



# **Southern African Development Community Groundwater Management Institute SADC-GMI**

**5<sup>th</sup> Targeted Regional Workshop for GEF International Waters  
Projects in Africa  
Enhancing Groundwater Governance**

**29 May 2019**

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# **PRESENTATION OVERVIEW**

1. WHY GROUNDWATER FOR WATER SECURITY?
2. GENESIS, STRUCTURE AND MANDATE OF SADC-GMI
3. SADC-GMI IMPLEMENTATION MODEL
4. SADC-GMI STRATEGIC FOCUS (2018 – 2023)
  
5. GROUP EXERCISES



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# WHY GROUNDWATER FOR WATER SECURITY?



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# Dependency on Groundwater in the SADC Region

- Over 70% of the 255 million inhabitants of SADC region (and more than 75% in Sub-Saharan Africa) rely on groundwater as their primary source of water,
- About 40% of the region's population use informal or unimproved sources of water, which are often unsafe and prone to the effects of drought and groundwater is often the only source of water for the poor and vulnerable rural communities,
- Estimated that 12 of the 15 SADC Member States are directly and periodically affected by drought events (2011). Southern and eastern Member States most dependent on groundwater and hence vulnerable to now endemic drought events,
- The region's main economic activity, agriculture, draws at least 20% of its water needs from groundwater and growing;
- Groundwater (and not surface water) constitutes about 97% of freshwater resources in Africa and its pollution and salinization is irreversible,
- Groundwater is often the only source of water bridging dry and rainy seasons especially in the driest south-western areas of the region.



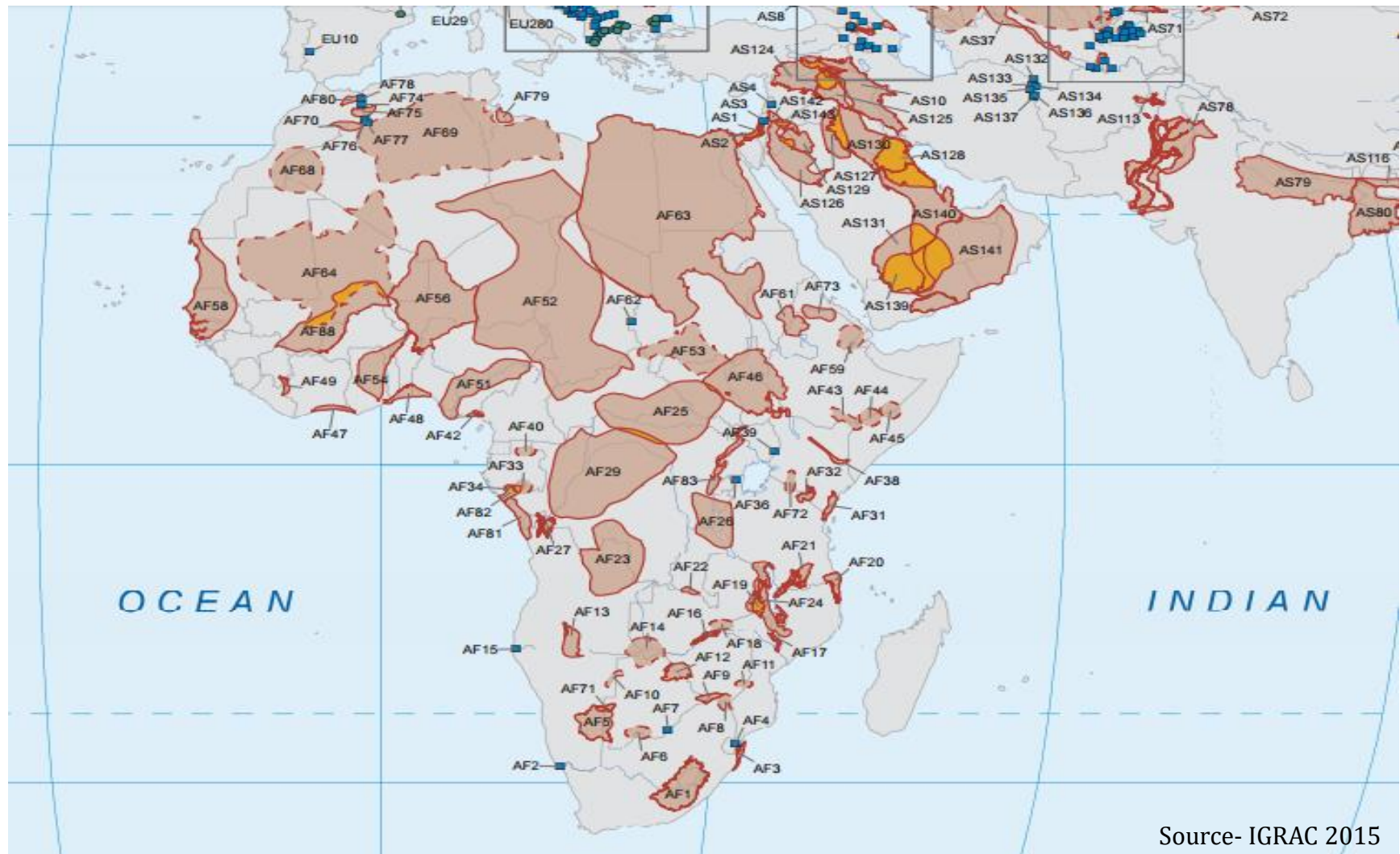
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# Groundwater Potential in the SADC Region

