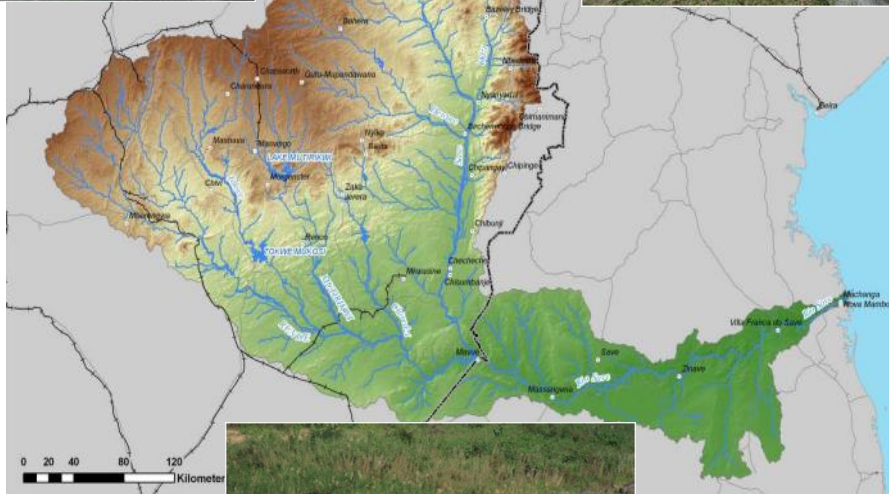




The Republic of Mozambique and the Republic of Zimbabwe

# The Save River Basin – a shared water resource

## Joint Integrated Water Resources Management Strategy



Sept 2013

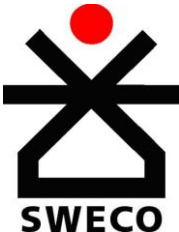
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on behalf of:  
Government of the Republic of Mozambique  
Government of the Republic of Zimbabwe

**Project:** DEVELOPMENT OF THE SAVE RIVER BASIN  
MONOGRAPH AND Joint IWRM STRATEGY

**Title:** JOINT INTEGRATED WATER RESOURCES MANAGEMENT STRATEGY

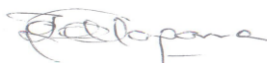
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The Southern African Development Community (SADC) and its member states have committed themselves to co-ordinated and environmentally sound development of the resources of shared watercourses in the region in order to support sustainable socio-economic development.

The Save River Basin is shared between Mozambique and Zimbabwe. The Development of the Save River Basin Monograph and Joint IWRM Strategy constitutes a part of the Shared Watercourses Support Project (SWCSP) for the Buzi, Save and Ruvuma river basins. The SWCSP has been prepared by the Southern African Development Community (SADC) Secretariat and the African Development Bank (AfDB), in consultation with the Governments of Mozambique, Tanzania and Zimbabwe, within the framework of the SADC Revised Protocol on Shared Watercourses (2000), the Regional Water Policy (2005), and the Regional Strategic Action Plan on Integrated Water Resources Development and Management (2005). The SWCSP was approved by the AfDB for funding and implementation in May 2006.

The overall long term goal of the joint effort between Mozambique and Zimbabwe on the Save River Basin is to ensure development of integrated water resources management and related physical infrastructure that contributes to regional integration and poverty reduction.

Project Implementing Agencies are the ARA-Centro in Beira, Mozambique and the ZINWA Catchment Offices in Runde and Save in Mutare and Masvingo respectively, Zimbabwe supported by the national Ministries responsible for water. As a transboundary project, the SWCSP including the Save component is managed by the SADC on behalf of the Governments.

The consultancy for the project is carried out by COWI A/S in association with Interconsult Zimbabwe, SWECO International, CONSULTEC Consultores Associados, BKS and AustralCOWI.

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## ACRONYMS AND ABBREVIATIONS

ARA	Regional Water Administration (Mozambique)
ARD	Acid Rock Drainage
ARDA	Agricultural Rural Development Authority (Zimbabwe)
AREX	Agricultural Extension Service (Zimbabwe)
ASM	Artisanal and Small-scale Mining
DNA	National Water Directorate (Mozambique)
DWR	Department of Water Resources (Zimbabwe)
EIA	Environmental Impact Assessment
EKIS	Enhanced Knowledge and Information System
EMA	Environmental Management Authority (Zimbabwe)
FIPAG	Water Supply Investment and Assets Fund (Mozambique)
GIS	Geographic Information System
IDA	Institutional Development Action
IDP	Infrastructure Development Project
JIWRM	Joint Integrated Water Resources Management
MAR	Mean Annual Runoff
ML	Million litres = Mega litres = 1,000,000 l = 1,000 m <sup>3</sup>
Mm <sup>3</sup>	Million cubic metres = Mega cubic metres = 1,000 ML
MOPH	Ministry of Public Works and Housing
MWh	Mega watt hours
NGO	Non-Governmental Organisation
RSAP	Regional Strategic Action Plan
RSOP	River System Outline Plan (= Catchment Outline Plan)
SADC	Southern African Development Community
SR	Storage Ratio
SRB	Save River Basin
SWCSP	Shared Watercourse Support Project
ZINWA	Zimbabwe National Water Authority

## EXECUTIVE SUMMARY

The Save River Basin Joint Integrated Water Resources Management Strategy (the ‘Strategy’ or ‘Joint IWRM Strategy’) has been developed to foster an integrated approach to managing and developing water resources in the basin. It is shared by Mozambique and Zimbabwe. The importance of the Strategy is illustrated by an examination of the key role water plays in shaping resilient industrious and vibrant communities. Water is essential for life. It supports valued and diverse ecosystems in wetlands, lakes, rivers, estuaries and the sea. It is key to health, recreation and tourism. It is vital for economic growth. It is used to generate power, to run industries, to grow food and to service residential homes. Thus, water is a resource that needs careful consideration and protection via well-formulated management strategies.

The implementation of water management strategies is particularly important in the Save River Basin (SRB) as the water resources within its catchment are already at risk from flooding and under pressure from farming, mining and other socio-economic activities. Furthermore, the SRBs water resources will be put under increasing strain in the near future due to population growth, the expansion of already competing land uses, changing lifestyles, the development of new technologies and the impact of climate change. The Joint IWRM Strategy seeks to identify, address and mitigate the impact of current and projected stressors within the SRB in order to ensure sustainable development and utilisation of this resource.

### *The Origins of the Joint IWRM Strategy*

The Save River Basin is one of three basins shared exclusively by Zimbabwe and Mozambique and thereby falls within the SADC region. The basis for socio-economic development in the SADC region is a co-ordinated and environmentally sound development of its shared watercourses as expressed in the SADC protocol and associated strategies and action plans. To realise this vision, the African Development Bank has financed the Shared Watercourse Support Project (SWCSP) for the Buzi, Ruvuma and Save River basins. This project is designed ***“to ensure the development of integrated water resources management and related physical infrastructure development that contributes to regional integration and poverty reduction”***. The objective of the project is the establishment of ***“a sustainable framework for an integrated planning and management of shared water resources in the Buzi, Ruvuma and Save river basins for development and support of improved livelihoods of the local communities”***. It is within this broader framework that the SWCSP and Save River Basin Joint IWRM Strategy have been developed.

The SWCP has been implemented in five components, comprising:

1. The development of River Basin Monographs and Strategies;
2. The creation of an Enhanced Knowledge and Information System (EKIS);
3. Community Based Water Management Projects (CBMPs);
4. Project Management and Capacity Building;
5. Technical Assistance and Project Auditing.

Phases 1 and 2 of the project produced Monograph and Development Scenarios for the Save River Basin (SRB). These phases presented baseline data and analysed development options against projected water demand respectively. The Joint IWRM Strategy, now presented in this Report, was formulated on the basis of these two phases.

*The Formulation and Outcomes of the Joint IWRM Strategy*

The Save River Basin Joint IWRM Strategy fits together with other plans and strategies to provide a co-ordinated approach to water resources management. Delivery of many of the actions herein rely on other strategies, plans and programmes of work in the region and within the national territories of Mozambique and Zimbabwe.

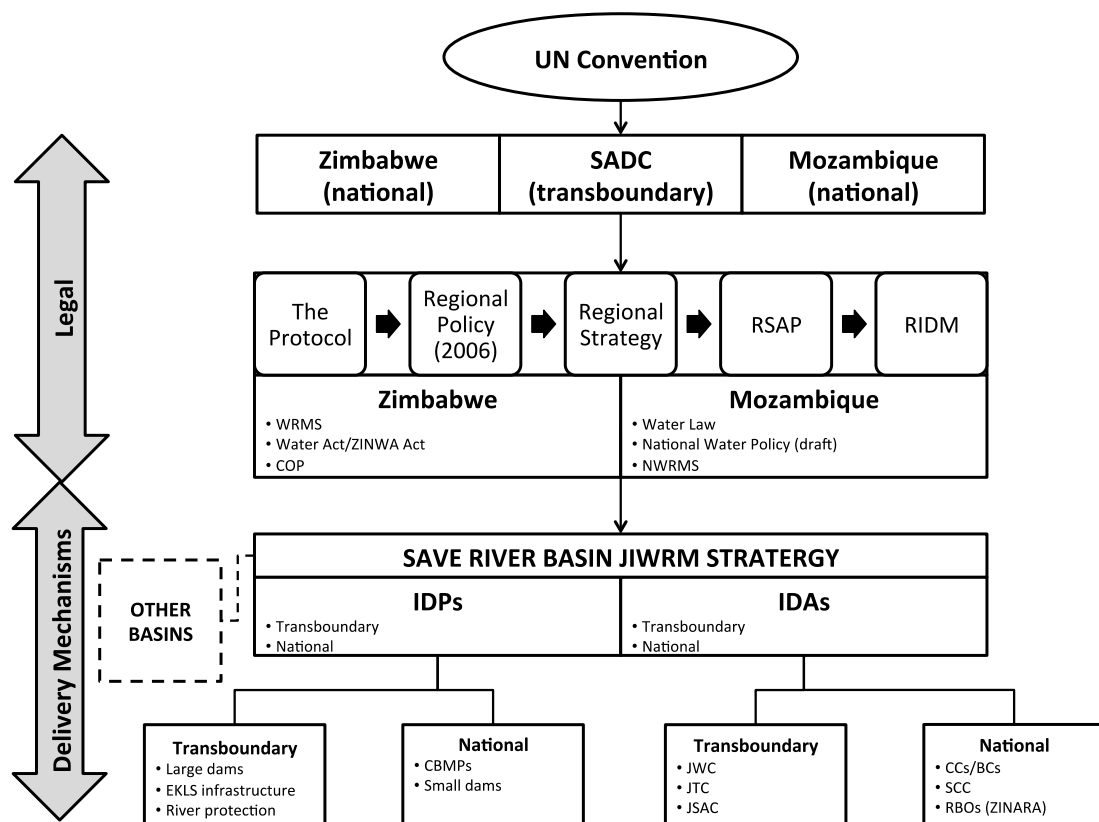


Figure i: The linkages between the Joint IWRM Strategy and the legal framework within which it is to be implemented.

The Strategy has been developed based on the following pillars and objectives:

- Sustainable planning and management of water resources
- Adaptation to, and mitigation of, climate change
- An improved water governance environment
- People valuing water and the water environment

The Strategy is designed to provide:

- Infrastructure development projects to meet the growing water needs of the Basin
- A legal and institutional framework that governs and supports implementation of the Strategy
- Institutional and stakeholder capacity development programs to create an empowered system for implementation of the Strategy

The Strategy is to be implemented in the following five components, details of which are provided in tables i to v below.

1. Institutional Framework for Water Resources Development and Management
2. Water Resources Infrastructure Development
3. Enhanced Water Resources Information and Knowledge Management
4. Water Resources Management
5. Environmental Sustainability

The construction of 8 large multi-purpose dams and associated water transfer infrastructure is required in to address the actions specified under Component 2 (Water Resource Infrastructure Development). These dams will provide the following services:

- Irrigation to approximately 100,000ha in the lower reaches of the SRB
- Primary water supply to small towns and business centres
- Up to 130MW hydropower generation
- Flood control
- Improved climate resilience in this drought and cyclone prone area

The Strategy proposes a feasibility study to formulate an investment plan to set priorities and dam operating rules for the ~US\$500million capital program. The network of dams and transfer systems is shown in figure ii below.

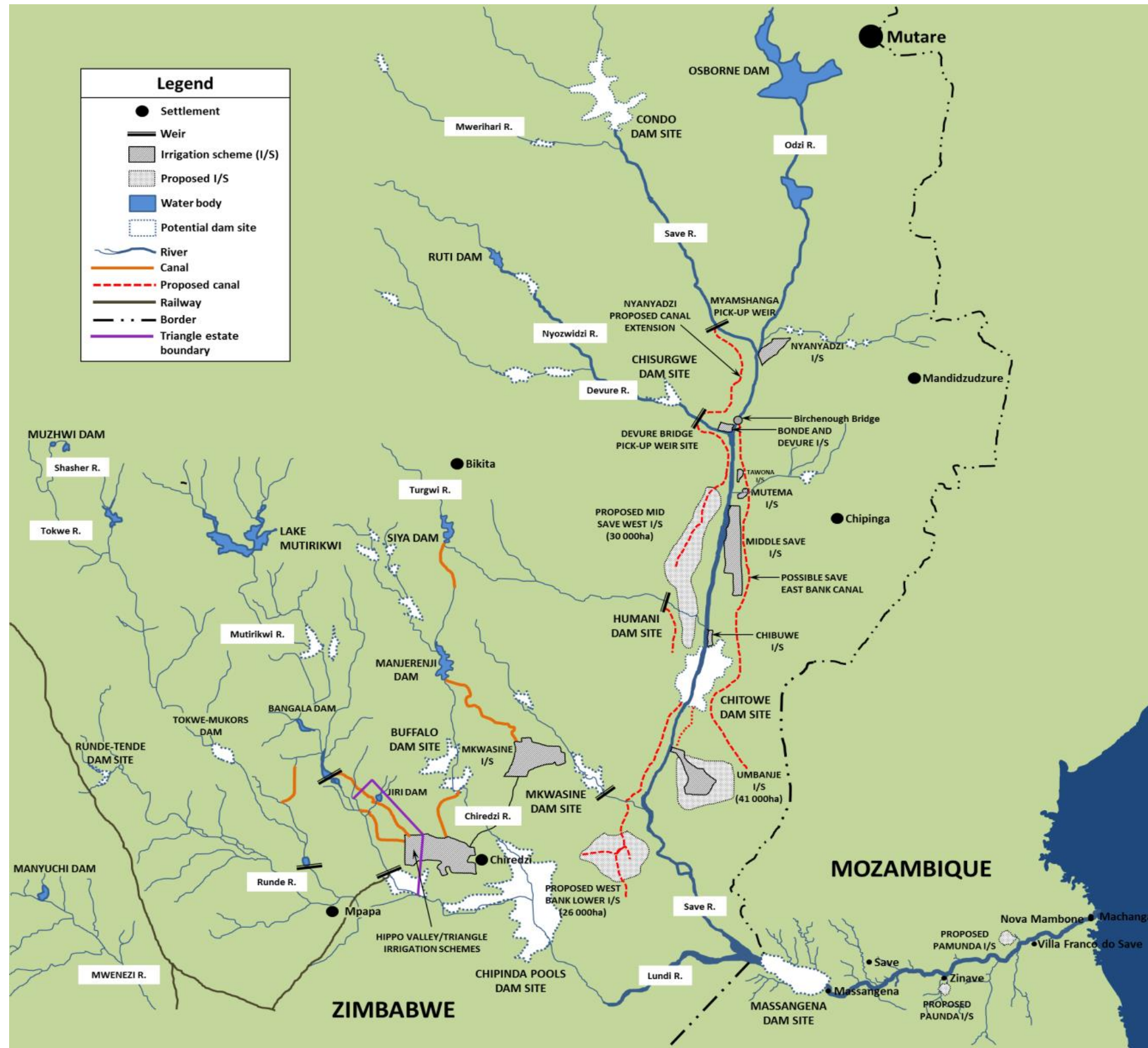


Figure ii: Existing and planned strategic water infrastructure for the Save River Basin

*Table i: Institutional Framework for Water Resources Management and Development*

<b>Strategic Objective</b>	<b>Strategic Intervention</b>	<b>Identified Project</b>	<b>Implementing and Support Agencies</b>	<b>Level Time Scale ~Budget</b>
<b>Component 1:</b> To develop joint planning mechanisms and operational procedures for managing the Buzi, Pungwe and Save River Basins in accordance with the Revised Protocol on Shared Watercourses, international obligations and national statutes.	<b>IF 1:</b> Joint management mechanism	<b>Capacity Building:</b> 1. Establishment of the JWC Secretariat and a Permanent Bilateral Joint Technical Committee (PBJTC) 2. Formulation, implementation & monitoring of the Joint Buzi, Pungwe and Save Bi-lateral comprehensive agreement - to operationalise the Strategies for each Basin (including provision of Technical Assistance to both sub-actions)	SADC, Member States (Mozambique (DNA) and Zimbabwe (DWR-ZINWA))	Transboundary 2013 – 2020 US\$1,200,000
		Review of legal / institutional framework and ratification of international treaties - including provision of Technical Assistance	Member States (Mozambique and Zimbabwe)	National 2013 – 2015 US\$200,000
	<b>IF 2:</b> Stakeholder participation	Create and operate Buzi - Pungwe - Save Basins Stakeholder Advisory Council	SADC, GiZ, Member States (Mozambique and Zimbabwe); Danida	Transboundary 2016 – 2020 US\$500,000
	<b>IF3:</b> Capacity building	Technical assistance to Catchment Councils / River Basin Committees; PIAs	DWR - ZINWA, Save /Runde Catchment Councils (Zimbabwe) and DNA-ARA Centro, Pungwe/Buzi/Save Basin Committees (Mozambique)	National and Sub-national 2013 – 2020 US\$1,200,000
	<b>IF4:</b> Vulnerable groups mainstreaming	Development of Vulnerable Groups Mainstreaming Strategy for the Buzi - Pungwe - Save Shared River Basins	Member States (Mozambique and Zimbabwe) through the JWC; Danida	All 2015 – 2018 US\$150,000
	<b>IF5:</b> Research and development	Establish a research and development fund for water resources in the SRB	DWR - ZINWA and DNA - ARA-Centro	All 2015 – 2025 US\$600,000

*Table ii: Water Resources Infrastructure Development*

Strategic Objective	Strategic Intervention	Identified Project	Implementing and Support Agencies	Level Time Scale ~Budget
<b>Component 2:</b> To address the deficit in water demand by ensuring water supply in an efficient and sustainable manner at the right time, in adequate quantities and of suitable quality. Additionally, this component seeks to maximise benefits from these investments by harnessing hydropower from the same infrastructure.	<b>WID 1:</b> Infrastructure development	1. Feasibility study and investment plan for multi-purpose dams in the SRB including SEIA and RAP 2. Geotechnical and other surveys for multi-purpose dams in the SRB 3. Dam operating rules for optimum water use and allocation	JWC - Member States; World Bank	Transboundary 2015 – 2020 US\$3,300,000
		<b>Condo Dam &amp; Chitowe Dam</b> 1. Update engineering design, EIA / RAP 2. Prepare procurement documents 3. Financial studies & investment funding 4. Construct dams and ancillary works	DWR - ZINWA	National 2015 – 2025 US\$154,100,000
		<b>Chisurgwe Dam</b> 1. Prepare detailed engineering design, EIA / RAP 2. Prepare procurement documents 3. Financial studies & investment funding 4. Construct dam and ancillary works	DWR - ZINWA	National 2020 – 2025 US\$62,500,000
		<b>Buffalo / Nyanyadzi Dams</b> 1. Prepare engineering design, EIA / RAP; 2. Prepare procurement documents 3. Financial studies & investment funding 4. Construct dam and ancillary works	DWR - ZINWA	National 2015 – 2020 US\$51,950,000
		<b>Chipinda Pools / Massangena Dams</b> 1. Investigate option to implement one as a Joint Mozambique - Zimbabwe dam. 2. Prepare detailed engineering design, EIA / RAP 3. Prepare procurement documents 4. Financial studies & investment funding 5. Construct dam and ancillary works	Mozambique - Zimbabwe; AfDB, World Bank	Transboundary 2018 – 2030 US\$93,700,000
		<b>Runde Tende Dam</b> 1. Prepare detailed engineering design, EIA / RAP 2. Prepare procurement documents 3. Financial studies & investment funding 4. Construct dam and ancillary works	DWR - ZINWA	National 2015 – 2020 US\$82,200,000
	<b>WID 2:</b> Infrastructure safety and operation	<b>Dam Safety Study</b> Produce an inventory of all dams/weirs and carry out a dam safety and sedimentation survey for all large and medium sized dams in the SRB	DWR - ZINWA	National 2015 – 2018 US\$1,000,000

Table iii: Enhanced Water Resources Knowledge and Information Systems

Strategic Objective	Strategic Intervention	Identified Project	Implementing and Support Agencies	Level Time Scale ~Budget
<b>Component 3:</b> To support effective, efficient collection and management of water resources data necessary for the implementation of IWRM in the Basin.	<b>EKIS 1:</b> Hydro-meteorological data and information systems	Procure hardware/software, train in standardised procedures, data protocol and tools for collection, storage and management of information exchange between the countries	SADC, Member States - JWC (Mozambique and Zimbabwe)	Transboundary 2015 – 2025 US\$1,000,000
	<b>EKIS 2:</b> Information access	1. Set-up flood / drought disaster information dissemination mechanisms 2. Develop web-based and other sale mechanisms to ensure that water resources information is available to users for planning, managing and developing water resources	ZINWA Data and Research Unit and ARA Centro and Met Offices in Mozambique and Zimbabwe	National 2015 – 2020 US\$120,000
	<b>EKIS 3:</b> Surface and groundwater monitoring	Expand/ Strengthen hydro-meteorological and groundwater monitoring stations in the Save River Basin	ZINWA and ARA Centro	Transboundary 2015 – 2030 US\$6,000,000
	<b>EKIS4:</b> Water quality and sediment monitoring	Expansion of pollution control, water quality and sediment monitoring stations in the basin	ZINWA and ARA Centro	National 2015 – 2025 US\$600,000

*Table iv: Water Resources Management Actions*

Strategic Objective	Strategic Intervention	Identified Project	Implementing and Support Agencies	Level Time Scale ~Budget
<b>Component 4:</b> To promote integrated management of water resources in the basin and reduce the impact of water related disasters in the Save River Basin.	<b>WRM 1:</b> Integrated planning	Develop 5 year rolling catchment outline plans based implementation plans for the Joint IWRM Strategy	ARA-Centro and ZINWA: Mozambique and Zimbabwe	Sub-National 2015 – 2030 US\$500,000
	<b>WRM 2:</b> Water allocation	Develop water allocation guidelines and a permit database (including discharge, storage and abstraction) aimed at promoting equity and water use efficiency (include estimation of the economic value of water across the sectors)	Save / Runde Catchment Councils and ARA Centro	Sub-National 2015 – 2020 US\$250,000
	<b>WRM 3:</b> Water demand management	Develop water demand management guidelines for the Save River Basin (extracting lessons learnt from work done at the SADC level)	Save /Runde Catchment Councils and ARA Centro	National/sub-national 2015 – 2018 US\$150,000
	<b>WRM 4:</b> Basin wide disaster management	Develop a basin-wide integrated flood mapping / forecasting and management strategy for the basin	JWC (Member States - Mozambique and Zimbabwe)	Transboundary 2015 – 2020 US\$200,000
		Develop an integrated drought management strategy and implementation plan for the Save River Basin	JWC (Member States - Mozambique and Zimbabwe)	Transboundary 2015 – 2020 US\$100,000
	<b>WRM 5:</b> Building climate resilience	Develop a basin-wide climate change adaptation strategy for the basin based on the SADC CCAWS (and climate change sensitivity analysis of proposed development scenarios)	JWC (Member States - Mozambique and Zimbabwe); DFID	Transboundary 2015 – 2020 US\$120,000

*Table v: Environmental Sustainability Actions*

Strategic Objective	Strategic Intervention	Identified Project	Implementing and Support Agencies	Level Time Scale ~Budget
<b>Component 5:</b> To halt and reverse environmental degradation with ecosystems services restored.	<b>ES 1:</b> Catchment protection	Develop and implement a river protection strategy (to combat streambank cultivation, artisanal mining, bush burning/clearing and implement improved land use practices) <ul style="list-style-type: none"> <li>Carry out remote sensing based or other river and reservoir siltation mapping</li> <li>Perform land use mapping of SRB</li> <li>Prepare a 10 year wetland reclamation and river protection strategy for the SRB</li> </ul>	JWC (Member States - Mozambique and Zimbabwe)	Transboundary 2015 – 2020 US\$1,200,000
		<ul style="list-style-type: none"> <li>Enact legislation to designate water and river protection zones</li> <li>Run catchment protection campaigns</li> </ul>	Mozambique and Zimbabwe	National 2018 – 2020 US\$200,000
	<b>ES 2:</b> Environmental water requirements	Carry out a Basin-wide environmental flows study to include: <ul style="list-style-type: none"> <li>Ecological baseline studies</li> <li>Environmental and estuarine flow requirements at typical river sections - especially in relation to low flows</li> <li>Consultation with stakeholders on desired state of water bodies</li> </ul>	JWC (Member States - Mozambique and Zimbabwe)	Transboundary 2020 – 2025 US\$500,000
	<b>ES 3:</b> Water pollution	Develop a strategy to combat water pollution - including accidental discharges, artisanal mining	JWC (Member States - Mozambique and Zimbabwe)	National/sub-national 2015 – 2020 US\$300,000
	<b>ES 4:</b> Community based water management projects (CBMPs)	Implement community basin management projects to promote sustainable, equitable and participatory management of water resources in the basin. Projects must be holistic in nature, comprising the following components: <ol style="list-style-type: none"> <li>Water supply and sanitation</li> <li>Irrigation and improved land use practices</li> <li>River / water source protection</li> <li>Gulley control and other aquatic environment reclamation works</li> </ol>	District Authorities / Sub-catchment councils and beneficiary communities'; Funding partners: DFID / SDC	Sub-national 2014 – 2025 US\$10,000,000



The Save River Basin is shared by two SADC Member States, namely Mozambique and Zimbabwe. The river basin has an area of approximately 102,000 km<sup>2</sup>, of which 83% lies in Zimbabwe and 17% in Mozambique. The SRB encompasses a wide range of climatic types ranging from mountainous with generally higher precipitation in the northeast to drier zones along a north-south gradient, and somewhat more humid and tropical approaching the coast and the Indian Ocean in the east. Rainfall is distinctly seasonal. In general, precipitation occurs during a hot and wet summer season of varying length (November-December to March-April) depending on specific location within the Basin, followed by a cool and dry period (May-August), and subsequently, a hot and dry period (September-November). The Triangle - Chiredzi area is a notable exception with the heaviest rainfall occurring in March instead of December.

