ZAMCOM

ZAMBEZI WATERCOURSE COMMISSION

Integrated Water Resources Management Strategy and Implementation Plan for the Zambezi River Basin

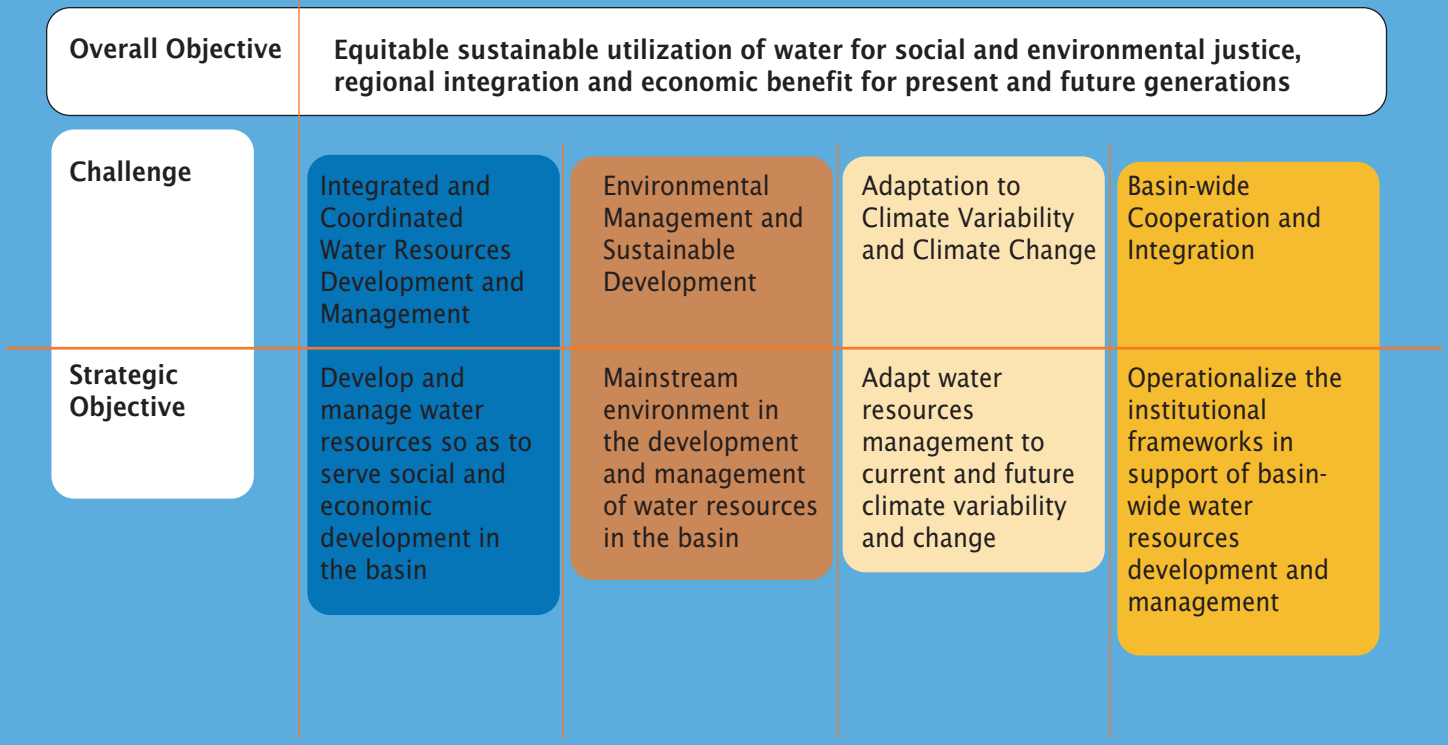




win-win cooperation/ cooperacao, ganhas tu, ganho eu

At a Glance

IWRM Strategy and Implementation Plan Overview



Objective

The objective of the Zambezi Watercourse Commission (ZAMCOM) is to promote the equitable and reasonable utilization of the water resources of the Zambezi Watercourse as well as the efficient management and sustainable development thereof.

IWRM Strategy

Objective

The objective of the Integrated Water Resources Management (IWRM) Strategy and Implementation Plan for the Zambezi Basin is to ensure equitable sustainable utilization of water for social and environmental justice, regional integration and economic benefit for present and future generations.

Antonio Klaus Kaarsberg

Under this uprooted tree, lies a hole formed by two rocks and that is where the Zambezi river starts

L. Munjoma

FOREWORD

The Zambezi River Basin is the most shared resource in the SADC region rich in natural resources ranging from water, land, soils, minerals, forests and wildlife. These play a critical central role in the economies of the eight riparian countries - Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia, and Zimbabwe. The basin has significant hydropower and irrigated agriculture potential.

However, the Basin faces key challenges that need to be addressed for riparian states to realize benefits from the water and related resources in a sustainable and equitable manner. The challenges centre on integrated and coordinated water resources development; environmental management and sustainable development; adaptation to climate variability and climate change; and basin-wide cooperation and integration.

The Integrated Water Resources Management Strategy and Implementation Plan for the Zambezi River Basin developed in 2008 through a highly consultative process and endorsed by Member States sets forth medium and long-term measures in support of integrated water resources development and management based on scenarios up to 2025. It continues to guide ZAMCOM as it carries out its mandate as set out in the ZAMCOM agreement.

Member States are keen to work together in addressing common challenges, as defined in this strategy. Member states recognize the importance of the coordinated and cooperative management of the Zambezi River Basin in order to, "promote the equitable and reasonable utilization of the water resources of the Zambezi Basin as well as the efficient management and sustainable development thereof" as enshrined in the ZAMCOM Agreement.

The strategy for its part spells out a vision around, "equitable and sustainable utilization of water for social and environmental justice, regional integration and economic benefit

for present and future generations". There is, therefore, a clear guiding framework for ZAMCOM to contribute to the socio-economic development of the basin.

Implementation of the strategy has already seen the establishment and operationalization of ZAMCOM and implementation of critical activities particularly in the area of basin-wide cooperation and integration. To that end, the ZAMCOM Agreement has been ratified by the required number of countries and is now in force.

The ZAMCOM Secretariat has been established and many critical programmes have been launched. The programmes include the upgrading of the Zambezi Water Resources Information System and the adoption of Rules and Procedures for the Sharing of Data and Information between and among the riparian states. Furthermore, the public information function within the Secretariat has been strengthened and national committees have been established in all the riparian states. Coordination with ongoing programmes in the basin is another area that has already received attention.

In the intervening period, significant assessments and studies have also been carried out in support of the development and management of water and related resources within the basin. Most of these studies have drawn upon or have been informed by the framework provided by the strategy. These include the Zambezi River Basin Multi-Sector Investment Opportunities Analysis (2010), Dam Synchronization Study (2011), Zambezi Basin Atlas (2012), and the Zambezi Environment Outlook (2015).

The Integrated Water Resources Management Strategy and Implementation Plan for the Zambezi River Basin at a Glance captures the salient aspects of the Integrated Water Resources Management Strategy and Implementation Plan for the Zambezi River Basin; and is a quick and easy to use reference resource for general use.

Zebediah Phiri (Prof.)
Executive Secretary, Zambezi Watercourse Commission

March 2016

P Johnson SARDC

ACKNOWLEDGEMENTS

The IWRM Strategy and Implementation Plan for the Zambezi River Basin (ZAMSTRAT) was formulated under the Zambezi Action Plan Project 6, Phase II (ZACPRO 6.2) project, which was designed upon the vision that the eight riparian states will achieve a higher and sustainable socio-economic development through equitable and sustainable utilization of the shared water resources of the Zambezi River Basin.

The Zambezi Watercourse Commission (ZAMCOM) would like to thank the SADC Water Division, the Zambezi River Authority (ZRA) and the ARA-Zambeze for their leadership and contribution to development of the strategy.

