a tool for the development of water services in a more efficient direction. However, water should not be treated as a market-oriented commodity when it comes to domestic use for very basic needs.

A full economic analysis must take into account the social costs and benefits of different water uses and not just, for example, the value of production per unit of water used.

These social costs should be accounted for in a proper economic analysis. However water provision should be priced so as to discourage wasteful use, while ensuring the right to access of a necessary minimum for all through mechanisms such as variable tariffs and targeted subsidies.

Hence there should be a distinction between the value of water and the tariffs for different consumer groups.

The cultural value of water should also be recognised. Water is the common symbol of humanity, social equity, and justice. It is one of our compelling links with the sacred, with nature, and with our cultural heritage.

Many other traditional practices and faith-based ceremonies across southern Africa demonstrate that water has a cultural value and therefore should be managed properly.

Applying traditional wisdom from the past should be incorporated within national policy frameworks to improve water resources management, as there are many traditional practices that were aimed at water conservation.

Conventional water management approaches do not explicitly acknowledge water's spiritual and cultural dimensions. Without recognising these, local stakeholder participation may be handicapped and curtailed by feelings that management mechanisms do not recognise the significance of water resources to the local people.

A case in point is the Zambezi River, which has very strong spiritual and cultural significance to the local Tonga people. The Tonga people believe that a lack of consultation and their forced resettlement from their homes on the fertile floodplains of the Zambezi to

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higher, less fertile ground when the Kariba Dam was built in the 1950s angered their river god, Nyaminyami.

They believe that Nyaminyami and his wife were separated by a wall across the river and the frequent earth tremors felt in the area since the wall was built are caused by the river god.

In 1957 some of the worst floods ever witnessed on the Zambezi washed away most of the partly built dam wall and heavy equipment, killing many of the workers. The Tonga attributed the disaster to Nyaminyami, saying he would ensure their return to their land on the banks of the river.

The Tonga people still live on the shores of Lake Kariba and are deeply concerned by developments that do not take into consideration the existence of Nyaminyami.

*Sample Article 5***Traditional Values of Water Resources*****Kuomboka - Getting out of flood waters***

Kuomboka is a word in the Lozi language which literally means “to get out of water”. It is applied today to a traditional ceremony, which attracts more interest as a celebration of local culture each year than any other in Zambia.

The ceremony takes place at the end of the rainy season, when the upper Zambezi river floods the plains of the Western province of Zambia. This is usually at the end of March or beginning of April. The date changes each year and is kept secret by the Barotse royal establishment until close to the day.

The festival celebrates the move of the Litunga, king of the Lozi people, from his compound at Lealui in the floodplain of the Zambezi river to Limulunga on higher ground. The King's state barge is called Nalikwanda and is painted black and white.

On the barge is a replica of a huge black elephant, the ears of which can be moved from inside the barge. There is also a fire on board, and the smoke tells the people that the king is alive and well.

WHAT TO WRITE ABOUT

For his wife there is a second barge adorned with a huge black chicken on top. The ceremony is preceded by heavy drumming of the royal Maoma drums, which echoes around the royal capital the day before *Kuomboka*, announcing the event.

Traditionally, the *Kuomboka* took place in the context of crisis as gardens and grazing were inundated by the annual flood and when the mounds on which many of the local Bulozhi people lived, became host to snakes, rats and other small creatures. Not just people but cattle too had to be moved to higher ground to graze. Thus, *Kuomboka* institutionalises the escape of the annual flood.

Source: *The Barotse Cultural Landscape*, UNESCO World Heritage Centre, 2002

9

Gender Dimensions of Water Management

Women play a central part in the provision, management and safeguarding of water.

Integrated Water Resources Management (IWRM) emphasises the important synergy that exists between gender equity and sustainable water management.

Striking a gender balance is often taken as expanding women's involvement as women are usually insufficiently involved in decision-making on water issues.

Throughout the developing world, women play a key role in the collection of water for domestic and agricultural use, but in many societies, women are excluded from water management decisions.

IWRM emphasises the empowerment of women in its focus on participatory management and capacity building. Where resources are scarce, there is competition for supplies, and those at the lowest end of the power spectrum, usually poor women, will go without, unless special provision is made to involve them.

Lack of access to water and sanitation precludes many girls from pursuing an education. It also excludes women from participating in income-generating aspects of the economy and their labour often goes unrecognised.

Women are generally responsible for maintaining family health and hygiene, a role that makes women crucial actors in fighting diseases that can be caused by contaminated water. Roughly 60 percent of infant mortality worldwide is linked to water-related infectious and parasitic diseases including common ailments such as diarrhoea, intestinal worms, trachoma, bilharzia and cholera.

Why now? The pivotal role of women as providers and users of water and guardians of the living environment has seldom been reflected in institutional arrangements for the development and management of water resources.

Gender Mainstreaming

- (i) Women are recognised as playing a central role in the provision, management and safeguarding of water and shall be fully involved in the development and implementation of policies, processes and activities at all levels.
- (ii) All SADC Water Institutions shall implement the principles, goals and objectives of gender mainstreaming in their administration and implementation.

From Executive Summary of SADC Regional Water Policy, see Chapter 14

Acceptance and implementation of this principle requires positive policies to address women's specific needs, and to equip and empower women to participate at all levels in water resources programmes, including decision-making and implementation.

Gender-sensitive, environmentally sound, locally appropriate and affordable technologies are needed to realise water and sanitation targets in developmental initiatives such as the Millennium Development Goals.

Applying a gender analysis helps water sector agencies allocate their resources to meet the different needs of women, men and marginalised groups.

Sample Article 6**Men and Women Share Responsibility for Management and Use of Water****Should men drink tea while women fetch water?**

The sustainable management of water requires participation of women at all levels and yet the situation is that, from policies to projects, women who are the main users and managers of water have been excluded.

Maliha Hussein, Chairperson of the Gender and Water Alliance, a network of women fighting for water rights, said if equitable access to clean water is to be achieved, all must participate in decision-making.

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“Water is everyone’s business, men and women alike,” she said in an interview during the Third World Water Forum in Kyoto, Japan.

Hussein said good governance and the integrated approach to water management implies that women and their organisations can participate on an equal footing with men. The current shortcomings offer important lessons and challenges for the international water community, she added.

Some speakers at the forum referred to the United Nations Millenium Development Goals (MDGs), which stress the need to halve the number of those without access to clean water and sanitation by 2015.

A report by the Water Action Unit of the World Water Council confirms the fears of women in the water reform process when it states that: “While men drink tea and relax, women fetch water and cook.

“After a weary day, instead of carrying water, I would like to have time for my children and myself,” the report quotes a Turkish woman as saying.

The report says pressing household needs for water and sanitation make women the major water users.

Although both men and women have water-related responsibilities, gender-based divisions of labour determine who controls the many uses of water.

“Their obvious skills as managers of water resources must be harnessed,” says the report.

At the Kyoto Water Forum, women demonstrated and discussed concrete examples of how to mainstream gender, mainly in organisational policies, structures and practices.

Gender was mainstreamed within other themes of the Forum, which were Africa Day, Latin America Day, and Water and Poverty Day.

The main objective of the Gender and Water Session at Kyoto was to assess progress made in mainstreaming gender in Integrated Water Resources Management (IWRM) since the Second World Water Forum in The Hague, Netherlands.

Research and practical experience from many gender networks have demonstrated that effective, efficient and equitable water resources management is only achieved when both women and men are involved in IWRM.

Source: *The Zambezi Vol 5.2*, SARDC 2003

10

Participation in Decision Making

Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels.

Participation in decision-making about water resource development and management is a key pillar of IWRM. This also involves raising awareness, mainly by the media, of water issues among policy-makers and the general public.

Management is decentralised from national governments to the catchment or sub-catchment, where special attention can be given to specific local problems and where institutional accountability is greater.

The private sector has a role to play in providing water services and should be encouraged to bring its technical expertise and management practices into areas where central government may struggle to provide sustainable service.

Water users must be involved in the planning and implementation of water projects, not only to ensure accountability, but also acceptability, support, and sustainability of the respective projects and their management.

Hearing the voice of all user groups and affected populations ensures that social welfare considerations are given proper weight.

Participation empowers local communities with the necessary tools to take care of their own welfare by ensuring that their voices are heard, and their interests are taken into consideration.

In this context, local community participation could provide important databases, experience and ideas that could lead to practical, relevant, achievable and acceptable solutions to water-related problems.

The use of indigenous knowledge and opinion is vital to environmental protection as it builds public trust and reduces conflicts in resource management.

Stakeholders comprise various groups of the society, including orphans and those people infected and affected by HIV and AIDS.

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The participatory approach ensures that the needs of such groups are incorporated into management of water resources. Other vulnerable groups may include the elderly and households headed by children.

Their immediate needs may include easy access to sustainable safe water and sanitation facilities. In many instances boreholes, wells, piped water schemes and toilets have been introduced, mostly in rural homes.

The capacity of certain disadvantaged groups may need to be enhanced through training and targeted pro-poor development policies for full participation.

Why now? Although widely accepted, user involvement in water resources management remains limited. Where users are involved, it is frequently for information gathering and not so much in decision-making.

The framework to allow management at all levels is often not available. The lack of a clear legal framework enshrining rights and responsibilities within the decentralisation process often causes confusion. While community-based approaches are now accepted as the norm, the necessary capacity is still developing.

Sample Article 7

Participatory Management of Water Resources

Cooperation – Key to sustainable management of the Zambezi River Basin

by Bonifácio Antònio

Countries sharing the Zambezi basin have been urged to work together to guarantee integrated and sustainable management of the river basin.

Eight countries share the basin: Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia and Zimbabwe.

Mozambique's Deputy Minister for Environment made the call when he officiated at the launch of the Portuguese version of the

State of the Environment Zambezi Basin 2000 book in Maputo. The book describes the physical, human and environmental characteristics of the basin.

Such collaboration, he said, “is a major challenge if we consider that integrated management of natural resources is something which has not been fully achieved either in individual countries, or in the region as a whole.”

The Minister noted that, despite the existence of large rivers such as the Zambezi, most of southern Africa is arid. Poor rains often worsen the situation and bring drought.

“The Zambezi river basin starts and finishes in two Portuguese speaking countries – a large part of its headwaters are in Angola and its delta lies in Mozambique. So that already is sufficient reason for translation,” stressed the Netherlands Ambassador whose mission financed the production of the Portuguese version.

The book was produced by SADC, in partnership with IUCN - The World Conservation Union Regional Office for Southern Africa (ROSA), the Zambezi River Authority (ZRA) and the Southern African Research and Documentation Centre (SARDC) Musokotwane Environment Resource Centre for Southern Africa (IMERCSA) with a network of National Collaborating Centres (NCCs) in the eight riparian states:

- Environment Council of Zambia
- Coordination Unit for the Rehabilitation of the Environment, Malawi
- National Environment Management Council, Tanzania;
- Forum for Sustainable Agriculture, Botswana;
- Gabinete do Plano de Desenvolvimento da Região do Zambeze, Mozambique;
- Campfire Association, Zimbabwe;
- Integrated Rural Development and Nature Conservation, Namibia;
- Development Workshop, Angola.

The Swedish International Development Cooperation Agency (Sida) funded the production of the book, which marks the first assessment of a single ecosystem in southern Africa.

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The publication is one of several activities of the State of the Environment Zambezi Basin (SOE Zambezi) project. Other activities include publication of *The Zambezi* newsletter, factsheets and posters.

Translation of the publication into Portuguese is one attempt at establishing a comprehensive environmental awareness programme involving all stakeholders in the eight riparian states of the Zambezi river.

The English version was launched at both national and regional levels in 2000. The national launches took place in respective basin states while the regional launch took place in Windhoek, Namibia, coinciding with a SADC Summit.