A variety of vegetation types ranging from bush-, shrub- and grassland dominate the SRB. These cover 38% of the basin area, followed by agriculture at 33%, and forest at 26%. If large sugar estates are excluded, irrigated agriculture presently constitutes only 0.61% of the land use. It is also of note that 9% of the Zimbabwean part of the Basin is found in protected areas. Large and small-scale mining is also a significant activity in the basin. Subsistence farming dominates in communal areas. In many cases stream bank cultivation is also practiced, resulting in extensive siltation of rivers and reservoirs. Soil studies have shown that there is 320,000 ha with the potential for irrigated crop cultivation, of which 46,000 ha is suitable for sugar cane and rice cultivation. As at year 2010, the SRB had an estimated total population of 3.17 million inhabitants, of which less than 5% reside in the basin in Mozambique. The majority are located in Zimbabwe's rural areas, with the rest found in a few service centres and larger towns within the basin.

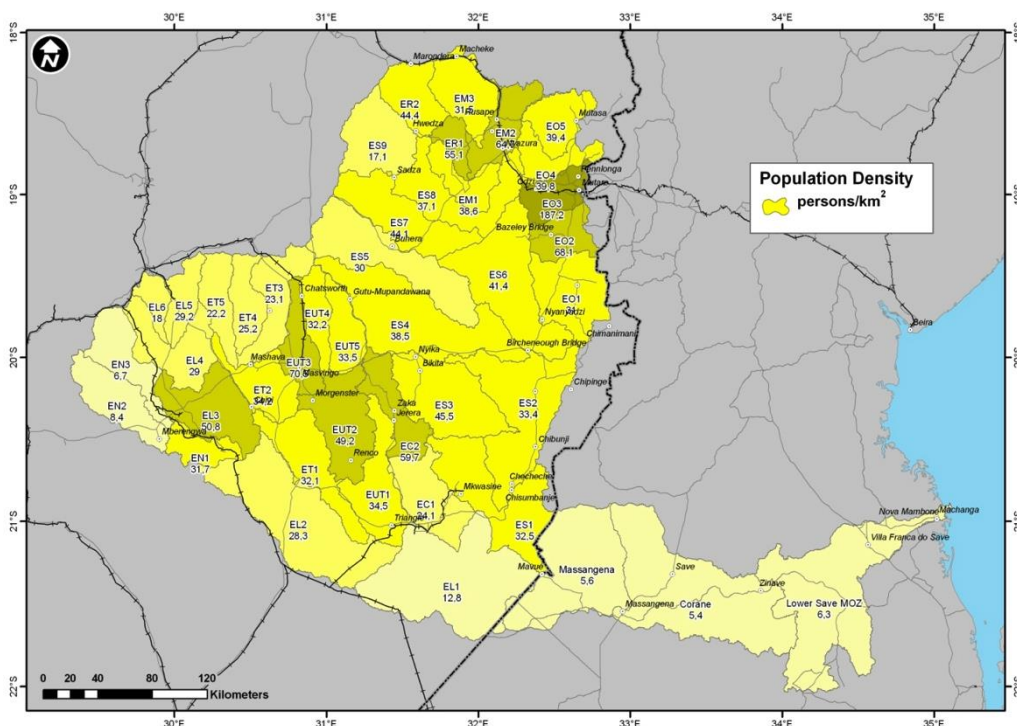


Figure 1-2: Population densities in the SRB, 2010

## **1.2 Policy, Legal and Institutional Frameworks**

A diverse range of global, regional and national instruments operate both independently and collectively to influence and regulate the joint management of the shared water resources of the Save River Basin.

Internationally there are a number of commitments and frameworks that create an enabling environment for countries to co-manage water resources, namely the Helsinki Rules, Agenda 21 from the Rio Summit in 1992 and the Convention on the Law of the Non-Navigational Uses of International Watercourses developed in 1997. At the Pan – African level the African Water Vision 2025 and the commitments by the Head of States in the African Union (AU) in the Sharma el Sheik Declaration on Water provide a context for transboundary water resources management.

Furthermore, Mozambique and Zimbabwe are Member States of the Southern African Development Community (SADC) and are committed to the SADC Treaty which calls for peace and stability, regional economic integration and poverty eradication. The SADC Treaty creates an enabling environment for cooperation in the SADC region. Other instruments have also been developed to facilitate collaborative management of shared river basins in the region; these include the Revised Protocol on Shared Watercourses, the Southern African Vision on Water, Life and Environment, the Regional Water Policy, the Regional Water Strategy and the Regional Strategic Action Plan on Integrated Water Resources Management (IWRM). At the national level, Mozambique and Zimbabwe have created enabling environments that recognise IWRM approaches and the importance of transboundary water resources management.

### **1.2.1 International Context**

#### *Helsinki Rules*

The Helsinki Rules were formulated and adopted by the International Law Association and as such codify international water law. The Helsinki or general rules of international law are applicable to the use of the waters of an international drainage basin except “*as may be provided otherwise by convention, agreement or binding custom among the basin States*”. The Rules define international drainage basins, and address the equitable utilisation of water therein, subject to factors concerning geography, hydrology and climate, historical utilisation and population levels among others. Procedures for the prevention and settlement of international disputes as well as the legal rights of Basin States are also outlined. The Rules set the tone for interstate co-operation by addressing key issues related to the exchange of information concerning water resources, their development and use, and the formation of joint agencies to formulate plans for the efficient use of the common resource. Thus, the Joint IWRM Strategy presented in this Report is predicated by several of the Articles contained in the Helsinki Rules.

### *Agenda 21*

The United Nations Conference on Environment & Development (UNCED) held in Rio de Janeiro, Brazil, 3 to 14 June 1992 resulted in the development of Agenda 21. It called for greater attention to the integration of environment and development concerns in order to fulfil basic needs and improved living standards. Under the section on Conservation and Management of Resources for Development the application of integrated approaches to the development, management and use of water resources is a key component that expresses the need to “*formulate water resources strategies, prepare water resources action programmes and consider, where appropriate, the harmonization of those strategies and action programmes*”.

Agenda 21 calls on all States to consider, at the regional level, the harmonisation of national strategies and Action Programmes for water resources management and development. Pursuant to this, the SADC Protocol has recognised the relevant provisions of Agenda 21, resulting in the formulation of the Regional Water Policy, the Regional Water Strategy and Regional Strategic Action Plan on Water Resources Management. These SADC initiatives have paved the way for the formulation of the Save River Basin Joint IWRM Strategy.

### *UN Convention on the Law of Non-navigational Uses of International Watercourses*

The UN Convention is the overarching instrument for inter-state co-operation in the management of shared watercourses. It sets the agenda for the creation of regional protocols, the formulation of watercourse agreements between water course states, and the formation of joint water commissions to provide a mechanism for co-operation in all aspects concerning the development and management of shared water resources. The Convention echoes the provisions in the Helsinki Rules requiring the equitable and reasonable utilisation of international water courses and participation in their use, development and protection.

Although Zimbabwe and Mozambique are not signatories to the UN Convention, they have signed the Revised Protocol on Shared Watercourses, which adopts the principles of the Convention.

## **1.2.2 Regional Context**

Cooperation and integration within the SADC region is enshrined in the aspirations of the SADC Treaty. In order to achieve these aspirations the region has implemented the SADC Regional Indicative Strategic Development Plan (RISDP). The purpose of the RISDP is to deepen regional integration in SADC. It provides SADC Member States with a consistent and comprehensive programme of long-term economic and social development policies. The ultimate objective of the RISDP is to deepen SADC agenda integration with a view of accelerating poverty reduction. The SADC Revised Protocol on Shared Watercourses 2000 came into effect in 2003; this protocol espouses the general principles and provisions for

managing shared watercourses in Southern Africa and thus contributes to the achievement of the goals of the SADC Treaty.

#### *The SADC Protocol on Shared Watercourse Systems*

The spirit of the SADC Protocol is predicated on a set of 13 general principles that largely draw on the Helsinki Rules, the UN Convention, Agenda 21, as well as the principles and objectives of the SADC Treaty. The Protocol provides for the establishment of institutions for shared watercourses to develop policy, promote equitable utilisation, formulate strategies for water development and management and monitor the implementation of action plans.

In line with the provisions of the Protocol, member states in the SADC region have deepened their cooperation in the management and development of shared water resources.

#### *Regional Water Policy*

SADC recognises that water is a key driver for regional economic and social development and integration. Integrated development in the region will reduce endemic poverty, enhance food security, and promote industrial development whilst also improving environmental sustainability. The SADC Treaty and the SADC Common Agenda have provided an overall policy framework for developing the shared resources of the region. In 2000 the SADC region developed a Vision for Water, Life and the Environment, this vision was the basis of the development of a Regional Water Policy (RWP). The RWP has nine thematic areas:

- Regional Cooperation in WRM
- Water for Development and Poverty Reduction
- Water and Environmental Sustainability
- Security from Water-Related Disasters
- Water Resources Information Management
- Water Resources Development and Management
- Regional Water Resources Institutional Framework
- Stakeholder Participation and Capacity Building
- Financing Water Resources Development and Management

The RWP is given effect by the Regional Water Strategy, which was adopted in 2006. The Regional Water Strategy is a long term planning instrument that is implemented at the national level through National Water Strategies, at the transboundary level through River Basin Strategies and regionally through the Regional Strategic Action Plan (RSAP).

### *Regional Water Strategy*

The Regional Water Strategy (RWS) provides the framework for implementing the policy statements in the RWP and the SADC Protocol on Shared Watercourses by providing strategic direction to regional and national institutions, and indicating regional priorities in the development and management of water resources in the region. Implementation of the Joint IWRM Strategy is thereby carried out through the Regional Strategic Action Plan

### *Regional Strategic Action Plan (RSAP)*

The RSAP implements the SADC Regional Water Strategy in five-year phases. To date, three of these phases have been implemented. These are summarised in turn below.

- RSAP I (1994 – 2000) focused on creating an enabling environment for the joint management of regional water resources. It was meant to lay the institutional basis for the execution of infrastructure projects and other related development initiatives. This phase gave birth to the JWC in 2002.
- RSAP II (2005 -2010) was structured around four strategic areas, namely: regional water resources development, planning and management, infrastructure development support, water governance and capacity building. This RSAP was implemented as an integral part to the Regional Indicative Strategic Development Plan.
- RSAP III (2011 – 2015) is the current operative plan for the implementation of IWRM activities in the SADC region. Its goal is to strengthen the enabling environment for regional water resources governance, their management and development through the application of integrated water resources management at the regional, river basin, Member State and community levels. Under RSAP III, the execution of interventions is organised into three strategic areas comprising water governance, infrastructure development and water management. RSAP III consists of 15 programmes; the Joint IWRM Strategy is a component of Programme 13, the programme for Hydrology and Basin Management. The objective of Programme 13 is to develop planning mechanisms and operational procedures for managing water resources.

### **1.2.3 National Policies, Legislation and Institutional Setting**

The Regional Water Policy and Strategy provides policy statements and strategies that will drive the harmonisation of water resources management and development in the region. The implementation of the Regional Water Policy and Strategy at the national level is done through national policies and strategies. Over the past few years a number of countries in the SADC region have embarked on water reforms that have led to the development of institutional mechanisms and management instruments. Tables 1-1 and 1-2 summarise the key policy, legal and institutional frameworks that have developed in the domestic realms of Mozambique and Zimbabwe under the auspices of the Regional Water Policy and Strategy.

Table 1-1: Policy and Legal Framework.

Description	Regional	Mozambique	Zimbabwe
<b>Water Policy</b>	SADC: The Regional Water Policy (2005)	National Water Policy (2007) Water Tariff Policy (1998)	National Water Policy (2012). Domestic Water Supply and Sanitation Policy, Final Draft, December, 2004
<b>National Water Law</b>		The Water Law (1991) ( <i>a Draft Water Law Mozambique was prepared in 2005 but it was not put forward for public discussion and approval since then</i> ) Regulation of Licenses and Concessions of Water (2007). Governmental decrees creating the delegated management framework for urban water supply (1998)	The Water Act [CAP 20:24], 1998; The Zimbabwe National Water Authority Act [CAP 20:25], 1998 Water (Permits) Regulations, Statutory Instrument (SI) 206 of 2001; Water (Waste and Effluent Disposal) Regulations, SI 274 of 2000; Water (Establishment of Catchment and Subcatchment Councils) Notice, SI 209 of 2000; Water (Catchment & Subcatchment Councils) Regulations SI 33 & 47 of 2000
<b>International Water Law and Agreements</b>	SADC: The Revised Protocol on Shared Watercourse Systems (2000)	Bi-lateral Agreement for the establishment and operation of a Joint Water Commission (2002). Individual Project Steering Committees for individual Watercourse Studies.	
<b>IWRM Strategy</b>	SADC: The Regional Water Strategy (2007)	National Water Resources Management Strategy 2005-2017 (2007)	Water Resources Management Strategy for Zimbabwe, 1999/2000

Table 1-2: Institutional Framework.

Description	Regional	Mozambique	Zimbabwe
<b>Council of Ministers for Water</b>	SADC Council of Ministries for Water	National Water Council	National Water Steering Committee /Inter-ministerial Subcommittee on IWRM
<b>Ministry /Department of Water</b> <i>Responsible to oversee implementation of the SADC The Revised Protocol on Shared Watercourse Systems</i>	The SADC Water Division, within the SADC Directorate of Infrastructure & Services	Ministry of Public Works and Housing National Directorate of Water International Rivers Office	Ministry of Water Resources Development and Management Department of Water Resources (DWR) Zimbabwe National Water Authority (ZINWA)
<b>River Basin Institutions</b>	Joint Water Commission	ARA-Centro	ZINWA- Catchment Managers (Save and Runde)
<b>Stakeholder Institutions</b>		ARA-Centro Management Board ( <i>to be established</i> ) Save Basin Committee ( <i>to be established</i> )	Save & Runde Catchment Councils/ 11 Sub-Catchment Councils (6 in Save, 5 in Runde)

Fig 1-3 below shows the linkages between the abovementioned international, regional and national legal frameworks and their association with the Save River Basin Joint IWRM Strategy.

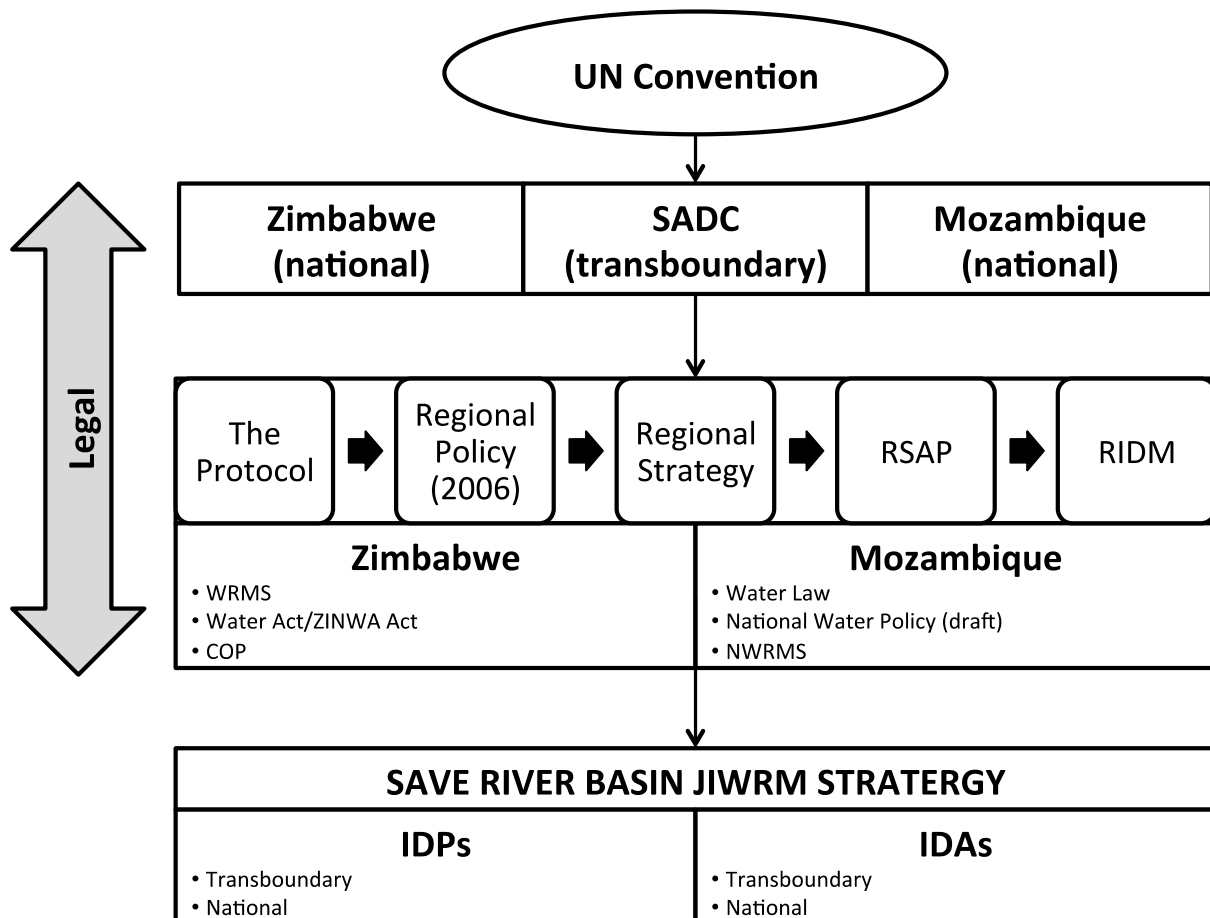


Figure 1-3: Linkages between the International, Regional and National Legal Frameworks associated with the Save River Basin Joint IWRM Strategy

### Overview of the Mozambique Water Sector

The institutional framework of Mozambique’s water sector has been established in agreement with Law no. 16/91 of 3 August (Water Law of 1991). The National Water Policy of 1995 was substituted by the new Water Policy of 2007. The Water Policy of 2007 was a revision of the National Water Policy of 1995 and its fundamental objective was to integrate important aspects of IWRM that were not sufficiently covered in the National Water Policy of 1995. In 2007 Mozambique government also approved the National Water Resources Strategy (ENGRH), with the main objective of effectively implementing the Water Policy.

The Ministry of Public Works and Housing (MOPH) and the National Water Directorate (DNA) are the entities responsible for the water sector, and as such, for water resources management and water supply and sanitation to urban and rural areas. Water resources planning, development and management falls under the auspices of DNA, who delegate some of the functional responsibility related to water resources management to five ARAs or regional water authorities, each of which is made up of contiguous basins. These ARAs operate at the 'catchment' level and as such are the smallest water management units, albeit with wide responsibilities. The Save basin in Mozambique falls under ARA-Centro. In terms

of stakeholder participation, there is legislation in place to provide for this process to occur, however, implementation has been slow to take root.

It is evident that the legislative and institutional framework for water resources management in Mozambique is in line with the principles espoused in the SADC Protocol and the Regional Water Policy. There is therefore need to expedite implementation of these provisions for successful implementation of the Save River Basin Joint IWRM Strategy.

#### *Overview of the Zimbabwe Water Sector*

Zimbabwe developed one of the most comprehensive approaches to water resources development and the provision of water supply and sanitation services in Africa. It promoted water resources development and expanded its reservoirs to over 8 000 small, medium and large dams. The country also expanded irrigation development, reaching an irrigated area of 160 000 to 180 000 ha in the commercial and smallholder sectors by the year 2000 and over 20 000 ha of informal irrigation during the same period. Coverage of rural sanitation and hygiene improvements moved from 5% in 1980 to 43% in 2009.

The country has implemented the legal and institutional reforms that are required to facilitate the management of water based on the catchment unit. The Zimbabwe National Water Policy dated October 2012, indicates that Zimbabwe's economy was heavily linked to water, as depicted in Figure 1-4 below.

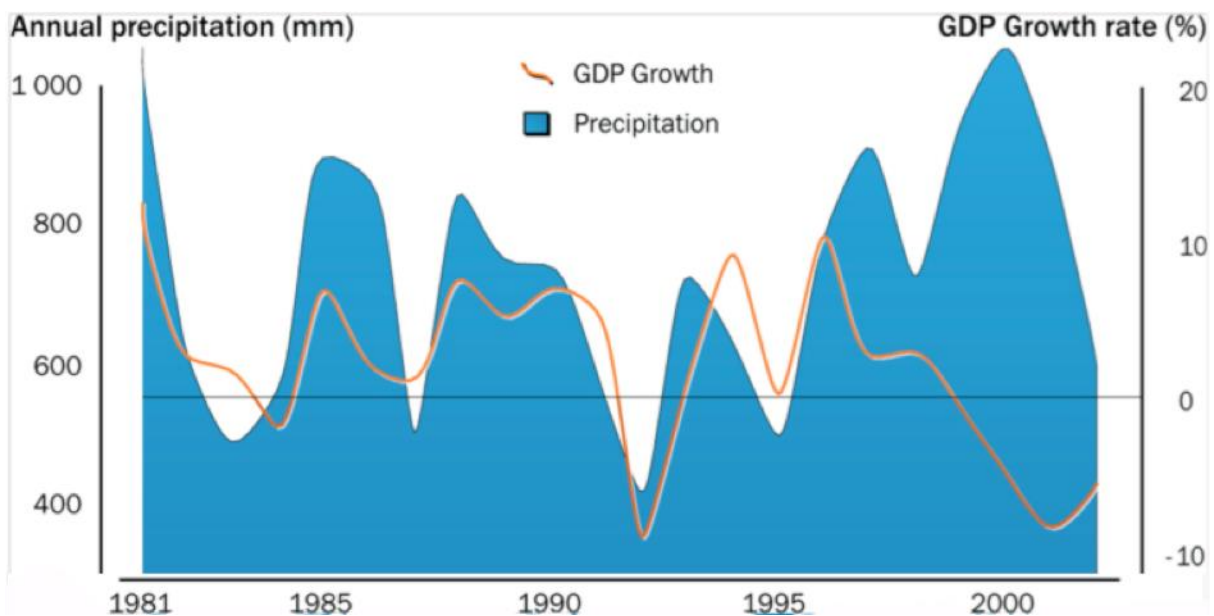


Figure 1-4: The correlation between rainfall and GDP in Zimbabwe (from Zimbabwe National Water Policy 2012 - UNEP/GRID 2010)

The Water Act of 1998 (Chapter 20-24) created the legal framework for the management of water resources at the grassroots level by dividing Zimbabwe into seven catchments. In terms of the Act, water resources are now managed at sub-catchment level. The Save Basin is made up of the Save and Runde Catchments, which in turn are divided into eleven sub-catchments and 40 sub-zones based on hydrological drainage units. The essence of these reforms was to foster integrated water resources management in line with the SADC Regional Water Policy.