Special mention goes to the Project Implementation Unit (PIU) then based atthe ZRA head office in Lusaka for shaping and guiding the process surrounding the IWRM Strategy. The stakeholder consultation processes heavily relied on the support from Dr. Zebediah Phiri, Dr. Jefter Sakupwanya and Ms. Leonissah Munjoma, then of the PIU.

Appreciation is given to the Project Steering Committee (PSC) which comprised of national contact persons in each riparian country and representatives of SADC Water Division, ZRA and the cooperating partners who monitored and supervised the process.

Dr. Mike Tumbare, then Chief Executive of ZRA, guided and supported the consultancy team on many occasions with his vast knowledge and experience of the Zambezi Basin and its development.

Sincere gratitude is given to Nordic countries through their development agencies Danish International Development Agency (DANIDA); Norwegian Agency for Development Cooperation (NORAD); and Swedish International Development Cooperation (SIDA) for funding the development of the Strategy.

Preparation of this Integrated Water Resources Management Strategy and Implementation Plan for the Zambezi River Basin at a Glance was supported by DANIDA, to whom we are very grateful.

CONTENTS

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ACRONYMS

BASC	Basin-wide Stakeholders Coordination Committee
DANIDA	Danish International Development Agency
DSS	Decision Support System
GDP	Gross Domestic Product
HYCOS	Hydrological Cycle Observing System
IPCC	Intergovernmental Panel on Climate Change
IWRM	Integrated Water Resources Management
NASC	National Stakeholders Coordination Committee
NORAD	Norwegian Agency for Development Cooperation
NSC	National Steering Committee
PIU	Project Implementation Unit
PSU	Project Steering Committee
RBO	River Basin Organisation
SADC	Southern African Development Community
SADC-WD	Southern African Development Community – Water Division
SAPP	Southern African Power Pool
SIDA	Swedish International Development Cooperation
WARFSA	Water Research Fund for Southern Africa
WWF	World Wide Fund for Nature
ZACPLAN	Zambezi River Action Plan
ZACPRO 6.2	ZACPLAN Project 6 Phase 2
ZAMCOM	Zambezi Watercourse Commission
ZAMSEC	ZAMCOM Secretariat
ZAMTEC	ZAMCOM Technical Committee
ZAMWIS	Zambezi Water Resources Information System
ZAMSTRAT	IWRM Strategy and Implementation Plan for the Zambezi River Basin
ZRA	Zambezi River Authority

1 INTRODUCTION

Antonio Klaus Kaarsberg

This document presents a summary of the Integrated Water Resources Management (IWRM) Strategy and Implementation Plan for the Zambezi Basin (ZAMSTRAT), designed to widely disseminate the conclusions and recommendations of the IWRM strategy 2008 in an attractive, up-to-date format.

The strategy defines short, medium and long-term measures to support integrated water resources management. These measures address main issues and challenges in the development and management of water resources of the Zambezi River Basin to enhance socio-economic development.

ZAMSTRAT is seen as a vital tool for cooperative and sustainable management of the water resources and is a blueprint for the implementation of the Zambezi Watercourse Commission Agreement, whose objective is,

to promote the equitable and reasonable utilization of the water resources of the Zambezi Watercourse as well as the efficient management and sustainable development thereof.

ZAMSTRAT was originally formulated within the framework of the Zambezi River Action Plan (ZACPLAN) Project 6 Phase 2 (ZACPRO 6.2). ZACPLAN was an initiative of the Southern African Development Community (SADC) aimed at achieving environmentally sound planning and management of water and related resources in the Zambezi Basin.

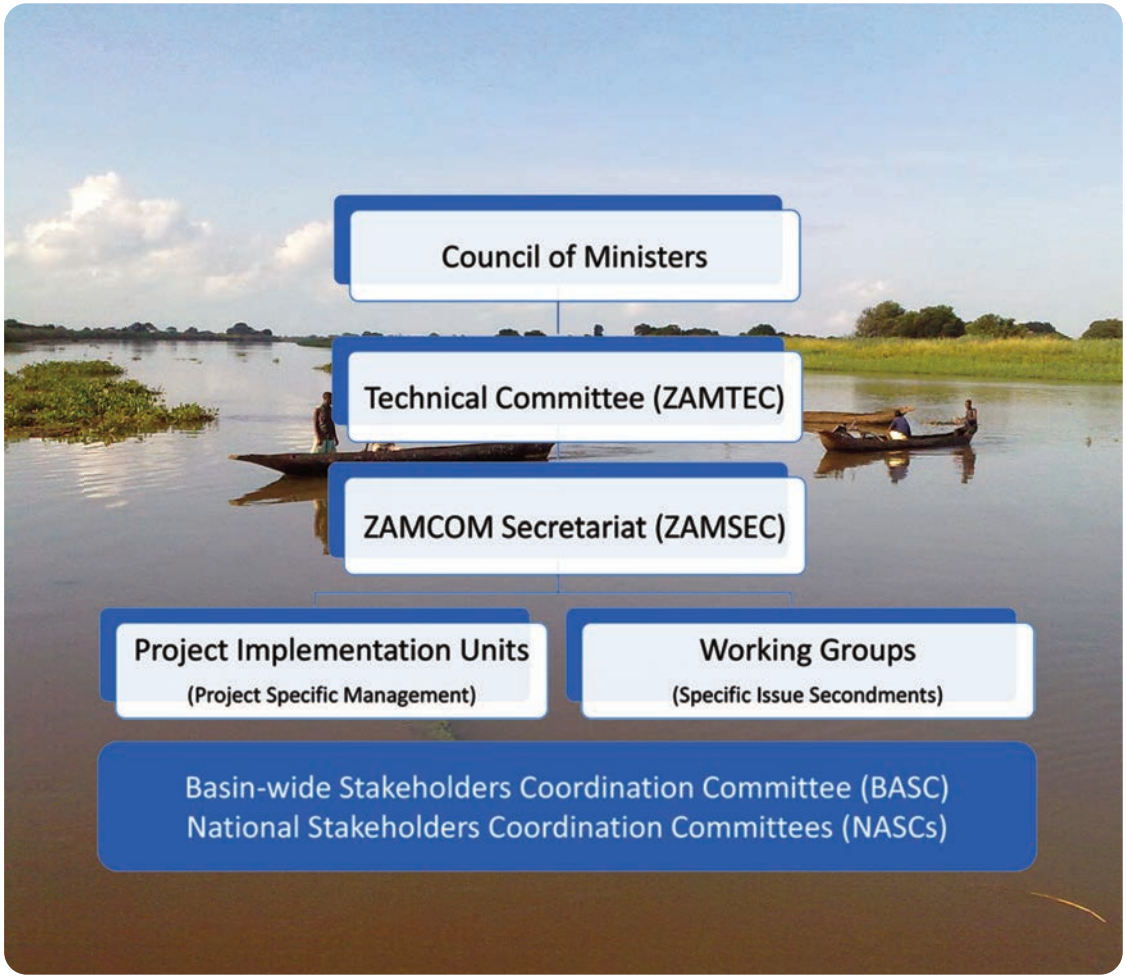
ZAMSTRAT presents the challenges for the Zambezi River Basin and proposes possible strategies and actions to address these.

The Zambezi Watercourse Commission (ZAMCOM) is a River Basin Organization (RBO) established by countries that share the Zambezi River Basin, as stipulated in the 2004 ZAMCOM Agreement and in accordance with the revised SADC Protocol on Shared Watercourses 2000.

ZAMCOM has three main governing organs:

- Council of Ministers which is the highest decision-making body;
- The Technical Committee (ZAMTEC) which is a technical advisory body; and,
- The Secretariat (ZAMSEC) which is responsible for the day-to-day operations.

The eight riparian states to the Zambezi River are Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia and Zimbabwe.