The book aims at stirring people from the eight basin states into taking actions that ensure sustainable use and management of the basin's natural resources.

The Zambezi river basin, covering an area of almost 1.4 million sq km is home to over 40 million people. More than 30 large dams have been built in the basin for domestic and industrial use, water supply, irrigation and power generation.

The book, which among other issues talks about threats to the Zambezi basin's biodiversity, including over-exploitation of resources, habitat loss and pollution, is 334 pages long and contains 13 chapters plus a Foreword by the Mozambican President and then SADC Chairperson, Joaquim Chissano. In the Foreword, President Chissano notes the importance of information even at the highest level of political decision-making.

The 13 chapters of the book are divided into three distinct sections. Section one provides background information on the people and physical aspects of the basin. The second section deals with social and environmental issues while the last section deals with trends and scenarios.

Source: *The Zambezi* Vol 4.2, SARDC 2002

Role of Communication in IWRM

The media can facilitate communication between the public, policy-makers and those providing technical knowledge on the country's ecosystems. Communication through the media can be helpful in researching and articulating IWRM issues, showing the relevance of an integrated approach to water resources management to users.

The process of producing feature articles on IWRM should go beyond events-based reporting and the 5 Ws and H (What, Where, When, Who, Why, and How) of basic journalism. Coverage should provide a detailed, analytical insight into issues and focus on implications and likely impact.

If IWRM issues have not been identified as newsworthy, it is probably because the focus has always been on the concept rather than on the actual human experience.

For journalists to make something tangible out of these questions they need to understand what water policies are in place and how they impact on society.

Water planners need to think differently about using communication, education and public awareness, and making themselves accessible to journalists and broadcasters for interviews. Rather than just making scientific information available to the public, communication processes need to build awareness of rights and responsibilities, and how sustainable practices ultimately benefit long-term interests.

In addition to the economic imperative, journalists are encouraged to address water holistically with a perspective on poverty eradication, the inclusion of social and cultural groups, and considering water as a human issue.

The environment is related to people's daily survival activities, and coverage should depict water as a primary resource that is integrally related to social and physical health, as well as to the economic livelihoods of people.

Focus on mainstreaming gender in IWRM should always be considered, with the media taking note of who does the work (be it work on a new water supply project or work in terms of walking a long distance to collect water for the household), who is paid

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for the work that they do, and who contributes to unpaid work, who makes the decisions, and who bears the costs? And who will reap the benefits, be these employment or water-use benefits?

Who is most at risk from lack of access to water, and who is made vulnerable by the lack of water?

Journalists should ask what are the macro-level policies that impact on the nature of water use by men, women and other groups. For example, pricing policies might price small farmers out of the market while financial policies may make it impossible to develop infrastructure where users cannot afford to pay for it. Such reporting should also consider vulnerable and disadvantaged groups.

A journalist can also assess progress in implementation of IWRM principles. Very few countries have met the target set out in the Johannesburg Plan of Implementation that IWRM should be incorporated into national water resource plans by 2005.

Assessing the practical effectiveness rather than the theoretical value of IWRM is crucial. How IWRM can be used to adapt to, and mitigate impacts of climate change such as floods and droughts, as well as reducing the effects of the energy shortfalls in the region, are some practical problems that could be critically reviewed.

The inclusion of IWRM in a global inter-governmental water target at the World Summit on Sustainable Development in 2002 heightened policy attention to water-resource management. On the other hand, IWRM has become a fashionable “buzz phrase” which may end up with ambiguous meaning, and yet it affects development, business, politics and the social services.

Some Story Angles from the IWRM Principles

Principle-1

Freshwater is a finite and vulnerable resource, essential to sustain life, development and the environment.

This is a broad principle, emphasising the three goals of sustainable development – economic development, social welfare, and environmental protection. Principle 1 also seeks to integrate sectors that use and/or impact on water. Examples are industries, cities, forests and wetlands, and local, national, regional and international water users.

Story angles include:

- the role of water in meeting developmental initiatives such as MDGs;
- the shaping of regional integration through shared water resources; and
- water resources development initiatives such as water infrastructure development, etc.

Principle 2

Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels.

Management decisions should involve users to ensure that decisions are supported by those who implement water projects at community level. This ensures acceptability, support and sustainability of the concerned projects. Stakeholders include all groups of the society including, women-headed households, elderly-headed households, orphans, and HIV and AIDS infected and affected people.

Story ideas include the multiple uses and users of water for food production, power generation, ecosystems services, sanitation, cleanliness and health.

Principle 3

Women play a central part in the provision, management and safeguarding of water.

The principle seeks to promote positive policies that address women's specific needs, as well as to empower women to participate at all levels in water resources programmes, including decision-making and implementation.

Story ideas include: empowerment of women in water provision, and access to water and energy by women and other social groups etc.

Principle 4

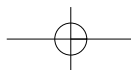
Water has an economic and social value in all its competing uses and should be recognized as an economic good.

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Sustainability of water service provision is needed, by making sure that water is priced at levels that cover the full recovery of costs, while recognising the human right to access clean water and sanitation at affordable prices.

Story ideas include:

- recycling technologies to reduce the demand of freshwater use;
- efficient irrigation systems such as drip irrigation;
- water storage and access;
- creating opportunities for a better life;
- water supply and demand;
- water pollution;
- rainwater harvesting techniques; encouraging rational water use through variable tariffs and targeted subsidies; and
- cultural values of water.



PART FOUR COMMITMENT TO IWRM IN THE SADC REGION

12

International Agreements and Conventions Related to IWRM

A number of international agreements and conventions have been developed to regulate the management and use of water and related resources.

- The Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention)
- The United Nations Framework Convention on Climate Change
- The United Nations Convention on Biodiversity
- The United Nations Convention to Combat Desertification
- The United Nations Convention on the Law of Non-navigational Uses of International Watercourses.

Together these instruments provide the framework for international cooperation in the management of water and related resources. These multilateral agreements and conventions, as well as the SADC Treaty and Protocols have a direct bearing on the regional commitment to Integrated Water Resources Management (IWRM).

One objective contained in Article 5 of the SADC Treaty is “to achieve sustainable utilisation of natural resources and effective protection of the environment.”

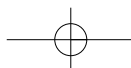
To fulfil this objective, SADC has a broad framework of legal and institutional mechanisms that guide the regional community in efforts to meet its commitments on the development and management of water resources.

The Dublin Principles and The Earth Summit

All SADC Member States were represented at the United Nations Conference on Environment and Development (UNCED or Earth Summit) held in Rio de Janeiro, Brazil in 1992, where IWRM received recognition in Agenda 21, the main substantive outcome of the summit.

The concept of IWRM was based on the four Dublin Principles for the equitable use of water and related natural resources.

Agenda 21 is a comprehensive plan of action that provides a framework for global, regional, national and local action towards sustainable development. (see Table 7, page 34 for selected sections of Chapter 18, Agenda 21. For the Dublin Principles see Chapter 6, p41 or Appendix 1.)



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Johannesburg Plan of Implementation

The Johannesburg Plan of Implementation was adopted at the World Summit on Sustainable Development in Johannesburg in 2002. Article 26 calls for countries to “develop Integrated Water Resources Management and Water Efficiency Plans by 2005”, in recognition of the strategic importance of water resources management in achieving the Millennium Development Goals (MDGs).

This plan builds on the achievements made since the Earth Summit in Brazil a decade earlier and seeks to expedite the remaining goals in the Earth Summit’s plan, Agenda 21. To this end, the Johannesburg Plan seeks to undertake concrete actions and measures at all levels and to strengthen international cooperation.

Johannesburg Plan of Implementation, Article 26

Table 9

The Plan of Implementation is to develop Integrated Water Resources Management and Water Efficiency Plans by 2005, with support to developing countries, through actions at all levels to:

- (a) Develop and implement national/regional strategies, plans and programmes with regard to integrated river basin, watershed and groundwater management and introduce measures to improve the efficiency of water infrastructure to reduce losses and increase recycling of water;
- (b) Employ the full range of policy instruments, including regulation, monitoring, voluntary measures, market and information-based tools, land-use management and cost recovery of water services, without cost recovery objectives becoming a barrier to access to safe water by poor people, and adopt an integrated water basin approach;
- (c) Improve the efficient use of water resources and promote their allocation among competing uses in a way that gives priority to the satisfaction of basic human needs and balances the requirement of preserving or restoring ecosystems and their functions, in particular in fragile environments, with human domestic, industrial and agriculture needs, including safeguarding drinking water quality;
- (d) Develop programmes for mitigating the effects of extreme water-related events;
- (e) Support the diffusion of technology and capacity building for non-conventional water resources and conservation technologies, to developing countries and regions facing water scarcity conditions or subject to drought and desertification, through technical and financial support and capacity-building;

- (f) Support, where appropriate, efforts and programmes for energy-efficient, sustainable and cost-effective desalination of seawater, water recycling and water harvesting from coastal fogs in developing countries, through such measures as technological, technical and financial assistance and other modalities;
- (g) Facilitate the establishment of public-private partnerships and other forms of partnership that give priority to the needs of the poor, within stable and transparent national regulatory frameworks provided by Governments, while respecting local conditions, involving all concerned stakeholders, and monitoring the performance and improving accountability of public institutions and private companies.

SADC Regional Water Policy and Strategy

The SADC Regional Water Policy and Strategy was developed through a highly consultative and participatory process involving many stakeholders, and was adopted in 2005.

The policy, which is implemented through a regional water strategy, is premised on the SADC Treaty; the Revised SADC Protocol on Shared Watercourses; the SADC Vision for Water, Life and the Environment in the 21st Century; and the Dublin Principles. It sets a framework for SADC Member States to co-operate in water resources management and development. The policy:

- recognises water as an instrument for peace, cooperation and regional integration;
- promotes effective public consultation and involvement of users at all levels;
- promotes integrated people-centred development;
- promotes joint planning and development of strategic regional infrastructure; and
- promotes the efficient use of available water resources through application of best practices such as demand management and the “polluter pays” principle.

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The water policy commits Member States to the protection of human life, common property and the environment against the effects of water-related natural and human-induced disasters and, notably, the environment is recognized in the policy as a resource base and a legitimate user of water. (See SADC Regional Water Policy in Chapter 14)

Southern Africa Vision for Water, Life and the Environment in the 21st Century

Table 10

“Equitable and sustainable utilisation of water for social, environmental justice, and economic benefit for present and future generations.”

This Vision is an expression of the desire for:

- Equitable and sustainable social and economic development in Southern Africa;
- Equitable access to water of an acceptable quantity and quality;
- Proper sanitation for all and safe waste disposal;
- Food security for all households;
- Energy security for all households;
- A sustainable environment;
- Security from natural disasters; and
- Integrated water resources development and management.”

(See Appendix 2)

Revised SADC Protocol on Shared Watercourses

The SADC Protocol on Shared Watercourse Systems, which was signed in 1995 and came into force in 1998, was revised subsequently to align it with the Convention on the Non-navigational Uses of International Watercourses adopted by the UN General Assembly.

The 1995 protocol was based on the Helsinki Rules that tilted heavily towards the principle of territorial sovereignty of a watercourse state. According to those earlier rules, an upstream state has the right to use water resources within its territory with no regard to any effects such use may have on the downstream state.

The intention of the Revised Protocol is to ensure that rivers are managed in such a way as to benefit all those countries and people who share a river basin.

The Revised Protocol on Shared Watercourses was signed by SADC Heads of State on 7 August 2000 in Windhoek, Namibia, and entered into force on 22 September 2003 upon ratification by the required two-thirds majority of Member States. (See Appendix 3 for text of the Revised Protocol)

Regional Strategic Action Plan

The Revised Protocol on Shared Watercourses is operationalised through the Regional Strategic Action Plan (RSAP) for Integrated Water Resources Management and Development in the SADC Region. The RSAP seeks to ensure that water resources management and development adequately contribute to poverty eradication, regional integration and socio-economic development in a sustainable manner.