### 1.3 Water Resources Situational Analysis

#### 1.3.1 Water Resources

**Water Availability and Distribution:** Total surface water resources in the SRB are estimated at 6,885 million m<sup>3</sup>/year (based on the period of record from 1960 to 96). Total run-off, as well as run-off for individual sub-zones, was modelled based on a combination of measured and calculated rainfall and evaporation data, and calibrated against the period providing the most reliable data set on both precipitation and run-off (from 1960-96). The mean annual precipitation and resulting estimate of natural run-off, indicating the gross surface water resource available (i.e. undisturbed by human intervention or infrastructure), are presented below in Figures 1-5 and 1-6.

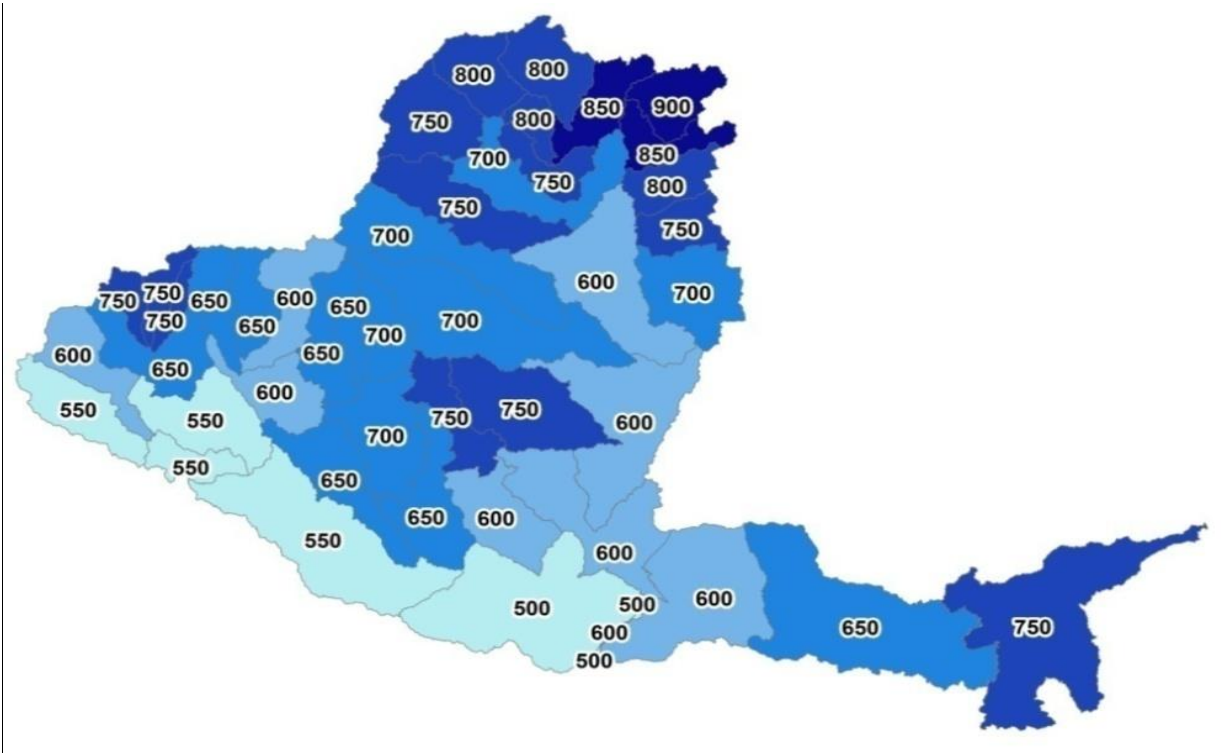


Figure 1-5: Estimated Mean Annual Precipitation (mm) throughout the SRB for the period 1960-96

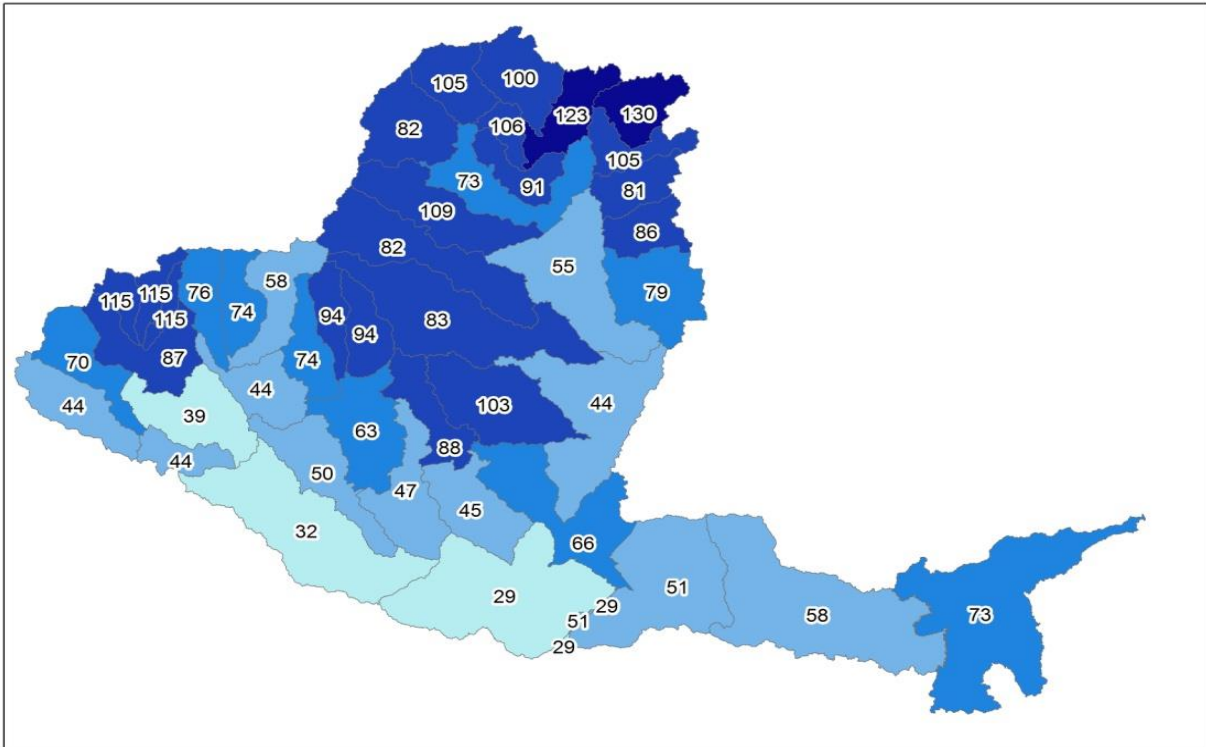


Figure 1-6: Estimated areal run-off (mm) in the SRB, based on data for the years 1960-96

It is evident from this analysis that the upper sub-basins of the Save River are the wettest, contributing to 52% of the total surface water generated, followed by Runde catchment at 32%, with the sub-basins in Mozambique contributing 15%. On average this corresponds closely to the area distribution of basin area between Zimbabwe and Mozambique of 83% and 17% respectively.

**Water Demand and Use:** The supply-demand scenarios for the Save catchment show that the total estimated water demand in 2010 was approximately 33% of the Mean Annual Runoff (MAR), this demand is projected to increase to about 49% by 2030. The 2010 water demands for the Runde catchment was 68% of the MAR, increasing to 147% by 2030. Only 19% of the growth in water demand between 2010 and 2030 in the Save catchment can be supplied with the existing water infrastructure. In the Runde catchment only 25% of the growth in water demand between 2010 and 2030 can be supplied with the existing water infrastructure. Additional water infrastructure, as identified in the Development Scenario phase, is required to improve the water supply to users in the entire Save Basin. In the Mozambique part, water utilisation is still relatively low. Plans are in hand, however, to install large irrigation schemes to boost food production.

Table 1-3: Summarised Comparison of Water Supply (all figures in million m<sup>3</sup>/a)

		Sub-catchment			TOTAL SAVE
		Save	Runde	Mozambique	
Incremental MAR		3 623.0	2 370.1	1 227.1	7 220.2
Water demands in 2010 with existing dams	Demand	1 197.2	1 601.3	1.9	2 800.4
	Supply	972.8	952.4	1.9	1 927.1
	Deficit	224.4	648.9	0	873.3
	% supply	81	59	100	69
Water demands in 2030 with existing dams	Demand	3 213.0	3 492.7	265	6 970.7
	Supply	1 549.6	1 277.3	142.8	2 969.7
	Deficit	1 663.4	2 215.4	122.2	4 001.0
	% supply	48	37	54	43

**Water Shortage Areas:** The cumulative deficits shown in Table 1-3 above, at 2010 water development levels are shown in Figure 1-7 below, by subzone. These shortages and the available development potential have been used to formulate strategies for water development in the basin to cater for projected water demand.

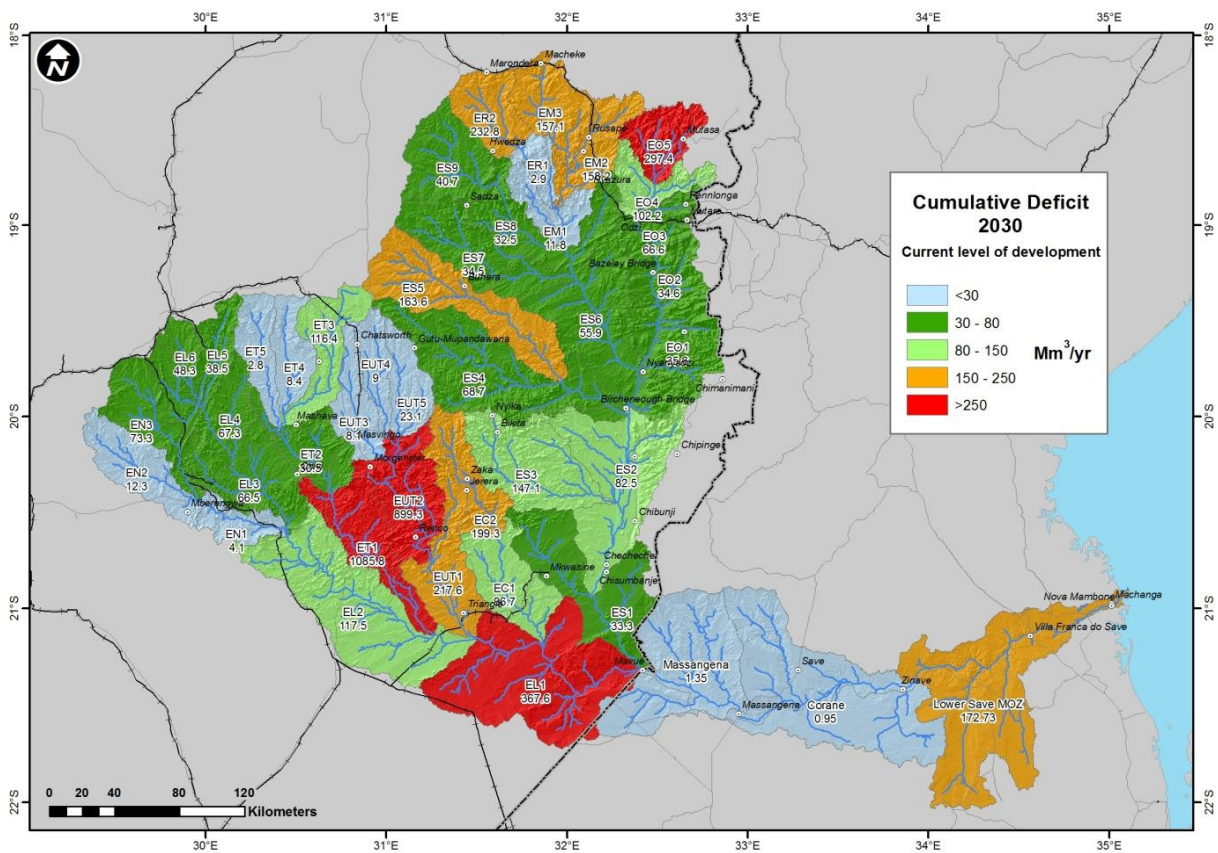


Figure 1-7 Projected water shortages in the SRB in 2030 if the 2010 water development levels remain unchanged.

Areas with high water deficit (orange and red in Fig 1-7) were assessed for their water development potential. Fig 1-8 shows water development potential by sub-zone. Areas with high storage ratio indicated low development potential, i.e. they are reaching their full water utilisation and development levels. Water infrastructure development has to be directed where water is available, e.g. most of the Save catchment in both Mozambique and Zimbabwe, where storage ratio is still mostly less than 1.

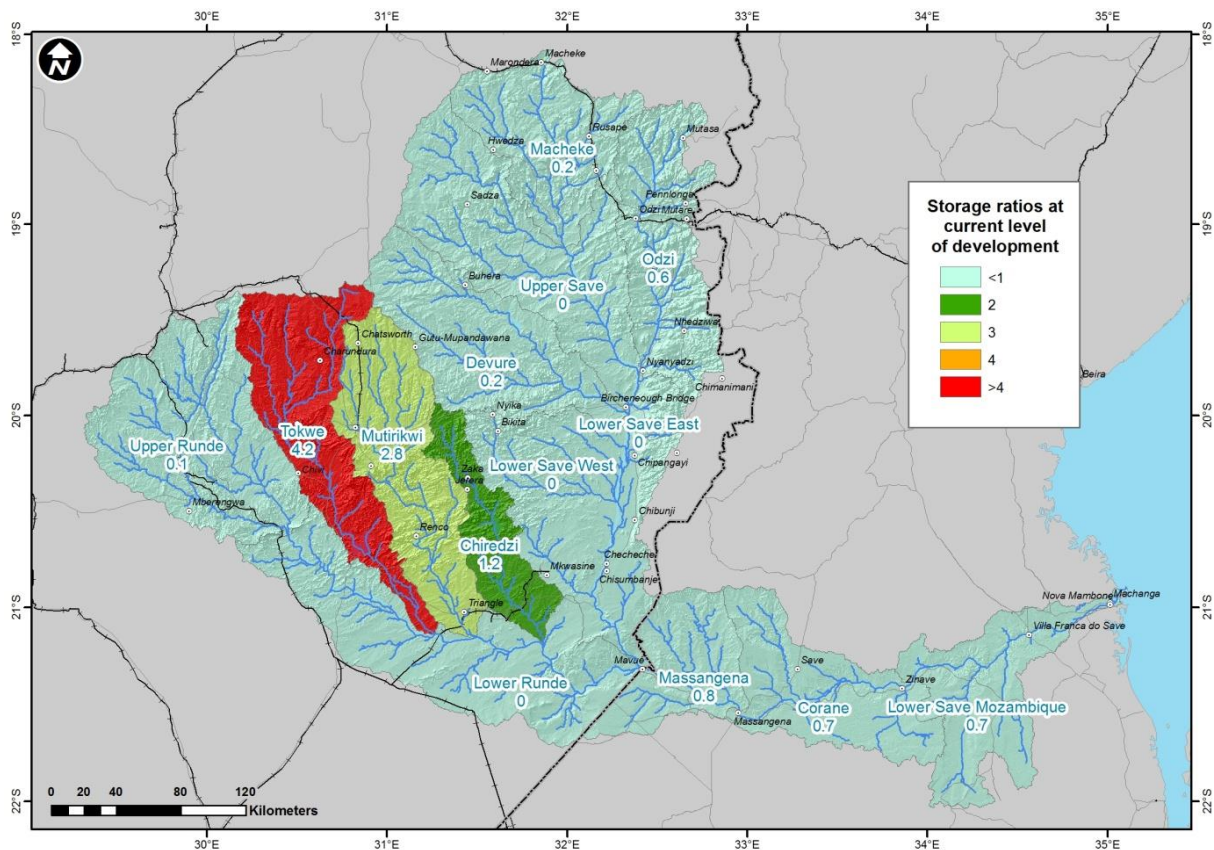


Figure 1-8: Storage ratios (SR) in the Save Basin by sub-catchment - as at 2010

**Water-related hazards:** Climate variability and climate change are causing more extreme and frequent water related hazards. The Save Basin, especially in the lower reaches, is prone to flooding. This often results in disastrous consequences with the loss of lives and damage to property, infrastructure and the environment. Indications are that the frequency of flood disasters has been increasing. Droughts are also being experienced in the basin and this has a huge impact on water supply and food security. The Strategy includes measures to minimise the impact of these disasters.

### 1.3.2 Environmental Issues

**Land degradation:** of concern in the SRB is river degradation, comprising erosion and sedimentation associated with poor land use practices, especially stream bank cultivation by subsistence farmers.

**Deforestation:** of concern is the use of trees as charcoal for energy. This has led to losses of forests leading to soil erosion and sedimentation in the rivers.

**Water quality:** the pollution of rivers from the discharge of raw sewage from sewage works and mining activities is problematic, especially in Zimbabwe. There is the potential for high-level and life-threatening pollution from mines. In particular there is a risk of acid rock drainage and cyanide spills from gold mines and artisanal mining activities prevalent across the basin.

**Environmental water requirements:** the environment is recognised as a legitimate user and provider of water resources in the Regional Water Strategy – it is therefore important to identify specific ecosystem requirements both in terms of quantity and quality. Water quality standards are also critical in ensuring ecosystem integrity.

### 1.3.3 Climate Variability and Change

Climate change and variability pose a threat to Africa's sustainable development objectives. Although the continent contributes only 3.8% of total greenhouse gas emissions, African countries are among the most vulnerable to climate change impacts. With a majority of poor countries and communities, Africa will suffer earliest and hardest because of weaker resilience and greater reliance on climate-sensitive sectors such as agriculture. Climatic fluctuations are nothing new in Africa. Many countries experience cycles of drought, flooding and other extreme climatic events which cause damage, suffering and disruptions to their populations, particularly the most vulnerable and poor. These climatic events have serious economic consequences which can derail a Government's best intentions and set back progress in development by years. Such experiences provide a sober warning of what could be in store in future with the climatic changes that increasingly seem likely. This has the potential to widen a countries adaption deficit, that is, its vulnerability to the present day climate.

Climate change implies the worsening of historic climatic fluctuations and long-term changes in climate which could introduce new risks and threats to the viability of African development. Climate change impacts will manifest themselves at the local level through changes in the viability of livelihoods, occurrence of disasters and increasing pressures over available resources. Livelihood activities such as crop selection and management, fuel sourcing, economic activities and health are all impacted by the climate and force communities into increased competition and the pursuit of activities which are unsustainable in the long term. Climate change will impact a range of sectors either directly, as a result of

water availability or quality, or indirectly as a result of resources being subject to increasingly competing demands.

The measures promulgated in this Strategy provide a platform for building climate resilience at local, national and trans-boundary levels.

## 1.4 Key Issues and Gaps

### 1.4.1 Challenges in the SADC Region

There are several strategic challenges for water in the SADC Region. These need to be addressed in order to exploit the potential that water management has to promote regional integration, economic growth and poverty alleviation. The challenges are varied and complex, comprising the following aspects.

- **Highly variable and unreliable rainfall** whose impacts are often associated with droughts, and floods waterborne diseases.
- **Unevenly distributed water resources** across the region, with water availability and demand frequently mismatched, resulting in spatial and temporary scarcities and excesses.
- **Uneven access to water** through the existence of watercourses with the bulk of the region's water resources shared by countries with varying social, economic, legal and political situations.
- **Widespread poverty and low access to adequate water** for basic human needs by the majority of the region's population. Limited access to safe drinking water and adequate sanitation which adversely impacts the livelihoods, health and productivity of the poorest and most vulnerable sections of the region's population.
- **Wide prevalence of HIV/AIDS** and its associated impacts on water requirements and capacity.
- **Inadequate water infrastructure** that is unable to meet the growing demands for development and services, rapid urbanisation, climate variability and change. Problems also arise as infrastructure is unevenly developed between countries.
- **A paucity of water resources information for management**, which hinders cooperation and proper planning in shared watercourses.
- **Nascent implementation capacities** with poorly enforced and weak legal, policy and regulatory frameworks which hinder the implementation of regional and national initiatives.

- Regional, national and sub-national institutions that are hamstrung by **low technical capacity and sometimes unclear mandates**.
- **Weak inter-sectoral linkages and coordination**, which hampers comprehensive and integrated development.
- **Low levels of awareness, education and training** in regional integrated water resources management.
- **Limited or no stakeholder participation** and involvement in water resources decision making, particularly for women, the youth, the disabled and the poor.
- **Extreme water related hazards** caused by climate variability and climate change.
- **Inadequate resources and capacity for research** institutions.

The abovementioned challenges face the majority of Member States in the SADC region and have informed and influenced the formulation of SADC RSAP III – IWRM. Most of these challenges are also prevalent in Mozambique and Zimbabwe. Fig 1-3 below shows cropping potential for *rain-fed agriculture* in the SADC countries.

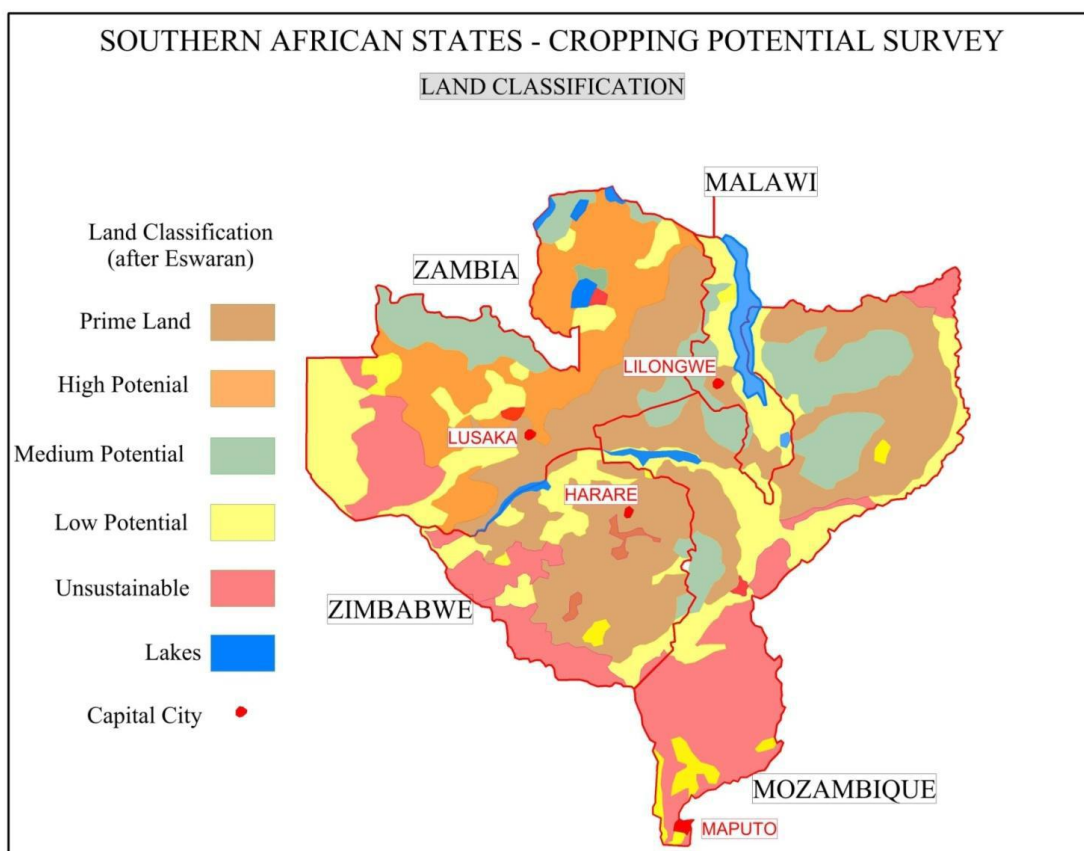


Figure 1-9: Map of rain fed agriculture potential

### 1.4.2 Key Issues in the Save River Basin

The key strategic challenges that face the Save River Basin are outlined below, these challenges have informed the formulation of the Save River Basin Joint IWRM Strategy.

