



**GROUNDWATER MANAGEMENT IN SADC RIVER BASIN
ORGANISATIONS: AN OVERVIEW OF CURRENT AND FUTURE
INTERVENTIONS.**

**Online Course on Groundwater Management
in African Lake and River Basin Organizations**

29th June-1st July 2021

Brighton Munyai

PRESENTATION LAYOUT

- ✓ Overview of the SADC-GMI (Current World Bank) Project–Phase 1.
- ✓ CURRENT INTERVENTIONS
 - ✓ LIMCOM, ZAMCOM, OKACOM,ORASECOM,CUVECOM
- ✓ Groundwater Data Collection and Management in SADC
- ✓ Overview of SADC- Groundwater Project: Phase 2.
- ✓ 4th SADC Groundwater Conference



Components of SADC Groundwater Management Project

The Project has four components funded by GEF and CIWA through the World Bank .

- Component A. Operationalization of the **SADC Groundwater Management Institute (SADC-GMI)** to serve as a center of excellence for groundwater in the region
- Component B. **Strengthening institutional frameworks** for sustainable groundwater management
- Component C. **Advancing knowledge & information-sharing** on transboundary and national groundwater
- Component D. **Promoting groundwater infrastructure development**, financing infrastructure as a means to develop opportunities for more sustainable management of groundwater.

The project is scheduled to be completed by December 31, 2020 but delays in the implementation of many field and in-country activities, caused by the COVID-19 crisis, do justify a no-cost extension till mid-2021.



KEY RESULTS OF SADC GROUNDWATER MANAGEMENT PROJECT

- SADC-GMI improved **regional data & information sharing** by establishing the SADC Groundwater Information Portal (SADC-GIP) and the online SADC Grey Literature Archive (SADC-GLA);
- SADC-GMI enhanced National and Transboundary GW **capacity and advocacy** through its Young Professionals internship programme (70 professionals trained) and establishment of National Focal Groups (5 Member States);
- SADC-GMI generated **principles for conjunctive surface & groundwater management** in SADC through studies undertaken in Shire TBA (Malawi/Mozambique);
- SADC-GMI established **formal cooperation with RBOs** in SADC through MOUs, establishment of GW Committees, Training for conjunctive water resources management and Technical Assistance;
- SADC-GMI attained regional and international recognition for hosting successful annual SADC GW Conferences (2018, 2019 & 2020) to promote sharing of scientific knowledge and networking
- Promoted **Groundwater Infrastructure Development- Through the sub-grants project** to Member States



CURRENT INTERVENTIONS –DIRECTLY WITH SADC- RBOs



COLLABORATION WITH RBOs

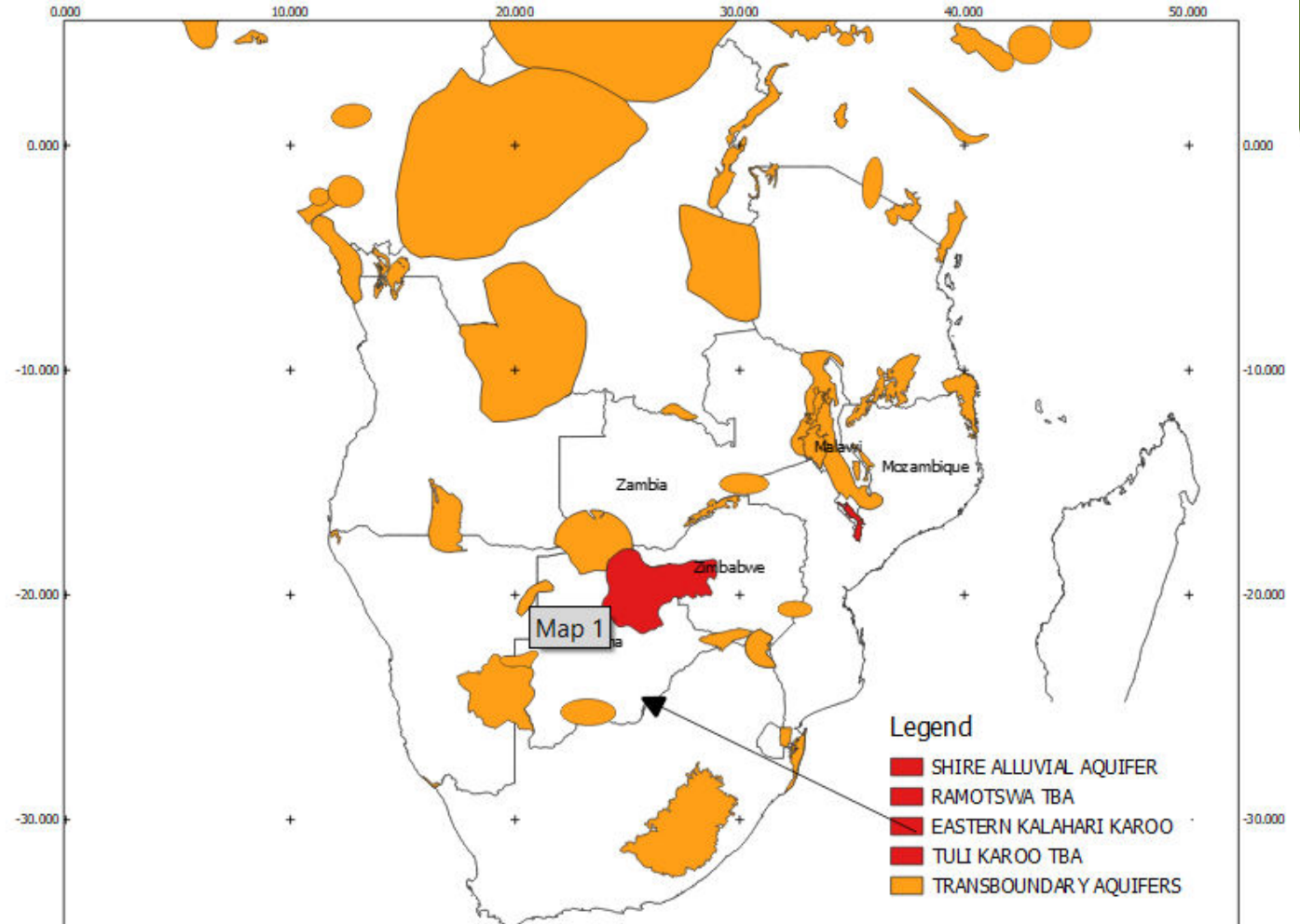
- **MOUs** have been signed with the following TBAs
 - ORASECOM Groundwater Hydrology Committee
 - LIMCOM groundwater Committee
 - ZAMCOM to establish a sub-committee of the ZAMSCOH (the G-Water Committee)
 - OKACOM's Technical Reference Group on Groundwater.
 - CUVECOM ON G/W Management related ACTIVITIES