The RSAP, whose first phase ran from 1999-2004, identified seven key priorities to facilitate a more integrated approach to the management and development of water resources:

- improving the legal and regulatory framework;
- institutional strengthening;
- sustainable development policies;
- information acquisition, management and dissemination;
- awareness building, education and training;
- public participation; and,
- infrastructure development.

The RSAP was reviewed and revised in 2004. The revised RSAP for 2005-2010 is a strategic infrastructure development programme, building on the first RSAP and presented in four thematic clusters:

- Water resources development, planning and management;
- Infrastructure development;
- Water governance; and
- Capacity building.

Each cluster has a number of projects aimed at achieving a set of strategic objectives. The implementation of all projects is premised on a river basin approach while joint development and mutual benefit underlines all activities.

The strategic objectives contained in the RSAP are based on the priorities identified in SADC's 15-year regional development plan.

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Focus Areas for Water under SADC's Regional Indicative Strategic Development Plan (RISDP)

- Establish and strengthen shared watercourse management institutions in order to facilitate the development of comprehensive, integrated basin-wide plans;
- Improve the legal and regulatory framework at national and regional levels to ensure harmonised policies and legislation and consistency with international water principles;
- Promote the development of strategic water infrastructure (rehabilitation and expansion of existing facilities, creation of new facilities, regional programme for water supply and sanitation, pre-feasibility studies for strategic regional infrastructure projects, e.g. water transfer and storage, irrigation, flood control and drought mitigation);
- Strengthen the capacity of national and regional water institutions for water resources planning, development and management;
- Enhance the knowledge base on water resources through improved information management, research and technology development (to improve the availability and quality of water);
- Promote awareness and public participation in policy and programme formulation and implementation.

Water Targets under SADC's 15-year Plan, Table 11
The Regional Indicative Strategic Development Plan (RISDP)

Target 1	Long term regional water policy and strategy developed and approved by March 2004;
Target 2	Increased awareness, broad participation and gender mainstreamed in water resources development and management by 2005;
Target 3	Centres of excellence for water research and technology development are identified, and strengthened by 2005;
Target 4	Water sector policies and legislation harmonised by 2006;
Target 5	Establish and strengthen at least eight River Basin Organisations by 2006;
Target 6	Water data banks and planning networks are established and fully operational by 2007;
Target 7	Training and institutional capacity strengthening programmes developed and implemented by 2008;
Target 8	Halve by 2015 the proportion of people without access to safe drinking water and sanitation services;
Target 9	Develop by 2015 water resources infrastructure needed to double land under irrigation.

Institutional Framework for IWRM in Southern Africa

A general understanding of the regional framework for water resources management is useful in trying to keep up with policy decisions in the water sector and the work of institutions entrusted with the responsibility of developing and managing water resources in the SADC region.

In order to facilitate the implementation of the Revised SADC Protocol on Shared Watercourses, and to have a focused and coordinated management of regional water resources, a SADC Regional Water Policy and Strategy was established in 2005 through wide consultation with stakeholders. The implementation is coordinated by the SADC Water Division under the Directorate of Infrastructure and Services at the SADC Secretariat in Gaborone, Botswana.

The SADC Secretariat is responsible for promoting and coordinating the implementation of the Regional Water Policy and Strategy and protocols for the water sector, in cooperation with other sectors such as health, energy, agriculture, tourism and environment.

The SADC Secretariat is accountable to Member States through the Council of Ministers and ensures direct coordination with National Water Departments in the 15 Member States.

The SADC Secretariat is also responsible for supporting the Shared Watercourse Institutions (SWCIs) and assessing their compliance with the implementation of the revised protocol. A Watercourse Commission is to be established for each shared river basin, by agreement among the basin states, to advise and coordinate the sustainable development and equitable utilisation of the associated water resources.

SADC Water Division

Water is one of the major areas of cooperation and integration in the SADC region. In recognition of this imperative, SADC established a dedicated Water Sector in August 1996, then known as the SADC Water Sector Coordinating Unit, and subsequently the current SADC Water Division, established in 2005 under the Directorate of Infrastructure and Services.

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The overall objective of the Water Division is to promote co-operation in all water matters for the sustainable and equitable development, utilisation and management of water resources, as well as to contribute towards the improvement of the quality of life of people in the region.

In pursuit of its mandate, the Water Division published its major programme for transboundary water resources management, the SADC Regional Strategic Action Plan for Integrated Water Resources Management and Development (RSAP-IWRMD) for the period 2005-2010.

The RSAP-IWRMD, approved in June 2005, comprises five strategic objectives based on the priorities identified for water resources management in SADC's 15-year plan, the Regional Indicative Strategic Development Plan (RISDP). The strategic objectives are as follows:

- Maintain and sustain an enabling environment for regional water resources management and development;
- Provide a framework for sustainable, effective and efficient planning and management of shared river basins at regional and related national levels;
- Promote and support strategic infrastructure development for regional integration, socio-economic development and poverty alleviation;
- Develop, promote and facilitate best practices regarding the effective participation by various individual and institutional stakeholders in water resource development and management, including women, youth and other disadvantaged groups; and
- Build and strengthen human and institutional capacity for sustainable management of water resources at basin, national and regional level.

Revised SADC Protocol on Shared Watercourses

The objective of the Revised SADC Protocol on Shared Watercourses is to foster closer cooperation for judicious, sustainable and coordinated management, protection and utilisation of shared watercourses and to advance the SADC agenda of regional integration and poverty reduction.

This protocol is the first ever sector-specific legal instrument to be developed by SADC, and creates the overarching framework for the management of the 15 shared river basins in the SADC region. (See Appendix 3 for text of the Protocol)

International River Basin Organisations in SADC

Southern Africa has 15 transboundary rivers, among them such major rivers as the Congo, Zambezi, Limpopo and Orange/Senqu Rivers.

The management of shared river basins is complex because the responsibility is shared among various institutions and stakeholders. Coordination between and among various players in a river basin is a critical aspect of the institutional framework for river basin management.

Water resources planning and management is a multidisciplinary process, which requires a sound framework for collaboration among all relevant agencies operating nationally and those with a transboundary mandate.

A key issue in river basin management is the coordination of management responsibilities for one river basin between different administrative authorities so as to avoid fragmented approaches. As with any shared river system, many communities in the region withdraw more water than is locally renewable, either through inter-basin transfers or unsustainable groundwater mining.

Downstream users and countries are vulnerable to the effects of mismanagement of transboundary water resources by upstream states. Under these circumstances, tensions over access to and use of transboundary watercourses are bound to arise.

SADC Member States have agreed on an integrated and cooperative management of transboundary river basins, and have undertaken several important initiatives that are intended to make shared watercourses a source of cooperation and integration rather than a potential source of confrontation.

The general framework for such cooperative endeavours is provided by the Revised SADC Protocol on Shared Watercourses. Several other agreements related to shared watercourses are in place, including those establishing general watercourse commissions, as well as agreements on single watercourses and those

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dealing with specific watercourse projects such as dams.

Several watercourse commissions, specialised river commissions, technical committees and development authorities responsible for the integrated management of transboundary watercourses have been established by SADC governments. These aim to advance the economic and social development of basin states and the economic integration of SADC member countries.

Integrated management of transboundary rivers is intended to benefit all users and avoid water-related disputes or conflicts.

These initiatives include the Zambezi Watercourse Commission, the Okavango Commission, Orange-Senqu Commission, the Limpopo River Commission, and the Permanent Technical Committees for the Incomati/Nkomati, Maputo and Mbuluzi river basins.

SADC plans to establish more river basin commissions to oversee the co-ordinated and sustainable use of the 15 shared river basins in the region.

In addition to the Revised SADC Protocol on Shared Watercourses, the commissions work within the 1997 UN Convention on the Law of Non-navigational Uses of International Watercourses and the 1966 Helsinki Rules that serve as the basis for agreements between states for the purpose of allowing each state an equitable share of international water and to use water within its territory reasonably. The Helsinki Rules were updated in 1994 to include an obligation not to cause harm to another state.

Major River Basin Commissions in SADC

Table 12

Commission	River Basin	Members	Established
Limpopo River Commission (LIMCOM)	Limpopo	Botswana, Mozambique, South Africa, Zimbabwe	2003
Maputo River Commission	Maputo	Mozambique, South Africa, Swaziland	2003
Nile Basin Commission	Nile	DRC, Tanzania (plus non-SADC countries Burundi, Egypt, Ethiopia, Kenya, Rwanda, Republic of Congo, Sudan)	2006
Okavango River Basin Commission (OKACOM)	Okavango	Angola, Botswana, Namibia	1994
Orange-Senqu River Commission (ORASECOM)	Orange/Senqu	Botswana, Lesotho, Namibia, South Africa	2000
Pungwe River Joint Water Commission	Pungwe	Mozambique, Zimbabwe	2002
Zambezi Watercourse Commission (ZAMCOM)	Zambezi	Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia, Zimbabwe	Agreement signed 2004. Five basin states ratified by Dec 2008.

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Southern African Development Community Regional Water Policy

EXECUTIVE SUMMARY

Background

1. The water resources of the SADC region are vital for sustainable economic and social development of the region. Apart from sustaining a rich diversity of natural ecosystems, the region's water resources are critical for meeting the basic needs related to water supplies for domestic and industrial requirements, and for sanitation and waste management for about 200 million people. In addition, there is a need for increasing food security through better management of rain-fed and irrigated agriculture, aquaculture, and livestock production; and improving access and availability of cheap energy through hydropower. Despite the importance of water in the region there is, presently, no long-term policy and strategy for the development and management of the region's water resources, and in particular the management of transboundary watercourse systems.

2. The SADC region has 15 major river basins which are transboundary or watercourses shared by two or more countries. They range from the large Congo River Basin (3,800,000 square kilometres), the Zambezi River Basin (1,400,000 square kilometres covering eight SADC Member States) to the Umbeluzi River Basin (5,500 square kilometres) shared by only two countries. Thus one of the characteristic features in the region is shared watercourse systems, with complex water rights and potential conflicts over utilization of the shared resources. This common heritage also presents tremendous opportunities for cooperation in managing the shared resources for regional economic development and regional integration.

3. Since the mid 1990s SADC Member States have engaged in wide ranging and intense consultations on development of the water sector in the region. This has brought about a heightened awareness of the importance of water for socio-economic development, regional integration and poverty reduction. However, there are a number of institutional, technical, economic, social and environmental factors which, to one degree or another, still constrain effective management of the region's water resources. These include:

- (i) Weak legal and regulatory framework.
- (ii) Inadequate institutional capacities of national water authorities, and regional or river basin organizations.
- (iii) Weak policy framework for sustainable development of national water resources.
- (iv) Poor information acquisition, management and dissemination systems.
- (v) Low levels of awareness, education and training with respect to economic, social, environmental and political issues related to water resources development and management.
- (vi) Lack of effective public participation by all stakeholders particularly women and the poor.
- (vii) Infrastructure is inadequate and unable to meet the growing demands for service.