- **Water variability:** The portion of the Basin in the Zimbabwean eastern highlands has higher rainfall compared to the lower parts of the Basin. However, it is in the lower areas of the Basin, particularly the portion in Mozambique, that are prone to frequent flooding. The middle parts of the basin have generally low rainfall and experience recurring droughts. Consequently, rain-fed agriculture is generally not viable. This sub-region, which largely falls within Zimbabwe, has over the years seen extensive development in irrigated agriculture and already suffers from water deficits against current demands, while development in Mozambique is nascent.
- **Poverty:** There is widespread poverty among rural as well as urban communities due to a disparity in access to water between communal and commercial farming sectors as well generally low employment in the cities and towns, which reflect low industrialisation levels. Roads and water supply infrastructure, while more developed in Zimbabwe compared to Mozambique, also require extensive rehabilitation due to neglect in recent years.
- **Disparity in water resources management:** There is a disparity in the development of water management institutions and water resources monitoring infrastructure between the two watercourse states. The two countries share three basins. The Joint Water Commission (JWC) needs to be strengthened to manage the three basins in a holistic manner that optimises resources.
- **Stakeholder participation:** Zimbabwe has made advances in stakeholder participation and Mozambique is working towards including stakeholders in the management of water resources through River Basin Committees established by ARAs. This is essential, as HIV/AIDS remains a major threat to development in the whole of the Save River Basin.
- **Capacity:** There is an asymmetry of awareness, education and training in IWRM among the stakeholders. National institutional capacities are skeletal and private sector involvement is yet to be mainstreamed as part of water development.
- **Levels of investment:** The economic downturn in Zimbabwe during the last decade adversely impacted on advances in water management and dampened the momentum that had been generated during the previous decade. This has led to low investments in water resources development and management, coupled with general neglect of existing infrastructure.
- **Information Management:** Information systems to support planning, allocation, management and development of water resources are required, as are sustained effort to capture historical data and implement continuous data collection programs.
- **Research and development:** Research is still significantly under-resourced in both Zimbabwe and Mozambique. Both countries need to invest in recent technological advances to maximise their potential in water resources research and development.

## 2 SAVE RIVER BASIN JOINT IWRM STRATEGY

### 2.1 Purpose, Aims and Objectives

The Save River Basin Joint IWRM Strategy is a priority intervention under Programme 13 of the Regional Strategic Action Plan III which requires Basin Strategies to be developed to outline the priority steps required for the implementation of integrated water resources management at the river basin and Member State levels. The overall objective of Programme 13 in the RSAP III is to develop planning mechanisms and operational procedures for managing water resources.

The Goal of the Shared Watercourse Support Project (SWCSP) is *“to ensure the development of integrated water resources management and related physical infrastructure development that contributes to regional integration and poverty reduction”*.

The objectives of the Save River Basin Joint IWRM Strategy contribute to the specific objective of the SWCSP which is *“to ensure a sustainable framework for an integrated planning and management of shared water resources in the Save River Basin for development and support of improved livelihoods of the local communities”*.

### 2.2 Strategy Development Process

The development of the Joint IWRM Strategy has been undertaken by a multi-disciplinary, multi-national Consultancy team over the period 2010 - 2013. The Consultancy was undertaken by an association comprising COWI and its associates: Interconsult Zimbabwe, BKS, SWECO, Consultec and COWI Mozambique. As depicted in Figure 2-1 the formulation process was conducted in three distinct phases. These phases were developed on a platform comprising stakeholder consultations while creating key decision and management support systems for the river basin organisations.

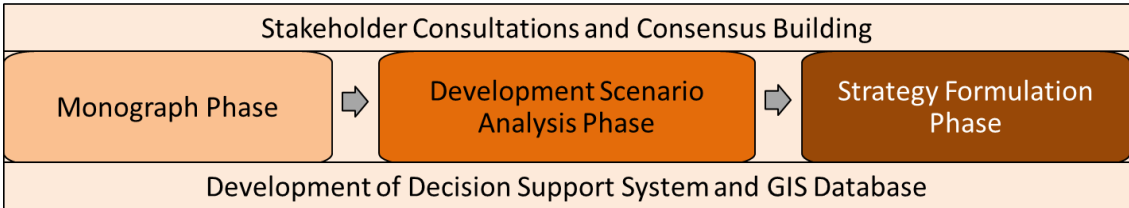


Figure 2-1: Save River Basin – Joint IWRM Planning Process and Phasing

The principles and practices followed during the planning phases were purposefully designed to embed an integrated (inter-sectoral) and participatory approach to the processes of developing, managing and utilising the water resources. It is important that the Joint IWRM Strategy is based on scientific evidence, clear evaluation criteria and consensus in order to ensure trust and support for the Strategy and Implementation Plan. To this end, the assessment

and analytic phases aimed to accurately identify and analyse water resources and demands whilst also considering the environmental, and socio-political issues within the basin. This is generally seen as key to ensuring the sustainable use of essential resources and mitigation against possible adverse impacts.

**2.2.1 The Monograph Phase**

The Monograph phase established the following foundations for the Joint IWRM Strategy:

- i) Create baseline data and information on the current state of the Save River Basin;
- ii) Give directive focus for the Development Scenarios through a comprehensive analysis of the baseline data;
- iii) Highlight priority water development and management challenges.

The Monograph computed all data as at year 2010, the date chosen as the Strategy base date for all planning and produced thematic reports.

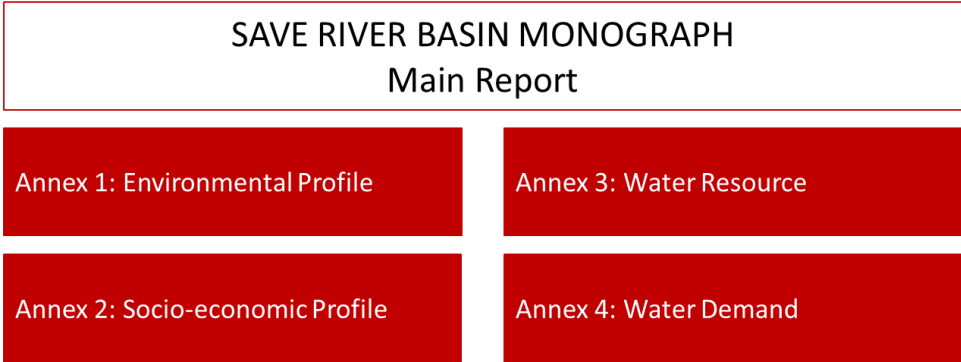


Figure 2-2: Components of the Save River Basin Monograph

**2.2.2 Development Scenario Phase**

Water strategies and plans should be robust and lay the foundation for optimal, equitable and sustainable use of the water resource. They have to be tested against multi-disciplinary, multi-sectoral criteria and different development scenarios.

The purpose of the scenario phase was to analyse development options and alternative strategic interventions to meet future water demand and management requirements. The key steps involved review of sector plans and long term objectives for water supply and sanitation; agriculture and irrigation; livestock; afforestation; industry; hydropower; wildlife and tourism and the environment. This was then subjected to integrated analysis of development and management options, river systems analysis/water balance modelling and multi-criteria analysis. Security of supply is expected to worsen over the planning period. This analysis showed that the projected increase in water utilisation would result in higher deficits that require investment in water development infrastructure.

Table 2-1: Comparison of Water Supply (including new dams - all figures in million m<sup>3</sup>/a)

		Sub-catchment			TOTAL SAVE
		Save	Runde	Mozambique	
Incremental MAR		3 623.0	2 370.1	1 227.1	7 220.2
Water demands in 2010 with existing dams	Demand	1 197.2	1 601.3	1.9	2 800.4
	Supply	972.8	952.4	1.9	1 927.1
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	Deficit	1 663.4	2 215.4	122.2	4 001.0
	% supply	48	37	54	43
Water demands in 2030 with proposed dams	Demand	3 213.0	3 492.7	265	6 970.7
	Supply	2 243.4	1 443.2	265	3 951.6
	Deficit	969.7	2 049.5	0	3 019.2
	% supply	70	41	100	57

The water balance analysis gave direction to available development options - with regards to feasible investment in large-scale water infrastructure projects that satisfy multi-purpose criteria, both on a transboundary and national level. This concept cascaded down to provide strategic direction on projects that create opportunities for poverty alleviation and socio-economic advancement. This resulted in the identification of projects for building climate resilience at a local level through the development of small and medium sized local and community based initiatives to provide sustainable support to the expansion of small- and medium-scale commercial agriculture, including livestock watering; guarding against droughts and supporting food security amongst subsistence farmers; ensuring adequate water supply to small towns and rural service centres; facilitating the supply of hydroelectric power to small towns and growth points; and generally developing storage capacity and equitable water allocation in the basin.

Ultimately, the SRB Development Scenario Report proposed strategic interventions under the following broad categories:

- i) Legal and Institutional Strengthening Actions (IDAs)
- ii) Infrastructure Development Projects (IDPs)

These interventions were identified through various mechanisms, namely, the assessment of previous planning documents, literature reviews, workshops and other public consultation platforms.

### **2.2.3 Strategy Formulation Phase**

The end product, the Save River Basin Joint IWRM Strategy, comprises a set of Strategic Action Projects (SAPs) following the broad categories from the Development Scenario phase. The SAPs address identified management and developmental challenges. The Joint IWRM Strategy proposes and promotes institutional action projects and water infrastructure investments that are technically robust, socially acceptable and economically sound.

The Strategy aims for:

- Sustainable planning and management of water resources
- Adaptation to, and mitigation of, climate change
- An improved water governance environment
- People valuing water and the water environment

The Joint IWRM Strategy comprises detailed guiding documents for the responsible basin water authorities. Nevertheless, the Strategy and especially its implementation plan is a dynamic document that should be regularly reviewed and up-dated.

A key Annex to the Strategy (*The Water Balance / Assessment Report*) comprises a simple/rudimentary hydrological and water balance model set up for the SRB and a GIS database. This model has been developed as a basis for future monitoring, basin planning, and management.

### 2.3 The Save River Basin Joint IWRM Strategy

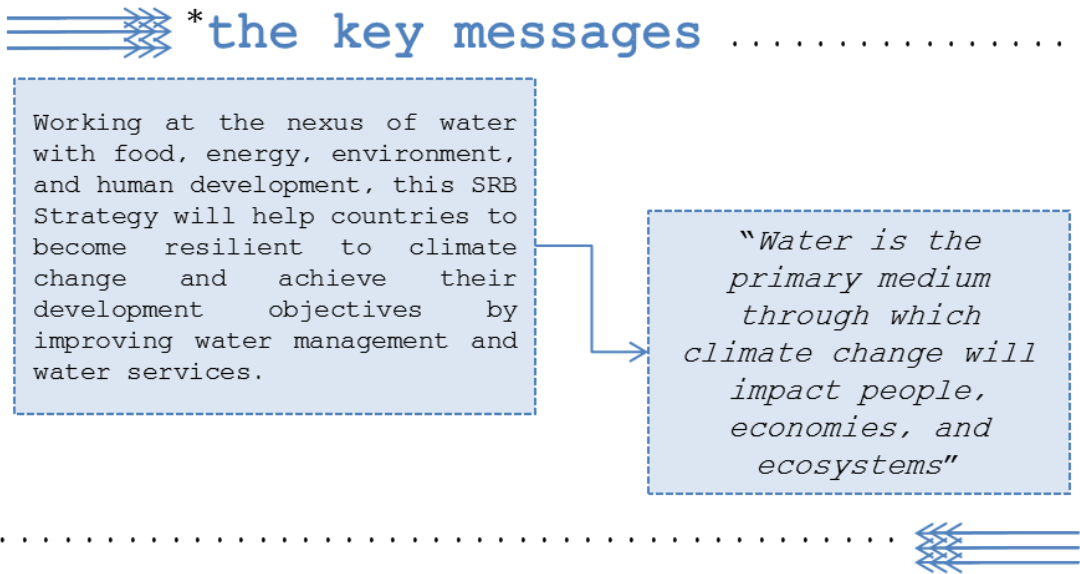
The Save River Basin Joint IWRM Strategy responds to the key strategic issues and challenges that have been identified in the study area. This has been achieved via a multi-stage process. Firstly, the strategic challenges were grouped into five components. These components were devised to address the priority areas and consist of a specific strategic objective that contributes to the achievement of the Save River Basin Joint IWRM Strategy. The next stage required the creation of strategic interventions to facilitate the achievement of the strategic objectives identified under each component. These interventions are aimed at supporting sustainable water resources management in the SRB, thereby ensuring social equity, environmental integrity and economic efficiency in the short, medium and long-term.

As part of the Joint IWRM Strategy the Institutional Development Actions (IDAs) have been restructured into three components:

- 1. Institutional Framework for Water Resources Management and Development
- 2. Water Resources Management
- 3. Environmental Sustainability

The Infrastructure Development Projects (IDPs) have also been restructured and consequently consist of two components:

- 1. Water Resources Infrastructure Development
- 2. Enhanced Water Resources Knowledge and Information Systems:



The abovementioned restructuring has produced the following five components of the Save River Basin Joint IWRM Strategy:

***Component 1: Institutional Framework for Water Resources Management and Development:*** Strengthening cooperation in the management and development of the Save River Basin.

***Component 2: Water Resources Infrastructure Development:*** To meet the needs of current water shortages and projected water demand growth.

***Component 3: Enhanced Water Resources Knowledge and Information Systems:*** Ensuring availability of information for the planning, management and development of water resources.

***Component 4: Water Resources Management:*** Promoting an integrated approach to managing water resources in the SRB and ensuring capacity to manage and respond to water related hazards.

***Component 5: Environmental Sustainability:*** Ensuring present and future environmental integrity.

### **2.3.1 Component 1: Institutional Framework for Water Resources Management and Development**

Joint management of the Save River Basin is aimed at achieving cooperation in the management of water resources, including the approaches to integrated development and management. Institutional frameworks between countries sharing water resources is therefore important. The establishment of shared watercourse institutions by formal agreement between Watercourse States is fundamental to the Protocol and RWP.

These institutions provide an important mechanism to promote regional cooperation and integrated water resources management within shared watercourses, while in some cases they enable the joint development and operation of shared water resources infrastructure. It is important to ensure cross-sectoral cooperation by involving water using and impacting sectors.

**Strategic objective:** To develop joint planning mechanisms and operational procedures for managing the Save River Basin in accordance with the Revised Protocol on Shared Watercourses, international obligations and national statutes.

**Proposed strategic interventions:**

- i. **Joint management mechanism:** Promote the establishment and strengthening of a joint mechanism for managing the river basin.
- ii. **Stakeholder participation:** Develop and promote mechanisms to encourage stakeholder participation and sharing of information in the river basin.
- iii. **Capacity building:** Ensure capacity development of stakeholders and institutions managing, developing and using water resources.
- iv. **Vulnerable groups mainstreaming:** Develop and promote mechanisms to effectively involve the vulnerable including youth, women, the elderly and the poor in IWRM decision-making and to empower them to participate in IWRM dialogue and debate.
- v. **Research and development:** Promote research and development to support sustainable development and management of water resources.

**2.3.2 Component 2: Water Resources Infrastructure Development**


The analysis of the supply demand balance in the basin indicates that additional water is required to cater for the projected growth in water demand and to alleviate supply areas that are already under the stress of water shortage (particularly in Zimbabwe). A number of strategies can be implemented to increase water availability in the river basin. However, there are challenges as flooding is endemic in the Save Basin and the region as a whole has a deficit of electricity energy supply. Water resources development should therefore respond to the development challenges in the basin to ensure water security, food security, energy security and climate resilience.

Damming is a feasible solution to some of the challenges and problems faced in the SRB. Preferred dams are those with a multipurpose nature that address the SRBs needs in line with the integrated water resources management approach. Hence, the development of multipurpose dams that can balance flood flows and cater for growing water demands is necessary. Disasters due to drought can also be addressed via the provision of large carryover dams that facilitate the supply of water in drought years.


**Strategic objective:** To address the deficit in water demand by ensuring water supply in an efficient and sustainable manner at the right time, in adequate quantities and of suitable quality. Additionally, this component seeks to maximise benefits from these investments by harnessing hydropower from the same infrastructure.

**Proposed strategic interventions:**

- i. **Infrastructure development:** Promote integrated planning, development and management of water storages to optimise the use of the water resources for livelihoods, social equity, economic efficiency and environmental sustainability. Coordinate the development and/or strengthening of strategic water infrastructure aimed at reducing the impact of floods and droughts in the SRB.
- ii. **Infrastructure safety and operation:** To ensure dam safety and optimisation of return on investments.

 \* **the key messages** .....

Mozambique and Zimbabwe are signatories to the 2003 Maputo Declaration on Agriculture and Food Security which states that expenditure on land, agriculture, water and sanitation must be above 10% of the Budget

..... 

**2.3.3 Component 3: Enhanced Water Resources Information and Knowledge Management**

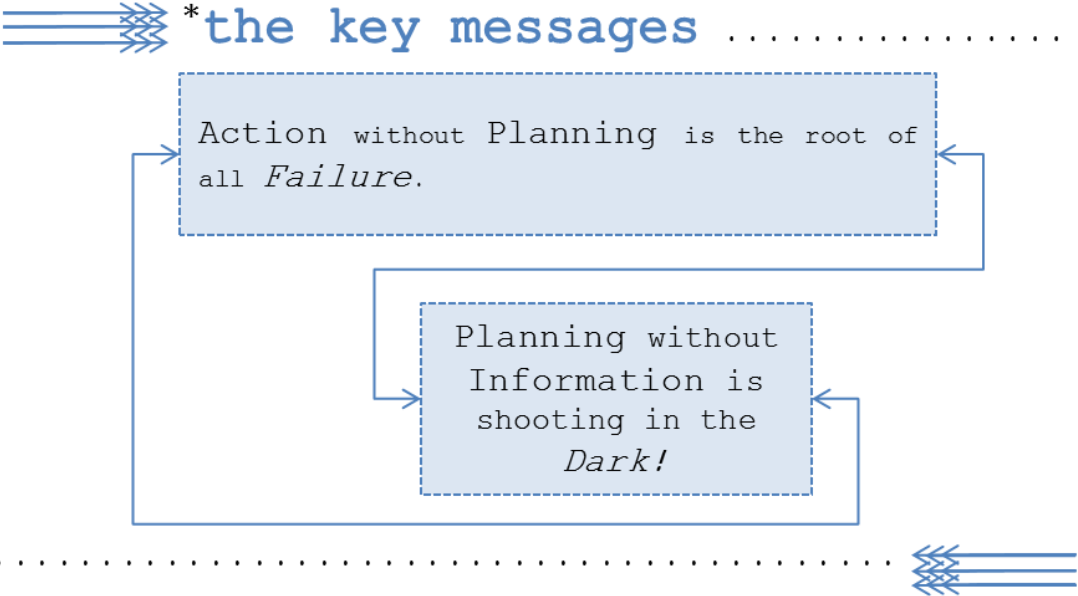
Information on water resources is integral to the planning, management and development of water resources. It is therefore important to ensure that stakeholders in the basin have adequate, timely and accurate information. Information also provides a basis for joint planning and management of water resources and is critical in building climate resilience, planning responses to climate variability and climate change. As such, systems are required for collecting and management of water resources information in the SRB. This data collection is an essential requirement for water resources assessment and research.

**Strategic objective:** To support effective, efficient collection and management of water resources data necessary for the implementation of IWRM in the Basin.

**Proposed strategic interventions:**

- i. **Hydro-meteorological data and information systems:** Strengthen the collection of hydrological and meteorological information and promote harmonisation of information between the member states.

- ii. **Information access:** Promote and improve the coordinated access to hydro-meteorological data for development planning by users.
- iii. **Surface and groundwater monitoring:** Develop an effective water resources monitoring network to capture all required planning and managing data.
- iv. **Water quality and sediment monitoring:** Develop and institutionalise water quality and sediment monitoring.



**2.3.4 Component 4: Water Resources Management**

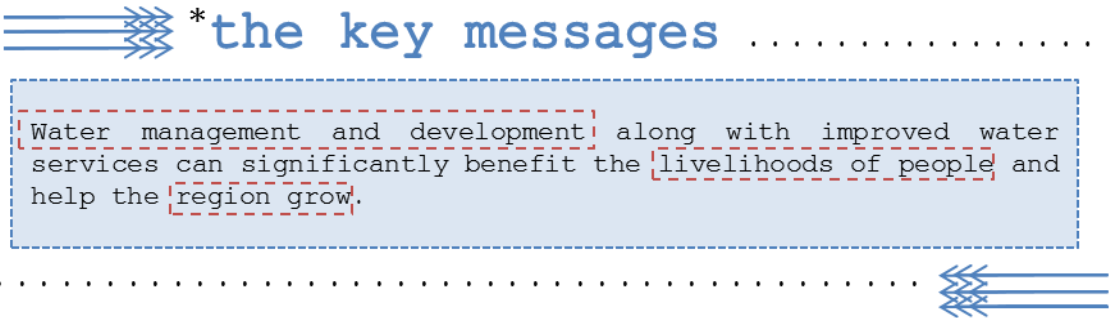
To ensure sustainable water resources management in the basin an integrated management of all the resources in the sub-catchment areas and proper water resources planning is required. There is also need to improve water use and allocation efficiency in the basin. Mozambique and Zimbabwe are both vulnerable to frequent water-related disasters, such as droughts, floods, water-borne diseases, etc. The frequency of these extreme water-related events is increasing; this may be attributed to climate variability and climate change. These disasters are leading to the loss of lives and impacting the sectors contribution to the respective GDPs of both countries.

In the SADC region a Climate Change Adaptation Strategy for the Water Sector (CCAWS) has been developed with strategies on planning, response and recovery to water related disasters. The CCAWS Strategy seeks to mainstream climate change adaptation in the development the SRB.

**Strategic Objective:** To promote integrated management of water resources in the basin and reduce the impact of water related disasters in the Save River Basin.

**Proposed strategic interventions:**

- i. **Integrated planning:** Facilitate the adoption of river basin approaches to planning, development and management of water resources based on IWRM principles. Develop common guidelines for water resources assessments and carry these out in the basin.
- ii. **Water allocation:** Promote and develop allocation and regulatory guidelines for the utilisation of water resources in the basin.
- iii. **Water demand management:** Promote the implementation of water demand management principles in the basin to address water shortages.
- iv. **Basin wide disaster management:** Improve early warning systems in the basin to better predict water related disasters. Promote integrated drought management and flood management approaches in dealing with water related disasters.
- v. **Building climate resilience:** Incorporate climate adaptation in planning and development of water resources and general economic activities.



**2.3.5 Component 5: Environmental Sustainability**

The high rural population density in the Save River Basin exerts environmental pressures on the natural environment, with the prevalence of poor land use practices causing the serious erosion of the fragile landscape. This pressure on land has reached very high and unsustainable levels. The resulting siltation is having an adverse impact on water resources in the basin. This is evidenced by the disappearance of flow from rivers during the dry season in streams that used to be perennial. Without access to streamflow, humans and animals become reliant on subsurface flows that are difficult to access. Furthermore, the ecosystem services that used to thrive in this perennial aquatic environment have vanished as a result of the basins altered hydrology. These changes further impoverish already disadvantaged rural

communities, for instance, fish stocks and mat-making reeds that used to thrive in most streams all year round are now no longer available.

In Mozambique charcoal production has created a market, thereby accelerating deforestation. This has deprived rivers of their natural erosion protection facilities, a problem which is exacerbated by uncontrolled stream bank cultivation. The strategy for river protection will address these negative environment impacts. It will be implemented by communities, via mobilisation and education. Cross-sector coordination through the active participation of the departments responsible for agriculture, women / youth and environment in both countries will be essential.

**Strategic objective:** To halt and reverse environmental degradation with ecosystems services restored.

**Proposed strategic interventions:**

- i. **Catchment protection:** Develop and implement a strategy aimed at promoting catchment protection in the river basin.
- ii. **Environmental water requirements:** Develop and implement guidelines aimed at ensuring that environment is seen as a legitimate user of the resource.
- iii. **Water pollution:** Promote an approach to combat water pollution in the basin.
- iv. **Community based water management projects (CBMPs):** Develop and implement a strategy for sustainable land use by providing alternative agricultural practices that respect river protection.

### **3 SAVE RIVER BASIN JOINT IWRM STRATEGIC INTERVENTIONS**

The strategic interventions identified and grouped under the five components presented in Section 2 are summarised below in Table 3-1. The SRB Action Plan is a collection of the strategic interventions that need to be done to achieve the aims of the Regional Strategy, the National Water Policies and the Regional Infrastructure Master Plan. It is the *mechanism* to deliver real benefits to people and the environment. These strategic interventions have been utilised to develop the Strategic Actions and Save River Basin projects presented later in Chapter 4.

