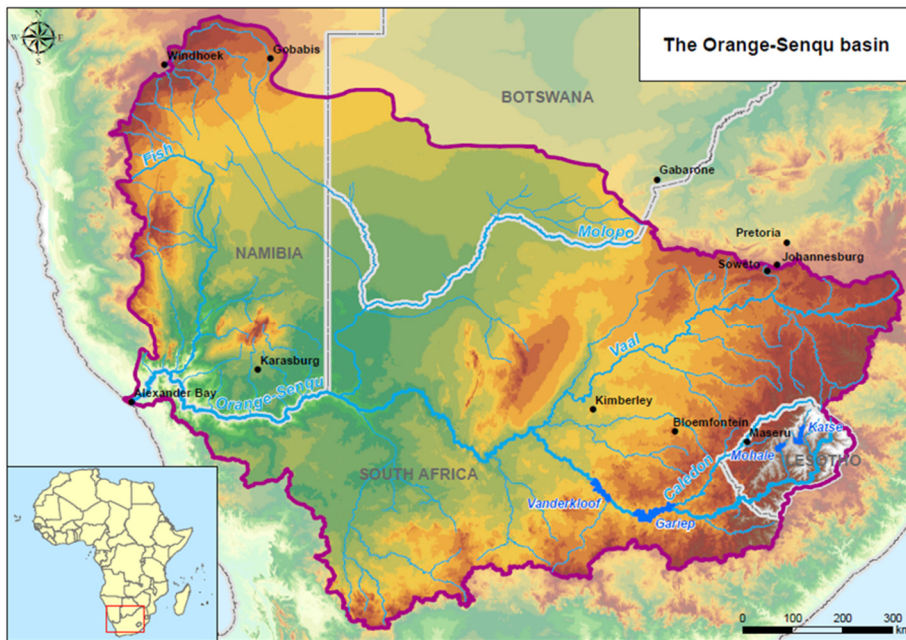


# Integrated Water Resources Management Plan for the Orange-Senqu River Basin – 2015 to 2024



## Introduction

The Orange - Senqu River originates in the highlands of Lesotho on the slopes of its highest peak, Thabana Ntlenyana, at 3 482m, and it runs for over 2 300km to its mouth on the Atlantic Ocean. The Orange-Senqu River basin is one of the largest in Africa with a total catchment area of 972 783km<sup>2</sup>, shared by four countries, parts of Botswana, Namibia, South Africa and all of Lesotho.



While socio-economic activities vary enormously across the basin, water plays a vital role in supporting the livelihoods of more than 14 million people within the system and many others living outside of it.

Water consumption within the basin in **Botswana** is currently low and almost entirely fed by locally developed groundwater sources. The vast majority of water resources development in **Lesotho** has thus far been for export either as raw water via the Lesotho Highlands Water project (LHWP) to South Africa, or through the generation of hydroelectricity. The basin is of major economic importance to **South Africa**, supporting both the urban/industrial heartland of Gauteng and large irrigated areas

producing crops for local consumption and export regionally and internationally. The water resources are also of strategic importance, producing both hydropower and providing water for the cooling of thermal power plants. Water is also exported out of the basin to other parts of the country although these “exports” are also compensated for through imports from other basins. The north-eastern part of the basin in **Namibia** is largely given over to stock farming, depending on rainfall and groundwater. Elsewhere in the Namibian part of the basin, irrigation plays an important economic role and a number of mines also depend on the water resources of the lower Orange.

Heavy demands have been placed on the water resources of the Orange-Senqu River and these have grown steadily. The “naturalised” (pre-development) mean flow of the water of the main river per year (mean annual runoff) is estimated at around 11 500 million cubic metres (11 500 billion litres). Demands have reduced this to less than 4 000 million cubic metres, making the Orange-Senqu one of the most heavily utilised and altered major rivers on the African Continent. This has impacted on downstream ecosystems, including the estuary – a Ramsar site. Inadequate land management associated mostly with agriculture and mining in parts of the Orange-Senqu River basin has led to loss of wetland storage and groundwater recharge in the source areas, increased sediment loads, deteriorating water resources quality, increased distribution and abundance of alien invasive plants, loss of biodiversity and lowered land productivity for farming.