- Despite the challenges in data, Southern Africa is estimated to have 2,500m<sup>3</sup>/capita/year in renewable groundwater resources,
- In comparison to the 14 internationally shared river basins, there are an estimated 30 Transboundary Aquifers in the SADC region.



# MAP OF TRANSBOUNDARY AQUIFERS IN AFRICA (SADC)



Source- IGRAC 2015



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# Challenges Hampering the Use of Groundwater for Water Security

- a) Because of its hidden underground nature, the full potential of groundwater is often misunderstood and significantly underestimated,
- b) There is underutilisation of the resource due to poor infrastructure. It is estimated that a meagre 1.5% of the groundwater potential in the region is exploited,
- c) Groundwater is unevenly utilised culminating in over abstraction/mining in some aquifers (e.g. in agricultural and urban areas), and under-utilisation in others,
- d) There is increasing and potentially irreversible pollution of aquifers from agriculture, human settlement (e.g. sanitation) and industrial activities,
- e) Climatic variability in the region (from the deserts of Namibia to the floodplains of Mozambique) which translate into recurring drought and flood conditions with varying frequency and magnitude are aggravated by the impact of climate change that further pose substantial challenges to water resource management,





# Challenges Hampering the Use of Groundwater for Water Security

- f) Even though the majority of the region's socio-economic livelihoods depend on it, the potential of groundwater to guarantee water security is not adequately addressed in the policy, legal and regulatory frameworks at both national and regional levels. This is testified at the highest level where the SADC protocols are not explicit on the importance of groundwater,
- g) There is lack of data and data management systems to generate decision making information on the potential of groundwater and its utilisation to ensure water security. This entails data on the geophysical, environmental and water security potential of the region's national and transboundary aquifers. Real-time data on the aquifers has to be generated from research and the installation of groundwater monitoring infrastructure as well as generating maps on important decision-making parameters,
- h) As with transboundary river systems, the challenges of transboundary aquifers cut across national boundaries and countries sharing a transboundary aquifer have similar experiences. However, there are no effective transboundary mechanisms to coordinate the management and development of the aquifer systems at regional level in order to elevate the status of groundwater in support of water security,





# Challenges Hampering the Use of Groundwater for Water Security

- i) Despite evidence that the bulk of fresh water resources are groundwater, **most institutional structures already in place focus on surface water** e.g. River Basin Organisations and there is no integration of groundwater into the RBOs,
- j) The relatively **poor operation and maintenance of groundwater infrastructure** is one big concern that compromises water security,
- k) **Lack of skills for groundwater management, development and research in the region** is contributing to the lagging advancement of the resource as a key contributor to water security both at national and regional level.