Table 3-1: Impacts of the strategic interventions in the Save River Basin

Strategy Component	Strategic Objective	Ref. No	Strategic Intervention	Impact of intervention
<b>Component 1: Institutional Framework for Water Resources Management and Development</b>	To develop joint planning mechanisms and operational procedures for managing the Save River Basin in accordance with the Revised Protocol on Shared Watercourses, international obligations and national statutes.	IF 1	<b>Joint management mechanism</b>	Contributes to the implementation of the SADC Protocol of Shared Watercourses, which calls for the establishment of Shared Watercourses Institutions. Joint management of water resources also contributes to regional cooperation in integrating and coordinating water resources development and management between countries; optimising benefits from joint resources and promoting peace and security.
		IF 2	<b>Stakeholder participation</b>	Contributes to the implementation SADC Regional Water Policy and the SADC RSAP III Programme 6 on Stakeholder Participation. Stakeholder participation in water resources management ensures empowerment and thus effective decision making in implementing IWRM. Informed stakeholders will contribute to managing and developing the water resources in a sustainable manner.
		IF 3	<b>Capacity building</b>	Contributes to the implementation of the SADC RSAP III and ensures that water managers and users have the knowledge and tools to implement IWRM. Capacitated managers will effectively implement IWRM in the Save River Basin and thereby improve water security.
		IF 4	<b>Vulnerable groups mainstreaming</b>	Poor men and women, including the youth, are marginalised in the management and use of resources. Involving them in planning, managing and developing the resource, and ensuring equity in use of the resource, contributes to improving livelihoods and poverty alleviation.
		IF 5	<b>Research and development</b>	Research and development will contribute to improving knowledge on managing and developing the resource in a sustainable way.
<b>Component 2: Water Resources Infrastructure Development</b>	To address the deficit in water demand by ensuring water supply in an efficient and sustainable manner at the right time, in adequate quantities and of suitable quality. Additionally, this component seeks to maximise benefits from these investments by harnessing	WID 1	<b>Infrastructure development</b>	The SADC RSAP III promotes the development of infrastructure. In the SRB multi-purpose infrastructure will contribute to regional development by ensuring water security for agriculture, energy, tourism, industrial growth etc. New water infrastructure will increase water storage capacity, retain floodwaters and allow for increased water supply during periods of drought.

Strategy Component	Strategic Objective	Ref. No	Strategic Intervention	Impact of intervention
	hydropower from the same infrastructure.	WID 2	<b>Infrastructure safety and operation</b>	This intervention will ensure the security of investments in dam infrastructure and protect downstream settlements and economic activities.
<b>Component 3: Enhanced Water Resources Knowledge and Information Systems</b>	To support effective, efficient collection and management of water resources data necessary for the implementation of IWRM in the Basin.	EKIS1	<b>Hydro-meteorological data and information systems</b>	This intervention links to the implementation of the SADC HYCOS within the SADC RSAP III. Water related data and information availability in terms of quantity, quality and time series will lead to better planning, management and development of water resources in the Save River Basin.
		EKIS2	<b>Information access</b>	Information access for different users will ensure water resources management and development occurs in a planned and coordinated fashion. Information access is important in flood management and mitigation as it allows for timely, clear and accurate emergency warnings. Agriculture, urban and other key economic activities need access to data for their operational and developmental planning.
		EKIS3	<b>Surface and groundwater monitoring</b>	Understanding resource availability is important for planning and responding to demands. In particular this will help SRB governments and communities cope with the variability caused by climate change. Thus allowing plans to be devised that are capable of ensuring that there is a reliable supply of water in the basin.
		EKIS4	<b>Water quality and sediment monitoring</b>	Promoting good water quality will improve the environmental integrity of the SRB and aid the provision of water that is suitable for aquatic life and agricultural use. Sediment monitoring is required as it will guide programs aimed at reducing the siltation of reservoirs in the basin. This is necessary as siltation affects the yield and water availability of these water sources.
<b>Component 4: Water Resource Management</b>	To promote integrated management of water resources in the basin and reduce the impact of water related disasters in the Save River Basin.	WRM 1	<b>Integrated planning</b>	Integrated planning addresses the SADC Regional Water Policy as it promotes the implementation of IWRM. Integrated approaches in planning reduce conflicts and unsustainable use of resources. Integrated planning also ensures that water resource management and development is planned and coordinated on the basis of environmentally, socially and economically sound principles.
		WRM 2	<b>Water allocation</b>	Equitable use of the water resources among all users reduces the risk of water conflicts, ensures that marginalised are allocated water resources and provides

Strategy Component	Strategic Objective	Ref. No	Strategic Intervention	Impact of intervention
				for the allocation of water to the environment as a legitimate user of the resource.
		WRM 3	<b>Water demand management</b>	This intervention promotes the efficient use of water resources thus increasing water availability for other users in the river basin.
		WRM 4	<b>Basin wide disaster management</b>	The SADC Regional Water Policy aims to have a region that is secure from water related disasters. Basin wide disaster management will reduce the loss of life (human and livestock) and economic losses associated with these disasters.
		WRM5	<b>Building climate resilience</b>	Climate variability and climate change impacts are felt through water. They impact on water security and therefore influence a countries productivity and development. Thus, building climate resilience through development is critical to continued economic growth and development in the basin.
<b>Component 5: Environmental Sustainability</b>	To halt and reverse environmental degradation with ecosystems services restored.	ES 1	<b>Catchment protection</b>	Catchment protection is important in ensuring environmental integrity in the basin. In particular catchment protection will foster sustainable land management practices and contribute to the reduction of siltation in the river basin.
		ES 2	<b>Environmental water requirements</b>	Noting that the environment is a user and provider of the resource and ensuring it is provided with adequate water will ensure environmental sustainability and the health of the ecosystem (which provides services for livelihoods) in the river basin.
		ES 3	<b>Water pollution</b>	Reducing water pollution contributes to the maintenance of a healthy river system that supports human and aquatic life in the basin.
		ES 4	<b>Community based water management projects (CBMPs)</b>	The SADC RSAP III strategic objective is to contribute to social development. Community based projects will lead to improving livelihoods and increasing the productivity of communities. They will also contribute to reducing siltation (siltation leads to reduction of reservoir yields) and improve the health of the river system. This creates a win-win situation between the communities and the environment.

## 4 SAVE RIVER BASIN JOINT IWRM STRATEGY IMPLEMENTATION PLAN

An Action Plan has been devised for each of the Strategy's five Components. The Action Plans consist of several actionable projects as depicted in Tables 4.1 – 4.5 below. These projects constitute key delivery mechanisms for the Joint IWRM Strategy and, as such, their implementation is essential (see Figure 4.1). The planned sequence of implementation for these strategic projects is depicted in Figure 4.2 below.

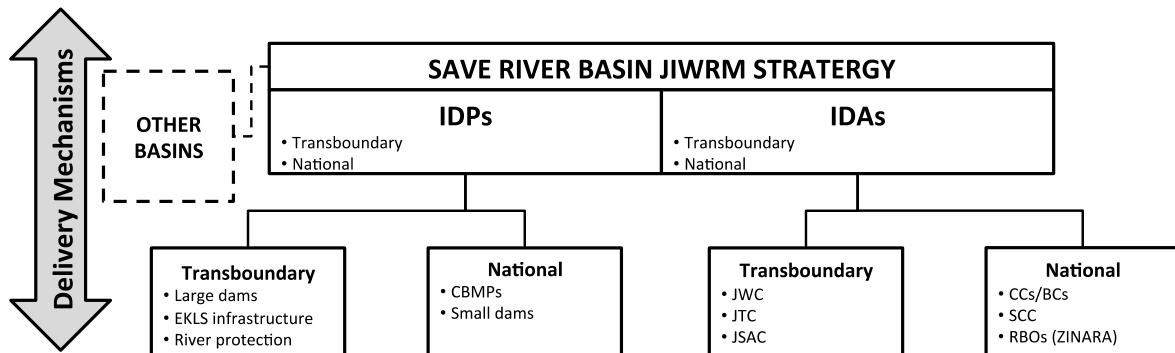


Figure 4-1: Save River Basin Joint IWRM Strategy Delivery Mechanisms

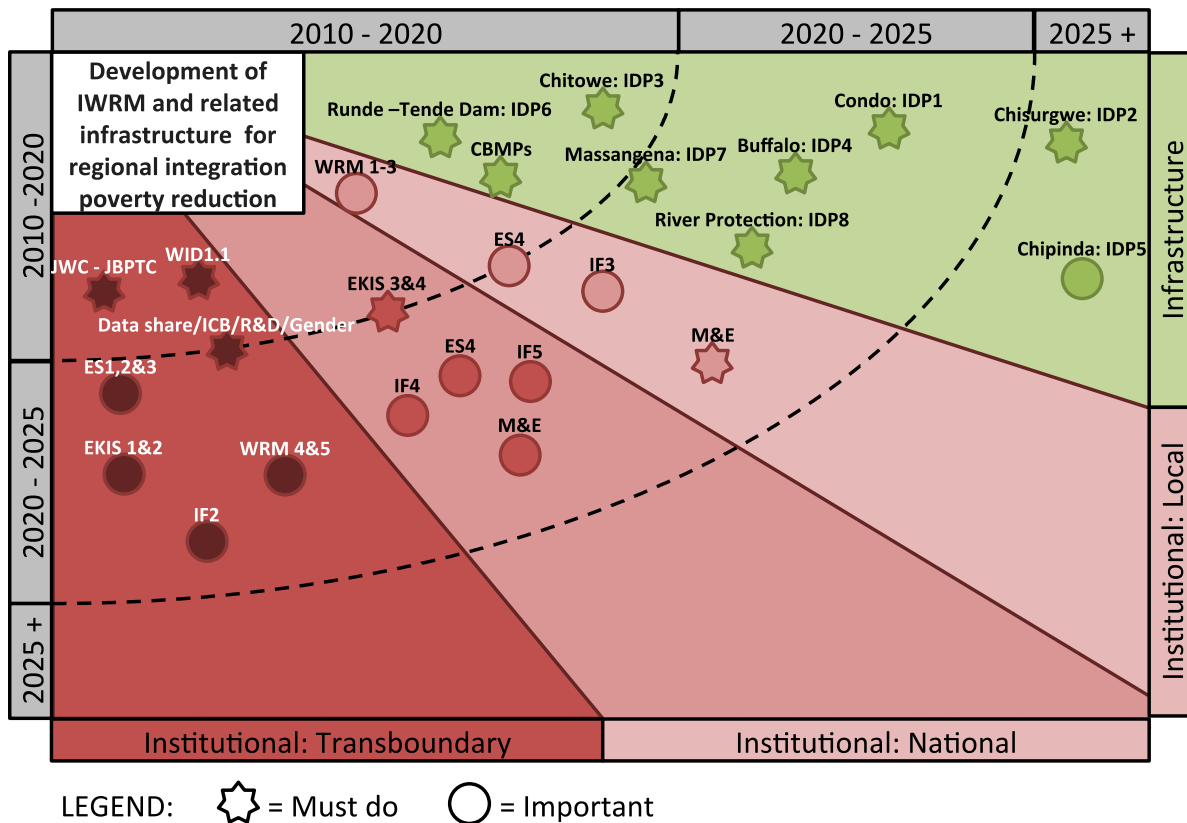


Figure 4-2: Save River Basin JIWRM Strategy Implementation Plan

## 4.1 Institutional Framework for Water Resources Management and Development

Table 4-1: Institutional Framework for Water Resources Management and Development

Strategic Objective	Strategic Intervention	Project no.	Level	Identified Project	Implementing and Support Agencies	Time Scale for Action	Budget Cost Estimate
<b>Component 1:</b> To develop joint planning mechanisms and operational procedures for managing the Save River Basin in accordance with the Revised Protocol on Shared Watercourses, international obligations and national statutes.	<b>IF 1:</b> Joint management mechanism	IF 1.1	Transboundary	<b>Capacity Building:</b> 1. Establishment of the JWC Secretariat and a Permanent Bilateral Joint Technical Committee (PBJTC) 2. Formulation, implementation & monitoring of the Joint Buzi, Pungwe and Save Bi-lateral comprehensive agreement - to operationalise the Strategies for each Basin (including provision of Technical Assistance to both sub-actions)	SADC, Member States (Mozambique (DNA) and Zimbabwe (DWR-ZINWA))	2013 – 2020	US\$1,200,000
		IF 1.2	National	Review of legal / institutional framework and ratification of international treaties - including provision of Technical Assistance	Member States (Mozambique and Zimbabwe)	2013 – 2015	US\$200,000
	<b>IF 2:</b> Stakeholder participation	IF 2	Transboundary	Create and operate Buzi - Pungwe - Save Basins Stakeholder Advisory Council	SADC, GiZ, Member States (Mozambique and Zimbabwe); Danida	2016 – 2020	US\$500,000
	<b>IF3:</b> Capacity building	IF 3	National and Sub-national	Technical assistance to Catchment Councils / River Basin Committees; PIAs	DWR - ZINWA, Save /Runde Catchment Councils (Zimbabwe) and DNA-ARA Centro, Pungwe/Buzi/Save Basin Committees (Mozambique)	2013 – 2020	US\$1,200,000
	<b>IF4:</b> Vulnerable groups mainstreaming	IF 4	All	Development of Vulnerable Groups Mainstreaming Strategy for the Buzi - Pungwe - Save Shared River Basins	Member States (Mozambique and Zimbabwe) through the JWC; Danida	2015 – 2018	US\$150,000
	<b>IF5:</b> Research and development	IF5	All	Establish a research and development fund for water resources in the SRB	DWR - ZINWA and DNA - ARA-Centro	2015 – 2025	US\$600,000

## **4.2 Water Resources Infrastructure Development**

The Runde Catchment in Zimbabwe is home to the SRB's single largest water user and is served by an intricate and well-developed network of large dams and transmission canals. The development of the Runde -Tende and Chipinda Pools will see the area reaching almost its full development potential. The SRB has focused development of large, multi-purpose dams in the Save catchment in Zimbabwe and Mozambique. Fig 4-1 shows the existing and proposed water development infrastructure, including the planned large-scale irrigation schemes.

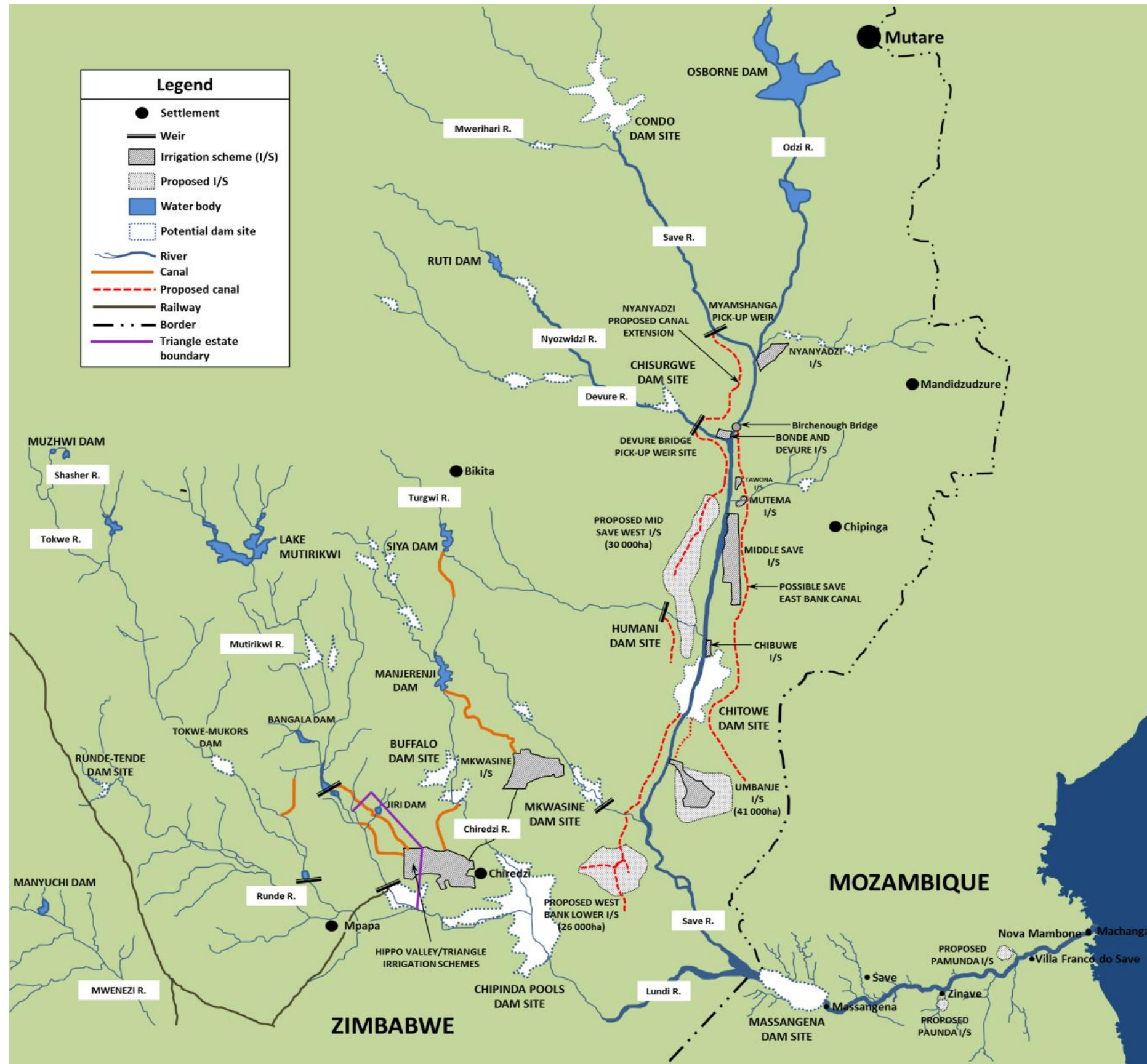


Figure 4-3: Existing and planned strategic water infrastructure for the Save River Basin

Table 4-2: Water Resources Infrastructure Development

Strategic Objective	Strategic Intervention	Project no.	Level	Identified Project	Implementing and Support Agencies	Time Scale for Action	Budget Cost Estimate
<b>Component 2: To address the deficit in water demand by ensuring water supply in an efficient and sustainable manner at the right time, in adequate quantities and of suitable quality. Additionally, this component seeks to maximise benefits from these investments by harnessing hydropower from the same infrastructure.</b>	<b>WID 1:</b> Infrastructure development	WID 1.1	Transboundary	1. Feasibility study and investment plan for multi-purpose dams in the SRB including SEIA and RAP 2. Geotechnical and other surveys for multi-purpose dams in the SRB 3. Dam operating rules for optimum water use and allocation	JWC - Member States; World Bank	2015 – 2020	1. US\$2,000,000 2. US\$800,000 3. US\$500,000  Total: US\$3,300,000
		WID 1.2	National	<b>Condo Dam &amp; Chitowe Dam</b> 1. Update engineering design, EIA / RAP 2. Prepare procurement documents 3. Financial studies & investment funding 4. Construct dams and ancillary works  <b>Main Project Components:</b> <b>Condo:</b> Rockfill dam, canals, pick-up weirs, hydropower and flood control <b>Chitowe:</b> Earth dam, canals, pickup weirs and flood control	DWR - ZINWA	2015 – 2025	1. US\$3,500,000 2. US\$400,000 3. US\$200,000 4. US\$150,000,000  Total: US\$154,100,000
		WID 1.3	National	<b>Chisurgwe Dam</b> 4. Prepare detailed engineering design, EIA / RAP 1. Prepare procurement documents 2. Financial studies & investment funding 3. Construct dam and ancillary works  <b>Main Project Components:</b> Rockfill dam, canals, pick-up weirs hydropower, and flood control	DWR - ZINWA	2020 – 2025	1. US\$2,000,000 2. US\$300,000 3. US\$200,000 4. US\$60,000,000  Total: US\$62,500,000

Strategic Objective	Strategic Intervention	Project no.	Level	Identified Project	Implementing and Support Agencies	Time Scale for Action	Budget Cost Estimate
		WID 1.4	National	<b>Buffalo / Nyanyadzi Dams</b> 1. Prepare engineering design, EIA / RAP; 2. Prepare procurement documents 3. Financial studies & investment funding 4. Construct dam and ancillary works  <b>Main Project Components:</b> Earth/concrete dam, canals, pickup weirs, transmission lines	DWR - ZINWA	2015 – 2020	1. US\$1,500,000 2. US\$250,000 3. US\$200,000 4. US\$50,000,000  Total: US\$51,950,000
		WID 1.5	Transboundary	<b>Chipinda Pools / Massangena Dams</b> 1. Investigate option to implement one as a Joint Mozambique - Zimbabwe dam. 2. Prepare detailed engineering design, EIA / RAP 3. Prepare procurement documents 4. Financial studies & investment funding 5. Construct dam and ancillary works  <b>Main Project Components:</b> Rockfill with concrete core, canals, supply pipelines	Mozambique - Zimbabwe; AfDB, World Bank	2018 – 2030	1. US\$500,000 2. US\$2,500,000 3. US\$400,000 4. US\$300,000 5. US\$90,000,000  Total: US\$93,700,000
		WID 1.6	National	<b>Runde Tende Dam</b> 1. Prepare detailed engineering design, EIA / RAP 2. Prepare procurement documents 3. Financial studies & investment funding 4. Construct dam and ancillary works  <b>Main Project Components:</b> Rockfill dam with concrete core, canal, hydropower station	DWR - ZINWA	2015 – 2020	1. US\$1,500,000 2. US\$500,000 3. US\$200,000 4. US\$80,000,000  Total: US\$82,200,000
	<b>WID 2:</b> Infrastructure safety and operation	WID 2	National	<b>Dam Safety Study</b> Produce an inventory of all dams/weirs and carry out a dam safety and sedimentation survey for all large and medium sized dams in the SRB	DWR - ZINWA	2015 – 2018	US\$1,000,000

### 4.3 Enhanced Water Resources Knowledge and Information Systems

Table 4-3: Enhanced Water Resources Knowledge and Information Systems

Strategic Objective	Strategic Intervention	Project no.	Level	Identified Project	Implementing and Support Agencies	Time Scale for Action	Budget Cost Estimate
<b>Component 3:</b> To support effective, efficient collection and management of water resources data necessary for the implementation of IWRM in the Basin.	<b>EKIS 1:</b> Hydro-meteorological data and information systems	EKIS 1	Transboundary	Procure hardware/software, train in standardised procedures, data protocol and tools for collection, storage and management of information exchange between the countries	SADC, Member States - JWC (Mozambique and Zimbabwe)	2015 – 2025	US\$1,000,000
	<b>EKIS 2:</b> Information access	EKIS 2	National	1. Set-up flood / drought disaster information dissemination mechanisms 2. Develop web-based and other sale mechanisms to ensure that water resources information is available to users for planning, managing and developing water resources	ZINWA Data and Research Unit and ARA Centro and Met Offices in Mozambique and Zimbabwe	2015 – 2020	US\$120,000
	<b>EKIS 3:</b> Surface and groundwater monitoring	EKIS3	Transboundary	Expand/ Strengthen hydro-meteorological and groundwater monitoring stations in the Save River Basin	ZINWA and ARA Centro	2015 – 2030	US\$6,000,000 (\$2million every 5 years)
	<b>EKIS4:</b> Water quality and sediment monitoring	EKIS 4	National	Expansion of pollution control, water quality and sediment monitoring stations in the basin	ZINWA and ARA Centro	2015 – 2025	US\$600,000

## 4.4 Water Resources Management Actions

Table 4-4: Water Resources Management Actions

Strategic Objective	Strategic Intervention	Project no.	Level	Identified Project	Implementing and Support Agencies	Time Scale for Action	Budget Cost Estimate
<b>Component 4:</b> To promote integrated management of water resources in the basin and reduce the impact of water related disasters in the Save River Basin.	<b>WRM 1:</b> Integrated planning	WRM 1	Sub-National	Develop 5 year rolling catchment outline plans based on implementation plans for the Joint IWRM Strategy	ARA-Centro and ZINWA: Mozambique and Zimbabwe	2015 – 2030	US\$500,000
	<b>WRM 2:</b> Water allocation	WRM 2	Sub-national	Develop water allocation guidelines and a permit database (including discharge, storage and abstraction) aimed at promoting equity and water use efficiency (include estimation of the economic value of water across the sectors)	Save / Runde Catchment Councils and ARA Centro	2015 – 2020	US\$250,000
	<b>WRM 3:</b> Water demand management	WRM 3	National/sub-national	Develop water demand management guidelines for the Save River Basin (extracting lessons learnt from work done at the SADC level)	Save /Runde Catchment Councils and ARA Centro	2015 – 2018	US\$150,000
	<b>WRM 4:</b> Basin wide disaster management	WRM 4.1	Transboundary	Develop a basin-wide integrated flood mapping / forecasting and management strategy for the basin	JWC (Member States - Mozambique and Zimbabwe)	2015 – 2020	US\$200,000
		WRM 4.2	Transboundary	Develop an integrated drought management strategy and implementation plan for the Save River Basin	JWC (Member States - Mozambique and Zimbabwe)	2015 – 2020	US\$100,000
	<b>WRM 5:</b> Building climate resilience	WRM 5	Transboundary	Develop a basin-wide climate change adaptation strategy for the basin based on the SADC CCAWS (and climate change sensitivity analysis of proposed development scenarios)	JWC (Member States - Mozambique and Zimbabwe); DFID	2015 – 2020	US\$120,000

## 4.5 Environmental Sustainability Actions

Table 4-5: Environmental Sustainability Actions

Strategic Objective	Strategic Intervention	Project no.	Level	Identified Project	Implementing and Support Agencies	Time Scale for Action	Budget Cost Estimate
<b>Component 5:</b> To halt and reverse environmental degradation with ecosystems services restored.	<b>ES 1:</b> Catchment protection	ES 1.1	Transboundary	Develop and implement a river protection strategy (to combat streambank cultivation, artisanal mining, bush burning/clearing and implement improved land use practices) <ul style="list-style-type: none"> <li>• Carry out remote sensing based or other river and reservoir siltation mapping</li> <li>• Perform land use mapping of SRB</li> <li>• Prepare a 10 year wetland reclamation and river protection strategy for the SRB</li> </ul>	JWC (Member States - Mozambique and Zimbabwe)	2015 – 2020	US\$1,200,000
		ES 1.2	National	<ul style="list-style-type: none"> <li>• Enact legislation to designate water and river protection zones</li> <li>• Run catchment protection campaigns</li> </ul>	Mozambique and Zimbabwe	2018 – 2020	US\$200,000
	<b>ES 2:</b> Environmental water requirements	ES 2	Transboundary	Carry out a Basin-wide environmental flows study to include: <ul style="list-style-type: none"> <li>• Ecological baseline studies</li> <li>• Environmental and estuarine flow requirements at typical river sections - especially in relation to low flows</li> <li>• Consultation with stakeholders on desired state of water bodies</li> </ul>	JWC (Member States - Mozambique and Zimbabwe)	2020 – 2025	US\$500,000
	<b>ES 3:</b> Water pollution	ES 3	National/sub-national	Develop a strategy to combat water pollution - including accidental discharges, artisanal mining	JWC (Member States - Mozambique and Zimbabwe)	2015 – 2020	US\$300,000
	<b>ES 4:</b> Community based water management projects (CBMPs)	ES 4	Sub-national	Implement community basin management projects to promote sustainable, equitable and participatory management of water resources in the basin. Projects must be holistic in nature, comprising the following components: <ol style="list-style-type: none"> <li>1. Water supply and sanitation</li> <li>2. Irrigation and improved land use practices</li> <li>3. River / water source protection</li> <li>4. Gully control and other aquatic environment reclamation works</li> </ol>	District Authorities / Sub-catchment councils and beneficiary communities'; Funding partners: DFID / SDC	2014 – 2025	US\$10,000,000 (\$3million every three years)

## **5 CO-ORDINATION, MONITORING AND EVALUATION**

### **5.1 Policy Framework**

A number of indicators and targets driving water resources management and development can be drawn from Pan African commitments and also from regional policy documents and plans.