GROUNDWATER MANAGEMENT INSTITUTE

TDAs/JSAP for PRIORITY AQUIFERS

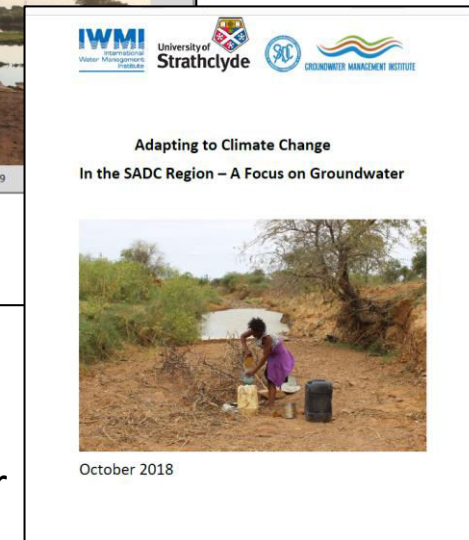
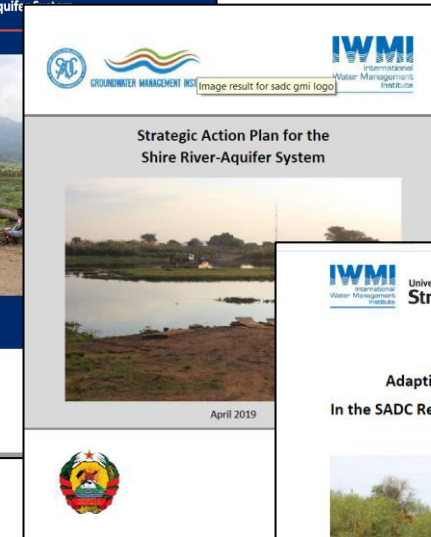
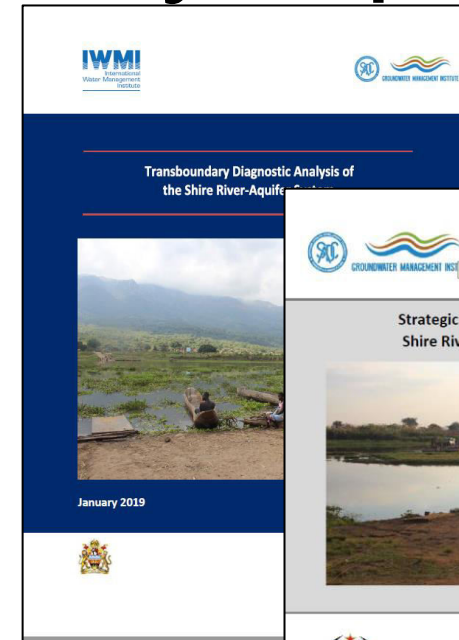
- Shire Alluvial Transboundary Aquifer
- Eastern Kalahari Transboundary Aquifer
- Of the **~30 TBAs** in the region the project managed to undertake work in **2 additional TBAs** (TDAs and JSAPs).
- **To date a total of 5 TBAs have been investigated leaving ~25 TBAs in need of Investigation.**



Shire Alluvial Transboundary Aquifer

Six priority actions were identified and elaborated further (these include)

- Establish a **joint Shire River Basin Committee** for coordination and cooperation in conjunctive water development and management
- Develop a **Memorandum of Understanding on data sharing** considering the existing **ZAMCOM protocol on data sharing**.
- Develop a **data sharing portal** that facilitates a joint information system in **consultation with ZAMWIS**
- **Train personnel involved in data collection** and research related to surface water and ground water and water quality issues.