# GENESIS, STRUCTURE AND MANDATE OF SADC-GMI



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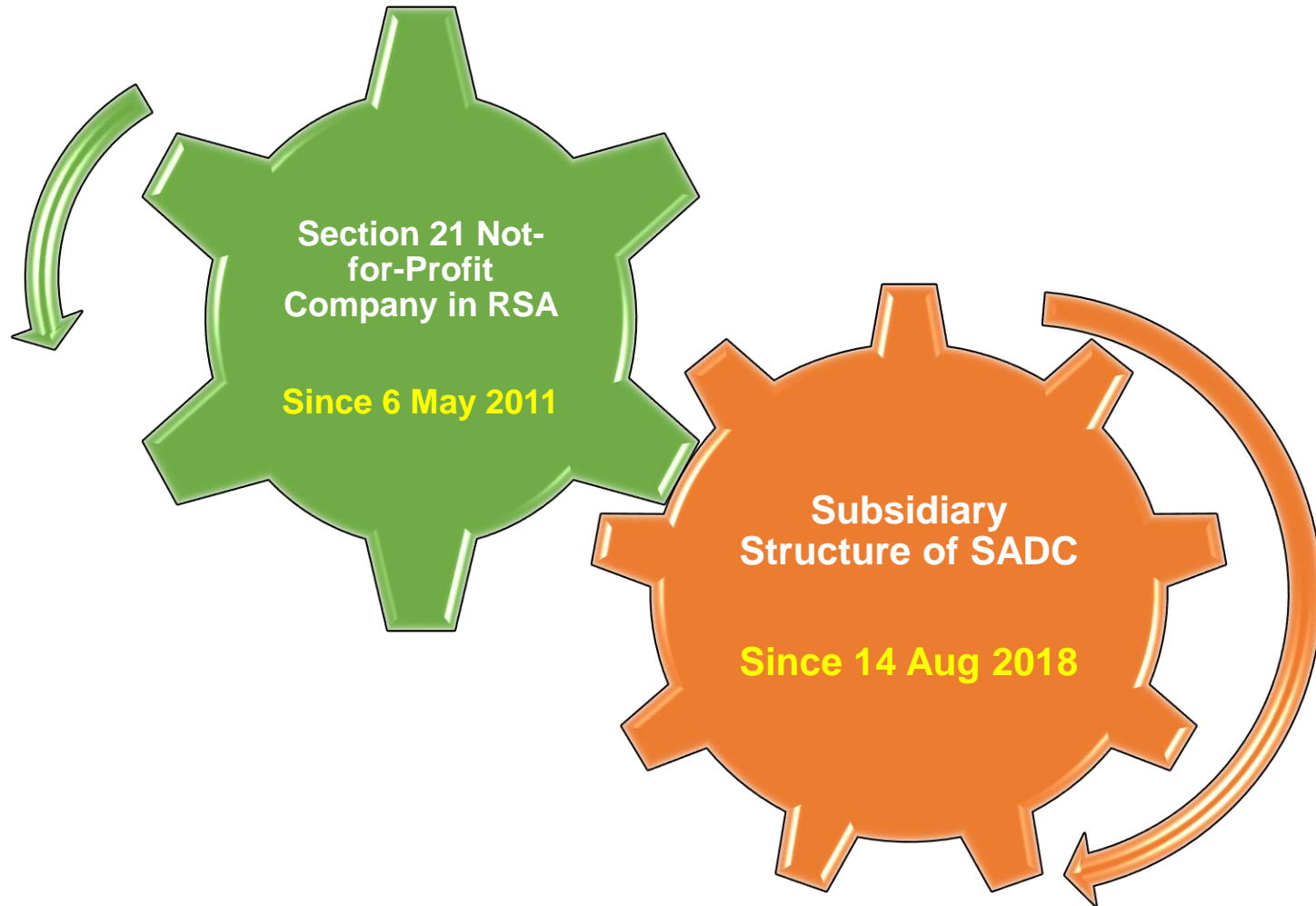
# GENESIS OF SADC-GMI

1. GEF made funding available through the World Bank, to support the SADC Secretariat's Water Division implementing the SADC Groundwater and Drought Management project (SADC-GMDP) between March 2007 and October 2011. Component 3 of the project entailed 'Establishment of Groundwater Management Institute of Southern Africa
2. The University of the Free State (UFS), through its Institute for Groundwater Studies (IGS) was selected by the SADC Subcommittee on Hydrogeology through a competitive process to host the SADC-GMI, a decision endorsed by the SADC Council of Ministers in 2008 followed by drafting of SADC-GMI Charter and Mandate
3. First Strategic Business Plan for the SADC-GMI for the period 2010 – 2012 was drafted in 2009
4. On 6 May 2011, the SADC-GMI was legally registered as a Not-for-Profit Company (NPC) under Section 21 of the South African Companies Act No. 71 of 2008 as amended with registration number 2011/011724/08. Articles and a Memorandum of Association were notarially registered in South Africa with 3 Directors (SADC Water Division, UFS & Zambia)
5. Memorandum of Incorporation signed by SADC-GMI Board on 18<sup>th</sup> August 2016
6. Executive Director came on Board from 1 August 2016 (part-time) and substantively on 1 April 2017
7. At meeting of 20 September 2016, 4 Additional non-executive Directors selected by Subcommittee on Hydrogeology (RSA as host & Vice Chair of SADC, UFS, Swaziland as Chair of SADC and Namibia)