- The Africa Water Vision
- The AU Management and Evaluation Water and Sanitation Framework
- SADC Regional Indicative Strategic Development Plan
- NEPAD – (indicators for water supply, irrigated land, hydropower potential)
- AU – PIDA (Partnership in Infrastructure Development in Africa)

The SADC Water Policy on monitoring and evaluation requires that the 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. It recognises that this is critical to the success and sustainability of its programmes. The Policy gives broad guidelines in this regard in that attention should focus on meeting SADC Water Sector targets specified in the Regional Indicative Strategic Plan RISDP, which embrace the Millennium Development Goals (MDGs). In shared watercourses monitoring and evaluation (M&E) should be implemented by Joint Water Commissions, where established, and by Member States.

To date, no specific guidelines on the monitoring and evaluation of the implementation of the SADC Regional Water Strategy are in place. The process for their formulation has only just commenced in the context of developing monitoring and evaluation systems for SADC regional instruments. Notwithstanding, the Regional Indicative Strategic Development Plan (RISDP) provides strategic direction with respect to SADC programmes and activities, by aligning the strategic objectives and priorities of SADC with the policies and strategies for achieving its long-term goals. It outlines the necessary conditions that should be realised towards achieving those goals and sets targets and timeframes in the various fields of co-operation thus providing a basis for the monitoring and measurement of progress. RISDP provides broad guidance on how SADC development programmes will be monitored at the political and policy level, as well as the operational and technical level. It calls on the SADC Secretariat to develop an appropriate monitoring system. The main types of evaluation prescribed by RISDP will be self-evaluation and independent in-depth evaluation, with the latter being the main tool for reviewing progress on medium-term programme implementation and reorientation of activities. Self-evaluation will take place during programme implementation and/or completion. Independent evaluators will be assigned to carry out in-depth mid-term and terminal evaluations, assessing achievements against objectives, as well as ex-post evaluations.

The independent in-depth evaluation will be conducted every three years with the following objectives:

- Assessment of the impact of RISDP on poverty alleviation
- Highlighting achievements and delays concerning priority intervention areas
- Appraisal of the programme, including the adequacy of policies, capacities and resources
- Noting constraints, best practices and lessons learnt, and recommending appropriate actions
- Reviewing roles of key players in programme implementation
- Reviewing the SADC Vision and Mission, as well as against regional priorities
- Reviewing strategies and targets against outcomes
- Evaluating proposed interventions against achievements
- Evaluating the RISDP in relation to current regional priorities

The following sets of information will form the basis for evaluation:

- Targets as outlined in the RISDP
- Indicators of regional development in each three-year cycle

Internal evaluation and monitoring reports will be produced at programme level and co-ordinated by the Secretariat. RISDP has assigned the following roles and responsibilities in the implementation of the M&E System:

- *SADC Summit, Council and Integrated Committee of Ministers (ICM)* – oversight
- *Secretariat* – regional level co-ordination and monitoring
- *SADC National Committees* – national level co-ordination and monitoring
- *Stakeholder Forum* – review and input to M&E reports
- *External Evaluator* – comparison of the outputs against targets, and the overall RISDP impact

The RISDP strategies for M&E are:

- Capacity development in M&E at regional and national levels
- Ensuring stakeholder participation in the process
- Developing aggregate indicators for M& E

## **5.2 Monitoring and Evaluation of the Save River Basin Joint IWRM Strategy**

In the absence of specific guidelines on the type of M&E system to use for the Joint IWRM Strategy, the consultant has drawn from best practice<sup>1</sup> in current application in the development arena to develop a preliminary result based system. The process will involve several steps, each of which is outlined below.

### **5.2.1 Readiness Assessment of Basin States and SADC Institutions to Implement M&E**

This is a comprehensive assessment that would cover the aspects related to the need for M&E, champions advocating the system and what motivates them, ownership and beneficiaries, impacts of the system on resource allocation and achievement of goals, and capacity issues among others. These issues should be covered during the comprehensive formulation of the M&E system. The readiness assessment is intended to facilitate the basin states in addressing the challenges of the training, organizational capacity building, and sequencing of efforts that will be needed to design and construct a results-based M&E systems.

Mozambique and Zimbabwe have a long-standing relationship in transboundary cooperation in different sectors. Most recently the two countries have worked closely in developing an Agreement for Cooperation within the Pungwe River Basin. A coordination mechanism involving the three bilaterally shared basins could build on these already existing institutional frameworks.

#### *Establish Outcomes to Monitor*

The outcomes to monitor are derived from the goals of the Save River Basin Joint IWRM Strategy. It is the outcomes that will ultimately derive benefits for the basin population. Other elements of the performance framework such as the indicators, baselines, and targets are also derived from the outcomes.

#### *Select Indicators to Monitor Outcomes*

Indicators are defined as “the quantitative or qualitative variables that provide a simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of an organization against the stated outcome”. Key performance indicators determine if outcomes are being achieved. The ideal number of indicators for any one outcome is the minimum number that establishes whether the outcome has been achieved.

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<sup>1</sup> A handbook for the Development Practitioner; Ten Steps to a Results Based Monitoring and Evaluation System, Jody Zall Kusek Ray C. Rist and also "Development of IWRM key performance indicators for African Transboundary Basins Management", International Network of Basin Organisation (NBO), 2010.

Performance indicators must conform to the normal SMART protocol, that is, they must be:

**S**PECIFIC - **M**EASURABLE - **A**CHIEVABLE - **R**ELEVANT AND **T**IMEBOUND

Performance indicators have been developed for the implementation of the Save River Basin Joint IWRM Strategy based on the desired outcomes. These indicators must be reviewed over time.

### **5.2.2 Baselines Setting and Data Indicators**

It is crucial to establish the current status relative to the desired outcome in order to set targets that project the desired future performance. The baseline is the first measurement of an indicator. It provides evidence by which to measure programme performance. The baselines will be derived from the outcomes and indicators. Each indicator will require data collection, most of which has been compiled in the Save River Monograph Reports.

#### *Establishing Results Targets*

These are performance targets that address what can be achieved in a specific time toward reaching the outcome. They are based on outcomes, indicators and baselines. A target is defined as “. . . a specified objective that indicates the number, timing and location of that which is to be realized.”<sup>1</sup> Targets should be established as short-term objectives on the path to achieving an outcome. They are interim steps on the way to an outcome, and eventually to a longer-term goal. It should be noted that the traditional implementation dimensions of inputs, activities, and outputs also require targets.

The above steps of the process lead to the formulation of a performance framework for managing the implementation of the Save River Basin JIWRM Strategy. It should be consulted frequently in order to ensure that implementation of the Strategy produces the intended outcomes. The performance framework for the Strategy is presented in the tables below:

### 5.2.3 Pre-existing Targets Related to the Joint IWRM Strategy

Table 5-1: Overarching Targets for Save River Basin M & E Framework

Level	Vision/Policy/Plan Document	Target
Regional	SADC Regional Strategic Indicative Development Plan	<ol style="list-style-type: none"> <li>1. Long term regional water policy and strategy developed and approved by March 2004</li> <li>2. Increased awareness, broad participation and gender mainstreamed in water resources development and management by 2005</li> <li>3. Centres of excellence for water research and technology development are identified, strengthened by 2005</li> <li>4. Water sector policies and legislation harmonised by 2006</li> <li>5. Establish and strengthen at least eight River Basin Organisations by 2006</li> <li>6. Water data banks and planning networks are established and fully operational by 2007</li> <li>7. Training and institutional capacity strengthening programmes developed and implemented by 2008</li> <li>8. Halve by 2015 the proportion of people without access to safe drinking water and sanitation services</li> <li>9. Develop by 2015 water resources infrastructure needed to double land under irrigation</li> </ol>
Africa	Africa Water Vision	<p><b>Improving Governance of Water Resources</b></p> <ol style="list-style-type: none"> <li>1. Development of national policies and comprehensive institutional reform, 100% of countries implementing by 2025</li> <li>2. Enabling environment for regional cooperation on shared water, 100% initiated in new river-basin organizations and implemented by river-basin organizations</li> <li>3. Improving water wisdom               <ol style="list-style-type: none"> <li>a. Systems for information generation, assessment and dissemination by 2025                   <ol style="list-style-type: none"> <li>i. Established at national level</li> <li>ii. Established for international river basins</li> <li>iii. Established at Africa-wide level</li> </ol> </li> <li>b. Sustainable financing for information generation and management by 2025                   <ol style="list-style-type: none"> <li>i. Review of global experience</li> <li>ii. Implementation at national level 100%</li> <li>iii. Implementation at river-basin level 90%</li> <li>iv. Implementation at Africa-wide level</li> </ol> </li> </ol> </li> <li>4. Capacity Building               <ol style="list-style-type: none"> <li>a. Create public awareness and consensus by 2025</li> <li>b. Knowledge gaps identified</li> <li>c. Partnerships for strategic assistance</li> <li>d. National research institutes established</li> <li>e. Regional research institution established</li> <li>f. Gender/youth concerns mainstreamed</li> </ol> </li> </ol>

Level	Vision/Policy/Plan Document	Target
		<p><b>Meeting Urgent Water Needs</b></p> <ol style="list-style-type: none"> <li>1. Proportion of people without access to safe and adequate water supply reduced by 95% by 2025</li> <li>2. Proportion of people without access to safe and adequate sanitation reduced by 95% by 2025</li> <li>3. Water for achieving food security                             <ol style="list-style-type: none"> <li>a. Water productivity of rain-fed agriculture and irrigation increase by 100%</li> <li>b. Size of irrigated area increased by 60%</li> </ol> </li> <li>4. Development of water for agriculture, hydropower, industry, tourism &amp; transportation at national level to 25% of potential by 2025</li> <li>5. Conservation and restoration of environment, in biodiversity, and life-supporting ecosystems                             <ol style="list-style-type: none"> <li>a. Allocation of sufficient water for environmental sustainability - implemented 100% in river basins.</li> <li>b. Conserving and restoring watershed ecosystem - implemented 100% in river basins.</li> </ol> </li> </ol> <p><b>Strengthening Financial Base for Desired Water Future</b></p> <ol style="list-style-type: none"> <li>1. Sustainable financing for policy and institutional reform and capacity building operations in 60% of the countries by 2005</li> <li>2. Sustainable financing for information generation and management in 100% of the countries by 2015</li> <li>3. Financing urgent water needs                             <ol style="list-style-type: none"> <li>a. Implementation of pricing and full cost recovery - operational in 100% of countries</li> <li>b. Increasing private sector participation - operational in 100% of the countries</li> <li>c. Mobilizing finance from national and international sources secured for 100% of countries</li> </ol> </li> </ol>
International	WSSD – Johannesburg Implementation Plan	To develop and implement integrated water resource management and water efficiency (IWRM/WE) plans by 2005 at all levels

## 5.2.4 Save River Basin Objectives and Outcome Indicators

Table 5-2: Specific Objectives and Outcome Indicators for the Save River Basin IJWRM Strategy

River Basin Objectives and Indicators			
OBJECTIVE	INDICATOR	SRB BASE-LINE	TARGET
Optimal, sustainable and equitable water use, including transboundary use	<ul style="list-style-type: none"> <li>▪ Proportion of total water resources used</li> <li>▪ Balance of use between riparian states</li> </ul>	<ul style="list-style-type: none"> <li>▪ 33% of MAR in Save catchment, 68% of MAR in Runde and 0.15% in Save Mozambique</li> <li>▪ Urban water supply losses approximately 20-30%; Water pricing to promote WDM exist in Zimbabwe</li> <li>▪ Mozambique part incremental MAR is 17%</li> <li>▪ Zimbabwean part generates 83% of MAR</li> </ul>	Water use allocation between riparian states to be regulated through a Comprehensive Agreement on the Save River Basin.
Reduction of vulnerability to climate change and extreme events i.e. floods and droughts	<ul style="list-style-type: none"> <li>▪ Number of people and economic activities at risk (e.g. from flood inundation maps)</li> <li>▪ Economic impact of flooding and drought (humans, environment and economic values)</li> <li>▪ System for Early Warning (EWS) in place (yes/no)</li> <li>▪ Storage and Regulating infrastructure in place (yes/no)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lower Save basin frequently affected by floods, cyclones and by droughts. Flood prone areas are: Lower Save West sub-catchment in Zimbabwe to the estuary in Mozambique.</li> <li>▪ Economic settlements in flood prone areas resulting in economic losses</li> <li>▪ EWS in place</li> <li>▪ No large dams in lower Save River basin</li> </ul>	<p>Restrict developments and economic activities within flood prone areas</p> <p>Early Warning Systems and Response System operational.</p> <p>Build large, multi-purpose dams and flood regulating infrastructure (Condo, Chitowe, Chipinda Pools and Massangena)</p>
Water storage and supply infrastructure that is satisfactory for social and economic development	<ul style="list-style-type: none"> <li>▪ Storage capacity and transmission / distribution infrastructure</li> <li>▪ Bulk water supply infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1005 Mm<sup>3</sup> in Save Zimbabwe</li> <li>▪ 4253 Mm<sup>3</sup> in Runde Zimbabwe</li> <li>▪ Nil in Save Mozambique</li> <li>▪ Compute total treated water capacity in Save Basin</li> </ul>	<p>Increase total storage ratio from 0.73MAR to 1.70MAR</p> <p>Increased security of supply of safe water by</p> <ul style="list-style-type: none"> <li>• 33% overall</li> <li>• 45% in Save Zimbabwe</li> <li>• 13% in Runde</li> <li>• 86% in Mozambique</li> </ul>
Surface water quantity and quality satisfactory to sustain environmental river health (fish and plant life biodiversity and eco-services)	<ul style="list-style-type: none"> <li>▪ % of time environmental flow requirements is maintained during low flows</li> <li>▪ % of water bodies with improved environmental quality.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Estimated EFR at key river points.</li> <li>▪ Dissolved Oxygen, Phosphate, Conductivity, Turbidity, pH- not within acceptable range locally</li> <li>▪ Polluting activities, silted areas and areas of concern to be mapped.</li> </ul>	<p>67% - 100% of WQ samples fall within national WQ standards</p> <p>Sensitive water bodies designated and protected</p>

Source: Adapted from "Development of IWRM key performance indicators for African Transboundary Basins management", International Network of Basin Organisation (INBO), draft 2010

Table 5-3: Related MDG Benchmarking Objectives and Indicators for the Save River Basin IIWRM Strategy

OBJECTIVE	INDICATOR	BUZI BASE-LINE <sup>2</sup>	IWRM CONTRIBUTION
Target 1.A: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day	Proportion of population below \$1 per day	<ul style="list-style-type: none"> <li>▪ Poverty incidence in Save Mozambique 2005 &gt;55%</li> <li>▪ Poverty incidence in Zimbabwe 2003: Save Zim &gt;48% and Runde &gt;45%</li> </ul>	<p>Water as a factor of production in agriculture, industry and other types of economic activity</p> <p>Investments in water infrastructure and services act as a catalyst for local and regional development</p>
Target 1.C: Halve, between 1990 and 2015, the proportion of people who suffer from hunger	Prevalence of malnourished children under-five years of age	<ul style="list-style-type: none"> <li>▪ Underweight at birth between 5-25% in SRB - higher than national averages in both countries</li> </ul>	<p>Water as a direct input into irrigation, including supplementary irrigation, for expanded grain production</p> <p>Reliable water for subsistence agriculture, home gardens, livestock, crops.</p> <p>Sustainable production of fish, tree, crops and other foods gathered in common property resources</p>
Target 7.A: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources	<p>Proportion of land area covered by forest</p> <p>Proportion of total wetlands lost</p>	<ul style="list-style-type: none"> <li>▪ Mapping of wetlands, forest and grasslands</li> <li>▪ Transfrontier Park and National Parks areas</li> </ul>	<p>Improved water management including pollution control and sustainable levels of abstraction are key factors in maintaining ecosystem integrity</p> <p>River Protection Strategy being implemented</p>
Target 7.B: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss	Designation and proportion of terrestrial and marine areas protected		
Target 7.C: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation	<p>Proportion of population using an improved drinking water source</p> <p>Proportion of population using an improved sanitation facility</p>	<p>Access to safe potable water. Moz: 4-17%. Use of unprotected sources: 50% -70%. Zim: &gt;60% within 1km. Approximately 40% within 500m</p> <p>Zim: Manicaland province - 75% including unimproved latrines. Moz: - 50% including unimproved latrines.</p>	<p>Actions to ensure access to adequate and safe water for poor and poorly serviced communities</p>

## 5.2.5 Transboundary IWRM Performance indicators

Table 5-4: Transboundary IWRM Performance Indicators

IWRM OBJECTIVE	OUTCOME AND INDICATOR	BASELINE
<b>Institutional and Legal Enabling Framework Objectives and Indicators<sup>3</sup></b>		
An institutional and legal framework and agreed regulations for optimal, sustainable and equitable utilization of shared river basins is in place	<ul style="list-style-type: none"> <li>▪ Comprehensive agreement developed for shared river basins based on joint basin studies;</li> <li>▪ Information exchange mechanisms, compatibility of technologies and procedures for collection and management of information in place;</li> <li>▪ Joint shared river basin management institution/mechanism established and operational.</li> <li>▪ Harmonisation of national legislation in accordance with the terms in regional, bi-lateral or multi-lateral agreements signed and ratified by riparian states;</li> <li>▪ International agreements transposed to national law.</li> <li>▪ Mechanisms for joint development and implementation of joint initiatives.</li> </ul>	<ul style="list-style-type: none"> <li>▪ JWC agreement signed, ratified and transposed to national law in both countries committing the parties to the general principles of sustainable development and use, preventions of harm, equity and co-operation on shared water resources.</li> <li>▪ Joint studies as basis for comprehensive agreement completed in 2013</li> <li>▪ National processes for harmonisation of national laws are in progress at SADC level.</li> </ul>
<b>IWRM Performance Indicators Transboundary River Basin Organisations<sup>4</sup></b>		
<b>Planning Indicators</b>		
Joint IWRM Planning procedures to be implemented	<ul style="list-style-type: none"> <li>▪ There is a planning process with well-defined objectives, mutually beneficial goals and development priorities, all stated in a long-term integrated river basin management plans</li> </ul>	<ul style="list-style-type: none"> <li>▪ Buzi, Pungwe &amp; Save Basins Joint Integrated Water Resources Management Strategies developed</li> </ul>
<b>Coordinating Indicators</b>		
International coordination of water management	<ul style="list-style-type: none"> <li>▪ Basin management programmes use coordination mechanisms between riparian's to maximise the opportunity to share benefits of water use</li> </ul>	<ul style="list-style-type: none"> <li>▪ JWC meetings held annually. SADC protocol and SADC Regional Water Strategy provide general guidelines for bi-lateral information exchange</li> <li>▪ At management level, information exchange is mainly focused on floods</li> <li>▪ Both countries part of SADC HYCOS (Hydrological Cycle Observation System) programme which aims at providing water resources data for decision-making.</li> </ul>
Consensus-based decision-making	<ul style="list-style-type: none"> <li>▪ Water sharing uses a consensus approach to broker agreements on a basin basis</li> </ul>	<ul style="list-style-type: none"> <li>▪ Water sharing anticipated to be negotiated in a Comprehensive Agreement. The riparian countries have a history of joint agreements</li> </ul>
Transparent monitoring	<ul style="list-style-type: none"> <li>▪ Each riparian's water sharing procedures use transparent monitoring mechanisms to account for activities</li> </ul>	<ul style="list-style-type: none"> <li>▪ Capacity for monitoring is a challenge</li> </ul>

<sup>3</sup> Interpreted from the SADC Protocol and SADC Strategy

<sup>4</sup>Sources: "Development of IWRM performance indicators for African Transboundary Basins management", International Network of Basin Organisation (INBO)

IWRM OBJECTIVE	OUTCOME AND INDICATOR	BASELINE
<b>Funding indicators</b>		
Ongoing funding for basin management	<ul style="list-style-type: none"> <li>▪ Financing for river basin management exists and is ongoing despite changes in the administration of each riparian</li> </ul>	<ul style="list-style-type: none"> <li>▪ State finance exists, however, management anticipated to be undertaken by financially autonomous offices.</li> </ul>
Investment guidelines	<ul style="list-style-type: none"> <li>▪ Funding for river basin management operates within international investment guidelines which prescribe outcomes in transparency, accountability, benefit shares &amp; sustainability (poverty reduction, economic development &amp; environmental flows)</li> </ul>	<ul style="list-style-type: none"> <li>▪ To some extent IFIs provide conditional funding. Depends on source of funding. Investments must undergo EIA.</li> </ul>
Donor coordination	<ul style="list-style-type: none"> <li>▪ Coordination between donor organizations exists to ensure programs and projects are linked, without duplication, while addressing common goals</li> </ul>	<ul style="list-style-type: none"> <li>▪ Yes (Pungwe Programme Phase II, SADC HYCOS and SWCSP)</li> </ul>