Council of Ministers
Technical Committee (ZAMTEC)
ZAMCOM Secretariat (ZAMSEC)
Project Implementation Units
(Project Specific Management)
Working Groups
(Specific Issue Secondments)
Basin-wide Stakeholders Coordination Committee (BASC)
National Stakeholders Coordination Committees (NASCs)

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2 BACKGROUND

Coastweek

The Zambezi River Basin is the largest river basin wholly within southern Africa and the fourth largest in Africa after the Congo, Nile and Niger, draining an area of almost 1.4 million sq km, and stretching across Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia and Zimbabwe. The Zambezi Basin covers almost all of the territory of Malawi, the smallest basin state; most of Zambia and about half of Zimbabwe. Significant areas of Mozambique and Angola are also in the Basin as well as small parts of Botswana, Namibia and Tanzania.

The Zambezi River Basin is populated by an estimated 40 million people, of which approximately 7.5 million live in the urban centres. The population is expected to increase to 51 million by 2025 with urbanization steadily increasing. In most of the riparian countries, economic growth has been high in recent years and has exceeded population growth. The average annual growth rate of the Gross Domestic Product (GDP) in the last 10 years has been six percent. There is need, to consolidate this growth through sustainable development, management and use of water resources in the Zambezi Basin.

Zambezi River Basin Sub-Basins

Chronicle

2.1 Available Water Resources and Utilization

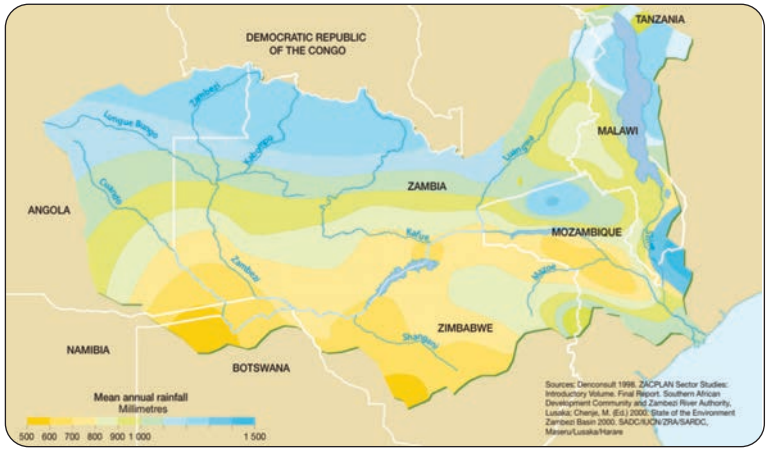
The basin as a whole receives a mean annual rainfall of about 950mm. However, rainfall varies from more than 1,400mm per year in the northern parts to less than 600mm per year in the low lying southwestern portion of the basin. The north and east of the basin experiences significantly more rainfall than the south and west.

There are distinct wet and hot summer months and a dry period in the remainder of the year. The available surface water resources originate from rainfall. Less than 15 percent of the mean annual rainfall in the basin contributes to the flow of the Zambezi River into the Indian Ocean. That means that more than 80 percent of mean annual rainfall evaporates and returns to the earth's atmosphere.

The Zambezi River and its network of tributaries discharges an average of 2,600 cubic metres per second (cu m/s) into the Indian Ocean. There are significant variations and uneven distribution in the available water resources from one area to another and over time (see map on Mean Annual Rainfall). The major contributors to total runoff are sub-basins in the upper part of the Zambezi, as well as the Kafue, Luangwa and Shire sub-basins. The available water resources are not coincident with water demands, since most of the population centres are in medium-to-low rainfall areas.

At present around 20 percent of the total runoff is used by evaporation from hydropower reservoirs, followed by irrigation and environmental use. Domestic and industrial water supply presently constitute less than 0.2 percent of available surface water resources. Based on development plans over the period up to 2025, water use in the Zambezi River Basin could increase to about 40 percent of the available surface water resources. Thus, the overall water use is still very small relative to the resources. However, given the high degree of seasonal and spatial variability in available water resources, some areas have much higher water demand relative to the available water resources in those specific areas. This is particularly true of the south and southwestern parts of the basin including northeastern Namibia, northern Botswana and western Zimbabwe.

Zambezi River Basin Average Rainfall



2.2 Floods and Droughts

Floods and droughts are part of the hydrological features of the Zambezi River Basin and occur almost cyclically. Extensive flooding occurs almost annually in the Upper Zambezi, the valley at the confluence of Cuando/Chobe and the Zambezi, the Lower Zambezi, in the Kafue Flats, and Lower Shire (see map of Zambezi River Basin Flood Areas).

The majority of the population in rural areas across the Zambezi River Basin practice subsistence agriculture along the floodplains, swamps, wetlands and margins of large water bodies. Although threats related to flooding are limited for large parts of the basin, the situation is different in some sections of the upper, middle and lower Zambezi, where floods inundate extensive areas and result in serious loss of life and infrastructure damage.

Droughts cover extensive geographic areas and have had a larger impact than floods. Areas commonly affected by droughts such as Cuando/Chobe, Kariba, Mupata and Tete sub-basins are also prone to floods. These droughts affect water supplies, reduce crop harvests and fisheries, as well as impacting on livestock. Low rainfall in the 2014/2015 and 2015/2016 seasons caused a sharp decline in the levels of Lake Kariba, resulting in a reduction in power generation. Climate change and variability is expected to increase the incidence of droughts in the region.

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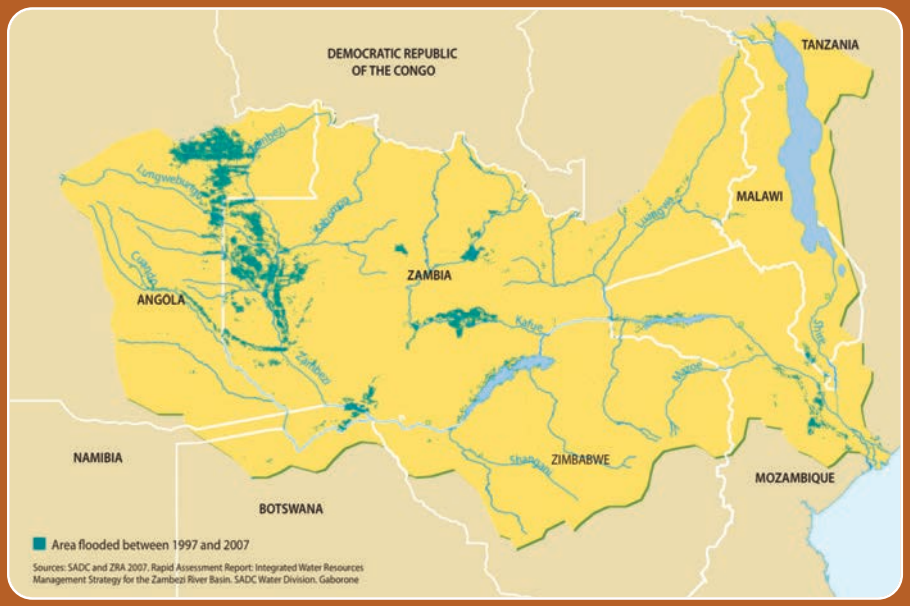
Zambezi River Basin Flood Areas



Occurrence of Extreme Events in the Zambezi Basin

2015 – 2016	Most countries in the Zambezi Basin experienced delays in the onset of rains by 10-40 days, along with poorly distributed rainfall, and very high temperatures. The areas most affected include southern Angola, central Malawi, southern Mozambique, northern Namibia, southern Zambia and southern Zimbabwe. The drought cycle experienced in the 2015/2016 agricultural season is much stronger than the 1997 cycle and the worst recorded in 50 years.
2014-2015	Tens of thousands of people in Malawi, Mozambique and Zimbabwe were severely affected by floods caused by Tropical Storm Chedza, which started in December 2014 and continued through February 2015. Malawi was hard hit by floods. More than 150,000 people in Mozambique and about 6,000 people in Zimbabwe were affected.
2012-2013	Following poor performance in November, good rains were received in the first part of December but dry conditions resumed late January through to May in the southern parts of the Zambezi Basin.
2008-2009	The basin experienced flooding in some parts, which displaced thousands of people in Angola, Botswana, Malawi, Namibia and Zambia.
2007	Floods induced by Cyclone Favio impacted on Mozambique and parts of Zimbabwe.
2005-2006	Parts of southern Africa received very heavy rains resulting in flooding that caused considerable infrastructural damage, destroying schools, crops, roads and telecommunications.
2004-2005	Many parts of the Zambezi Basin received below-normal rainfall during the agricultural season. Several riparian states declared national disasters to mobilize support for those affected.
2001-2003	Severe drought in the SADC region.
1999-2000	Cyclone Eline hit the region and widespread floods devastated large parts of southern, central and southeastern Mozambique, and parts of South Africa, Botswana and Zimbabwe. In Mozambique this affected 2 million people with 650,000 forced to abandon their homes.
1994-1995	Many countries in the SADC region hit by a severe drought, surpassing the impact of the 1991-1992 droughts.
1991 – 1992	Worst drought in living memory experienced in southern Africa, excluding Namibia.
1986 – 1987	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 – 1982	Severe drought occurred in most parts of southern Africa.
1967 – 1973	This six-year period was dry across the entire region. Some records show a severe drought.