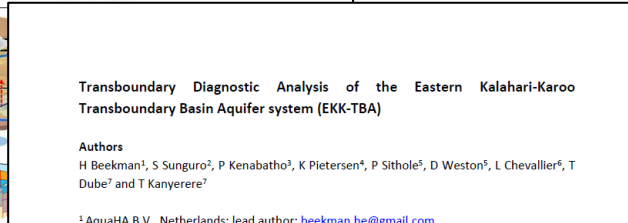
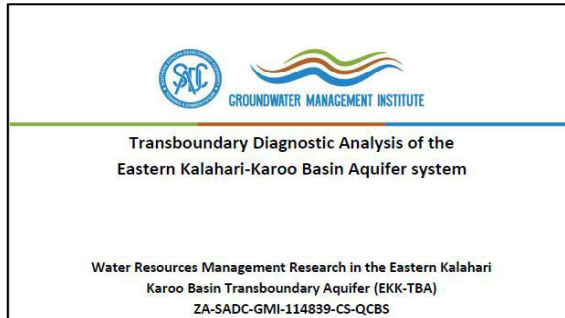


EASTERN KALAHARI KAROO TRANSBOUNDARY AQUIFER

- Establish **bilateral institutional** arrangements
 - **Further Research** to understand the hydrogeological systems
 - **Develop data sharing** arrangements
 - Establish **joint monitoring** systems
-
- Promote joint proposals to mobilise funds for specific projects activities related to sustainable resources management and livelihoods improvement.