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# IDENTITY OF SADC GROUNDWATER MANAGEMENT INSTITUTE



# SADC-GMI Institutional Arrangements

## SADC Secretariat

Directorate for Infrastructure & Services - Water Division

Botswana - Gaborone

## University of the Free State

Institute for Groundwater Studies

Bloemfontein - South Africa

## SADC Groundwater Management Institute

(SADC GMI)

## SADC Members States

Committee of Water Ministers  
Committee of Water Sr Officials Water  
Resources Technical Committee SADC  
Subcommittee on Hydrogeology &  
National Focal Points/Groups

GMI Board of Directors  
(SADC, UFS, Member States  
repress.) Sub-Grant Committee

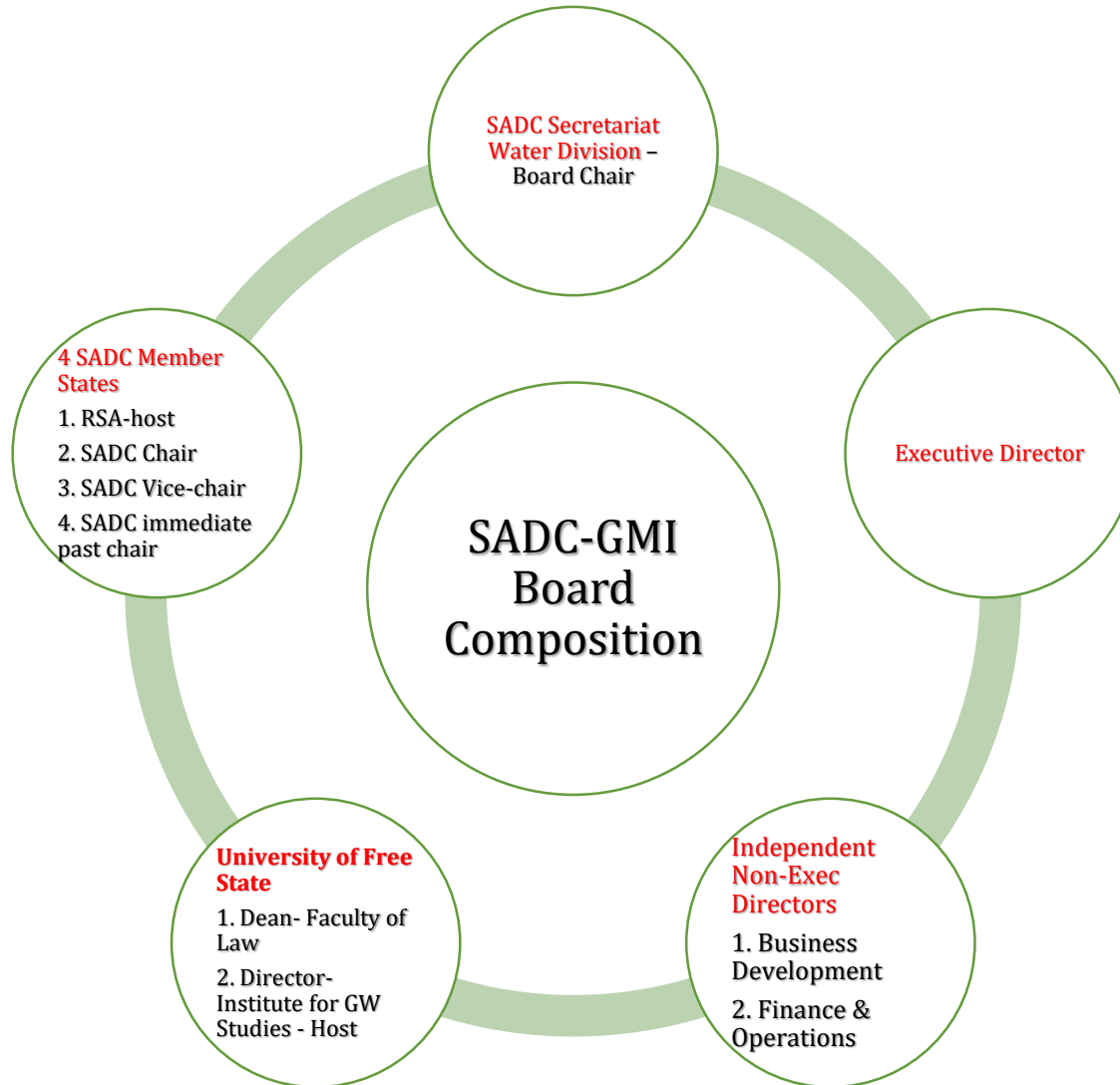
## GMI Beneficiaries

Member States Representatives in  
the SADC Subcommittee on HG with  
Project Steering Committee function