3 CHALLENGES AND DEVELOPMENT ISSUES

SARDC

The basin has considerable potential for development in agriculture, tourism, hydropower and mining. Water resources development and management will be a key factor in the socio-economic development of the SADC region as a whole and the Zambezi Basin in particular.

The key issues with respect to water development and management as elaborated within the ZAMSTRAT are discussed under four main challenges:

- Integrated and Coordinated Water Resources Development;
- Environmental Management and Sustainable Development;
- Adaptation to Climate Variability and Change; and,
- Basin-wide Cooperation and Integration.

3.1 Integrated and Coordinated Water Resources Development

Water security is a major challenge in the Zambezi Basin. As countries improve their economies to meet national development goals there will be need to increase the infrastructure necessary to harness and manage the water resources, upon which the envisaged development depends. More storage dams will be needed for hydropower, irrigation, water supply and river regulation. The existing dams have been built to serve a single purpose. These will need to be operated conjunctively to optimize multiple benefits including power, irrigation and flood control.

Future development of water infrastructure calls for integrated development and operation for multi-purposes including safeguarding the integrity of aquatic ecosystems most prevalent in the basin. These aspects call for real basin-wide cooperation and improved coordination. Funding of water resources development and management will need greater support from governments of the riparian states. Access to water supply and sanitation is relatively low among the majority of riparian states, and this impacts negatively on the health of communities, educational advancement of children (particularly girls), poverty eradication, and sustainability of economic development in general.

Water resources management has to address this particular need for improved access to sustainable water supply and sanitation among the basin states.

3.2 Environmental Management and Sustainable Development

The Zambezi Basin is endowed with a rich natural capital, including wetlands, lakes, wildlife, and minerals plentiful under the soil. Economic growth depends largely on the sustainable use of natural resources. Wetlands are potentially among the most productive ecosystems in the basin, providing a wide range of goods and services of local, national and international importance. Examples include the Barotse Floodplain, Kafue Flats, and the Zambezi Delta (all Ramsar sites), and natural and artificial lakes, including Lake Malawi/Nyasa/Niassa, and Lake Kariba.

The wetlands are among the most environmentally sensitive areas and are often degraded. Environmental management and sustainable development of the aquatic environment will be a major challenge in the Zambezi Basin.

The Zambezi Basin is characterised by a decline in water quality due to discharges from urban, mining and manufacturing centres. Increasing pollution from urban and mining activities is already evident in Upper Kafue Basin (copper mining area of Zambia), and industrial complexes in urban areas such as in Harare, Lusaka, Tete, Blantyre and Lilongwe.

The invasion of aquatic weeds (water hyacinth, hippo-grass, red water fern, and mimosa pigra) is already a problem in a number of sub-basins including the Kafue, Shire, Kariba, and the Zambezi delta. Although large parts of the basin are sparsely populated, the watershed suffers from deforestation and soil degradation because of a high level of dependency on fuelwood and charcoal for cooking, heating, brick and tobacco curing.

ARA Zambeze

3.3 Adaptation to Climate Variability and Change

Climate in the Zambezi Basin is changing and the impacts are already being felt. The Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) asserts that further change in climate is inevitable in the coming decades and will pose greater challenges to growth and development. Average temperatures in southern Africa have risen by 0.5°C over the last century, with the 1990s deemed the warmest and driest decade ever.

There is now compelling evidence of a shift towards a new climate state, characterized by higher temperatures, extremes of rainfall, including shifts in the onset and duration of the rain season, apparent frequency of alternating droughts and flooding. Floods are probably the most pressing transboundary water management issue for the population living in the Zambezi River Basin.

The Lower Zambezi, with a number of unregulated tributaries has suffered from severe floods almost on an annual basis. Flood management is a shared responsibility by a number of national institutions. There is need for improved coordination, reporting, and disaster management plans. There are a number of challenges in dealing with droughts, including poor data networks of climatic and hydrological variables (including water supply); poor information sharing and exchange among basin states; lack of integrated physical and socio-economic indicators that would facilitate a comprehensive understanding of the magnitude, spatial extent and impacts of droughts; and lack of sound drought management plan as well as bureaucratic obstacles to efficient implementation.

Antonio Klaus Kaarsberg

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3.4 Basin-wide Cooperation and Integration

Regional cooperation in water resources management has been improving, though more slowly than may be desirable to deal with the evident development challenges in the basin.

ZAMCOM is a watercourse management organization set up by countries that share the Zambezi River Basin, as stipulated in the ZAMCOM Agreement and in accordance with the Revised SADC Protocol on Shared Watercourses. Its stated objective is to "to promote the equitable and reasonable utilization of the water resources of the Zambezi Watercourse as well as the efficient management and sustainable development thereof." All the organs of the ZAMCOM structure are now in place, since 2014.

While the steps taken to establish ZAMCOM are commendable, there is need for it to continue to be operationalised and the institutional frameworks at national level enhanced to facilitate greater cooperation. In addition, capacity of the water management institutions, both at national level as well as at the regional level, require strengthening as there are deficiencies in terms of funding, skills for integrated water resources management, including hydro-meteorological monitoring, multi-sectoral planning, and environmental management.

Furthermore, there is scarcity of data and information on which to base sound water resources planning and management across the basin. Data collection networks are declining and poorly maintained throughout the basin states, there is inadequate funding of data collection and processing, particularly for water quality and groundwater.

Equally important is the lack of effective stakeholder participation in water resources development and management, an issue engendered by a number of factors including inadequate policy and legal framework, poor funding by governments, mistrust between various stakeholders, and lack of awareness of the benefits of stakeholder involvement in the management of water and related natural resources such as water.

4 STRATEGIES AND ACTIONS

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4.1 Strategic Options Analysis

The strategy is a set of options determined to be the best measure to address the issues affecting water resources development and management in the Zambezi Basin. The strategy formulation provides an opportunity to analyze strategic options for the Zambezi Basin. Options analysis was a logical step following identification of the issues. For a number of the issues (discussed in the previous section), there is only one way to address the solution, and the question is not in choosing options but when and in which sequence to implement. The strategic option therefore is reduced to project design, determining the scope of development, timing, and the associated costs.

In the development of the ZAMSTRAT, options analysis was a key component of the consultative workshops conducted at national level with stakeholders in the riparian states (National Steering Committees) and at regional level through the Zambezi Basin Forum Meeting and the Regional Expert Meeting. While the options analyses were primarily subjective (group discussions), the results present a synthesis of collective knowledge, experience and expertise. Hence greater weight was given to the outputs of these consultative meetings.

For hydropower development the options analysis relied on previous studies carried out by the Southern African Power Pool (SAPP) to choose a development scenario most appropriate to meet the energy needs of SADC region. Future water use for hydropower was based on the SAPP hydropower development plan. For expansion of agriculture, two development scenarios were used to assess the future water requirements. It was concluded that a modest (50%) expansion of irrigated agriculture seems more likely than the maximum expansion envisaged under the development plans of the riparian states.