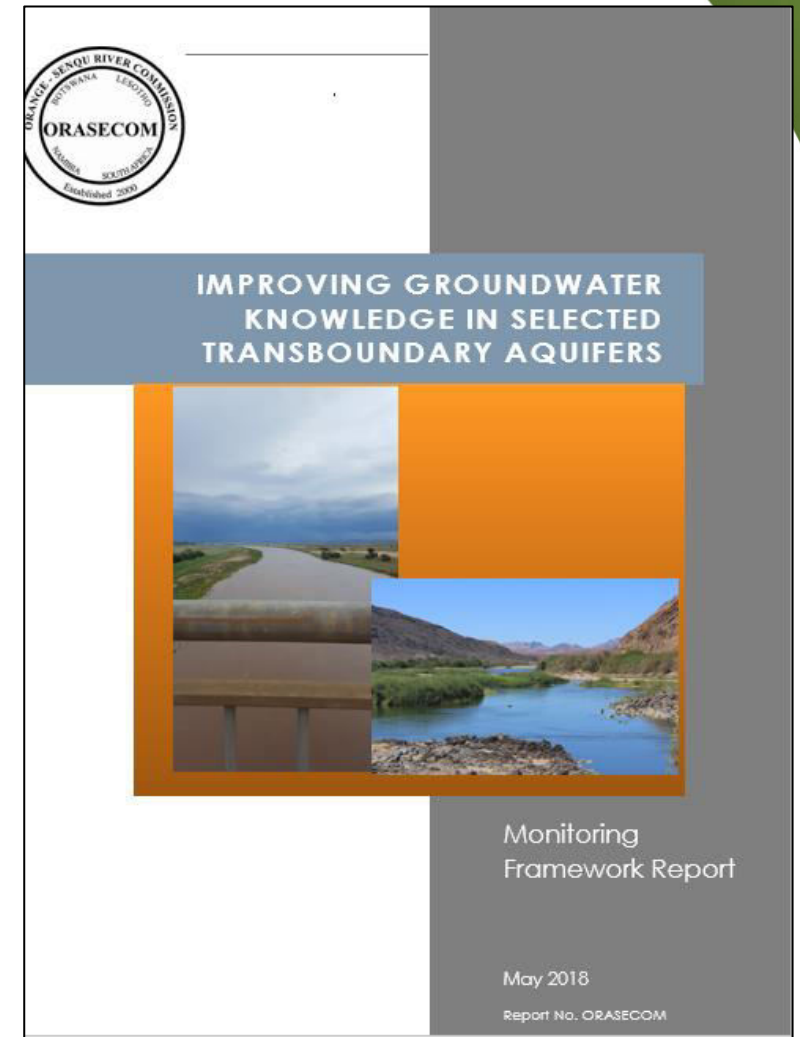
- Develop **data sharing arrangements**

- Capacity Building



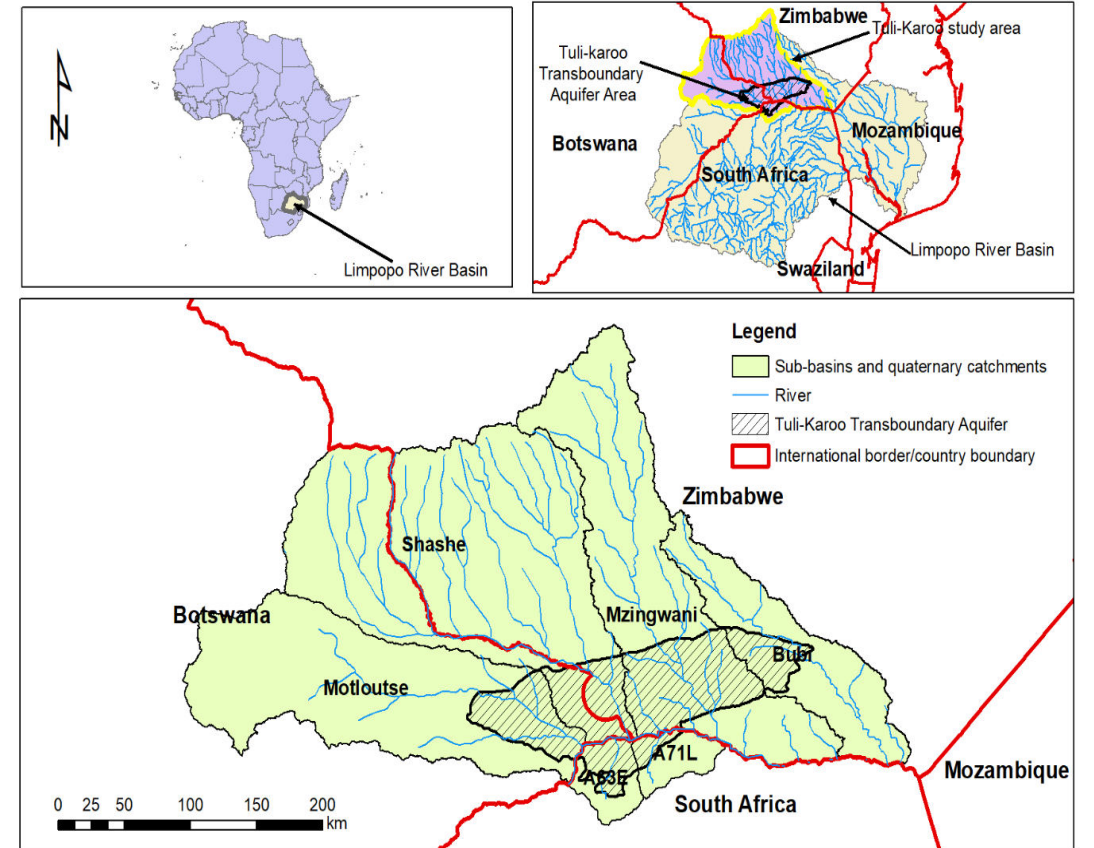
ORASECOM GROUNDWATER HYDROLOGY COMMITTEE

- An Ex-Officio Member of the ORASECOM GWHC
 - Through the GWHC made input into carrying forward the work done by **UNESCO-IHP in the STAS**
 - **Exploring ways of nesting and Piloting the MCCM in the region.**
- Providing technical input into the work of the GHWC