Demands are expected to increase further and there is an urgent need for a coordinated and integrated approach to managing the water resources of the basin. The Orange-Senqu River Commission (ORASECOM) has taken the initiative to meet this need through the development of a basin-wide integrated water resources development (IWRM) plan.

# Integrated Water Resources Management – “IWRM”

Integrated water resources management (IWRM) **“is a process which promotes the coordinated development and management of water, land and related resources in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital eco-systems”** (Global Water Partnership, 1999). The purpose of an IWRM Plan is to make sure that the principles of IWRM are mainstreamed into the development and management of water resources.

IWRM is a cross-sectoral policy approach, designed to replace the fragmented sectoral approach to water resources management that has led to poor services and unsustainable resource use. IWRM recognises that **water resources are an integral part of the ecosystem, a natural resource, and a social and economic good.**

While this concept is widely accepted and easily understood, turning what is essentially a philosophy of sustainable development into a programme of implementable actions that reflect its principles has consistently proved a challenge. This challenge has been taken up by ORASECOM and has been supported by the German International Cooperation (GIZ) from 2004 to 2015, through the implementation of a three-phased Study. The final phase has just been completed and has culminated in the unanimous endorsement of the basin-wide Plan by the ORASECOM Council.

## ORASECOM and the IWRM Plan Initiative

ORASECOM was established on 3rd November, 2000 in Windhoek, Namibia. The highest body of ORASECOM is its “Council” consisting of three permanent members, including one head, for each delegation from the four States sharing the Basin. Support from advisors and ad hoc working groups can be established by the Council. The day to day work of ORASECOM is facilitated by a small permanent Secretariat.

Putting in place an IWRM Plan has always been high on ORASECOM's agenda but building the Plan has taken 10 years. The key building blocks have been provided through a number of major ORASECOM-managed studies over the years together with several national studies.

## ORASECOM’s Vision for the Orange-Senqu River Basin

In order to provide a clear direction for the IWRM Plan and to define its strategic objectives, a Vision for the Orange-Senqu River Basin was developed by some of the key stakeholders.

### ORASECOM's Vision for the Orange-Senqu River basin:

*A well-managed water secure basin with prosperous inhabitants living in harmony in a healthy environment*

A number of strategic objectives aimed at achieving this **Vision** have been proposed and agreed as tabulated below. They are divided into:- (i) objectives which form the backbone of the IWRM Plan, termed as “Central Objectives”; (ii) those that enable or facilitate achievement of central objectives, and are termed “Enabling Objectives”; and (iii) those that relate to all objectives, termed as “Cross-cutting Objectives”:

Central strategic Objectives	Enabling strategic objectives	Cross-cutting strategic objectives
<ol style="list-style-type: none"> <li>1. Ensure the optimized sustainable management of the basins water resources</li> <li>2. Support socioeconomic upliftment and eradication of poverty in the basin</li> <li>3. Ensure that the adverse effects of catchment degradation are reduced and the sustainability of resource use is improved</li> <li>4. Maximize security from water-related disasters (especially flood and drought)</li> </ol>	<ol style="list-style-type: none"> <li>1. Put an adequate knowledge base in place</li> <li>2. Build sufficient capacity and institutional strength</li> <li>3. Promote high level of stakeholder engagement</li> <li>4. Ensure appropriate financing mechanisms are in place</li> <li>5. Promote adaptive management and effective monitoring and evaluation systems.</li> </ol>	<ol style="list-style-type: none"> <li>6. Promote the mainstreaming of adaptation to potential impacts of climate change into planned actions</li> <li>7. Ensure the mainstreaming of gender considerations into planned actions</li> </ol>

## The IWRM Plan - Strategic Framework

The basin-wide Integrated Water Resources Management (IWRM) Plan for the Orange-Senqu River Basin covers the period 2015-2024.