4.2 Strategies

The strategies address the challenges and issues in the Zambezi Basin as identified above.

The overall development objective is shown below.

Equitable sustainable utilization of water for social and environmental justice, regional integration and economic benefit for present and future generations

L Munjoma

The strategies are formulated within the four key challenges:

- Integrated and coordinated water resources development;
- Environmental management and sustainable development;
- Adaptation to climate variability and climate change;
- Basin-wide cooperation and integration.

4.2.1 Integrated and Coordinated Water Resources Development

Water resources development and management should serve many purposes such as hydropower, irrigation, fisheries, aquatic weed control, floodplain agriculture, flood control, and the sustenance of environmental flows. Benefits and costs are to be shared among the riparian states.

The strategic objective under the Challenge of Integrated and Coordinated Water Resources Development and Management is to "Develop and manage water resources so as to serve social and economic development of the basin".

This strategic objective translates into a number of strategies that are presented below. These strategies should be read in close conjunction with others, in particular in the mainstreaming of environment and adaptation to current and future climate variability. The strategies to achieve integrated and coordinated water resources development are:

- Address the high demand for new water infrastructure to meet regional energy security;
- Address the demand for water in agricultural development and regional food security;
- Improve operation of existing and new major dams in the basin to take into account and optimize multiple functions of water;
- Increase funding for water resources development and management; and
- Improve access to sustainable water supply and sanitation.

4.2.2 Environmental Management and Sustainable Development

All countries in the Zambezi Basin have ambitious and optimistic economic growth scenarios to ensure improved livelihoods. Basin countries derive larger part of their growth from natural resources use, including mining, fishery, agriculture, forestry and nature tourism. This places environmental management and natural resources governance in the core of development in the Zambezi Basin. The strategic objective of this challenge is therefore to "Mainstream environment in the development and management of water resources in the Zambezi Basin".

There are six strategies that are particularly important for sustainable development in the Zambezi Basin:

- Adequately manage the ecological and economic functions of wetlands and sustain their viability;
- Control water pollution from point sources, especially from urban centres and mining areas;
- Control invasive aquatic weeds and prevent new outbreaks;
- Promote sustainable fishery management as a contribution to regional food security;
- Ensure water resource development and management does not harm tourism potential; and
- Prepare and implement strategic environmental plans and procedures including the development of protected area networks and valuable ecosystems.

watermission.org

4.2.3 Adaptation to Climate Variability and Climate Change

Climate change is expected to result in increased frequency of extreme events such as droughts and floods, affecting agricultural crop and livestock production as well as wildlife. Rising temperature is expected to affect fish production from major lakes and reservoirs, as well as cause higher evaporation from these main water bodies and reduce the yield of main agricultural crops (especially cereal crops). Wetland ecosystems will be affected as run-off patterns will change. Precise assessments of climate change are inadequate and are often limited to mean temperature and precipitation, with relatively little known about changes in extremes.

The strategic objective under the challenge of Adaptation to Climate Variability and Climate Change is to "Adapt water resources management to current and future climate variability".

Four strategies to meet this objective are shown below:

- Improve the knowledge base on climate variability and climate change and their impacts on water resources;
- Improve flood management and mitigation mechanisms at national and regional scale;
- Improve regional and national drought management; and
- Develop regional capacity to adapt to climate change and make use of the development opportunities associated with global climate change mitigation.

4.2.4 Basin-wide Cooperation and Integration

The challenges of integrated and coordinated water resources development, environmental management and sustainable development, and climate change adaptations, and the strategies required to address these challenges underline the need for stronger regional cooperation and closer integration in the field of water management. Integrated water resources development and management is at the heart of economic development and social wellbeing in the Zambezi River Basin.

Several activities are being implemented to support water management in the Zambezi Basin. However, there is limited coordination in these efforts. There is need, therefore, to further strengthen basin-wide cooperation and to formalize the cooperative framework. The strategic objective for this challenge is to "Operationalize the institutional frameworks in support of basin-wide water resources development and management".

This requires four strategies, which are:

- Strengthen institutional frameworks in support of basin-wide water resources development and management and discuss issues of inter-basin transfer;

Overall Objective	**Equitable sustainable utilization of water for social and environmental justice, regional**	
Challenge	1. Integrated and Coordinated Water Resources Development and Management	2. Environmental Management and Sustainable Development
Strategic Objective	*Develop and manage water resources so as to serve social and economic development of the basin*	*Mainstream environment in the development and management of water resources in the basin*
ISSUES	1.1 Inadequate water infrastructure for achieving regional energy security 1.2 Insufficient water infrastructure for agricultural development to achieve regional food security 1.3 Major dams in the basin were constructed for a single purpose and their operation is not optimized for multiple uses 1.4 Inadequate financing of water resources development and management 1.5 Low access to water supply and sanitation	2.1 Inadequate protection and sustainable development and use of wetland 2.2 Deterioration of water quality due to point pollution from mining, industrial and urban centres 2.3 Proliferation of invasive aquatic weeds 2.4 Unsustainable and low-productivity fisheries management 2.5 Tourism development is threatened by degradation of the aquatic environment 2.6 High-value and unique ecosystems and related ecological and economic functions in the basin may be threatened and fragmented by accelerated development

- Strengthen organisational, financial and human resource capacities of water management institutions at regional, national and local levels;
- Improve and expand basin-wide water resources data collection, processing and information transfer systems; and
- Promote broad-based stakeholder participation in water resources development and management.

4.3 Strategic Framework

The Strategic Framework for the Zambezi IWRM Strategy is presented below. For each challenge the strategic objective is defined, and for each objective the key issues have been summarized. This is followed by the strategies to address those issues and the main actions in support of the proposed strategy. The framework also indicates the close relationship between the strategies. This is the basis of IWRM as it calls for coordinated and integrated development of water resources in the entire river basin to address the socio-economic development.

integration and economic benefit for present and future generations

3. Adaptation to Climate Variability and Climate Change	4. Basin-wide Cooperation and Integration
Adapt water resources management to current and future climate variability and change	*Operationalize the institutional frameworks in support of basin-wide water resources development and management*
3.1 Extreme variability and uneven distribution of rainfall is likely to be amplified by climate change 3.2 Lack of integrated flood management in development planning 3.3 Poor drought management and integration in development planning 3.4 Inadequate coping mechanisms for climate change	4.1 Strengthen ZAMCOM operations 4.2 Weak capacity of national water management institutions to perform river basin management tasks 4.3 Inadequate water resources knowledge base for basin-wide development and management 4.4 Inadequate effective stakeholder participation in water resources planning, development and management

Overall Objective	Equitable sustainable utilization of water for social and environmental justice, regional	
Challenge	1. Integrated and Coordinated Water Resources Development and Management	2. Environmental Management and Sustainable Development
Strategic Objective	*Develop and manage water resources so as to serve social and economic development of the basin*	*Mainstream environment in the development and management of water resources in the basin*
STRATEGIES	1.1 Address the high demand for new water infrastructure to meet regional energy security 1.2 Address the demand for water in agricultural development and regional food security 1.3 Improve operation of existing and new major dams to take into account and optimize multiple functions of water 1.4 Increase funding for water resources development and management 1.5 Improve access to sustainable water supply and sanitation	2.1 Adequately manage the ecological and economic functions of wetlands and sustain their viability 2.2 Control water pollution from point sources – especially from urban centres and mining areas 2.3 Control invasive aquatic weeds and prevent new outbreaks 2.4 Promote sustainable fishery management as a contribution to regional food security 2.5 Ensure water resource development and management does not harm tourism potential 2.6 Prepare and implement strategic environmental plans and procedures including the development of area networks
MAIN ACTIONS	1.1 ✦ Joint development of feasible package of major hydropower sites, taking into account multiple functions in coordination with SAPP ✦ Identify and promote options for small scale hydropower development	2.1 ✦ Improve the wetland related regulation and management between riparian countries ✦ Assess and maintain environmental flows appropriate to each river section ✦ Develop management plans for all the major wetlands taking into account the different wetland functions ✦ Develop and implement special initiatives for environmental management around hotspots