4. These issues are being addressed through a number of programmes and projects that form part of the Regional Strategic Action Plan for Integrated Water Resources Development and Management in the SADC Countries (RSAP-IWRM) which is now a component of the Regional Indicative Strategic Development Plan (RISDP). The RSAP is implemented by the SADC Secretariat through the Directorate of Infrastructure and Services' Water Division (DIS-WD). However, water resources development in the region still faces many challenges including the following:

- i) **Mismatch between water availability and demand.** Areas of highest water demand happen to be in the water scarce semi-arid zones of the region. This poses a challenge in terms of the allocation of available water resources to various users, particularly with respect to transboundary water resources.
- ii) **High variability of available water resources,** which impacts on reliability. Investments in storage dams, inter-basin transfers and large scale water distribution networks are needed to ensure water security for multi-purpose uses under varying climatic and hydrological conditions.
- iii) **Shared watercourses** which cut across political jurisdictions and cover several countries with different socio-economic conditions and complex water rights serve as a potential source of conflict unless managed in a coordinated, integrated and equitable manner. At the same time, shared watercourses serve as potential sources of regional cooperation and economic integration.
- iv) **Widespread poverty** in the region. UN and World Bank studies indicate that a number of SADC countries have the lowest human development indices in the world; it is estimated that about 70% of the population in the region lives below the international poverty line of US\$2 per day.
- v) **Weak inter-sectoral linkages and coordination,** which hampers comprehensive and integrated development.
- vi) **Low access to safe drinking water and adequate sanitation,** primarily as a result of inadequate infrastructure, and poor operation and maintenance of facilities.
- vii) **Weak policy linkages at regional and national levels,** particularly weak implementation mechanisms at national level, such that plans at regional level do not have an effective impact at national level.
- viii) **Sharing benefits of water allocation,** between Watercourse States, taking account of historically uneven development of water resources requiring joint assessment, planning and understanding of resource availability and utilisation.
- ix) **Poorly developed formal dispute resolution mechanisms,** particularly the delay in the establishment of the SADC Tribunal.
- x) **The prevalence of HIV and AIDS,** with the associated challenges for the capacity, sensitivity and requirements to water resources management in the region.

5. The Regional Water Policy for the SADC region is aimed at providing a framework for sustainable, integrated and coordinated development, utilization, protection and control of national and transboundary water resources in the SADC region, for the promotion of socio-economic development and regional integration and improvement of the quality of life of all people in the region. The policy was formulated through a highly participatory and consultative process,

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implemented over a period of about 12 months, involving diverse stakeholders including senior government officials from ministries dealing with economics, law, water resources, agriculture, energy, and environment. Other stakeholders included academic and research institutions, private companies, consultants in various disciplines, as well as representatives of local and regional NGOs, and community leaders.

Policy Principles

6. The policy framework for the regional water policy is anchored by the following pronouncements which SADC Member States have formulated over the years:

- SADC Declaration and Treaty (Declaration by the Heads of State or Government of Southern African States *"Towards the Southern African Development Community"* adopted in Windhoek, Namibia, on 17 August 1992, and the Treaty of the Southern African Development Community, which entered into force on 30 September 1993). The original Declaration calls upon all countries and people of Southern Africa to develop a *vision of a shared future, a future within a regional community* that will ensure economic well-being, improvement of the standards of living and quality of life, freedom and social justice and peace and security for the peoples of Southern Africa.
- The Southern African Vision for Water, Life and Environment adopted in March 2000, aimed at *"equitable and sustainable utilisation of water for social and environmental justice, regional integration and economic benefit for present and future generations"*. Water is therefore seen as a driving force to a better future for the peoples of Southern Africa.
- The Revised SADC Protocol on Shared Watercourses, which entered into force in September 2003, whose overall objective is *"to foster closer cooperation for judicious, sustainable and coordinated management, protection and utilisation of shared watercourses and advance the SADC agenda of regional integration and poverty reduction"*.
- The "Dublin Principles" of integrated water resources management (IWRM) (enunciated in the 1992 Dublin Statement on Water and Sustainable Development promulgated by the International Council of Water and Development) commonly accepted as representing best water resources management practice.

7. The Policy Principles for Water Resources Management for the SADC region, taking into account the above policy pronouncements, are as follows:

- Recognition of water as an instrument for peace, cooperation and regional integration
- Effective public consultation and involvement of users.
- Focus on integrated, people-centred planning.
- Further development of SADC water resources through the joint planning and construction of strategic water infrastructure, in order to rectify historical imbalances and promote water supply for irrigation and poor communities.
- Efficient use of water through demand management, conservation and reuse, and the efficient use of water for agriculture.

- Recognition of the environment as a legitimate user of water, as well as a resource base.
- The protection of the environment through appropriate user charges and the enforcement of “the polluter pays” principle, taking into account equity and social justice.
- Integration of water supply, sanitation and health and hygiene education programmes.
- Capacity building to ensure that managers of water, waste and sanitation have the requisite knowledge and tools.
- Ensuring that waste is safely managed close to the point of generation.
- Preventing the export (and import) of harmful waste across the national and regional boundaries.
- Gender mainstreaming and addressing HIV and AIDS in water resources management at all levels.

Policy Structure

8. The policy has nine thematic areas which address the water resources management issues and challenges outlined in paragraphs 3 and 4, or are aimed at optimising the development opportunities. The main policy areas are:

- a) **Regional Cooperation in Water Resources Management:** including policy provisions on water for regional integration and socio-economic development; cooperation in water resources management of shared watercourses; inter-sectoral and international cooperation; and the harmonisation of national policies and legislation.
- b) **Water for Development and Poverty Reduction:** containing policy provisions on water for basic human needs and for industrial development; water for food and energy security.
- c) **Water for Environmental Sustainability:** containing policy provisions on water and the environment, water quality management, and control of alien invasive species in watercourses.
- d) **Security from Water-related Disasters:** including policy provisions covering people’s protection from water related disasters; disaster prediction, and management and mitigation.
- e) **Water Resources Information and Management:** covering data and information acquisition and management; and information sharing.
- f) **Water Resources Development and Management:** including policy provisions on a river basin approach; integrated planning; dams and dam management; water demand management; and alternative sources of water
- g) **Regional Water Resources Institutional Framework:** including policy provisions covering institutional arrangements at regional and national levels and for Shared Watercourse Institutions (SWCIs).
- h) **Stakeholder Participation and Capacity Building:** including provisions focusing on participation and awareness creation; capacity building and training; gender mainstreaming; and research, technology development and transfer.
- i) **Financing integrated water resources management in the region.**

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Policy Statements

9. Based on the above policy structure, and guided by the policy principles already outlined, the policy statements are grouped under each thematic area and sub-theme. The policy statements are stated below:

a) Regional Cooperation in Water Resources Management.

Water for Economic Integration

- (i) Water resources shall be developed and managed in an integrated manner to contribute to regional and national economic integration and development on the basis of balance, equity and mutual benefit for all Member States
- (ii) The Southern African Vision for Water, Life and the Environment shall be the reference point for the water resources contribution to achieving regional integration, development and poverty eradication

Water for Peace

- (i) Regional Cooperation in shared watercourses shall be guided by the Revised SADC Protocol on Shared Watercourses.
- (ii) Watercourse States shall participate and co-operate in the planning, development, management, utilization and protection of water resources in the shared watercourses
- (iii) Member States shall endeavour to promote and exploit opportunities for joint water resources development in shared watercourses to consolidate regional cooperation.

Water and Inter-Sectoral Cooperation

The SADC Secretariat, Member States and Watercourse Institutions shall ensure the collaboration of all affected sectors in the management of water resources to achieve the goals of regional integration, development, equity, poverty eradication and sustainability. Harmonisation of National Policy and Legislation

- (i) Member States shall promote the harmonisation of their water policies and legislation with the regional water policy.
- (ii) National water policy and legislation shall take into account any international and regional conventions, protocols and policies accepted and/or already adopted by the Member States.

Conflict Management

- (i) Member States shall pursue all avenues of amicable prevention and resolution of conflicts, in accordance with the principles enshrined in the SADC Treaty
- (ii) Where amicable resolution cannot be achieved, conciliation, mediation and arbitration mechanisms should be pursued, with use of the SADC Tribunal or other recognised international arbitration structures only as the last resort.

Water for International Cooperation

SADC shall actively participate in and support other African Initiatives, as well as creating relationships with international initiatives on water resources management.

(b) Water for Development and Poverty Reduction.**Water for Socio-Economic Development**

- (i) Water shall be considered as an economic good, which supports crosssectoral regional economic integration and development, and shall be conserved, developed and managed to provide economic benefits.
- (ii) Water shall be considered as a social good that is essential to human dignity, poverty reduction and social well-being.
- (iii) Water allocation between Member States, sectors and users shall consider among other things the economic benefits balanced with social obligation and environmental requirements
- (iv) Regional water resources management shall consider the concept of comparative advantage in water availability as a means of promoting intra-regional trade and balancing national water budgets in a sustainable manner.

Water Supply, Sanitation and Hygiene

- (i) Member States have a social and economic responsibility to ensure sustainable access to safe water supply for basic human needs in their respective countries.
- (ii) Member States will prioritise the allocation, access and utilisation of water resources for basic human needs over any other allocation, access and utilisation.
- (iii) Member States will seek to provide, in addition to clean water for domestic use, water for productive activities to poor and marginalised communities in rural and peri-urban areas in order to alleviate poverty and to correct imbalances in development.
- (iv) To ensure sustainability of water supply services to all areas, cost recovery will underpin all infrastructural developments and operations, i.e. beneficiaries will pay an appropriate amount towards the cost of providing services taking into account Member States' social responsibilities to the poor.
- (v) Member States will facilitate the provision of sustainable access to adequate sanitation for all rural, peri-urban and urban households.
- (vi) Member States will ensure that provision of sanitation services is integrated into the provision of water supply for basic human needs.
- (vii) Public awareness, as well as hygiene education and practice should be integrated in the provision, operation and maintenance of water and sanitation facilities.

Water for Food Security

- (i) Member States will promote the attainment of regional food security rather than national self-sufficiency by developing those areas which have comparative advantage for rain-fed and irrigated agriculture.
- (ii) Water resources development for irrigation in commercial agriculture should be planned in coordination with other sectors in the interest of IWRM.
- (iii) As a vehicle for promoting reliable food production and enhancing food security, sustainable irrigated agriculture will be promoted in all Member States with suitable water and land resources.
- (iv) Member States will promote improved tillage and rainwater harvesting techniques to optimise the use of water by rain-fed agriculture.

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- (v) Member States will promote affordable and sustainable techniques for small-scale irrigation as an equitable measure to increase production of food and cash crops in rural areas for sustainable livelihoods and poverty reduction.
- (vi) Member States will promote measures to increase water use efficiency in agriculture. Pricing of irrigation water shall be consistent with the need to provide economic incentives for efficient use.
- (vii) Water requirements for livestock watering and for maintenance of grazing land shall receive adequate consideration in water resources allocations and management at regional as well as national and local levels.

Water for Energy Development

- (i) Member States will optimise the use of hydro-electricity generation potential so as to provide cheaper and more environmentally friendly sources of electrical energy to the region.
- (ii) Member States will encourage the use of more efficient technologies in cooling of industrial processes and electric power generation stations.
- (iii) Member States will encourage the development of small-scale hydropower to service energy needs of rural communities.

Water for Industrial Development

Member States may allocate water for industrial requirements at the economic value of the resource.

Water for Sports and Recreation

Water resources allocation at national and regional levels shall consider allocating water for Sport and Recreation.

(c) Water for Environmental Sustainability.

Water and the Environment

- (i) The environment is recognised as a resource base and a legitimate user of water in the SADC region and Member States should take all necessary measures to sustain it.
- (ii) Member States should, in their mechanisms for allocating water resources among many users, allocate sufficient water to maintain ecosystem integrity and biodiversity including marine and estuarine life.

Water Quality Management

- (i) SADC should harmonise and uphold common minimum standards of water quality in shared watercourses.
- (ii) Member States should individually and collectively adopt the necessary measures to prevent and control pollution (point and nonpoint sources) of ground and surface waters resulting from inland, coastal or offshore activities.
- (iii) Member States shall not import pollutants into the region for disposal which can affect watercourses.
- (iv) EIA should be a mandatory requirement for development initiatives in the watercourses and Member States are encouraged to undertake Strategic Environmental Assessments where feasible.