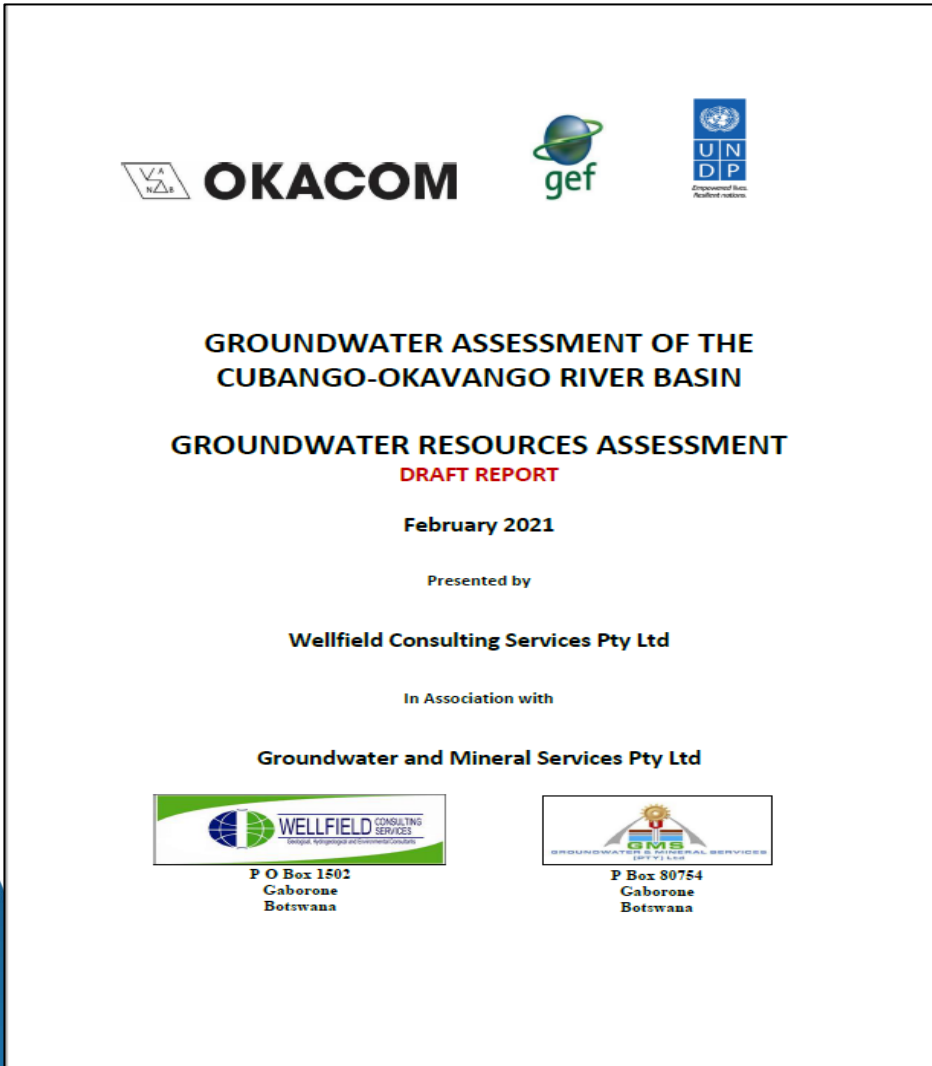


LIMCOM GROUNDWATER COMMITTEE

- **Established** the LIMCOM Groundwater Committee (LGC) in **28th Feb- 1st March 2018**
- **Through the LGC have collaborated with IWMI** to implement the project on, Conjunctive water resources research in the **Tuli Karoo TBA**, which involved,
 - Development of a TDA
 - Development of a GW monitoring network
 - Ag-Water Solutions
 - Managed Aquifer Recharge Mapping



OKACOM GW TRG



The cover page features the OKACOM logo (a triangle with 'VA' and 'NZP' inside) at the top left, the GEF logo (a globe with 'gef' text) at the top center, and the UNDP logo (a blue square with 'UNDP' and 'Empowering People, Accelerating Nations') at the top right. The main title is 'GROUNDWATER ASSESSMENT OF THE CUBANGO-OKAVANGO RIVER BASIN' in bold black text. Below it is 'GROUNDWATER RESOURCES ASSESSMENT' in bold black text, followed by 'DRAFT REPORT' in red text. The date 'February 2021' is centered. Below that, it says 'Presented by' followed by 'Wellfield Consulting Services Pty Ltd' in bold black text. Underneath is 'In Association with' followed by 'Groundwater and Mineral Services Pty Ltd' in bold black text. At the bottom, there are two logos: 'WELLFIELD CONSULTING SERVICES' with a globe icon and 'GROUNDWATER & MINERAL SERVICES' with a sun and water icon. Below each logo is the address: 'P O Box 1502, Gaborone, Botswana' for Wellfield and 'P Box 80754, Gaborone, Botswana' for GMS.

OKACOM

gef

UNDP
Empowering People, Accelerating Nations

**GROUNDWATER ASSESSMENT OF THE
CUBANGO-OKAVANGO RIVER BASIN**

GROUNDWATER RESOURCES ASSESSMENT
DRAFT REPORT

February 2021

Presented by

Wellfield Consulting Services Pty Ltd

In Association with

Groundwater and Mineral Services Pty Ltd

WELLFIELD CONSULTING SERVICES
P O Box 1502
Gaborone
Botswana

GROUNDWATER & MINERAL SERVICES
P Box 80754
Gaborone
Botswana

- A member of **OKACOM's Technical Reference Group on Groundwater Assessment in the Basin.**
 - Stage 1 – Data Acquisition, Collation and Storage. To conclude with an Inception Report
 - Stage 2 – **Data Assessment.** To conclude with a **Situation Analysis Report**
 - **Stage 3 – Groundwater Resources Evaluation.** To conclude with a Groundwater Resources Report
 - Stage 4 – **Groundwater Monitoring network** review and design



CUVECOM GW ACTIVITIES

- IMPLEMENTATION OF TRAINING COMMENCED THROUGH:

- Development of a Training package for CUVECOM to be rolled out over 2 years starting 2021.

Course/ Month	2020							2021					
	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June
1. Integration of Groundwater Management into Transboundary Basin Organizations													
2. Professional Borehole Drilling supervision													
3. Operation and Maintenance of Groundwater supply projects													
4. Groundwater Monitoring and Groundwater Data Storage													

- Offering a Training Program based on the **SADC framework for groundwater data Collection and Management.**



MEMORANDUM OF UNDERSTANDING

BETWEEN THE

SOUTHERN AFRICAN DEVELOPMENT COMMUNITY GROUNDWATER MANAGEMENT INSTITUTE (SADC-GMI)