integration and economic benefit for present and future generations

3. Adaptation to Climate Variability and Climate Change	4. Basin-wide Cooperation and Integration
Adapt water resources management to current and future climate variability and change	*Operationalize the institutional frameworks in support of basin-wide water resources development and management*
3.1 Improve the knowledge base on climate variability and climate change and their impacts on water resources 3.2 Improve flood management and mitigation mechanisms at national and regional scale 3.3 Improve regional and national drought management 3.4 Develop regional capacity to adapt to climate change and make use of the development opportunities associated with global climate change mitigation	4.1 Strengthen operationalisation of ZAMCOM in support of basin-wide water resources development and management and discuss issues of inter-basin transfer 4.2 Strengthen organisational, financial and human resource capacities of water management institutions at regional, national and local levels 4.3 Improve and expand basin-wide water resources data collection, processing and information transfer systems 4.4 Promote broad-based stakeholder participation in water resources development and management
3.1 ✦ Carry out comprehensive assessment of the vulnerability of basin water resources to climate variability and climate change	4.1 ✦ Strengthen ZAMCOM through promotion of targeted measures to raise awareness of benefits of basin-wide management of water resources ✦ Strengthen coordination with ongoing programmes in the basin (SADC HYCOS/ COMESA/SAPP/NEPAD/ Waternet/ IUCN/WWF/World Bank), including management commissions of sub-basins (Joint Water Commission, ZRA) .

Overall Objective	Equitable sustainable utilization of water for social and environmental justice, regional	
Challenge	1. Integrated and Coordinated Water Resources Development and Management	2. Environmental Management and Sustainable Development
Strategic Objective	*Develop and manage water resources so as to serve social and economic development of the basin*	*Mainstream environment in the development and management of water resources in the basin*
MAIN ACTIONS	1.2 ✦ Support the development of agriculture through basic facilities such as reliable input supply and better road networks ✦ Expand irrigated agriculture ✦ Promote and support the restoration and sustainability of flood plain agriculture ✦ Enhance the productivity of rain-fed agriculture through improved water management options	2.2 ✦ Set up integrated water quality monitoring system ✦ Harmonize legislation and enforcement systems ✦ Promote clean technology
	1.3 ✦ Develop appropriate river simulation models to identify the influence of dam operations on the downstream flow regime, including unregulated tributaries ✦ Optimize multi-purpose management of existing reservoirs	2.3 ✦ Harmonize the legislation on the control of aquatic weeds ✦ Set up national focal points on aquatic weed control ✦ Initiate regional capacity building ✦ Initiate joint monitoring and survey of aquatic weeds ✦ Adjust reservoir operations (incl. provision for weed control)

integration and economic benefit for present and future generations

3. Adaptation to Climate Variability and Climate Change	4. Basin-wide Cooperation and Integration
Adapt water resources management to current and future climate variability and change	*Operationalize the institutional frameworks in support of basin-wide water resources development and management*
3.2 ✦ Integrate flood management in development planning ✦ Develop and implement effective land use planning ✦ Strengthen and encourage collaboration of existing early warning institutions ✦ Dovetail the operation of major water infrastructure to optimize flood storage ✦ Formulate comprehensive flood preparedness and flood response mechanisms, making use of regional good practice	4.2 ✦ Develop and implement performance based training programmes on water resources management based on institutional development assessments ✦ Implement well-designed plan to harmonise water resources management policies, legislation and strategies of the Basin states
3.3 ✦ Support development of drought management plans, including local irrigation development, improved food stock logistics, crop adaptation and drought insurance ✦ Mainstream drought forecasting in water resources planning and management	4.3 ✦ Implement rules and procedures for data and information sharing for further operationalization of ZAMWIS ✦ Harmonize data measurement and storage methods in basin ✦ Improve basin-wide data (water quality and quantity measurements, sediment content, groundwater) collection systems ✦ Priority improvement of data and knowledge base on groundwater resources ✦ Further development of ZAMWIS (increasing accessibility and interactivity and developing models and Decision Support System tools) ✦ Strengthen basin-wide research on water resources through joint programmes, collaboration of research institutions, and enhanced information exchange

Overall Objective	Equitable sustainable utilization of water for social and environmental justice, regional	
Challenge	1. Integrated and Coordinated Water Resources Development and Management	2. Environmental Management and Sustainable Development
Strategic Objective	*Develop and manage water resources so as to serve social and economic development of the basin*	*Mainstream environment in the development and management of water resources in the basin*
MAIN ACTIONS	1.4 ✦ Improve overall investment climate to make water development infrastructure financing more attractive ✦ Develop mechanisms for local infrastructure co-financing ✦ Raise awareness of the vital role of the water sector in economic development and poverty alleviation	2.4 ✦ Collaborate with NEPAD programme towards improving fisheries productivity. ✦ Integrate fisheries development with water resources development – new reservoir operating rules, fishery production, provision for fish migration
	1.5 ✦ Expand coverage of water supply and sanitation services in rural and urban areas	2.5 ✦ Systematically integrate tourism development in water resources planning, development and management ✦ Develop catchment management plans incorporating areas of tourism value such as game management areas and wetlands. ✦ Operation of water infrastructure to support and enhance tourism management
		2.6 ✦ Prepare a comprehensive and spatially explicit map of ecosystems services ✦ Delineate high priority conservation areas such as headwaters, recharge zones and flood plains and implement land use plans for these areas ✦ Start international cooperation on linking areas with high significance for biodiversity – coming to Protected Area Networks ✦ Develop and implement guidelines for the use of proper EIAs and SEAs in development planning

integration and economic benefit for present and future generations

3. Adaptation to Climate Variability and Climate Change	4. Basin-wide Cooperation and Integration
Adapt water resources management to current and future climate variability and change	*Operationalize the institutional frameworks in support of basin-wide water resources development and management*
3.4 ✦ Integrate strategies to deal with climate variability and climate change in national socio-economic development planning ✦ Exploit development opportunities under global climate change protocols for afforestation and reforestation at national level ✦ Setup a regional centre of excellence to document and support activities for effective adaptation to climate variability and climate change	4.4 ✦ Strengthen stakeholder participation through policy and legislation review and revision throughout the basin states ✦ Formulate and implement a public information programme to raise awareness among a broad range of stakeholders ✦ Strengthen and sustain the National Stakeholders Coordination Committees and basin-wide Stakeholders Coordination Committees meetings as part of awareness and information sharing among basin stakeholders

5 STRATEGY IMPLEMENTATION PLAN

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The main actions described in the Strategic Framework are prioritized into initiatives that need to be undertaken in the short term (0-2 years), medium term (3-5 years) and long term (6-15 years).

The implementation plan also proposes the organizations that should take the lead and that should be actively engaged in these activities, as well as short description of the trigger actions in each field.

The sequencing of activities has endeavoured to strike a balance between strengthening the basic framework for cooperation as well as working on substantive activities (joint investments to address energy, food and environmental needs) yielding the tangible benefits of water resource development and management in the Zambezi River Basin.