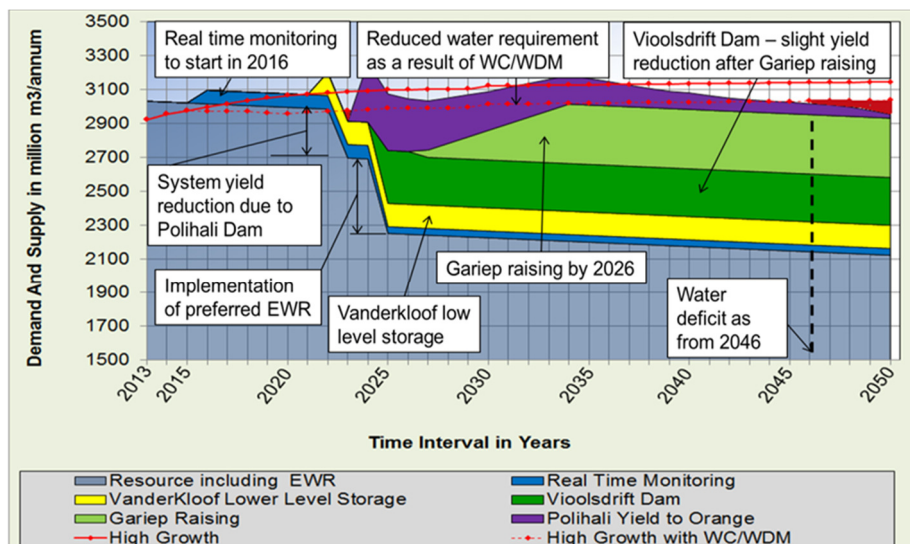
**The objective of the IWRM Plan is** *“to provide a framework for sustainable development and management of the water resources, taking into account the need for improved distribution and equitable allocation of benefits, in order to contribute towards socio-economic upliftment of communities within the basin, and ensure future water security for the basin States.”*

One of ORASECOM's main roles is to “**serve as technical advisor to the Parties on matters relating to the development, utilisation and conservation of the water resources in the River System**”. To this end, the Plan is aimed at providing a framework for the management, development and conservation of water resources in the Orange-Senqu River Basin. The aim has been to compile a Plan that comprises a **convincing and integrated piece of advice** where the reasons behind the various proposed actions can be easily understood within the development and management context of the basin and its peoples. A key aspect of the Plan is that it fits within the context of existing regional and national development plans and strategies, as well as into a longer general planning horizon.

It is important to stress that it is focused on defining and prioritizing **only ORASECOM's actions and activities** over the next ten years (2015 to 2024). However, in order to do this it has been necessary to develop a holistic plan within the spirit of IWRM, even though the majority of actions and activities in the Plan will be planned, prioritized **and carried out** (or are already being carried out) **at the national level by national institutions without any interference from ORASECOM**.

A key consideration in the development of the Plan has been looking at alternative water resources development and management alternatives to cater for water demand in the future and to make allowance for environmental flows (water required to support environmental needs). Several options were modelled. In the main stem of the Orange-Senqu River, downstream of the Gariep Dam, infrastructure development and management measures could include:

- real-time monitoring of flows along the length of river,
- water savings through improved water demand management and water conservation,
- increasing the storage of the Gariep Dam through raising of the dam wall,
- utilising the currently unexploitable low level water storage in Vanderkloof Dam,
- construction of the Vioolsdrift Dam on the Namibia-South Africa shared border,
- utilising water stored in the planned Polihali Dam in the Lesotho Highlands.



A range of measures are also planned for the Vaal River, the Orange-Senqu's largest tributary. These will probably include:

- construction of the Polihali Dam and the increase of water transfer from Lesotho to South Africa,
- the eradication of unlawful irrigation of crops and other uses ,
- water savings through improved water demand management and water conservation,
- desalination of mine water i.e. removing salts and acid from the water of abandoned mines.

Of course, the IWRM Plan includes much more than the construction of infrastructure. A complete set of **action areas** and **strategic actions** were developed through a stakeholder-driven process. These are listed on the back of this leaflet. For all of these, more specific actions and activities, with associated timelines and assignment of responsibility have been specified.

## Implementation of the Plan and the Way Forward

The Plan was officially approved by the ORASECOM Council on the 5<sup>th</sup> of February 2015 and implementation is already underway. Most of the activities will be undertaken at the national level but ORASECOM will have a key role to play in the management of several transboundary projects. It will also be responsible for the monitoring and evaluation of the Plan implementation.