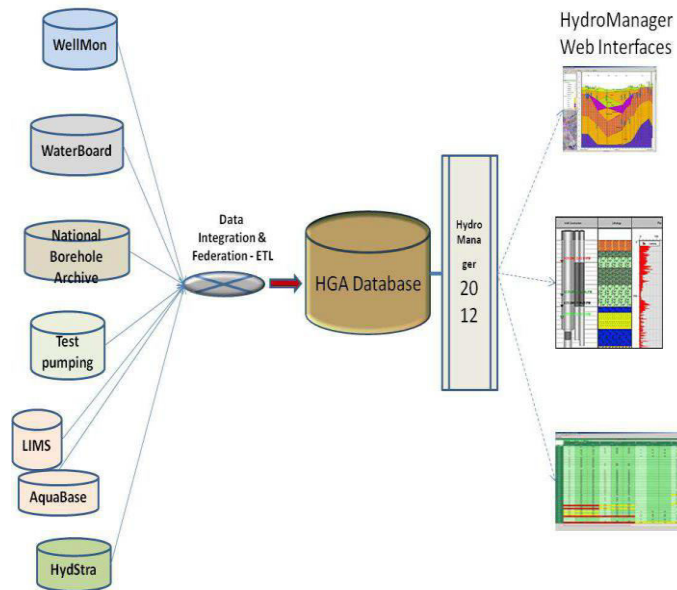
AND

THE CUVELAI WATERCOURSE COMMISSION (CUVECOM)

WHEREAS the SADC-GMI has the objective to “Promote Sustainable Groundwater Management And Providing Solutions To Groundwater Challenges in the SADC Region through Creating an Enabling Policy, Legal And Regulatory Environment, Capacity Building, Advancing Research, Supporting Infrastructure Development, and Enabling Dialogue and Accessibility of Groundwater Information.”



Overview of Sub-Grants Projects in the Member



Botswana: **Integration of Groundwater Resources Data Management System (IGWRMS) for Water Resource Management in Botswana.**



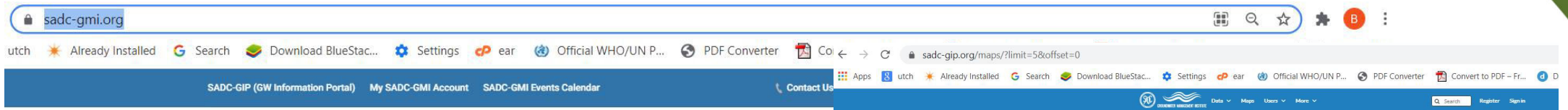
Lesotho: **Expansion of national groundwater monitoring project.**



Namibia: **Review and update of the Hydrogeological Map of Namibia**



Project website <http://sadc-gmi.org/>



Home About SADC-GMI Projects & Activities Resour



Filters Clear

TEXT

Search

KEYWORDS

CATEGORIES

RESPONSIBLE

GROUPS

GROUP CATEGORIES

DATE

REGION

EXTENT

3 Maps found

SADC HYDROGEOLOGICAL MAPPING PROJECT (2010)

SADC Hydrogeological Mapping project (2010)

This map contains the regional layers and the harmonized borehole datasets produced by the SADC Hydrogeological Mapping project (2010).

IGRAC Admin 22 Feb 2021 220 0 0

View Map

Gaborone

Ramotswa

Ramotswa transboundary aquifer

This map viewer contains the data and information produced by the Ramotswa project, under phases 1 (2015-2017) and 2 (2017-2019).

IGRAC Admin 30 Aug 2020 317 0 0

View Map

ASSESSMENT OF PRIORITY INTERVENTION AREAS

SADC Groundwater drought risk maps (2013)

Source: Karen G. Vilhelms & Christian Tetzlaff & Martin Steudel & Ashton Mahery (2013) Integrated mapping of groundwater drought risk in the Southern African Development Community (SADC) region. Hydrogeology Journal (2013) 21: 863-888. DOI 10.1007/s10040-013-0958-1

IGRAC Admin 30 May 2020 225 0 0

View Map

page 1 of 1



SADC Groundwater Literature Archive :: About

About the SADC Groundwater Literature Archive

The SADC-GLA was developed by the SADC Groundwater Management Institute, in partnership with the British Geological Survey (BGS) and International Groundwater Resources Assessment Centre (IGRAC). The GLA contributes to SADC-GMI's vision of equitable and sustainable use and protection of groundwater in the SADC region by making groundwater information more easily accessible to all relevant stakeholders in the region. It sits alongside the SADC Groundwater Information Portal (SADC-GIP), which provides groundwater data and maps for the region.

Partners

SADC Groundwater Management Institute (SADC-GMI)

The SADC-GMI is a "Centre of Excellence" for groundwater management and groundwater dependent ecosystems in the SADC region working with national, regional and international groundwater initiatives and institutions. The institute is hosted by the University of the Free State in Bloemfontein, South Africa, on behalf of, and under the strategic guidance of the SADC Secretariat, Directorate of Infrastructure's Water Division, in Gaborone, Botswana. SADC-GMI is currently implementing multiple projects in the SADC Region in partnership with key players in the water sector.

sadc-gmi.org

British Geological Survey (BGS)

BGS provide expert services and impartial advice in all areas of geoscience to a client base drawn from the public and private sectors both in the UK and internationally.