Alien Invasive Species

Member States are individually and collectively responsible for the control of alien invasive species with the ultimate aim of eradication of the non-economical ones.

(d) Security from Water-related Disasters.**People's Protection from Floods and Droughts**

- (i) Member States shall commit themselves towards the protection of human life, common property and the environment against the effects of water related natural and human-induced disasters.
- (ii) The SADC Secretariat and SWCIs shall facilitate and coordinate the management of natural disasters at a shared watercourse and regional level.

Disaster Prediction, Planning and Mitigation

- (i) The SADC Secretariat, Member States and SWCIs are committed to improving the region's capacity in predicting water-related disasters associated with floods and droughts through coherent and effective regional and watercourse strategies.
- (ii) Management of natural disasters and emergency situations requires development and implementation of integrated and coherent regional and watercourse level management plans and procedures.
- (iii) Regional disaster management planning shall be aligned with other sector disaster management plans and involve consultation with relevant stakeholders.
- (iv) Each Member State has an obligation to notify and share information with affected Watercourse States in the event of actual or pending water related disasters.

(e) Water Resources Information and Management.**Data and Information Acquisition and Management**

- (i) Member States shall establish water resources data and information acquisition and management systems in their territories in an integrated manner at regional, river basin and national levels to meet all water resources management needs.
- (ii) Member States shall adopt compatible systems for data and information acquisition and management.

Information Sharing

- (i) Member States shall timeously share relevant available information and data regarding the hydrological, hydro-geological, water quality, meteorological and environmental condition of shared watercourses.
- (ii) Member States shall ensure that members of the public in the region have access to relevant and understandable information regarding water resources impacting on their health or safety and on economic interests.
- (iii) SADC, SWCIs as well as Member States shall establish mechanisms for regular interpretation and dissemination of essential information on water resources so that the public is regularly informed.

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Water Resources Assessment

Member States shall adopt common or compatible procedures and methodologies for carrying out regular water resources assessment at regional, river basin and national levels.

(f) Water Resources Development and Management.

River Basin Approach

- (i) Member States will adopt a river basin or watercourse approach in the planning, development and management of water resources. This applies in particular to shared watercourses.
- (ii) Watercourse States will prepare and implement river basin development plans in a holistic and integrated manner, with the involvement of stakeholders to achieve equitable and efficient utilisation.
- (iii) The planning, development and management of watercourses, particularly in shared watercourses will consider the integrated use of surface and ground water resources, the reuse of water, proper pollution management and the provision of environmental requirements.
- (iv) Water resources allocation and utilisation will be based on equitable and reasonable mechanisms through negotiations between watercourse States.
- (v) Member States will ensure that major water uses in watercourses, particularly in shared watercourses will be regulated through authorisations such as a system of permits.

Integrated Planning

- (i) Planning, development and management of water resources in the region should be based on the principles of IWRM and shall take full cognisance of the cross-cutting nature of water.
- (ii) Watercourse States shall promote joint planning and implementation of water resources developments within their shared watercourse and transparently notify and/ or engage other Watercourse States in a dialogue, where such States are not proponents of the project.

Water Demand Management

- (i) When planning the development of water infrastructure and services, Member States or river basin organisations shall aim to utilise existing capacities more efficiently as part of the process of augmenting water supply.
- (ii) Water Demand Management will be pursued by Member States as a fundamental requirement for integrated planning and management of water resources, particularly in shared watercourses.

Alternative Sources of Water

Member States will promote rainwater harvesting and alternative sources of water such as desalination, reuse of water, recycling and reclamation. Relevant research in this regard should be promoted as and where appropriate.

Dam Development and Management

- (i) Integrated planning, development and management of dams will be promoted so as to optimise the use of the water resources, maximise derived benefits (such as hydropower, tourism, flood control, irrigation, water supply) and take both positive and negative externalities into account.

- (ii) SADC shall encourage the participation of all stakeholders in decision-making processes for dam development and, where appropriate, with adequate facilitation and empowerment of vulnerable groups to ensure their effective involvement in decision-making.
- (iii) Watercourse States will negotiate on operating rules for dams on shared watercourses so as to optimise the socio-economic and environmental benefits in an equitable manner.

Affected Communities

- (i) Watercourse States shall promote the development and implementation of water infrastructure projects through a participatory process, especially of affected communities.
- (ii) Member States will put in place proper legislation to ensure/provide for compensation and resettlement of affected communities, so that they will not be worse off as a result of the project.

(g) Regional Water Resources Institutional Framework.

SADC Secretariat

- (i) The SADC Secretariat is responsible for promoting and coordinating the implementation of the Regional Water Policy and Strategy and Protocols for the Water Sector in cooperation with other sectors such as health, energy, agriculture, tourism and environment.
- (ii) The SADC Secretariat is responsible for supporting SWCIs and assessing their compliance with and implementation of the Revised Protocol.
- (iii) The SADC Secretariat is accountable to the Member States through the Council of Ministers and shall ensure direct coordination with National Water Departments.

Shared Watercourse Institutions (SWCIs)

- (i) Appropriate SWCIs shall be negotiated in all shared watercourses by agreement between the Watercourse States.
- (ii) A Watercourse Commission shall be established on each shared watercourse to advise and coordinate the sustainable development and equitable utilisation of the associated water resources for mutual benefit and integration.
- (iii) The development of Watercourse Commissions may be phased to enable gradual development of cooperative arrangements and capacity requirements.
- (iv) Watercourse Commissions must efficiently and effectively fulfil the institution's responsibilities considering sustainability.
- (v) Watercourse States are encouraged to jointly plan the development of water resources through Watercourse Commissions and to undertake the development and operation of joint water resources infrastructure on behalf of two or more countries for mutual benefit through Water Authorities or Boards.
- (vi) Policy and strategy level decision making within SWCIs should be through consensus between Watercourse States.
- (vii) All SWCIs must enable the SADC Secretariat to fulfil its coordination and guidance responsibilities in terms of the Regional Policy and Strategy and the (Revised) Protocol on Shared Watercourses.

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- (viii) Stakeholder participation in decision making shall primarily be through Member States' government representatives, while any SWCI shall ensure stakeholder consultation at a joint project level.
- (ix) In the interests of IWRM, SWCIs are encouraged to foster cooperative relationships with non-governmental and civil society groupings within the shared watercourse.

Institutional Arrangements at National Levels

- (i) Member States have an obligation to create an enabling institutional environment for the effective management of shared watercourses in line with the Revised Protocol and the Regional Policy and Strategy.
- (ii) Member States are encouraged to decentralise the management of water and the associated authority to the lowest appropriate level, while maintaining appropriate institutional arrangements for the management of shared watercourses.
- (iii) Member States shall develop and implement appropriate institutional arrangements to enhance the participation of NGOs in planning and management of water resources at national and community levels.

Monitoring and Evaluation

The SADC Water Sector's achievement of its development goals, objectives, strategies, programmes and institutional performance should be assessed through a coherent, transparent and independent monitoring and evaluation system.

(h) Stakeholder Participation and Capacity. Participation and Capacity Development

- (i) Water resources development and management at all levels shall be based on a participatory approach, with effective involvement of all stakeholders.
- (ii) All stakeholders shall be empowered to effectively participate in the management of water resources at regional, river basin, national and community levels, particularly in shared watercourses.
- (iii) Member States and SWCIs shall recognize the positive role played by NGOs in water resources management particularly at community level, and shall facilitate their participation in water development and management activities.

Gender Mainstreaming

- (i) Women are recognised as playing a central role in the provision, management and safeguarding of water and shall be fully involved in the development and implementation of policies, processes and activities at all levels.
- (ii) All SADC Water Institutions shall implement the principles, goals and objectives of gender mainstreaming in their administration and implementation.

Capacity Building and Training

- (i) All water institutions in the region at various levels shall make all efforts to develop and share capacity to carry out their mandate efficiently and effectively.
- (ii) IWRM and regional integration shall be promoted in water sector education and training.

Research, Technology Development and Transfer

- (i) A regional perspective for effective and efficient demand-driven water sector research and technology development shall be adopted in the region.
- (ii) Notwithstanding considerations of national sovereignty, Member States shall share appropriate water technology and information as a means of building capacity and integration.

(i) Financing Integrated Water Resources Development and Management in the Region.**Financial Sustainability**

- (i) Member States shall ensure adequate financial resources for national as well as regional projects for water resources development and management.
- (ii) For water resources development and management at national and regional level to be financially sustainable, Member States as well as SWCIs shall strive to recover all costs for managing the resources considering the special requirements of the poor and the vulnerable in society.

Cost Reduction

Member States shall institute planning and operational systems to facilitate cost reduction in the management of water resources.

Public-Private Partnerships

- (i) The SADC Secretariat, SWCIs and Member States should actively develop partnerships with funding agencies, non-governmental organisations and private sector bodies to support the development and management of water resources in the region.
- (ii) Partnerships between SWCIs or governments and private sector should be considered where these could contribute to efficient management of resources and delivery of services, as well as higher inflow of investment capital to the sector.
- (iii) SADC shall continue to actively engage donor agencies to finance water development and management in the region.

Implementation of Regional Water Policy

10. The Regional Water Policy will be implemented through a Regional Water Strategy. An important vehicle for implementing the policy is the existence of well functioning River Basin Organisations established particularly on shared watercourses, operating under sound legislation, and systems for planning and stakeholder involvement, and embracing the IWRM principles.

11. In order for the Regional Water Policy to be implemented at national level, Member States would need to harmonise their policies with this Regional Water Policy.

12. It is also fundamentally important that there should be closer coordination of the Regional Water Policy with other sectoral policies in the SADC, especially the major water use sectors including, trade, agriculture, energy and environment. Inter-sectoral coordination at SADC level would be an important building block for integrated water resources development and management which is the basis for sustainable development.



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FURTHER READING

Available from the Southern African Research and Documentation Centre at www.sardc.net Knowledge for Development

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Zambezi Basin Series

1 – The Zambezi Basin; 2 – Energy; 3 – Wildlife; 4 – Water Quality: General Concepts; 5 – Fisheries; 6 – Tourism; 7 – Gender and Women's Issues; 8 – Biological Diversity; 9 – Indigenous Knowledge Systems; 10 – Water Resources; 11 – Pollution; 12 – Poverty; 13 – Population Growth and Water Management; 14 – Integrated Water Resources Management; 15 – Forest Resources; 16 – Wetlands

SARDC Factsheets

Southern African Environmental Issues

1 – Soil Erosion; 2 – Threats to wildlife; 3 – Sources of Pollution; 4 – Facts About Fish in Southern Africa; 5 – Deforestation; 6 – The Human Side of Soil Degradation; 7 – Water; 8 – Environment Impact Assessment; 9 – Wildlife Management Programmes; 10 – The Ozone Layer; 11 – Water Hyacinth; 12 – Energy Sources and Uses; 13 – Biological Diversity; 14 – Environmental Conventions; 15 – CITES; 16 – Global Warming and Climate Change; 17 – The Ramsar Convention; 18 – Convention to Combat Desertification; 19 – The Bamako Convention

See Virtual Library for Southern Africa

www.sardc.net Knowledge for Development

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APPENDIX



This Appendix includes selected sections of key documents as reference for the media when preparing articles and for general understanding of water issues and management. Appendix 5 contains a list of institutional sources of knowledge and expertise on water management at regional and national level that are accessible to the media and provide good contacts when seeking reliable information or interviews. The Glossary is also a handy reference when seeking to simplify technical terms related to water resources management.