Challenge / Strategy / Main Action		Short Term (0-2 yrs)	Medium Term (3-5 yrs)	Long Term (6-15 yrs)
1	**INTEGRATED AND COORDINATED WATER RESOURCES DEVELOPMENT & MANAGEMENT**			
1.1	***Address high demand for infrastructure to meet energy security***			
1.1.1	Joint development of hydropower sites	✓	✓	
1.1.2	Identify and promote options for small scale hydropower	✓	✓	✓
1.2	***Address demand for water in agricultural development and regional food security***			
1.2.1	Support the development of agriculture through basic facilities such as reliable input supply and better road networks		✓	✓
1.2.2	Expand irrigated agriculture	✓	✓	✓

Lead Institution	Main Partner Institutions	First Action
ZAMCOM/SAPP	Riparian Energy Organizations, Ministries of Water Resources	Update current studies in view of electricity crisis in the basin
ZAMCOM/SAPP	Riparian Energy Providers, Private Sector Regulators	Develop package of technical and financial options and case inventory
ZAMCOM/National Road Authorities	Ministries of Agriculture, Donor Organizations	Map main current/future agricultural production areas and marketing constraints
ZAMCOM/National Ministries responsible for irrigation	NEPAD, World Bank	Collate national plans and identify technical and capacity constraints

Challenge / Strategy / Main Action		Short Term (0-2 yrs)	Medium Term (3-5 yrs)	Long Term (6-15 yrs)
1.2.3	Promote and support the restoration of flood plain agriculture		✓	✓
1.2.4	Enhance the productivity of rain-dependent agriculture	✓	✓	✓
1.3	***Improve operation of existing and new dams for multiple functions of water***			
1.3.1	Develop river simulation models for dam operation and unregulated tributaries	✓	✓	
1.3.2	Optimize multi-purpose management of existing reservoirs		✓	✓
1.4	***Increase funding for water resources development & management***			
1.4.1	Improve overall investment climate to attract water development infrastructure financing		✓	
1.4.2	Develop mechanisms for local infrastructure co-financing			✓
1.4.3	Raise awareness of the vital role of the water sector in economic development and poverty alleviation	✓	✓	
1.5	***Increase access to sustainable water supply & sanitation***			
1.5.1	Expand coverage of water supply and sanitation services in rural and urban areas		✓	

Lead Institution	Main Partner Institutions	First Action
ZAMCOM/Dam Operators	WWF/TNC/UNESCO-IHE	Review implementation experience in Kafue Plains and operationalize studies
National Ministries of Agriculture	Fertilizer boards, research and extension organizations	Identify current practices and regional/ international good practices
ZAMCOM	Navigation, Fisheries, Weed Control, Flood Storage Agriculture	Define with many stakeholders all multifunctional requirements
ZAMCOM/Dam operators	Different stakeholders as above	Plan review first years flow regimes in practice - including communication
ZAMCOM	Ministries of Planning and Finance/ Water Resources	Identify bottlenecks with possible investment funds
ZAMCOM/SAPP	Ministries of Planning and Finance/ Water Resources	Initiate discussion with local financial institutes
ZAMCOM	Ministries of Planning and Finance/ Water Resources, SARDC	
ZAMCOM/Ministers of Water Resources	Riparian ministries of water and sanitation	

Challenge / Strategy / Main Action		Short Term (0-2 yrs)	Medium Term (3-5 yrs)	Long Term (6-15 yrs)
2.	ENVIRONMENTAL MANAGEMENT AND SUSTAINABLE DEVELOPMENT			
2.1	***Adequately manage the ecological and economic functions of wetlands in the Basin***			
2.1.1	Improve wetland related regulation and management between countries		✓	✓
2.1.2	Assess and maintain environmental flow appropriate to each main river section	✓	✓	
2.1.3	Develop management plans for all major wetlands in the Basin taking into account multiple functions	✓	✓	
2.1.4	Develop and implement special initiatives for environmental management around hotspots		✓	✓
2.2	***Control water pollution from point sources - especially urban centres and mines***			
2.2.1	Set up integrated water quality monitoring systems with real time communication		✓	
2.2.2	Harmonize legislation and enforcement systems on water quality		✓	
2.2.3	Promote clean technology through system of environmental audits		✓	✓
2.3	***Control invasive aquatic weeds and prevent new outbreaks***			
2.3.1	Harmonize legislation on control of aquatic weeds		✓	
2.3.2	Set up national focal points on aquatic weed control	✓	✓	

Lead Institution	Main Partner Institutions	First Action
ZAMCOM	Local Government, Ministries of Environment/Fishery	Assess current regulation and operational effectiveness
ZAMCOM	Dam Operators, Ministries of Water Resources, Academia	Synthesize current knowledge from various studies
ZAMCOM	Local Government, Ministries of Environment/Fishery	Identify and agree on list of main wetlands in the basin
ZAMCOM/SARDC	Local Government, Ministries of Environment/Fishery	Identify and agree major hot spots/areas under threat
ZAMCOM	National Ministries of Water Resources	Prepare overview of ongoing activities; identify priorities and communication
ZAMCOM	National Committees, National Organizations	Inventory of ongoing legislation and operational effectiveness, including labs
Industry/ Mining Associations	Ministries of Planning and Finance/ Industries	Review financing/enforcement mechanism to support clean technology
ZAMCOM	Ministries of Fisheries/Environment/ Water Resources	Inventory of ongoing legislations and operational effectiveness
ZAMCOM	Ministries of Fisheries/Environment/ Water Resources	Describe minimum requirements for Focal Point

Challenge / Strategy / Main Action		Short Term (0-2 yrs)	Medium Term (3-5 yrs)	Long Term (6-15 yrs)
2.3.3	Exchange experience and initiate regional capacity building		✓	
2.3.4	Initiate joint monitoring and survey of aquatic weeds proliferation		✓	✓
2.3.5	Adjust reservoir operations including provision for weed control		✓	✓
2.4	***Promote sustainable fisheries management as contribution to regional food security***			
2.4.1	Collaborate with NEPAD programme towards improved fisheries productivity	✓	✓	
2.4.2	Integrate fisheries development with main water resources development		✓	✓
2.5	***Ensure water resources development & management does not harm tourism potential***			
2.5.1	Systematically integrate tourism development in water resources planning, development & management		✓	✓
2.5.2	Develop catchment management plans incorporating areas of tourism value such as game management areas and wetlands.		✓	
2.5.3	Operation of water infrastructure to support and enhance tourism management		✓	
2.6	***High and unique ecological values in the Basin may be threatened and fragmented by accelerated development***			
2.6.1	Prepare a comprehensive and spatially explicit map of ecosystems services		✓	

Lead Institution	Main Partner Institutions	First Action
ZAMCOM	National Focal Points	Describe based on ongoing work and literature good practices in weed control
ZAMCOM/ Focal Points	Ministries of Fisheries/Environment/ Water Resources	Agree on parameters, frequency and means of communication
ZAMCOM/Dam Operators	Other stakeholders in dam operations as described above	Describe based on ongoing work and literature good practices in weed control
ZAMCOM	Reservoir Operators, Private Sector, Ministries of Fisheries	Develop long-list of improved fishery/ marketing practices of relevance for the basin
ZAMCOM	Reservoir Operators, Ministries of Fisheries	Screen current reservoir operations (levels, landings, vegetation, fish migration)
ZAMCOM	Ministries of Water Resources	Identify and describe (including potential) water-related tourism highpoints
ZAMCOM	Ministries of Water Resources/ Natural Resources/Land	
ZAMCOM	Ministries of Water Resources, Reservoir Operators	Describe flow and water level requirement for most important tourist activities
	Ministries of Environment/Natural Resources	
ZAMCOM/SARDC	Ministries of Environment/Natural Resources	

Challenge / Strategy / Main Action		Short Term (0-2 yrs)	Medium Term (3-5 yrs)	Long Term (6-15 yrs)
2.6.2	Delineate high priority conservation areas such as headwaters, recharge zones and flood plains and implement land use plans for these areas		✓	
2.6.3	Start international cooperation on linking areas with high significance for biodiversity	✓		
3.	**ADAPTATION TO CLIMATE VARIABILITY AND CLIMATE CHANGE**			
3.1	***Improve the knowledge base on climate variability and climate change and their impacts on water resources***			
3.1.1	Carry out comprehensive assessment of the vulnerability of basin water resources to climate variability and climate change	✓		
3.2	***Improve flood management and mitigation mechanisms at national and regional scale***			
3.2.1	Integrate flood management in development planning		✓	
3.2.2	Development and implementation of effective land use planning		✓	
3.2.3	Strengthen and encourage collaboration of existing early warning institutions	✓		
3.2.4	Dovetail the operation of major water infrastructure to optimize flood storage	✓		
3.2.5	Formulate comprehensive flood preparedness and flood response mechanisms, making use of regional good practice	✓		