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## 7 APPENDIX A: STRATEGIC INTERVENTIONS: PROJECT FACT SHEETS

### 7.1 Institutional Development Actions

PROJECT FACT SHEET No. IF 1.1 – Joint Basins Management		
<b>Project Setting</b>		
Component 1	Institutional Framework for Water Resources Management and Development	
Strategic Objective	To develop joint planning mechanisms and operational procedures for managing the bilaterally shared Buzi, Pungwe and Save River Basins in accordance with the Revised Protocol on Shared Watercourses, international obligations and national statutes.	
Strategic Intervention	IF 1: Joint management mechanism	
<b>Project Details</b>		
No.	IF 1.1	
Title	Operationalisation of the Joint Water Commission	
Level	Transboundary	
Objective	To operationalise the JWC by establishing a Secretariat and Joint Bilateral Permanent Technical Committee to roll out the three basin strategies.	
Rationale / Justification	Compliance with the provisions of international conventions and the SADC Regional Protocol	
Particulars	<ul style="list-style-type: none"> <li>• Establish a Joint Water Commission (JWC) Secretariat for Zimbabwe and Mozambique</li> <li>• Establish a Joint Bilateral Permanent Technical Committee (JBPTC) for Zimbabwe and Mozambique</li> <li>• Formulation and rollout of the Joint Buzi, Pungwe and Save bilateral comprehensive agreement</li> <li>• Technical assistance</li> </ul>	
Activities	<b>IMPLEMENTATION STATUS</b>	
	<b>Completed Activities</b> <ul style="list-style-type: none"> <li>• Draft Pungwe bilateral agreement</li> <li>• Functions of JWC</li> <li>• Functions of the JBPTC</li> </ul>	<b>Outstanding Activities</b> <ul style="list-style-type: none"> <li>• Formation of JWC Secretariat</li> <li>• Formation of JBPTC</li> <li>• Save and Buzi agreements</li> </ul>
Key Outputs	<ul style="list-style-type: none"> <li>• JWC Secretariat</li> <li>• PBJTC</li> <li>• Bilateral agreements for implementation of Save and Buzi Strategies</li> </ul>	
Supporting Information	<ol style="list-style-type: none"> <li>1. Social and Environmental Sustainability: (Including impacts and mitigation strategies, EIA status)</li> <li>2. Stakeholder Participation:</li> <li>3. Vulnerable Groups and Health Issues:</li> <li>4. Risks and uncertainties: (Are there any issues that may prevent or inhibit implementation?)</li> <li>5. Any other relevant issues: (political tensions?)</li> </ol>	
Implementing and Support Agencies	SADC, Member States (Mozambique (DNA) and Zimbabwe (DWR-ZINWA))	
Time Scale for Action	2013 – 2020	
Budget Cost Estimate	US\$1,200,000	

<b>PROJECT FACT SHEET No. IF 1.2 – Legal Framework Harmonisation</b>		
<b>Project Setting</b>		
Component 1	Institutional Framework for Water Resources Management and Development	
Strategic Objective	To develop joint planning mechanisms and operational procedures for managing the Save River Basin in accordance with the Revised Protocol on Shared Watercourses, international obligations and national statutes.	
Strategic Intervention	IF 1: Joint management mechanism	
<b>Project Details</b>		
No.	IF 1.2	
Title	Legal Framework Harmonisation	
Level	National	
Objective	Rationalisation and harmonisation of national statutes to conform to international legal framework.	
Rationale / Justification	Compliance with the provisions of international conventions, treaties and the SADC Regional Protocol	
Particulars	<ul style="list-style-type: none"> <li>• Ratification of international Treaties</li> <li>• Review and realignment of legal and institutional framework in line with international conventions and the regional protocol</li> <li>• Technical assistance</li> </ul>	
Activities	<b>IMPLEMENTATION STATUS</b>	
	<i>Completed Activities</i>	<i>Outstanding Activities</i>
	<ul style="list-style-type: none"> <li>• Ratification of SADC Protocol</li> </ul>	<ul style="list-style-type: none"> <li>• Ratification of international laws</li> </ul>
Key Outputs	<ul style="list-style-type: none"> <li>• Harmonised statutes</li> </ul>	
Supporting Information	<ol style="list-style-type: none"> <li>1. Legal framework: (Status of the project partners, compliance with national law and international treaty etc.)</li> <li>2. Risks and uncertainties: (Are there any issues that may prevent or inhibit implementation?)</li> <li>3. Any other relevant issues: (E.g. technology, skills, capacity building, institutional development etc.)</li> </ol>	
Implementing and Support Agencies	Member States (Mozambique and Zimbabwe)	
Time Scale for Action	2013 – 2015	
Budget Cost Estimate	US\$200,000	

PROJECT FACT SHEET No. IF 2 – Stakeholder Participation		
<b>Project Setting</b>		
Component 1	Institutional Framework for Water Resources Management and Development	
Strategic Objective	To develop joint planning mechanisms and operational procedures for managing the Save River Basin in accordance with the Revised Protocol on Shared Watercourses, international obligations and national statutes.	
Strategic Intervention	IF 2: Stakeholder participation	
<b>Project Details</b>		
No.	IF 2	
Title	Stakeholder Participation in Water Resources Management	
Level	Transboundary	
Objective	To promote, strengthen and institutionalise stakeholder participation in water management.	
Rationale / Justification	<ul style="list-style-type: none"> <li>Deterioration of the level of stakeholder participation in Zimbabwe</li> <li>Support to strengthen the nascent stakeholder participation in Mozambique</li> </ul>	
Particulars	Create and operate Buzi - Pungwe - Save Basins Stakeholder Advisory Council	
Activities	<b>IMPLEMENTATION STATUS</b>	
	<table border="1"> <tr> <td> <p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>Draft Basin Committees Regulations in Mozambique</li> <li>Sub- and Catchment Councils established in Zimbabwe</li> </ul> </td> <td> <p><b>Outstanding Activities</b></p> <ol style="list-style-type: none"> <li><i>Zimbabwe</i> <ol style="list-style-type: none"> <li>1.1. Provide assistance for the re-establishment of, and consolidation of catchment and sub-catchment councils</li> </ol> </li> <li><i>Mozambique</i> <ol style="list-style-type: none"> <li>2.1. Support the process for the approval of internal regulations for the establishment of Basin Committees, and the institutionalisation of stakeholder participation</li> </ol> </li> <li><i>Both Mozambique and Zimbabwe</i> <ol style="list-style-type: none"> <li>3.1. Establish a tailor-made stakeholder awareness, communication and education strategies for each country to promote stake-holder participation in water management</li> <li>3.2. Provide training in communication skills</li> </ol> </li> </ol> </td> </tr> </table>	<p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>Draft Basin Committees Regulations in Mozambique</li> <li>Sub- and Catchment Councils established in Zimbabwe</li> </ul>
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Key Outputs	<ul style="list-style-type: none"> <li>Restored stakeholder institutions in Zimbabwe operating effectively</li> <li>Operational Basin committees in Mozambique</li> </ul>	
Supporting Information	<ol style="list-style-type: none"> <li>Social and Environmental Sustainability: (Including impacts and mitigation strategies, EIA status)</li> <li>Participation: <ul style="list-style-type: none"> <li>PIAs and Stakeholder institutions:</li> </ul> </li> <li>Vulnerable Groups and Health Issues:</li> </ol>	

	<p>4. Legal framework: (Legal Status for participation, compliance with national laws etc.)</p> <p>5. Risks and uncertainties: (Are there any issues that may prevent or inhibit implementation?)</p> <ul style="list-style-type: none"> <li>○ Weak institutional capacity of PIAs in both Zimbabwe and Mozambique</li> </ul> <p>6. Any other relevant issues: (E.g. technology, skills, capacity building, institutional development etc.)</p> <ul style="list-style-type: none"> <li>○ The institutional capacity of PIAs need to be strengthened to enable them to efficiently drive the process</li> </ul>
Implementing and Support Agencies	SADC, GiZ, Member States (Mozambique and Zimbabwe); Danida
Time Scale for Action	2016 – 2020
Budget Cost Estimate	US\$500,000

<b>PROJECT FACT SHEET No. EKIS – Data and Information Systems</b>		
<b>Project Setting</b>		
Component 5	Enhanced Water Resources Knowledge and Information Systems	
Strategic Objective	To support effective, efficient collection and management of water resources data necessary for the implementation of IWRM in the Basin.	
Strategic Intervention	EKIS : Enhanced water resources knowledge and information systems	
<b>Project Details</b>		
No.	EKIS 1-4	
Title	Hydrometeorological data and Information systems	
Level	Transboundary	
Objective	To enhance data quality and efficiency in the collection, archival, management and exchange of information that is vital for water resources management.	
Rationale / Justification	<ul style="list-style-type: none"> <li>Limited distribution of water resources monitoring stations in Mozambique.</li> <li>Antiquated and unserviceable water resources monitoring network in Zimbabwe which require modernisation and rehabilitation.</li> <li>Requirements for capacity building to enhance and impart expertise in new technologies.</li> </ul>	
Particulars	<ol style="list-style-type: none"> <li>Rehabilitate existing water resources monitoring network in the Save River Basin, including stream flow gauging to update rating curves</li> <li>Expand and strengthen the water resources monitoring network</li> <li>Procure hardware and software for data management.</li> <li>Set up protocols and tools for the collection, storage and management of water resources information between the two countries.</li> <li>Implement training programmes in data management.</li> <li>Set up early warning systems for flood and drought disasters in the Save Basin</li> <li>Develop mechanisms for the real time dissemination of flood information throughout the basin</li> <li>Develop a web store for the online sale of water resources information to water resources practitioners, researchers, consultants, farmers, urban authorities and other stakeholders to facilitate efficient distribution for development planning.</li> </ol>	
Activities	<b>IMPLEMENTATION STATUS</b>	
	<b><i>Completed Activities</i></b> <ul style="list-style-type: none"> <li>Technical note on the requirements of EKIS</li> </ul>	<b><i>Outstanding Activities</i></b> <ul style="list-style-type: none"> <li>Procurement of hardware and software</li> <li>Setting up protocols for data management</li> <li>Rehabilitation and expansion of the water resources monitoring network</li> <li>Early warning systems</li> </ul>

		<ul style="list-style-type: none"> <li>• Creation of a web store for water resources information</li> <li>• Training of PIAs</li> </ul>
Key Outputs	An operational EKIS	
Supporting Information	Meteorological data sharing protocol must be made part of an EKIS database	
Implementing and Support Agencies	SADC, Member States - JWC (Mozambique and Zimbabwe)	
Time Scale for Action	2015 – 2025	
Budget Cost Estimate	US\$7,720,000	

PROJECT FACT SHEET No. ES – River Protection			
<b>Project Setting</b>			
Component 5	Environmental Sustainability Actions		
Strategic Objective	To halt and reverse environmental degradation with ecosystems services restored.		
Strategic Intervention	ES : River Protection Strategy incorporating environmental flows, pollution management and community based water management projects (CBMPs)		
<b>Project Details</b>			
No.	ES 1- 4		
Title	Environmental sustainability		
Level	Sub-national		
Objective	To promote sustainable, equitable and participatory management of water resources in the Save Basin and to improve food security among the basin's population via the use of holistic solutions.		
Rationale / Justification	<ul style="list-style-type: none"> <li>• Poor access to safe water supply by the majority in the basin</li> <li>• Endemic poverty</li> <li>• Streambank cultivation - Land degradation due to human activities</li> </ul>		
Particulars	<ol style="list-style-type: none"> <li>1. Development of Sustainable Water supply and sanitation</li> <li>2. Development of Sustainable Small-holder Irrigation and Improved land-use practices</li> <li>3. Water source protection including pollution and siltation control</li> <li>4. Gulley control and other aquatic environmental reclamation works</li> </ol>		
Activities	<b>IMPLEMENTATION STATUS</b> (Note: Projects implemented in 3 year cycles)		
	<b>(a) Planning Stage</b>		
	<table border="0"> <tr> <td style="vertical-align: top;"> <b>Completed Activities</b> <ul style="list-style-type: none"> <li>• Stakeholder consultations</li> <li>• Selection of projects</li> <li>• Feasibility studies</li> </ul> </td> <td style="vertical-align: top;"> <b>Outstanding Activities</b> <ul style="list-style-type: none"> <li>• Siltation baseline mapping</li> <li>• Streambank cultivation baseline mapping</li> <li>• Strategy for consolidated garedns</li> <li>• Further feasibility studies</li> </ul> </td> </tr> </table>	<b>Completed Activities</b> <ul style="list-style-type: none"> <li>• Stakeholder consultations</li> <li>• Selection of projects</li> <li>• Feasibility studies</li> </ul>	<b>Outstanding Activities</b> <ul style="list-style-type: none"> <li>• Siltation baseline mapping</li> <li>• Streambank cultivation baseline mapping</li> <li>• Strategy for consolidated garedns</li> <li>• Further feasibility studies</li> </ul>
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<b>(a) Implementation Stage</b>			
<table border="0"> <tr> <td style="vertical-align: top;"> <b>Completed Activities</b> <ul style="list-style-type: none"> <li>• Detailed Design</li> <li>• Beneficiary capacity building</li> </ul> </td> <td style="vertical-align: top;"> <b>Outstanding Activities</b> <ul style="list-style-type: none"> <li>• Engineering procurement contract</li> <li>• Implementation</li> </ul> </td> </tr> </table>	<b>Completed Activities</b> <ul style="list-style-type: none"> <li>• Detailed Design</li> <li>• Beneficiary capacity building</li> </ul>	<b>Outstanding Activities</b> <ul style="list-style-type: none"> <li>• Engineering procurement contract</li> <li>• Implementation</li> </ul>	
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Key Outputs	Improved livelihoods through higher water and food security		
Supporting Information	<ol style="list-style-type: none"> <li>1. Social and Environmental Sustainability: (Including impacts and mitigation strategies, EIA status) <ul style="list-style-type: none"> <li>○ Poverty alleviation</li> <li>○ Promotion of environmental protection</li> <li>○ Community buy-in</li> </ul> </li> <li>2. Participation: <ul style="list-style-type: none"> <li>○ Government Institutions: Funding, planning, design and operation and maintenance of the infrastructure</li> <li>○ Co-operating partners: Funding</li> <li>○ Target Beneficiary communities: Production</li> </ul> </li> <li>3. Vulnerable Groups and Health Issues: <ul style="list-style-type: none"> <li>○ Food security</li> <li>○ Access to safe water supplies</li> <li>○ Mitigation of HIV/AIDS impacts</li> </ul> </li> <li>4. Legal framework: (Status of the project partners, compliance with national</li> </ol>		

	<p>law and international treaty etc.)</p> <ul style="list-style-type: none"> <li>○ Small projects not requiring notification</li> </ul> <p>5. Risks and uncertainties: (Are there any issues that may prevent or inhibit implementation?)</p> <ul style="list-style-type: none"> <li>○ Inadequate budgetary provision in comparison with contractor bids</li> </ul> <p>6. Any other relevant issues: (E.g. technology, skills, capacity building, institutional development etc.)</p> <ul style="list-style-type: none"> <li>○ Climate resilient technologies to be employed for irrigation</li> <li>○ Stakeholders new to irrigation requiring support during the initial stages of project operation</li> <li>○ Shortage of experienced agricultural extension officers to provide support to producers</li> </ul>
Implementing and Support Agencies	District Authorities / Sub-catchment councils and beneficiary communities'; Funding partners: DFID / SDC
Time Scale for Action	2014 – 2025
Budget Cost Estimate	US\$10,000,000 (\$3million every three years)

## 7.2 Water Resources Infrastructure Development Projects

Note: where section is left blank means information does not exist.

Project Fact Sheets: COMPONENT 2	
Project Title	<i>Develop MULTI-PURPOSE dams in the Save Basin: Condo-Chitowe Dams</i>
Objective	To address the deficit in water demand by assuring water supply in an efficient and sustainable manner at the right time, in adequate quantities, and suitable quality, and to provide for flood control in the lower Save Valley, as well as electricity generation for peaking and standby. Chitowe dam essential for pick-up storage balancing of Condo water releases.
Project Location	<ul style="list-style-type: none"> <li>• Cordinates : 32<sup>0</sup> 1' E 19<sup>0</sup> 12' S</li> <li>• Name of River : Save River</li> <li>• Name of Sub-zone : Subzone ES8</li> <li>• Subcatchment : Upper Save</li> <li>• Country : Zimbabwe</li> </ul>
Project Number	WID 1.2
Save Strategy Component	Component 2: Infrastructure development
Time Scale for Action	2015 - 2025
Technical Details	<p><b>A. Main dam wall</b></p> <p>Type : Concrete Faced Rockfill Dam</p> <p>Maximum Height : 86 m</p> <p>Crest Length : 452 m</p> <p>Rockfill Volume : 2,366,300 m<sup>3</sup></p> <p>Earthfill Volume : 84,150</p> <p><b>B. Saddle Dam</b></p> <p>Type : Conventional zoned earthfill dam</p> <p>Maximum Height : 25.8 m</p> <p>Crest Length : 1941 m</p> <p>Embankment Volume : 1,940,500 m<sup>3</sup></p> <p><b>C. Spillway</b></p> <p>Type : Drop inlet</p> <p>Inflow food : 9,600 m<sup>3</sup>/sec</p> <p>Discharge Capacity : 540 m<sup>3</sup>/sec</p> <p><b>D. Reservoir</b></p>

Project Fact Sheets: COMPONENT 2					
Project Title	<i>Develop MULTI-PURPOSE dams in the Save Basin: Condo-Chitowe Dams</i>				
	Full supply level : 847.0 m Maximum water depth : 78.9 m Full supply capacity : 3,565,000 MI Area at FSL : 18,900 ha 10% yield : 966,000 MI <b>E. Water Transmission</b> <ul style="list-style-type: none"> <li>• Nyamshanga pick-up weir and diversion canal to Devure Bridge P/Up weir</li> <li>• Devure Bridge pick-up weir and diversion canal to proposed Mid-Save West 30,000 ha irrigation scheme</li> <li>• Chitowe dam and diversion canals to 41,000 ha Chisumbanje and Possible Save East Bank Canal from Birchenough Bridge to Chisumbanje irrigation scheme</li> </ul>				
Rationale/Justification	<ul style="list-style-type: none"> <li>• Irrigation of 41,000 ha Chisumbanje scheme</li> <li>• Irrigation of 30,00 ha Mid-Save West scheme</li> <li>• Hydropower peaking with installed capacity of 48 MW inc standby</li> <li>• Flood mitigation</li> <li>• Water Supply to Towns and Service Centres in the low veldt</li> <li>• Irrigation to small scale community projects</li> </ul>				
Impact	<ul style="list-style-type: none"> <li>• In excess of 250,000 beneficiaries – social benefits in improving livelihoods</li> <li>• Contribution to the overall economy and job creation in agriculture and downstream industries</li> <li>• Enhanced food security</li> <li>• Enhanced flood disaster management system</li> </ul>				
Activities	<b>IMPLEMENTATION STATUS</b> (a) <i>Planning Stage</i> <table style="width: 100%; border: none;"> <tr> <td style="vertical-align: top;"> <b>Completed Activities</b> <ul style="list-style-type: none"> <li>• Site and basin Surveys</li> <li>• Core Drilling and geological report</li> <li>• Design Report and Drawings</li> </ul> </td> <td style="vertical-align: top;"> <b>Outstanding Activities</b> <ul style="list-style-type: none"> <li>• Soils investigation report for Bepe Hills Saddle Dam</li> <li>• Water Use and Distribution Report</li> <li>• Detailed EIA</li> <li>• Environmental Management Plan</li> <li>• Resettlement Action Plan</li> <li>• Bankable document</li> </ul> </td> </tr> </table> (b) <i>Implementation Stage</i> <table style="width: 100%; border: none;"> <tr> <td style="vertical-align: top;"> <b>Completed Activities</b> <ul style="list-style-type: none"> <li>• None</li> </ul> </td> <td style="vertical-align: top;"> <b>Outstanding Activities</b> <ul style="list-style-type: none"> <li>• updating design report and prepare Detailed designs</li> <li>• Procurement documents</li> <li>• Construction</li> </ul> </td> </tr> </table>	<b>Completed Activities</b> <ul style="list-style-type: none"> <li>• Site and basin Surveys</li> <li>• Core Drilling and geological report</li> <li>• Design Report and Drawings</li> </ul>	<b>Outstanding Activities</b> <ul style="list-style-type: none"> <li>• Soils investigation report for Bepe Hills Saddle Dam</li> <li>• Water Use and Distribution Report</li> <li>• Detailed EIA</li> <li>• Environmental Management Plan</li> <li>• Resettlement Action Plan</li> <li>• Bankable document</li> </ul>	<b>Completed Activities</b> <ul style="list-style-type: none"> <li>• None</li> </ul>	<b>Outstanding Activities</b> <ul style="list-style-type: none"> <li>• updating design report and prepare Detailed designs</li> <li>• Procurement documents</li> <li>• Construction</li> </ul>
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<b>Completed Activities</b> <ul style="list-style-type: none"> <li>• None</li> </ul>	<b>Outstanding Activities</b> <ul style="list-style-type: none"> <li>• updating design report and prepare Detailed designs</li> <li>• Procurement documents</li> <li>• Construction</li> </ul>				

Project Fact Sheets: COMPONENT 2	
Project Title	<i>Develop MULTI-PURPOSE dams in the Save Basin: Condo-Chitowe Dams</i>
Key Outputs	Multipurpose rockfill dam <ul style="list-style-type: none"> <li>- supplying rural and urban areas water demand</li> <li>- supplying agricultural water demand</li> <li>- enhancing flood disaster mitigation</li> <li>- providing 48 MW installed hydropower at peak</li> </ul>
Supporting information	<ul style="list-style-type: none"> <li>• Social and Environmental Sustainability: (Including impacts and mitigation strategies, EIA status)</li> <li>• Contribution to climate resilience through the provision of water in fertile low rainfall areas</li> <li>• Participation:                             <ul style="list-style-type: none"> <li>• Government Institutions : Funding, planning, design and operation and maintenance of the infrastructure</li> <li>• Co-operating partners : Funding</li> <li>• Farmers : Production</li> </ul> </li> <li>3. Gender and Health Issues :                             <ul style="list-style-type: none"> <li>• Food security</li> <li>• Access to safe water supplies</li> <li>• Mitigation of HIV/AIDS impacts</li> </ul> </li> <li>4. Legal framework:                             <ul style="list-style-type: none"> <li>• Notifiable project</li> <li>• Downstream state approval through bilateral agreement</li> </ul> </li> <li>5. Risks and uncertainties:                             <p>(Are there any issues that may prevent or inhibit implementation?)</p> <ul style="list-style-type: none"> <li>• environmental impacts</li> <li>• Inability to mobilise required funding for construction</li> </ul> </li> <li>6. Any other relevant issues: (E.g. technology, skills, capacity building, institutional development etc.)                             <ul style="list-style-type: none"> <li>• New technologies to be incorporated in the 1998 design</li> <li>• Shortage of skilled engineers within ZINWA</li> <li>• International level skilled consultants</li> <li>• Shortage of experienced agricultural extension officers to provide support to producers</li> </ul> </li> </ul>
Estimated Investment Cost	USD 155 million

Project Fact Sheets: COMPONENT 2	
Project Title	<i>WID 1.3 Develop MULTI-PURPOSE dams in the Save Basin: Chisurgwe Dam</i>
Objective	To address the deficit in water demand by assuring water supply in an efficient and sustainable manner at the right time, in adequate quantities, and suitable quality, and to provide for flood control in the lower Save Valley, as well as electricity generation for peaking and standby.
Project Location	<ul style="list-style-type: none"> <li>• Geographic Co-ordinates :</li> <li>• Name of River : Devure</li> <li>• Name of Sub-zone : Subzone ES4</li> <li>• Subcatchment : Devure</li> <li>• Country : Zimbabwe</li> </ul>
Project Number	WID 1.3
Save Strategy Component	Component 2 - nrastructure development
Time Scale for Action	2020 - 2030
Technical Details	<p><b>A. Main dam wall</b></p> <p>Type : Earth Dam</p> <p>Maximum Height : 36 m</p> <p><i>Data on crest length, fill volumes, saddle dams, spillway not available</i></p> <p><b>D. Reservoir</b></p> <p>Full supply level :</p> <p>Maximum water depth :</p> <p>Full supply capacity : 2,660 x 10<sup>6</sup> m<sup>3</sup></p> <p><b>C. Water Distribution System</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>
Rationale/Justification	<ul style="list-style-type: none"> <li>• Agricultural Irrigation</li> <li>• Flood mitigation</li> <li>• Irrigation to small scale community projects</li> </ul>
Impact	<ul style="list-style-type: none"> <li>• In excess of 150,000 beneficiaries – social benefits in improved livelihoods</li> <li>• Contribution to the overall economy and job creation in agriculture and downstream industries</li> <li>• Enhanced food security</li> <li>• Enhanced flood disaster management system</li> </ul>
Activities	<b>IMPLEMENTATION STATUS</b>