Appendix

- 1 The Dublin Principles
- 2 Southern Africa Vision for Water, Life and Environment
- 3 Revised SADC Protocol on Shared Watercourses
- 4 IWRM Expertise in the SADC Region

Contacts

Acronyms

Glossary

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Appendix 1

The Dublin Principles

The International Conference on Water and the Environment (ICWE) was held in Dublin, Ireland in January 1992, to serve as a preparatory event, with respect to water issues, to the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil. ICWE set out Recommendations in the Dublin Statement for consideration by world leaders assembled at the Rio Summit later the same year. These are known as The Dublin Principles.

Guiding Principles

Concerted action is needed to reverse the present trends of over consumption, pollution, and rising threats from drought and floods. The conference report sets out recommendations for action at local, national and international levels, based on four guiding principles.

Principle No. 1 – Freshwater is a finite and vulnerable resource, essential to sustain life, development and the environment

Since water sustains life, effective management of water resources demands a holistic approach, linking social and economic development with protection of natural ecosystems. Effective management links land and water uses across the whole of a catchment area or groundwater aquifer.

Principle No. 2 – Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels

The participatory approach involves raising awareness of the importance of water among policy-makers and the general public. It means that decisions are taken at the lowest appropriate level, with full public consultation and involvement of users in the planning and implementation of water projects.

Principle No. 3 – Women play a central part in the provision, management and safeguarding of water

This pivotal role of women as providers and users of water and guardians of the living environment has seldom been reflected in institutional arrangements for the development and management of water resources. Acceptance and implementation of this principle requires positive policies to address women's specific needs and to equip and empower women to participate at all levels in water resources programmes, including decision-making and implementation, in ways defined by them.

Principle No. 4 – Water has an economic value in all its competing uses and should be recognized as an economic good

Within this principle, it is vital to recognize first the basic right of all human beings to have access to clean water and sanitation at an affordable price. Past failure to recognize the economic value of water has led to wasteful and environmentally damaging uses of the resource. Managing water as an economic good is an important way of achieving efficient and equitable use, and of encouraging conservation and protection of water resources.

Appendix 2

Southern Africa Vision for Water, Life and the Environment in the 21st Century

"The peoples of Southern Africa recognise that water is essential to:

- their own personal and community survival;
- the production of the food that they eat;
- the sanitation and conveyance of waste;
- the generation of the energy that supplies their needs;
- the commodities that they produce for national consumption and export; and,
- the integrity of the environment and the survival of other living forms with whom they share the world.

It is recognised that the present "water world" in Southern Africa contains many situations that are evolving, some of which are undesirable. These include a rapidly growing population; a rapidly urbanising population; widespread and increasing poverty; widespread food insecurity; inadequate coverage of water and sanitation services especially among the urban, peri-urban and rural poor; disease and premature death from water-related illnesses; dependence on agriculture for livelihoods; polluted water bodies; low levels of energy supply; degraded watersheds; trans-boundary river basins with complex water rights issues; and, constraints within water management institutions.

Recognising that the potential water world could be substantially improved from that which exists at present, the peoples of the region express a desire to derive the maximum benefits from the water resource during their own lifetime. They also wish to bequeath the same benefits to their children and to successive generations. Indeed, they would wish themselves to take steps to bequeath an improved water situation than that which they have inherited.

In order to move the southern African water world from that which now exists, the peoples of the region wish to express their desirable future, their Vision for Water, Life and the Environment in the 21st Century in a regionally integrated Southern Africa.

Their Vision is therefore:

"Equitable and sustainable utilisation of water for social, environmental justice, and economic benefit for present and future generations."

This Vision is an expression of the desire for:

- Equitable and sustainable social and economic development in Southern Africa;
- Equitable access to water of an acceptable quantity and quality;
- Proper sanitation for all and safe waste disposal;
- Food security for all households;
- Energy security for all households;
- A sustainable environment;
- Security from natural disasters; and
- Integrated water resources development and management."

In March 2000, SADC Ministers responsible for Water attended the 2nd World Water Forum and Ministerial Conference in The Hague, The Netherlands. At those meetings, the Ministers discussed a global Vision for Water, Life and the Environment in the 21st Century. The SADC Ministers presented the Southern Africa Vision for Water, Life and the Environment in the 21st Century as a contribution to the global context, facilitated by the Global Water Partnership in Southern Africa and SADC, within the context of global processes enabled by the World Water Council and the Global Water Partnership.

The main objective of the regional Vision for Water, Life and the Environment was to set out a number of problems facing the region at the turn of the Millennium, and to develop a widely shared Vision of a desirable future and the action required to accomplish it. The Vision horizon was the year 2025, twenty-five years later. The reader is invited to consider the world as it existed 25 years before – in 1975, and to see the magnitude of change that can take place within a time period of 25 years. It is easy to foresee that changes of a similar or even greater magnitude might take place over the next 25 years. Source: From the Executive Summary of the Southern Africa Vision for Water, Life and the Environment in the 21st Century

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Appendix 3

Revised SADC Protocol on Shared Watercourses, General Principles and Selected Clauses

PREAMBLE

WE, the Heads of State or Government of:

The Republic of Angola, The Republic of Botswana, The Democratic Republic of the Congo, The Kingdom of Lesotho, The Republic of Malawi, The Republic of Mauritius, The Republic of Mozambique, The Republic of Namibia, The Republic of Seychelles, The Republic of South Africa, The Kingdom of Swaziland, The United Republic of Tanzania, The Republic of Zambia, The Republic of Zimbabwe

BEARING in mind the progress with the development and codification of international water law initiated by the Helsinki Rules and that the United Nations subsequently adopted the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses;

RECOGNISING the relevant provisions of Agenda 21 of the United Nations Conference on Environment and Development, the concepts of environmentally sound management, sustainable development and equitable utilisation of shared watercourses in the SADC Region;

CONSIDERING the existing and emerging socio-economic development programmes in the SADC Region and their impact on the environment;

DESIROUS of developing close cooperation for judicious, sustainable and coordinated utilisation of the resources of the shared watercourses in the SADC Region;

CONVINCED of the need for coordinated and environmentally sound development of the resources of shared watercourses in the SADC Region in order to support sustainable socio-economic development;

RECOGNISING that there are as yet no regional conventions regulating common utilisation and management of the resources of shared watercourses in the SADC Region; MINDFUL of the existence of other Agreements in the SADC Region regarding the common utilisation of certain watercourses; and

IN ACCORDANCE with Article 22 of the Treaty, have agreed as follows:

ARTICLE 1

DEFINITIONS

1. For the purposes of this Protocol the following terms shall have the meanings ascribed to them hereunder:

"Agricultural use" means use of water for irrigation purposes;

"Domestic use" means use of water for drinking, washing, cooking, bathing, sanitation and stock watering purposes;

"Emergency situation" means a situation that causes or poses an imminent threat of causing serious harm to Watercourse States and which results suddenly from natural causes, such as torrential rains, floods, landslides or earthquakes or from human conduct;

"Environmental use" means the use of water for the preservation and maintenance of ecosystems;

"Industrial use" means use of water for commercial, electrical power generation, industrial, manufacturing and mining purposes;

"Management of a shared watercourse" means

(i) planning the sustainable development of a shared watercourse and providing for the implementation of any plans adopted; and

(ii) otherwise promoting the rational, equitable and optimal utilisation, protection, and control of the watercourse;

“Navigational use” means use of water for sailing whether it be for transport, fishing, recreation or tourism;

“Pollution of a shared watercourse” means any detrimental alteration in the composition or quality of the waters of a shared watercourse which results directly or indirectly from human conduct;

“Regulation of the flow of the waters of a shared watercourse” means the use of hydraulic works or any other continuing measure to alter, vary or otherwise control the flow of waters of a shared watercourse;

“Shared watercourse” means a watercourse passing through or forming the border between two or more Watercourse States;

“Significant Harm” means non-trivial harm capable of being established by objective evidence without necessarily rising to the level of being substantial;

“State Party” means a Member of SADC which is a party to this Protocol;

“Watercourse” means a system of surface and ground waters consisting by virtue of their physical relationship a unitary whole normally flowing into a common terminus such as the sea, lake or aquifer;

“Watercourse State” means a State Party in whose territory part of a watercourse is situated.

2. Any other term defined in the Treaty and used in this Protocol shall have the same meaning as ascribed to it in the Treaty.

ARTICLE 2 OBJECTIVE

The overall objective of this Protocol is to foster closer cooperation for judicious, sustainable and coordinated management, protection and utilisation of shared watercourses and advance the SADC agenda of regional integration and poverty alleviation. In order to achieve this objective, this Protocol seeks to:

- (a) promote and facilitate the establishment of shared watercourse agreements and Shared Watercourse Institutions for the management of shared watercourses;
- (b) advance the sustainable, equitable and reasonable utilisation of the shared watercourses;
- (c) promote a coordinated and integrated environmentally sound development and management of shared watercourses;
- (d) promote the harmonisation and monitoring of legislation and policies for planning, development, conservation, protection of shared watercourses, and allocation of the resources thereof; and
- (e) promote research and technology development, information exchange, capacity building, and the application of appropriate technologies in shared watercourses management.

ARTICLE 3 GENERAL PRINCIPLES

For the purposes of this Protocol the following general principles shall apply:

1. The State Parties recognise the principle of the unity and coherence of each shared watercourse and in accordance with this principle, undertake to harmonise the water uses in the shared watercourses and to ensure that all necessary interventions are consistent with the sustainable development of all

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Watercourse States and observe the objectives of regional integration and harmonisation of their socio-economic policies and plans.

2. The utilisation of shared watercourses within the SADC Region shall be open to each Watercourse State, in respect of the watercourses within its territory and without prejudice to its sovereign rights, in accordance with the principles contained in this Protocol. The utilisation of the resources of the watercourses shall include agricultural, domestic, industrial, navigational and environmental uses.
3. State Parties undertake to respect the existing rules of customary or general international law relating to the utilisation and management of the resources of shared watercourses.
4. State Parties shall maintain a proper balance between resource development for a higher standard of living for their people and conservation and enhancement of the environment to promote sustainable development.
5. State Parties undertake to pursue and establish close cooperation with regard to the study and execution of all projects likely to have an effect on the regime of the shared watercourse.
6. State Parties shall exchange available information and data regarding the hydrological, hydro-geological, water quality, meteorological and environmental condition of shared watercourses.
7. (a) Watercourse States shall in their respective territories utilise a shared watercourse in an equitable and reasonable manner. In particular, a shared watercourse shall be used and developed by Watercourse States with a view to attain optimal and sustainable utilisation thereof and benefits therefrom, taking into account the interests of the Watercourse States concerned, consistent with adequate protection of the watercourse for the benefit of current and future generations.
(b) Watercourse States shall participate in the use, development and protection of a shared watercourse in an equitable and reasonable manner. Such participation, includes both the right to utilise the watercourse and the duty to cooperate in the protection and development thereof, as provided in this Protocol.
8. (a) Utilisation of a shared watercourse in an equitable and reasonable manner within the meaning of Article 7(a) and (b) requires taking into account all relevant factors and circumstances including:
 - (i) geographical, hydrographical, hydrological, climatical, ecological and other factors of a natural character;
 - (ii) the social, economic and environmental needs of the Watercourse States concerned;
 - (iii) the population dependent on the shared watercourse in each Watercourse State;
 - (iv) the effects of the use or uses of a shared watercourse in one Watercourse State on other Watercourse States;
 - (v) existing and potential uses of the watercourse;

- (vi) conservation, protection, development and economy of use of the water resources of the shared watercourse and the costs of measures taken to that effect; and
 - (vii) the availability of alternatives, of comparable value, to a particular planned or existing use.
 - (b) The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is an equitable and reasonable use, all relevant factors are to be considered together and a conclusion reached on the basis of the whole.
9. State Parties shall deal with planned measures in conformity with the procedure set out in Article 4 (1).
10. (a) State Parties shall, in utilising a shared watercourse in their territories, take all appropriate measures to prevent the causing of significant harm to other Watercourse States.
- (b) Where significant harm is nevertheless caused to another Watercourse State, the State whose use causes such harm shall, in the absence of agreement to such use, take all appropriate measures, having due regard for the provisions of paragraph (a) above in consultation with the affected States, to eliminate or mitigate such harm and, where appropriate, to discuss the question of compensation.
- (c) Unless the Watercourse States concerned have agreed otherwise for the protection of the interests of persons, natural or juridical, who have suffered or are under a serious threat of suffering significant transboundary harm as a result of activities related to a shared watercourse, a Watercourse State shall not discriminate on the basis of nationality or residence or place where the injury occurred, in granting to such persons, in accordance with its legal system, access to judicial or other procedures, or a right to claim compensation or other relief in respect of significant harm caused by such activities carried on in its territory.