www.bgs.ac.uk

Data Layers Documents Remote Services

Maps Explore Maps

About People Groups

Contact Us

Website: <http://sadc-gmi.org/>
SADC Groundwater Management Institute
Institute for Groundwater Studies Building
Dean Street, 205 Nelson Mandela Drive, University of the Free State
Bloemfontein
South Africa
Tel: (+27) 51 401 7734
E-mail: gmi@mgm.ufs.ac.za

boundaries

4th SADC Groundwater Conference

10-12 November 2021

More details including registration platform link, full call for abstracts, abstract submission link and sponsorship brochure will be shared in July 2021

About Us

LEARN MORE



CAPACITY BUILDING IN GROUNDWATER DATA COLLECTION AND MANAGEMENT IN SADC MEMBER STATES



GROUNDWATER MANAGEMENT INSTITUTE

Capacity building in Groundwater Data Collection and Management in SADC Member States:

- Assessment of capacities and needs
 - ✓ **Gap analysis** of **groundwater data collection and management** in SADC Member States
- Capacity building activities
 - ✓ **Young professional** assignments
 - ✓ Training workshops
 - ✓ SADC Framework for groundwater monitoring
 - ✓ Scoping of improvements on the SADC-GIP



Rationale for GW data framework – from GAP analysis

In one way or the other all SADC Member States experience a lack of budget & staff and inabilities to meet their monitoring objectives, be it in:

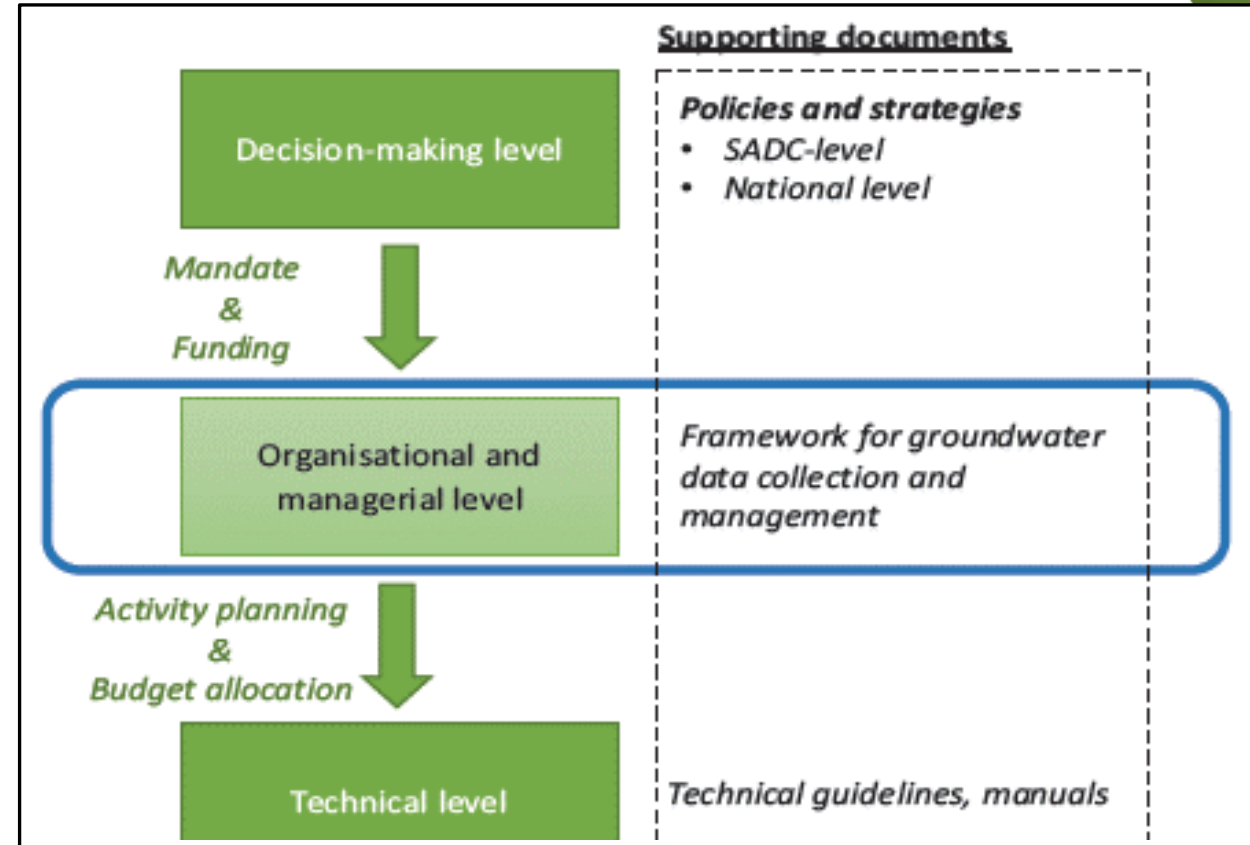
- The number of boreholes actually being monitored,
- Frequency of monitoring,
- Parameters being monitored,
- Data storage and it's usage,
- Data analysis and interpretation



Objectives for framework

The *SADC-wide Framework* aims to:

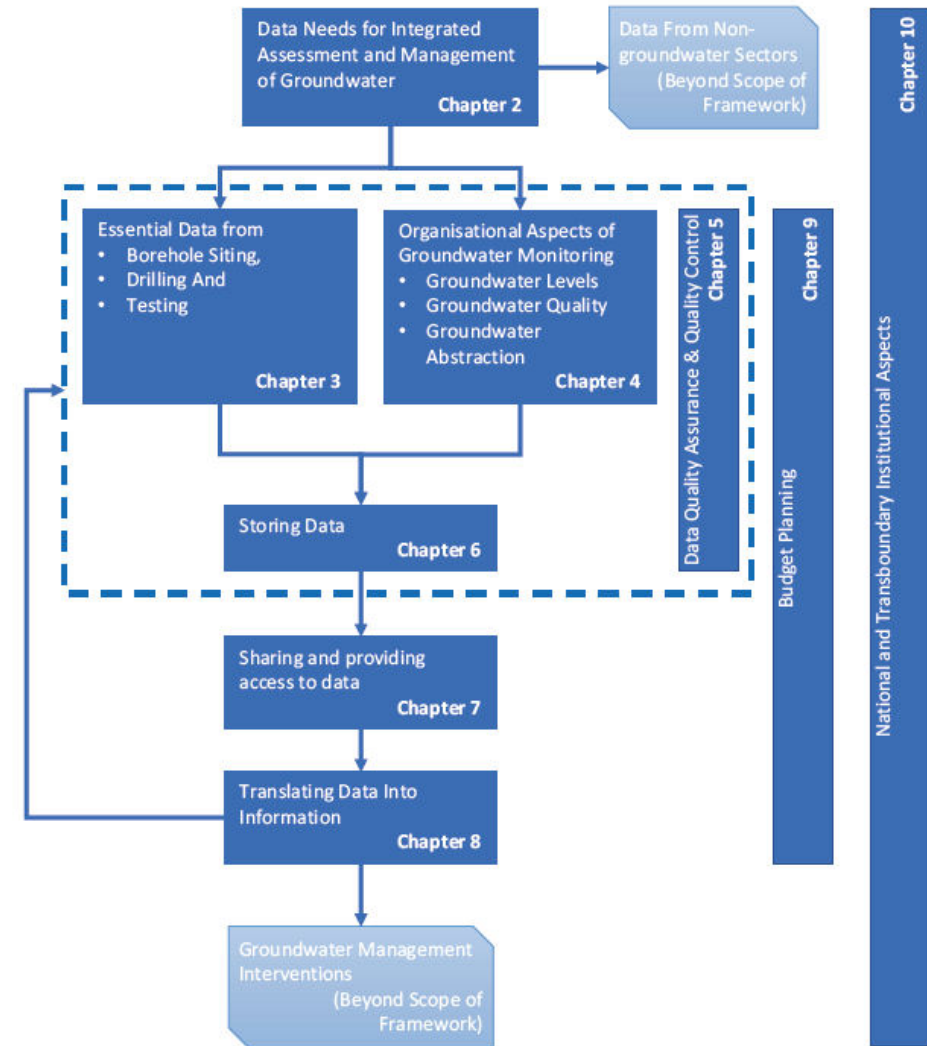
- Assist Member States in **developing adequate groundwater data collection & management procedures** at the national level that **match their current (financial and human) capacity**.
- Enhance **transboundary and regional cooperation** through **harmonization** of practices across Member States in **terms of data collection and management and facilitate data exchange**.



The Framework- Overview

The **Framework is targeted** at officials who have **a coordinating role** in groundwater data collection and data management. These are **usually senior level professionals** who coordinate **field technicians** as well as interact with **managers and directors of departments**

The Framework addresses **various aspects** of groundwater data collection and data management, such as borehole siting, **and drilling, groundwater monitoring, field data collection, databases, and data sharing and reporting.**



LOOKING AHEAD

Rationale: Sustainable Groundwater Management in SADC Member States

Project Phase 2.

Building on the successes and momentum of the SADC Groundwater Management Project, the new proposed Program envisions to **expand and deepen the efforts** of the SADC-GMI in supporting Member States in **addressing some of the groundwater development challenges** of the SADC region;

For most of the SADC region groundwater is a **vital resource** that provides **water security, resilience to droughts** and supports economic development;

The Sustainable Groundwater Management in SADC Member States – Phase 2. Program will be structured around 3 pillars:

- ✓ Institutions
- ✓ Knowledge
- ✓ Livelihoods



Objectives of the Sustainable Groundwater Management in SADC Member States

Project Phase 2

The Project Development Objective of the new Program is:

“to develop capacity and knowledge for inclusive groundwater management and use in the SADC region at national and transboundary levels.”

Projected Budget: 4 year program (2021-2025)

The Key Result Areas are:

SADC-GMI Management and Coordination of Program

Component 1

Capacity building for sustainable groundwater management

Component 2

Knowledge development, dissemination, and advocacy

Component 3

Building resilient livelihoods and inclusive groundwater management

SAVE THE DATE

4th SADC GROUNDWATER CONFERENCE

10th - 12th of November 2021

VIRTUAL CONFERENCE

THEME: Towards a Water Secure SADC- Groundwater Systems Thinking.



THANK YOU