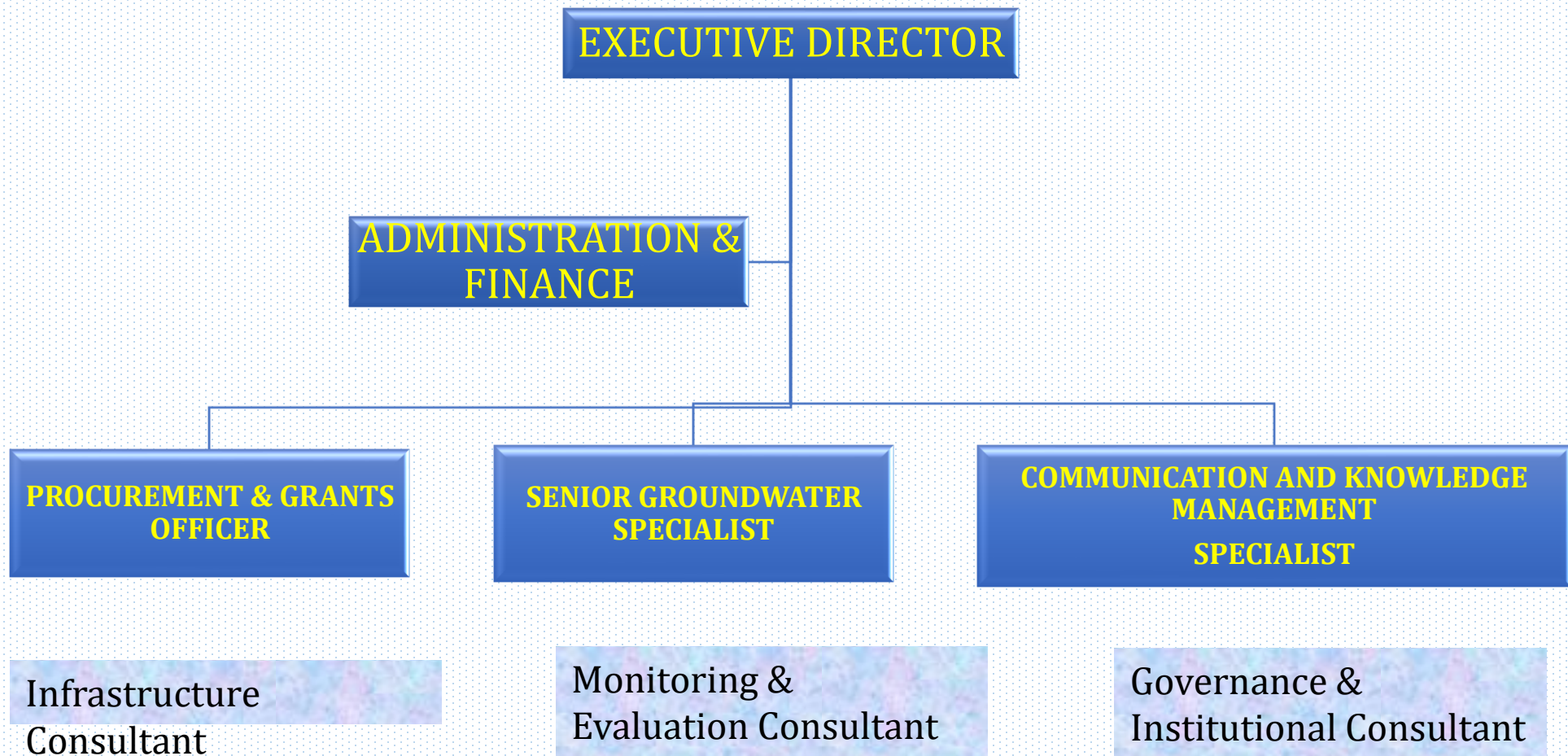
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# SADC-GMI COMPOSITION OF BOARD OF DIRECTORS



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# SADC-GMI Organogram





# **SADC-GMI MANDATE FROM SADC RSAP IV (2016-2020)**

1. Institutionalising the SADC Groundwater Management Institute (SADC-GMI) as Centre of Excellence for groundwater in the region;
2. Modernize and harmonize legal, policy and regulatory frameworks to address gaps in prevailing institutional groundwater management tools at national and transboundary levels, including in Oceanic States;
3. Transboundary and national groundwater knowledge advanced through various initiatives and studies;
4. Promote the role of infrastructure as a means to develop opportunities for more sustainable management of groundwater and addressing groundwater related challenges
5. Develop strategies for the safe and sustainable use of groundwater to promote water security of the Oceanic States that are heavily reliant on groundwater sources.