ARTICLE 5

INSTITUTIONAL FRAMEWORK FOR IMPLEMENTATION

1. The following institutional mechanisms responsible for the implementation of this Protocol are hereby established -
- (a) **SADC Water Sector Organs**
 - (i) the Committee of Water Ministers;
 - (ii) the Committee of Water Senior Officials;
 - (iii) the Water Sector Co-ordinating Unit; and
 - (iv) the Water Resources Technical Committee and sub-Committees.
 - (b) **Shared Watercourse Institutions**
 - (c) **The Committee of Water Ministers** shall consist of the Permanent Secretaries or officials of equivalent rank responsible for water.
 - (d) **The Committee of Water Senior Officials** shall consist of the Permanent Secretaries or officials of equivalent rank responsible for water.
 - (e) **The Water Sector Coordinating Unit** which shall be the executing agency of the Water Sector shall be headed by a Coordinator appointed by the State Party responsible for coordinating the Water Sector, and he or she shall be assisted by such supporting staff of professional, administrative and secretarial personnel as the Coordinator may deem necessary.

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2. The SADC Water Sector Organs shall have the following functions:

(a) The Committee of Water Ministers

- (i) Oversee and monitor the implementation of the Protocol and assist in resolving potential conflicts on shared watercourses.
- (ii) Guide and co-ordinate cooperation and harmonisation of legislation, policies, strategies, programmes and projects.
- (iii) Advise the Council on policies to be pursued.
- (iv) Recommend to Council the creation of such other organs as may be necessary for the implementation of this Protocol.
- (v) Provide regular updates to the Council on the status of the implementation of this Protocol.

(b) The Committee of Water Senior Officials

- (i) Examine all reports and documents put before them by the Water Resources Technical Committee and the Water Sector Coordinating Unit.
- (ii) Initiate and advise the Committee of Water Ministers on policies, strategies, programmes and projects to be presented to the Council for approval.
- (iii) Recommend to the Committee of Water Ministers the creation of such other organs as may be necessary for the implementation of this Protocol.
- (iv) Provide regular updates to the Committee of Water Ministers on the status of the implementation of this Protocol.

(c) The Water Sector Coordinating Unit

- (i) Monitor the implementation of this Protocol.
- (ii) Liaise with other SADC organs and Shared Watercourse Institutions on matters pertaining to the implementation of this Protocol.
- (iii) Provide guidance on the interpretation of this Protocol.
- (iv) Advise State Parties on matters pertaining to this Protocol.
- (v) Organise and manage all technical and policy meetings.
- (vi) Draft terms of reference for consultancies and manage the execution of those assignments.
- (vii) Mobilise or facilitate the mobilisation of financial and technical resources for the implementation of this Protocol.
- (viii) Annually submit a status report on the implementation of the Protocol to the Council through the Committee of Water Ministers.
- (ix) Keep an inventory of all shared watercourse management institutions and their agreements on shared watercourses within the SADC Region

(d) The Water Resources Technical Committee

- (i) Provide technical support and advice to the Committee of Water Senior Officials through the Water Sector Coordinating Unit with respect to the implementation of this Protocol.
- (ii) Discuss issues tabled by the Water Sector Coordinating Unit and prepare for the Committee of Water Senior Officials.
- (iii) Consider and approve terms of reference for consultancies, including the appointment of consultants.
- (iv) Recommend to the Committee of Water Senior Officials any matter of interest to it on which agreement has not been reached.
- (v) Appoint working groups for short-term tasks and standing sub-committees for longer-term tasks.
- (vi) Address any other issues that may have implications on the implementation of this Protocol.

3. Shared Watercourse Institutions
 - (a) Watercourse States undertake to establish appropriate institutions such as watercourse commissions, water authorities or boards as may be determined.
 - (b) The responsibilities of such institutions shall be determined by the nature of their objectives which must be in conformity with the principles set out in this Protocol.
 - (c) Shared Watercourse Institutions shall provide on a regular basis or as required by the Water Sector Coordinating Unit, all the information necessary to assess progress on the implementation of the provisions of this Protocol, including the development of their respective agreements.
4. State Parties undertake to adopt appropriate measures to give effect to the institutional framework referred to in this Article for the implementation of this Protocol.

ARTICLE 6 SHARED WATERCOURSE AGREEMENTS

1. In the absence of any agreement to the contrary, nothing in this Protocol shall affect the rights or obligations of a Watercourse State arising from agreements in force for it on the date on which it became a party to the Protocol.
2. Notwithstanding the provisions of paragraph 1, parties to agreements referred to in paragraph 1 may harmonise such agreements with this Protocol.
3. Watercourse States may enter into agreements, which apply the provision of this Protocol to the characteristics and uses of a particular shared watercourse or part thereof.
4. Where a watercourse agreement is concluded between two or more Watercourse States, it shall define the waters to which it applies. Such an agreement may be entered into with respect to an entire shared watercourse or any part thereof or a particular project, programme or use except insofar as the agreement adversely affects, to a significant extent, the use by one or more other Watercourse States of the waters of the watercourse, without their express consent.
5. Where some but not all Watercourse States to a particular shared watercourse are parties to an agreement, nothing contained in such agreement shall affect the rights or obligations under this protocol of Watercourse States that are not parties to such an agreement.
6. Every Watercourse State is entitled to participate in the negotiation of and to become a party to any watercourse agreement that applies to the entire shared watercourse, as well as to participate in any relevant consultations.
7. A Watercourse State whose use of a shared watercourse may be affected to a significant extent by the implementation of a proposed watercourse agreement that applies only to a part of the watercourse or to a particular project, programme or use is entitled to participate in consultations on such an agreement and, where appropriate, in the negotiation thereof in good faith with a view to becoming a party thereto, to the extent that its use is thereby affected.

*Reporting Water in Southern Africa***ARTICLE 7
SETTLEMENT OF DISPUTES**

1. State Parties shall strive to resolve all disputes regarding the implementation, interpretation or application of the provisions of this Protocol amicably in accordance with the principles enshrined in Article 4 of the Treaty.
2. Disputes between State Parties regarding the interpretation or application of the provisions of this Protocol which are not settled amicably, shall be referred to the Tribunal.
3. If a dispute arises between SADC on the one hand and a State Party on the other, a request shall be made for an advisory opinion in accordance with Article 16(4) of the Treaty.

**ARTICLE 8
SIGNATURE**

This Protocol shall be signed by the duly authorised representatives of the Member States.

**ARTICLE 9
RATIFICATION**

This Protocol shall be ratified by the signatory States in accordance with their constitutional procedures.

**ARTICLE 10
ENTRY INTO FORCE**

This Protocol and any subsequent amendments thereof shall enter into force thirty (30) days after the deposit of the instruments of ratification by two-thirds of the Member States listed in the Preamble.

**ARTICLE 11
ACCESSION**

This Protocol and any subsequent amendments thereof shall remain open for accession by any Member State.

**ARTICLE 12
AMENDMENT**

1. An amendment to this Protocol shall be adopted by a decision of three-quarters of the Summit Members who are a party to this Protocol.
2. A proposal for any amendment to this Protocol may be made to the Executive Secretary by any State Party for preliminary consideration by the Council, provided however, that the proposed amendment shall not be submitted to the Council for preliminary consideration until all Member States have been duly notified of it and a period of three (3) months has elapsed after such notification.

**ARTICLE 13
WITHDRAWAL**

1. Any State Party may withdraw from this Protocol upon the expiration of twelve (12) months from the date of giving to the Executive Secretary, a written notice to that effect.

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2. Any State Party that has withdrawn pursuant to paragraph 1 shall cease to enjoy all rights and benefits under this Protocol upon the withdrawal becoming effective, but shall remain bound by the obligations herein for a period of twelve (12) months from the date of giving notice to the date the withdrawal becomes effective.

**ARTICLE 14
TERMINATION**

This Protocol may be terminated by a decision of three-quarters of Members of the Summit.

**ARTICLE 15
DEPOSITARY**

1. The original of this Protocol and all instruments of ratification and accession shall be deposited with the Executive Secretary, who shall transmit certified copies to all Member States.
2. The Executive Secretary shall register this Protocol with the Secretariats of the United Nations and the Organisation of African Unity.

**ARTICLE 16
PROTOCOL ON SHARED WATERCOURSE SYSTEMS IN THE SADC
REGION**

1. Upon entry into force of this Protocol, the Protocol on Shared Watercourse Systems in the Southern African Development Community (SADC) Region, which entered into force on 29th September 1998, shall be repealed and replaced by this Protocol.
2. The rights and obligations of any State Party to the Protocol on Shared Watercourse Systems in the SADC Region, which does not become a party to this Protocol, shall remain in force for twelve (12) months after this Protocol has entered into force.

IN WITNESS WHEREOF, WE, the Heads of State or Government, or duly authorised representatives, of SADC Member States have signed this Protocol.

Done at Windhoek, this 7th day of August 2000.

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Appendix 4

IWRM Expertise in the SADC Region

Expert sources are invaluable when reporting water resources management issues. It is often important to ask for expert opinion on the technical aspects of a story before publishing to avoid embarrassing misrepresentation of facts. A list of organisations with a mandate to manage water resources on international, regional, and national scales has been included below. Within these institutions journalists will find experts who can clarify the issues and help the journalist understand the subject before they go to print. Experts are also good sources for background information and can be contacted for authoritative comment on a particular issue. The list is by no means exhaustive but it forms a basis on which journalists can build their own list of expert sources on Integrated Water Resources Management in the region.

Knowledge Sources and Institutional Expertise for IWRM in SADC

Expert sources are often needed when reporting on water resources management issues, for consultation on the technical aspects. This section provides a list of selected organisations and networks that are reliable sources of knowledge and information. Some have a mandate to manage water resources at national, regional and international levels, while others are research institutions. Within these institutions, journalists can find information or experts who can clarify the issues and provide comment. The list is not exhaustive but forms a basis upon which journalists can build a contacts list of expert sources on Integrated Water Resources Management.

Global Water Partnership (GWP) Southern Africa

The Global Water Partnership (GWP) was launched in 1996 to translate global consensus on principles for water management into responsive and coherent services in member countries and organisations.

The main objective of the GWP is to assist in the interpretation of the Dublin principles for their practical application in water resources management.

GWP Southern Africa worked with SADC to prepare the regional vision for sustainable water management, "Water for the 21st Century – Vision to Action Southern Africa", and has established consultative groups of water organisations and departments in most SADC Member States.

Southern African Research and Documentation Centre (SARDC)

SARDC is an independent regional knowledge resource centre whose vision is to enhance the effectiveness of key development processes in the SADC region through the collection, production and dissemination of information, and enabling the capacity to generate and use knowledge. SARDC seeks to improve the base of knowledge about economic, political, cultural and social developments, and their implications by making information accessible to governments and policy makers, NGOs, the private sector, development agencies, parliaments, the media and others.