# IWRM Plan Action Areas and Strategic Actions

Main Action Areas	Strategic Actions
<b>Surface and groundwater assessments</b>	Update hydrology for catchments as required
	Improve assessments of aquifers (storage capacities, recharge rates, sustainable yields etc.)
<b>Optimising efficient utilisation, development, adaptive management of water resources</b>	Utilise an adaptive management approach including application and continuous/regular use of surface and groundwater resources planning tools using a proactive, transparent and coordinated
	Plan (investigation, feasibility, design of water resources development and management infrastructure
	Implement water demand management and water conservation in agriculture and wildlife management
	Implement water demand management and water conservation in domestic, industrial and mining water supply
<b>Inter/Intra-sectoral planning and coordination</b>	Promote transboundary inter-sectoral planning and coordination in order to support cost-effective and sustainable development of water and associated natural resources
	Promote intra-sectoral (water sector) planning and coordination in order to support cost-effective and sustainable development of water resources
<b>Equitable utilisation of the water resources</b>	Review and agree on definitions in the context of the Orange-Senqu Basin and set out guidelines and procedures to improve equitable utilisation and benefit sharing at the basin level
	Implement procedures to improve equitable utilisation and benefit sharing at transboundary and national levels
<b>Water resources development</b>	Improve sustainable access to improved water supply and sanitation in urban and rural environments
	Develop water resources for supply to economic development sectors, promote employment opportunities
	Ensure optimised availability of water for strategic use areas (power, industry, etc.)
<b>Improving water resources quality</b>	Set and agree on basin-wide water resources quality objectives
	Manage the increasing salinity of the system
	Manage eutrophication
	Understand the extent and impacts of persistent organic pollutants
<b>Catchment degradation, watershed management and land-use planning</b>	Plan, prioritize and promote multipurpose watershed management interventions around the basin
	Implement sustainable livelihood-based integrated catchment management programmes in degraded parts of the catchment based on the taking to scale of pilot demonstration projects
	Manage and control of alien and migratory species and pests
<b>Environmental water requirements</b>	Basin-wide implementation and monitoring and evaluation programme for agreed preliminary EFRs
	Manage the Orange-Senqu Mouth
	Improve knowledge of EFRs, including capacity building, updating of EFRs, and basin-wide implementation
<b>Flood and drought mitigation, extreme events, climate proofing</b>	Improve knowledge, understanding and communication of extreme events
	Mainstream climate-adaptation into the design of development activities
	Mainstream climate-adaptation into drought and flood mitigation Mainstreaming of climate-proofing into drought and flood mitigation
<b>Water resources and associated environmental data and information</b>	Improve reliability, usefulness, trans-boundary confidence and areal coverage of surface water monitoring networks at the transboundary and national (sub-catchment) levels
	Improve water resource focused climate (change) monitoring
	Improve reliability, usefulness, transboundary confidence and areal coverage of groundwater monitoring networks at the transboundary and national (sub-catchment) levels
	Improve reliability, usefulness, transboundary confidence and areal coverage of water quality monitoring networks at the transboundary and national (sub-catchment) levels
	Integrate water resources and environmental data through development of a Water Information System (WIS)
<b>Water use and demand data and information</b>	Improve monitoring and reporting of water usage and return flows at national and transboundary levels
	Increase permit/licence coverage, reduce illegal abstraction and losses, improve control and enforcement
	Update projected demands and consideration of possible plausible futures
<b>Promotion/ maximising mainstreaming of key cross-cutting and enabling actions</b>	Ensure effective capacity building at various levels in all appropriate action areas
	Ensure effective policy, legal and institutional arrangements
	Share research and knowledge in areas to support sustainable water resources development and management
	Ensure appropriate and effective stakeholder participation for implementation of all areas of the Plan.
	Mainstream the promotion of transboundary cooperation into all appropriate actions
	Ensure adequate financing mechanisms and funding
	Ensure that effective and appropriate monitoring and evaluation systems are in place
	Promote the mainstreaming of adaptation to climate change into all areas
Ensure appropriate and effective mainstreaming of gender considerations into planned and on-going actions	

Further details can be obtained by visiting the ORASECOM website <http://www.orasecom.org>



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