Project Fact Sheets: COMPONENT 2					
Project Title	<i>WID 1.3 Develop MULTI-PURPOSE dams in the Save Basin: Chisurgwe Dam</i>				
	<p>(a) <i>Planning Stage</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• Sit and basin survey</li> <li>• Core drilling and report</li> <li>• Preliminary design report</li> </ul> </td> <td style="width: 50%; vertical-align: top;"> <p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Full Geotechnical investigations</li> <li>• Water Use and Distribution Report</li> <li>• Detailed EIA</li> <li>• Environmental Management Plan</li> <li>• Resettlement Action Plan</li> <li>• Bankable document</li> </ul> </td> </tr> </table> <p>(b) <i>Implementation Stage</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> </td> <td style="width: 50%; vertical-align: top;"> <p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Detailed design and updating design report</li> <li>• procurement documents</li> <li>• Construction</li> </ul> </td> </tr> </table>	<p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• Sit and basin survey</li> <li>• Core drilling and report</li> <li>• Preliminary design report</li> </ul>	<p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Full Geotechnical investigations</li> <li>• Water Use and Distribution Report</li> <li>• Detailed EIA</li> <li>• Environmental Management Plan</li> <li>• Resettlement Action Plan</li> <li>• Bankable document</li> </ul>	<p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>	<p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Detailed design and updating design report</li> <li>• procurement documents</li> <li>• Construction</li> </ul>
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<p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>	<p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Detailed design and updating design report</li> <li>• procurement documents</li> <li>• Construction</li> </ul>				
Key Outputs	<p>Multipurpose Earthfill dam</p> <ul style="list-style-type: none"> <li>– supplying agricultural water demand</li> <li>– enhancing flood disaster management capability</li> <li>– providing 5 MW installed hydropower for peaking</li> </ul>				
Supporting information	<ol style="list-style-type: none"> <li>1. Social and Environmental Sustainability: (Including impacts and mitigation strategies, EIA status)</li> <li>2. Contribution to climate resilience:             <ul style="list-style-type: none"> <li>• Provision of water in fertile low rainfall areas</li> </ul> </li> <li>3. Participation:             <ul style="list-style-type: none"> <li>• Government Institutions : Funding, planning, design, and operation and maintenance of the infrastructure</li> <li>• Catchment and subcatchment councils : environmental protection and water allocation</li> <li>• Co-operating partners : Funding</li> <li>• Farmers’ &amp; Communities : Production</li> </ul> </li> <li>4. Gender and Health Issues :             <ul style="list-style-type: none"> <li>• Food security</li> <li>• Access to safe water supplies</li> <li>• Mitigation of HIV/AIDS impacts</li> </ul> </li> <li>5. Legal framework: (Status of the project partners, compliance with national law and international treaty etc.)</li> <li>6. Risks and uncertainties: (Are there any issues that may prevent or inhibit implementation?)             <ul style="list-style-type: none"> <li>• environmental impacts</li> <li>• Inability to mobilise required funding for construction</li> </ul> </li> <li>7. Any other relevant issues: (E.g. technology, skills, capacity building, institutional development etc.)</li> </ol>				

Project Fact Sheets: COMPONENT 2	
Project Title	<i>WID 1.3 Develop MULTI-PURPOSE dams in the Save Basin: Chisurgwe Dam</i>
	<ul style="list-style-type: none"><li>• Shortage of skilled engineers within ZINWA</li><li>• Shortage of agricultural extension officer to provide support to producers)</li></ul>
Estimated Investment Cost	USD 60 million

Project Fact Sheets: COMPONENT 2			
Project Title	<i>Develop MULTI-PURPOSE dams in the Save Basin: Buffalo-Nyanyadzi Dams</i>		
Objective	To supply Primary, Urban and Agricultural water demand, 20MW Hydropower at Nyanyadzi		
Project Location	<ul style="list-style-type: none"> <li>• Geographic Co-ordinates :</li> <li>• Name of River : Chiredzi / Nyanyadzi rivers</li> <li>• Name of Sub-zone : EC1 / EO5</li> <li>• Subcatchment : Chiredzi / Nyanyadzi</li> <li>• Country : Zimbabwe</li> </ul>		
Project Number	WID 1.4		
Save Strategy Component	Component 2 - Infrastructure development		
Time Scale for Action	2015 - 2025		
Technical Details	<p><b>A. Main dam wall</b></p> <p>Type : Earth/Concrete Dam</p> <p><b>B. Reservoir (Buffalo)</b></p> <p>Full supply capacity : <math>170 \times 10^6 \text{ m}^3</math></p> <p>Area at FSL :</p> <p>10% yield : <math>15 \times 10^6 \text{ m}^3</math></p> <p><b>D. Water Distribution System</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>		
Rationale/Justification	<ul style="list-style-type: none"> <li>• Primary water supply</li> <li>• Agricultural Irrigation</li> <li>• Flood mitigation</li> <li>• Irrigation to small scale community projects</li> </ul>		
Impact	<ul style="list-style-type: none"> <li>• In excess of 20,000 beneficiaries – social benefits in improving livelihoods</li> <li>• Contribution to the overall economy and job creation in agriculture and downstream industries</li> <li>• Enhanced food security</li> <li>• Enhanced flood disaster management system</li> </ul>		
Activities	<p><b>IMPLEMENTATION STATUS</b></p> <p>(a) <i>Planning Stage</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• Site survey</li> </ul> </td> <td style="width: 50%; vertical-align: top;"> <p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Core drilling</li> <li>• Geotechnical investigations &amp; report</li> <li>• Preliminary design report</li> </ul> </td> </tr> </table>	<p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• Site survey</li> </ul>	<p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Core drilling</li> <li>• Geotechnical investigations &amp; report</li> <li>• Preliminary design report</li> </ul>
<p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• Site survey</li> </ul>	<p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Core drilling</li> <li>• Geotechnical investigations &amp; report</li> <li>• Preliminary design report</li> </ul>		

Project Fact Sheets: COMPONENT 2			
Project Title	<i>Develop MULTI-PURPOSE dams in the Save Basin: Buffalo-Nyanyadzi Dams</i>		
	<ul style="list-style-type: none"> <li>• Water Use and Distribution Report</li> <li>• Detailed EIA</li> <li>• Environmental Management Plan</li> <li>• Resettlement Action Plan</li> <li>• Bankable document</li> </ul> <p>(b) <i>Implementation Stage</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> </td> <td style="width: 50%; vertical-align: top;"> <p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Detailed design report</li> <li>• Engineering procurement contract</li> </ul> </td> </tr> </table>	<p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>	<p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Detailed design report</li> <li>• Engineering procurement contract</li> </ul>
<p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>	<p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Detailed design report</li> <li>• Engineering procurement contract</li> </ul>		
Key Outputs	Multipurpose Earthfill dam – Supplying primary, urban and agricultural water demand		
Supporting information	<ol style="list-style-type: none"> <li>1. Social and Environmental Sustainability: (Including impacts and mitigation strategies, EIA status)                             <ul style="list-style-type: none"> <li>• No EIA</li> </ul> </li> <li>2. Contribution to climate resilience:                             <ul style="list-style-type: none"> <li>• Provision of water in fertile low rainfall areas</li> </ul> </li> <li>3. Participation:                             <ul style="list-style-type: none"> <li>• Government Institutions : Funding, planning, design, and operation and maintenance of the infrastructure</li> <li>• Catchment and subcatchment councils : environmental protection and water allocation</li> <li>• Co-operating partners : Funding</li> <li>• Farmers’ organisation : Production</li> </ul> </li> <li>4. Gender and Health Issues :                             <ul style="list-style-type: none"> <li>• Food security</li> <li>• Access to safe water supplies</li> <li>• Mitigation of HIV/AIDS impacts</li> </ul> </li> <li>5. Legal framework: (Status of the project partners, compliance with national law and international treaty etc.)                             <ul style="list-style-type: none"> <li>• Development is not notifiable</li> </ul> </li> <li>6. Risks and uncertainties: (Are there any issues that may prevent or inhibit implementation?)                             <ul style="list-style-type: none"> <li>• Severe environmental impacts</li> <li>• Inability to mobilise required funding for construction due to unfavourable economic conditions</li> </ul> </li> <li>7. Any other relevant issues: (E.g. technology, skills, capacity building, institutional development etc.)                             <ul style="list-style-type: none"> <li>• Shortage of skilled engineers within ZINWA</li> </ul> </li> </ol>		

Project Fact Sheets: COMPONENT 2	
Project Title	<i>Develop MULTI-PURPOSE dams in the Save Basin: Buffalo-Nyanyadzi Dams</i>
	<ul style="list-style-type: none"><li>• Shortage of agricultural extension officer to provide support to producers)</li></ul>
Estimated Investment Cost	USD 105 million

Project Fact Sheets: COMPONENT 2	
Project Title	<i>Develop MULTI-PURPOSE dams in the Save Basin: Chipinda Pools Dam</i>
Objective	To supply primary urban, agricultural and primary water demand, hydropower while facilitating flood control in the lower Save Valley
Project Location	<ul style="list-style-type: none"> <li>• Geographic Co-ordinates : E S</li> <li>• Name of River : Runde</li> <li>• Name of Sub-zone : EL1</li> <li>• Subcatchment : Lower Runde</li> <li>• Country : Zimbabwe</li> </ul>
Project Number	WID 1.5
Save Strategy Component	Component 2 - Infrastructure development
Time Scale for Action	2020 - 2030
Technical Details	<p><b>A. Main dam wall</b></p> <p>Type : Rockfill with Concrete Core</p> <p>Maximum Height : 81</p> <p><b>C. Reservoir</b></p> <p>Full supply level :</p> <p>Maximum water depth :</p> <p>Full supply capacity :</p> <p>Area at FSL :</p> <p>10% yield : x 10<sup>6</sup> m<sup>3</sup></p> <p><b>D. Water Distribution System</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>
Rationale/Justification	<ul style="list-style-type: none"> <li>• Irrigation of 26,000 ha West Bank Lower scheme</li> <li>• Augment existing Sugar Estates irrigation supply</li> <li>• Urban water demand</li> <li>• Agricultural Irrigation</li> <li>• Flood mitigation</li> <li>• Irrigation to small scale community projects</li> </ul>
Impact	<ul style="list-style-type: none"> <li>• In excess of 15,000 beneficiaries – social benefits in improved livelihoods</li> <li>• Contribution to the overall economy and job creation in agriculture and downstream industries</li> <li>• Enhanced food security</li> <li>• Enhanced flood disaster management system</li> </ul>

Project Fact Sheets: COMPONENT 2					
Project Title	<i>Develop MULTI-PURPOSE dams in the Save Basin: Chipinda Pools Dam</i>				
Activities	<p><b>IMPLEMENTATION STATUS</b></p> <p>(a) <i>Planning Stage</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b>Completed Activities</b></p> <p>None</p> </td> <td style="width: 50%; vertical-align: top;"> <p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Site and Basin</li> <li>• Core drilling</li> <li>• Getechnical investigations &amp; report</li> <li>• Preliminary design report</li> <li>• Water Use and Distribution Report</li> <li>• Detailed EIA</li> <li>• Environmental Management Plan</li> <li>• Resettlement Action Plan</li> <li>• Bankable document</li> </ul> </td> </tr> </table> <p>(b) <i>Implementation Stage</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> </td> <td style="width: 50%; vertical-align: top;"> <p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Detailed design and design report</li> <li>• Engineering procurement contract</li> </ul> </td> </tr> </table>	<p><b>Completed Activities</b></p> <p>None</p>	<p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Site and Basin</li> <li>• Core drilling</li> <li>• Getechnical investigations &amp; report</li> <li>• Preliminary design report</li> <li>• Water Use and Distribution Report</li> <li>• Detailed EIA</li> <li>• Environmental Management Plan</li> <li>• Resettlement Action Plan</li> <li>• Bankable document</li> </ul>	<p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>	<p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Detailed design and design report</li> <li>• Engineering procurement contract</li> </ul>
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<p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>	<p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Detailed design and design report</li> <li>• Engineering procurement contract</li> </ul>				
Key Outputs	<p>Multipurpose Earthfill dam</p> <ul style="list-style-type: none"> <li>– Supplying primary, urban and agricultural water demand</li> <li>– 80MW hydropower</li> </ul>				
Supporting information	<ol style="list-style-type: none"> <li>1. Social and Environmental Sustainability: (Including impacts and mitigation strategies, EIA status)             <ul style="list-style-type: none"> <li>• No EIA</li> </ul> </li> <li>2. Contribution to climate resilience:             <ul style="list-style-type: none"> <li>• Provision of water in fertile low rainfall areas</li> </ul> </li> <li>3. Participation:             <ul style="list-style-type: none"> <li>• Government Institutions : Funding, planning, design, and operation and maintenance of the infrastructure</li> <li>• Catchment and subcatchment councils : environmental protection and water allocation</li> <li>• Co-operating partners : Funding</li> <li>• Farmers’ organisation : Production</li> </ul> </li> <li>4. Gender and Health Issues :             <ul style="list-style-type: none"> <li>• Food security</li> <li>• Access to safe water supplies</li> <li>• Mitigation of HIV/AIDS impacts</li> </ul> </li> <li>5. Legal framework:             <p>(Status of the project partners, compliance with national law and international treaty etc.)</p> <ul style="list-style-type: none"> <li>• Development has been notified</li> </ul> </li> </ol>				

Project Fact Sheets: COMPONENT 2	
Project Title	<i>Develop MULTI-PURPOSE dams in the Save Basin: Chipinda Pools Dam</i>
	<p>6. Risks and uncertainties: (Are there any issues that may prevent or inhibit implementation?)</p> <ul style="list-style-type: none"> <li>• Unfavourable geological conditions at the site</li> <li>• environmental impacts</li> <li>• Inability to mobilise required funding for construction</li> </ul> <p>7. Any other relevant issues: (E.g. technology, skills, capacity building, institutional development etc.)</p> <ul style="list-style-type: none"> <li>• Shortage of skilled engineers within ZINWA</li> <li>• Shortage of agricultural extension officer to provide support to producers)</li> </ul>
Estimated Investment Cost	USD 90 million

Project Fact Sheets: COMPONENT 2	
Project Title	<i>Develop MULTI-PURPOSE dams in the Save Basin: Runde Tende Dam</i>
Objective	To supply agricultural and primary water demand to the Rutenga irrigation scheme, as well as hydro power, operating together with Tokwe-Mukorsi dam.
Project Location	<ul style="list-style-type: none"> <li>• Geographic Co-ordinates : E S</li> <li>• Name of River : Runde</li> <li>• Name of Sub-zone : EL2</li> <li>• Subcatchment : Lower Runde</li> <li>• Country : Zimbabwe</li> </ul>
Project Number	WID 1.6
Save Strategy Component	Component 2 - Infrastructure development
Time Scale for Action	2013 - 2020
Technical Details	<p><b>A. Main dam wall</b></p> <p>Type : Rockfill with central concrete Core</p> <p>Maximum Height : 81</p> <p>Crest Length : -</p> <p>Earth fill Volume : -</p> <p><b>B. Saddle Dam</b></p> <p>Type :</p> <p>Maximum Height :</p> <p>Crest Length :</p> <p>Embankment Volume : 940,500 m<sup>3</sup></p> <p><b>B. Spillway</b></p> <p>Type : Chute</p> <p>length : 50 m</p> <p>Inflow food : 13,200 m<sup>3</sup>/s</p> <p>Discharge Capacity : 3,060</p> <p><b>C. Reservoir</b></p> <p>Full supply level : 655</p> <p>Maximum water depth : 80</p> <p>Full supply capacity : 1,050 x 10<sup>6</sup> m<sup>3</sup>/s</p>

Project Fact Sheets: COMPONENT 2					
Project Title	<i>Develop MULTI-PURPOSE dams in the Save Basin: Runde Tende Dam</i>				
	Area at FSL : 10% yield : 215 x 10 <sup>6</sup> m <sup>3</sup>  C. Water Distribution System • Tokwe Runde Canal to irrigate to Rutenga Irrigation Scheme				
Rationale/Justification	<ul style="list-style-type: none"> <li>• Agricultural Irrigation of 18,000 ha of land</li> <li>• Flood mitigation</li> <li>• Hydropower with installed capacity of 10.65 MW</li> <li>• Irrigation to small scale community projects</li> </ul>				
Impact	<ul style="list-style-type: none"> <li>• In excess of 36,000 beneficiaries – social benefits in improving livelihoods</li> <li>• Contribution to the overall economy and job creation in agriculture and downstream industries</li> <li>• Enhanced food security</li> <li>• Enhanced flood disaster management system</li> </ul>				
Activities	<p><b>IMPLEMENTATION STATUS</b></p> <p>(a) <i>Planning Stage</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>Site and Basin Surveys</li> <li>Core drilling</li> <li>Geotechnical investigations &amp; report</li> <li>Preliminary design report</li> <li>Water Use and Distribution Report</li> </ul> </td> <td style="width: 50%; vertical-align: top;"> <p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>Detailed EIA</li> <li>Environmental Management Plan</li> <li>Resettlement Action Plan</li> <li>Bankable document</li> </ul> </td> </tr> </table> <p>(b) <i>Implementation Stage</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> </td> <td style="width: 50%; vertical-align: top;"> <p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Detailed design and design report</li> <li>• Engineering procurement contract</li> </ul> </td> </tr> </table>	<p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>Site and Basin Surveys</li> <li>Core drilling</li> <li>Geotechnical investigations &amp; report</li> <li>Preliminary design report</li> <li>Water Use and Distribution Report</li> </ul>	<p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>Detailed EIA</li> <li>Environmental Management Plan</li> <li>Resettlement Action Plan</li> <li>Bankable document</li> </ul>	<p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>	<p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Detailed design and design report</li> <li>• Engineering procurement contract</li> </ul>
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<p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>	<p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Detailed design and design report</li> <li>• Engineering procurement contract</li> </ul>				
Key Outputs	Multipurpose Earthfill dam – Supplying primary, urban and agricultural water demand and hydro electricity				
Supporting information	1. Social and Environmental Sustainability: (Including impacts and mitigation strategies, EIA status)				

Project Fact Sheets: COMPONENT 2	
Project Title	<p><i>Develop MULTI-PURPOSE dams in the Save Basin: Runde Tende Dam</i></p> <ul style="list-style-type: none"> <li>• No EIA</li> </ul> <p>2. Contribution to climate resilience:</p> <ul style="list-style-type: none"> <li>• Provision of water in fertile low rainfall areas</li> </ul> <p>3. Participation:</p> <ul style="list-style-type: none"> <li>• Government Institutions : Funding, planning, design, and operation and maintenance of the infrastructure</li> <li>• Catchment and subcatchment councils : environmental protection and water allocation</li> <li>• Co-operating partners : Funding</li> <li>• Farmers’ organisation : Production</li> </ul> <p>4. Gender and Health Issues :</p> <ul style="list-style-type: none"> <li>• Food security</li> <li>• Access to safe water supplies</li> <li>• Mitigation of HIV/AIDS impacts</li> </ul> <p>5. Legal framework:</p> <p>(Status of the project partners, compliance with national law and international treaty etc.)</p> <ul style="list-style-type: none"> <li>• Development is notifiable</li> </ul> <p>6. Risks and uncertainties:</p> <p>(Are there any issues that may prevent or inhibit implementation?)</p> <ul style="list-style-type: none"> <li>• Severe environmental impacts</li> <li>• Inability to mobilise required funding for construction due to unfavourable economic conditions</li> </ul> <p>7. Any other relevant issues: (E.g. technology, skills, capacity building, institutional development etc.)</p> <ul style="list-style-type: none"> <li>• Shortage of skilled engineers within ZINWA</li> <li>• Shortage of agricultural extension officer to provide support to producers)</li> </ul>
Estimated Investment Cost	USD 80 million

Project Fact Sheets: COMPONENT 2	
Project Title	<i>Develop MULTI-PURPOSE dams in the Save Basin: Massangena</i>
Objective	To supply primary urban, agricultural and for siltation and flood control
Project Location	<ul style="list-style-type: none"> <li>• Geographic Co-ordinates : E S</li> <li>• Name of River : Save</li> <li>• Subcatchment : Lower Runde</li> <li>• Country : Mozambique</li> </ul>
Project Number	WID 1.5
Save Strategy Component	Component 2 - Infrastructure development
Time Scale for Action	2013 - 2020
Technical Details	<p><b>A. Main dam wall</b></p> <p>Type : Rockfill with central concrete Core</p> <p>Maximum Height : 45</p> <p>Crest Length : -</p> <p>Earth fill Volume : -</p> <p><b>C. Spillway</b></p> <p>Type :</p> <p>Inflow food :</p> <p>Discharge Capacity :</p> <p><b>D. Reservoir</b></p> <p>Full supply level :</p> <p>Maximum water depth :</p> <p>Full supply capacity :</p> <p>Area at FSL : 4,825 km<sup>2</sup></p> <p>10% yield : 7,263 x 10<sup>6</sup> m<sup>3</sup></p> <p><b>C. Water Distribution System</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>
Rationale/Justification	<ul style="list-style-type: none"> <li>• Irrigation of 10,000 ha Lower Save Mozambique schemes</li> <li>• Primary water demand</li> <li>• Urban water demand</li> <li>• Siltation control</li> <li>• Flood control</li> </ul>
Impact	<ul style="list-style-type: none"> <li>• In excess of 20,000 beneficiaries – social benefits in improving</li> </ul>

Project Fact Sheets: COMPONENT 2					
Project Title	<i>Develop MULTI-PURPOSE dams in the Save Basin: Massangena</i>				
	livelihoods <ul style="list-style-type: none"> <li>• Contribution to the overall economy and job creation in agriculture and downstream industries</li> <li>• Enhanced food security</li> <li>• Enhanced flood disaster management system</li> </ul>				
Activities	<p><b>IMPLEMENTATION STATUS</b></p> <p>(a) <i>Planning Stage</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• Prefeasibility survey</li> </ul> </td> <td style="width: 50%; vertical-align: top;"> <p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Core drilling</li> <li>• Geotechnical investigations &amp; report</li> <li>• Preliminary design report</li> <li>• Water Use and Distribution Report</li> <li>• Detailed EIA</li> <li>• Environmental Management Plan</li> <li>• Resettlement Action Plan</li> <li>• Bankable document</li> </ul> </td> </tr> </table> <p>(b) <i>Implementation Stage</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> </td> <td style="width: 50%; vertical-align: top;"> <p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Detailed design and design report</li> <li>• Engineering procurement contract</li> </ul> </td> </tr> </table>	<p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• Prefeasibility survey</li> </ul>	<p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Core drilling</li> <li>• Geotechnical investigations &amp; report</li> <li>• Preliminary design report</li> <li>• Water Use and Distribution Report</li> <li>• Detailed EIA</li> <li>• Environmental Management Plan</li> <li>• Resettlement Action Plan</li> <li>• Bankable document</li> </ul>	<p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>	<p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Detailed design and design report</li> <li>• Engineering procurement contract</li> </ul>
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<p><b>Completed Activities</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>	<p><b>Outstanding Activities</b></p> <ul style="list-style-type: none"> <li>• Detailed design and design report</li> <li>• Engineering procurement contract</li> </ul>				
Key Outputs	Multipurpose Rockfill dam – Supplying primary, urban and agricultural water demand				
Supporting information	<ol style="list-style-type: none"> <li>1. Social and Environmental Sustainability: (Including impacts and mitigation strategies, EIA status)                             <ul style="list-style-type: none"> <li>• No EIA</li> </ul> </li> <li>2. Contribution to climate resilience:                             <ul style="list-style-type: none"> <li>• Flood control</li> </ul> </li> <li>3. Participation:                             <ul style="list-style-type: none"> <li>• Government Institutions : Funding, planning, design, and operation and maintenance of the infrastructure</li> <li>• Co-operating partners : Funding</li> <li>• Farmers’ organisation : Production</li> </ul> </li> <li>4. Gender and Health Issues :                             <ul style="list-style-type: none"> <li>• Food security</li> <li>• Access to safe water supplies</li> <li>• Mitigation of HIV/AIDS impacts</li> </ul> </li> </ol>				

Project Fact Sheets: COMPONENT 2	
Project Title	<i>Develop MULTI-PURPOSE dams in the Save Basin: Massangena</i>
	<p>5. Legal framework: (Status of the project partners, compliance with national law and international treaty etc.)</p> <ul style="list-style-type: none"> <li>• Development is notifiable</li> </ul> <p>6. Risks and uncertainties: (Are there any issues that may prevent or inhibit implementation?)</p> <ul style="list-style-type: none"> <li>• Unfavourable geological conditions of the site</li> <li>• Severe environmental impacts</li> <li>• Inability to mobilise required funding for construction due to unfavourable economic conditions</li> </ul> <p>7. Any other relevant issues: (E.g. technology, skills, capacity building, institutional development etc.)</p> <ul style="list-style-type: none"> <li>• Shortage of skilled engineers within ZINWA</li> <li>• Shortage of agricultural extension officer to provide support to producers)</li> </ul>
Estimated Investment Cost	USD 100 million