The programmes on environment, gender and governance have published a joint series of media handbooks as a knowledge resource for journalists, including:

Reporting the Southern African Environment;

Reporting Gender in Southern Africa;

Reporting Elections in Southern Africa.

I. Musokotwane Environment Resource Centre for Southern Africa (IMERCSA)

The SARDC specialist programme responsible for environmental and water resources is the Musokotwane Environment Resource Centre for Southern Africa (IMERCSA).

The objective of SARDC IMERCSA is that "People at all levels of environmental decision-making are motivated to take positive actions to counter environmental degradation and move towards sustainable development paths through provision of accurate, accessible and meaningful Environment Outlook reports."

IMERCSA initiated the first report on the southern African environment in 1994. *State of the Environment in Southern Africa*, produced in partnership with SADC and IUCN, and has continued to produce thematic and other reports on the southern African environment, that has facilitated the collection, storage, generation and exchange of environmental information in the SADC region and beyond.

Environmental reports include the current *Southern Africa Environment Outlook*, in partnership with SADC, IUCN and UNEP. This report is one of the outputs in the SADC Regional Indicative Strategic Development Plan (RISDP) that targets regional environment reports at five-year intervals.

These and other publications are available online at SARDC's Virtual Library for Southern Africa www.sardc.net Knowledge for Development and linked to the SADC website at www.sadc.int

SARDC IMERCSA is also the regional Collaborating Centre for Southern Africa for the UN Environment Programme (UNEP) in the production of continental and global reports, the Africa Environment Outlook (AEO) and the Global Environment Outlook (GEO). Both AEO and GEO processes are anchored in the Africa Environment Information Network, a capacity-building initiative driven by UNEP and its collaborating centres such as SARDC and working with national environment focal points to strengthen environmental assessment and reporting. The most recent report published through this collaboration is the *Atlas of Africa's Changing Environment*.

SARDC has published several books on water issues in collaboration with SADC, including *State of the Environment Zambezi Basin 2000*, published in English and Portuguese, and also in summary form, which was the first study of a single ecosystem in the region. Another key output under the water initiative was the 2002 book *Defining and Mainstreaming Environmental Sustainability in Water Resources Management in Southern Africa*, and *Water in Southern Africa*, published in 1996.

SARDC has also established a Virtual Library to increase access to, among other things, information on water management in the southern African region and the IWRM concept.

WaterNet Project

WaterNet is a regional programme that aims to strengthen the educational, training and research capacities in southern Africa through a network of institutions that are involved in fields directly related to Integrated Water Resources Management (IWRM).

One of the main objectives of the programme is to establish a common language of the central concepts in IWRM that can allow present and future water managers

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to effectively communicate with experts from other disciplines, such as environmentalists, lawyers, planners, community representatives, scientists, health professionals, engineers, and the media.

The WaterNet Project was initiated after realising the need to develop capacity in IWRM. At a SADC/EU conference held in Maseru, Lesotho, in 1997 it was noted that, while the major problems in the two regions with respect to international waters are different — southern Africa's concern is on water scarcity while those of Europe include navigation, water quality and flood control — water remains a major area of co-operation between the two trading blocks.

The capacity of development in water resources management within SADC was highlighted as a very important area for co-operation. Out of this the SADC WaterNet Project was initiated, with the aim of building capacity and skills of IWRM personnel in the SADC region. The programme offers a Masters Degree in IWRM run jointly by a number of universities in the region, consisting of modules taught at the different universities with each institution contributing by teaching the module in which they possess more experience and a comparative advantage over the others.

WaterNet also offers short courses in IWRM as well as holding annual Water Symposia, which are jointly organised with the Water Research Fund of Southern Africa (WARFSA) and the Global Water Partnership Southern Africa. The Symposia are a platform for water professionals in southern Africa, where advances in research and education related to IWRM are presented and new opportunities and developments towards the integrated management of the region's scarce fresh water resources are discussed.

Water Strategy Reference Group

The cooperation between SADC and its International Cooperating Partners (ICPs) has a longstanding history, given that ICPs have been an integral part of the Water Sector programme formulation, implementation and regular review and focusing.

The cooperation between SADC and ICPs includes the Water Strategy Reference Group (WSRG). The WSRG was established in 1999 and comprises of the SADC Secretariat, SADC Water Division, UNDP, World Bank, GWP, the African Development Bank, IUCN, USAID and Sida.

The WSRG's task is to follow up on the implementation of the activities of the Regional Strategic Action Plan and act as a think-tank. This represents a long-term partnership between the Water Sector and its co-operating partners.

To track and monitor development, policy direction and trends in cooperation in the water sector, journalists in the region need to be aware of, and gain access to information from, bodies such as the WSRG.

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ACRONYMS

CEP	Communicating the Environment Programme
DANIDA	Danish International Development Agency
GWP	Global Water Partnership
GWP SA	Global Water Partnership Southern Africa
ICWE	International Conference on Water and the Environment
IKS	Indigenous Knowledge Systems
IMERCSA	I Musokotwane Environment Resource Centre for Southern Africa
IPCC	Intergovernmental Panel on Climate Change
ITCZ	Inter Tropical Convergence Zone
IUCN	IUCN – The World Conservation Union
IWRM	Integrated Water Resources Management
LIMCOM	Limpopo River Commission
MDGs	Millennium Development Goals
MOU	Memorandum of Understanding
OKACOM	Okavango River Basin Water Commission
ORASECOM	Orange-Senqu River Commission
RISDP	Regional Indicative Strategic Development Plan (SADC)
RSAP	Regional Strategic Action Plan for Integrated Water Resources Management and Development
SADC	Southern African Development Community
SADC FANR	Food, Agriculture and Natural Resources Directorate
SADC HYCOS	Hydrological Cycle Observing System
SARDC	Southern African Research and Documentation Centre
SIDA	Swedish International Development Cooperation Agency
UNCBD	United Nations Convention on Biological Diversity
UNCCD	United Nations Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations International Children's Fund
WHO	World Health Organisation
WHYCOS	World Hydrological Cycle Observing System
WRTC	Water Resources Technical Committee
WSRG	Water Strategy Reference Group
WSSD	World Summit on Sustainable Development
WWF	World Wide Fund for Nature
ZAMCOM	Zambezi Watercourse Commission
ZRA	Zambezi River Authority

GLOSSARY



Abstraction Draw water from a source, for any purpose

Aquatic Growing or living in or near water; refers to marine or freshwater ecosystems

Aquifer Underground layer of rock, sand, or gravel capable of storing water within cracks and pores, or between grains. Water in an aquifer is called groundwater, and this can be used for drinking and other purposes if sufficient quantity and quality.

Arid Dry

Basin A large low-lying area drained by a stream or river system (see Catchment)

Benefit sharing This concept sees the potential for sharing the environmental and socio-economic benefits of water in shared water bodies, rather than simply equal allocation.

Botswana High High-pressure area that builds up over Botswana, 3 - 6kms above sea level, and has marked influence on climatic conditions

Catchment An area that receives or "catches" the rain that flows into a water-course (see Basin)

Climate change Alteration to measured quantities of rain, temperature, wind, cloudiness and other characteristics of a climate system that departs significantly from previous average conditions and remains, causing changes to ecosystems and socio-economic activity

Community participation Process whereby a community is encouraged to take part in decision-making and implementation of development programmes in which it is a beneficiary

Consumptive use Any use that permanently removes water from the natural stream system

Dambo Shallow, seasonally or permanently waterlogged, grass-covered depression

Degradation Deterioration of the environment through depletion of resources such as water or soil

Delta Triangular tract of sand and soil at the mouth of a river where it flows into the sea enclosed or traversed by its diverging branches

Desalination Process of removing salt from water

Downstream In the direction to which a river or stream flows

Drought Condition in which an area does not get enough water due to low rainfall, high temperatures, or both

Ecological value A measure of the significance of an area of land as a habitat supporting trees, plants and animals

Ecosystem All the living organisms and the physical environment in an area as well as the processes that link them together

Effluent Liquid waste that is a by-product of human activity, such as sewage or industrial discharge

El Niña Cooling of the Pacific Ocean water; the female or opposite of El Niño

El Niño The warming of eastern and central Pacific Ocean waters which brings change in global weather patterns by affecting air and ocean temperatures, and is associated with below average rainfall in southern Africa

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Endemic Species believed to exist only in a specific area

Estuary Part of a the river where it meets the sea, characterised by a mixture of seawater and freshwater

Floodplain Area adjacent to a river or lake and seasonally flooded

Flood An overflow or influx of water beyond its normal confines

Food security Availability of food when needed, through production, storage or import

Freshwater Water with less than 0.5 parts per thousand of dissolved salts, found in lakes, rivers and groundwater

Gender Differences between women and men that are socially constructed, changeable over time, and have wide variations within and between cultures

Global warming Increase in average temperature of the earth's atmosphere

Groundwater Rainfall that seeps into the ground through cracks in the soil, sand, or rocks until it reaches a layer of rock and collects there

Groundwater recharge Replacement of water, usually through rainwater seeping into the ground, to replenish that lost through abstraction, evaporation of transpiration

Helsinki Rules A basis for international agreements on water management, stating that each basin state has rights to an equitable share of water in the basin, and that maximum benefit should be achieved with minimum disadvantage to other states

Hydrological cycle Process by which water reaches the Earth through rain, passes through transport and storage stages on the Earth's surface, and is returned to the atmosphere through evaporation

Integrated Water Resources Management (IWRM) The coordinated development and management of water, land and related resources, to maximise the economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems

Irrigation Watering land by canals, sprinklers or drips for purpose of crop production

Non-consumptive use Water usage that does not involve reduction in the quantity of water available

Perennial Lasting throughout the year or for a long time

Pollution Poisoning of land, air or water with anything that reduces its ability to support life

Rainfall variability Pattern of rainfall in arid environments where the amount and location of rain differ widely from year to year

Ramsar Treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources

Riparian Adjacent to a river

River basin Area of land from which all surface run-off of water flows through a sequence of streams, rivers and sometimes lakes into the sea at a single river mouth, estuary or delta

Runoff Storm water flowing over the ground surface

GLOSSARY

SADC Treaty The Treaty establishing the Southern African Development Community (SADC) signed on 17 August 1992 in Windhoek, Namibia

Sanitation The maintenance or improvement of sanitary conditions through drainage and disposal of sewage and refuse

Semi-arid Areas where mean annual rainfall is between about 250 and 600mm, rainfall is seasonal and variable, and potential evaporation is high

Surface water Water found on the surface of the land, such as that in rivers, lakes and dams

Sustainable development Term used by the World Commission on Environment and Development to denote development that meets the needs of the present without compromising the ability of future generations to meet their own needs

Upstream The opposite direction to the water flow in a river; towards the source

Water allocation Distribution of water among the various sectors of society

Water-borne diseases Those caused by parasites that live in water, for example cholera, dysentery, bilharzia, or typhoid, among others

Water harvesting Collection of rainwater

Water resources Water that is useful or potentially useful

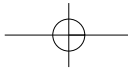
Water scarcity This occurs when the annual freshwater supplies drop below 1,000 cubic metres per person, and there is not enough water to support agricultural, urban, human, or environmental needs

Water stress A community or country is said to be water stressed when annual supplies of freshwater drop below 1,700 cubic metres per person. This can be caused by the drying up of boreholes or lakes, or other activity that reduces the liquid water available.

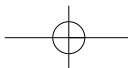
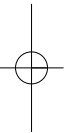
Water table A more or less horizontal layer in the soil below which all spaces between soil particles are saturated with water

Wetland Land that has the water table at, near, or above the land surface or that is saturated for a long enough time to promote aquatic processes and various kinds of biological activity adapted to the wet environment.

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NOTES



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