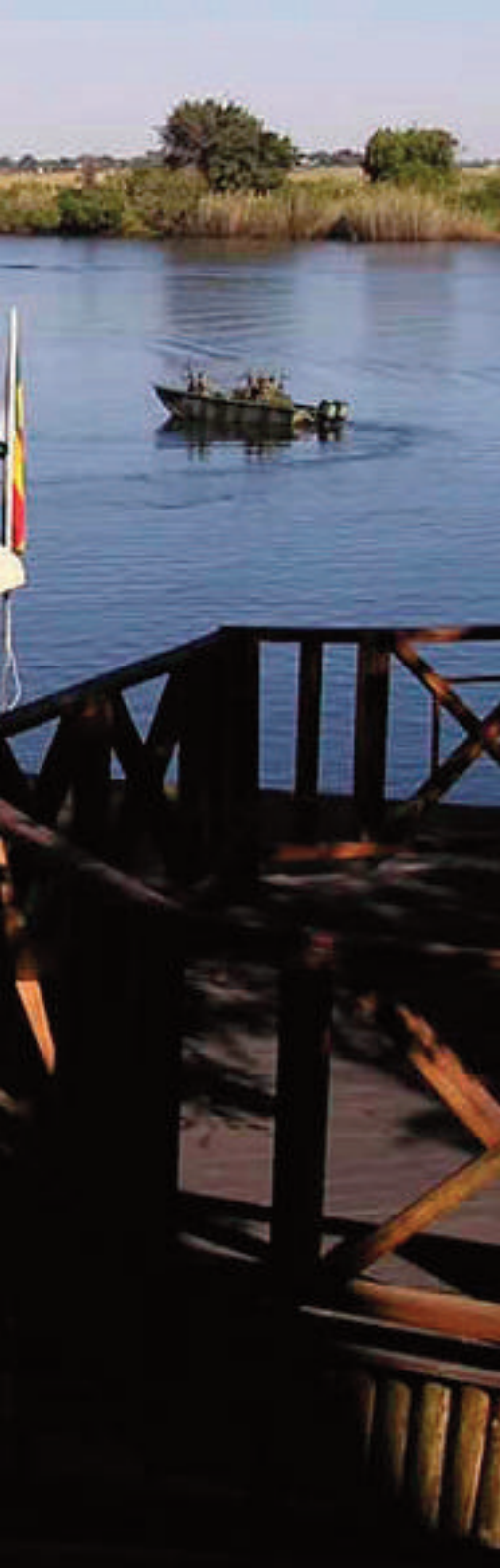
Lead Institution	Main Partner Institutions	First Action
ZAMCOM	Ministries of Environment/Natural Resources	
ZAMCOM	Ministries of Environment/Natural Resources	
ZAMCOM/SARDC	Ministries of Water Resources/ Environment/ Meteorological Services/ SARDC	
ZAMCOM	Ministries of Water Resources/ Environment/Planning/Finance	
ZAMCOM	Ministries of Land/Natural Resources	
ZAMCOM/ SADC Water Division	Ministries of Water Resources/ Environment/Meteorological Services	
ZAMCOM/Dam operators	Ministries of Water/Disaster Management Units	
ZAMCOM	Ministries of Water Resources/ Environment/Meteorological Services/ Disaster Management Units	

Challenge / Strategy / Main Action		Short Term (0-2 yrs)	Medium Term (3-5 yrs)	Long Term (6-15 yrs)
3.3	***Improve regional and national drought management***			
3.3.1	Support development of drought management plans		✓	✓
3.3.2	Mainstream drought forecasting in water resources planning and management		✓	✓
3.4	***Use regional/global development opportunities presented by climate change***			
3.4.1	Integrate strategies to deal with climate variability and climate change in national socio-economic development planning	✓		
3.4.2	Exploit development opportunities under climate change financing mechanisms for administrative order afforestation	✓	✓	
3.4.3	Setup a regional centre of excellence to document and support activities for effective adaptation to climate variability and climate change		✓	✓
4.	**BASIN WIDE COOPERATION AND INTEGRATION**			
4.1	***Strengthen operationalisation of ZAMCOM***			
4.1.1	Strengthen coordination with ongoing programmes in the basin	✓		
4.2	***Strengthen organisational, financial and human resource capacities of water management institutions at regional, national and local levels***			

Lead Institution	Main Partner Institutions	First Action
ZAMCOM	SADC	Share successful experiences from the Basin
SADC/ZAMCOM	Meteorological Services, Disaster Forecasting Services, SARDC	Assess experience with recent droughts and make priority list of requirements
ZAMCOM/Miombo Network, Waternet/SARDC	Ministries of Planning and Finance, Water Resources	Develop briefings based on existing studies; systematically share
ZAMCOM	Ministries of Planning and Finance, Water Resources, Forestry	Identify service provider that could serve as focal point on carbon credit financing
Ministries of Planning and Finance; Water Resources; Forestry	SADC/ZAMCOM/Service Providers/ SARDC	Develop a suite of project packages including financing arrangements
ZAMCOM	NASCs, BASC/SARDC	Develop MoUs on linking the various programmes to the ZAMCOM process

Challenge / Strategy / Main Action		Short Term (0-2 yrs)	Medium Term (3-5 yrs)
4.2.1	Develop and implement performance based training programmes on water resources management based on institutional development assessments	✓	✓
4.2.2	Implement well-designed plan to harmonize water resources management policies, legislation and strategies of the basin states	✓	✓
4.3	***Improve and expand basin-wide water resources data collection, processing and information transfer systems***		
4.3.1	Strengthen data and information sharing protocol for further operationalization of ZAMWIS	✓	
4.3.2	Harmonize data measurement and storage methods in basin		✓
4.3.3	Improve basin-wide data (water quality and quantity measurements, sediment content, groundwater) collection systems	✓	✓
4.3.4	Priority improvement of data and knowledge base on groundwater resources	✓	
4.3.5	Further development of ZAMWIS (increasing accessibility and interactivity and developing models and DSS tools)	✓	
4.3.6	Strengthen basin-wide research on water resources through joint programmes, collaboration of research institutions, and enhanced information exchange.		✓
4.4	***Promote broad based stakeholders participation in water management***		
4.4.1	Strengthen stakeholder participation through policy and legislation review and revision throughout the basin states.	✓	
4.4.2	Formulate and implement a public information programme to raise awareness among a broad range of stakeholders.		✓
4.4.3	Strengthen and sustain the Annual Basin Forum meetings as part of awareness and information sharing among basin stakeholders	✓	

Long Term (6-15 yrs)	Lead Institution	Main Partner Institutions	First Action
	ZAMCOM	SADC-WD /Ministries of Water Resources/ Meteorological Services	
	ZAMCOM	SADC-WD/Ministries of Water Resources/ Meteorological Services	
✓	ZAMCOM	SADC-WD/Ministries of Water Resources/ Meteorological Services	
	ZAMCOM	SADC-WD/Ministries of Water Resources/ Geological Services/Research Institutions	
	ZAMCOM	SADC-WD/Ministries of Water Resources/ Meteorological Services	
	ZAMCOM	SADC-WD/Ministries of Water Resources/ Research Institutions/SARDC	
	ZAMCOM	National Stakeholder Committees	Identify most important messages and national organizations to work with
✓	ZAMCOM	National Stakeholder Committees	Develop contacts with important associations of target groups and media
	ZAMCOM	SADC-WD/Ministries of Water Resources/ River Basin Organisations	Formalize an MoU between key stakeholders



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ZAMCOM

ZAMBEZI WATERCOURSE COMMISSION

IWRM Strategy and Implementation Plan for the Zambezi River Basin





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