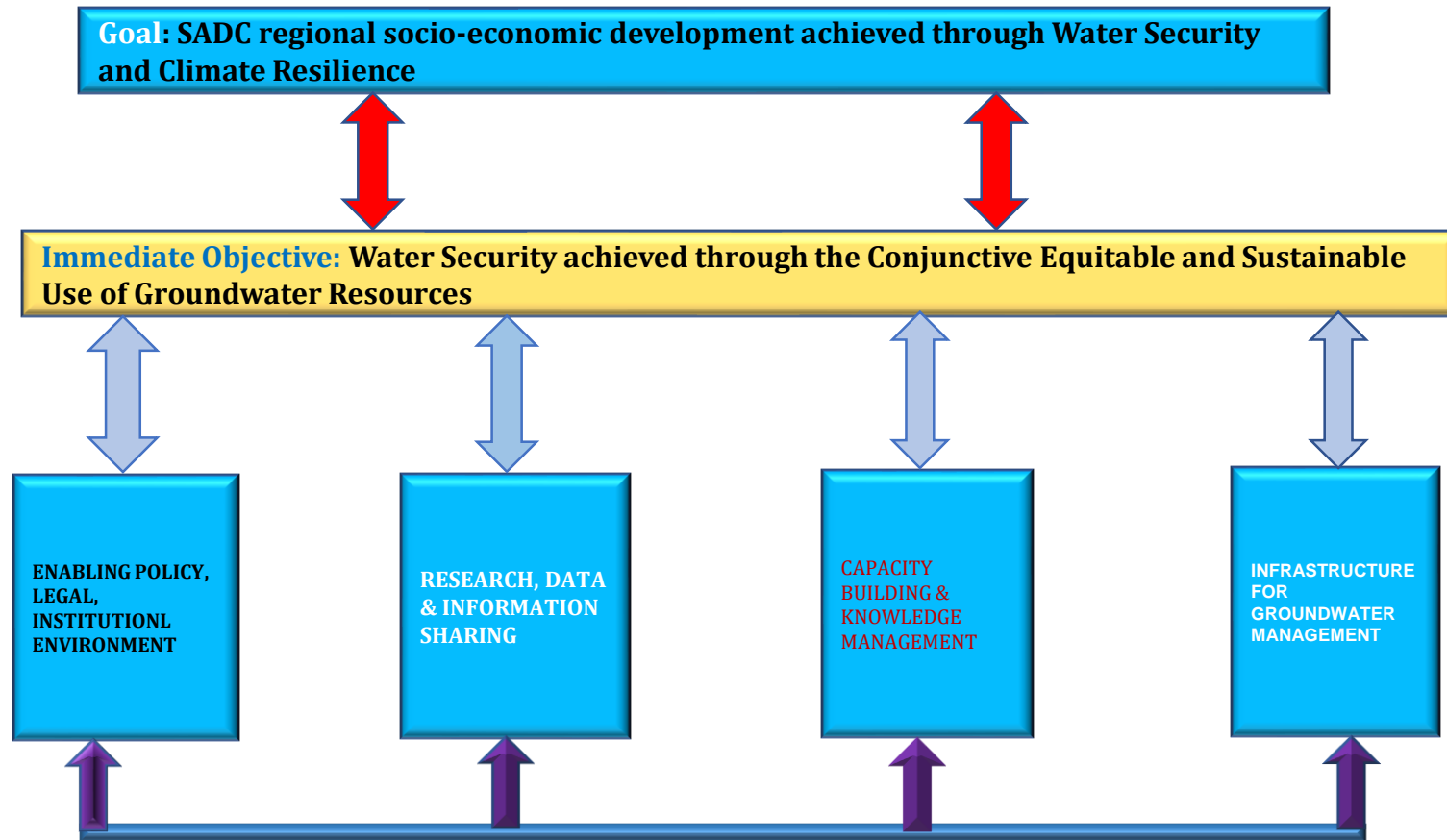


# SADC-GMI IMPLEMENTATION MODEL

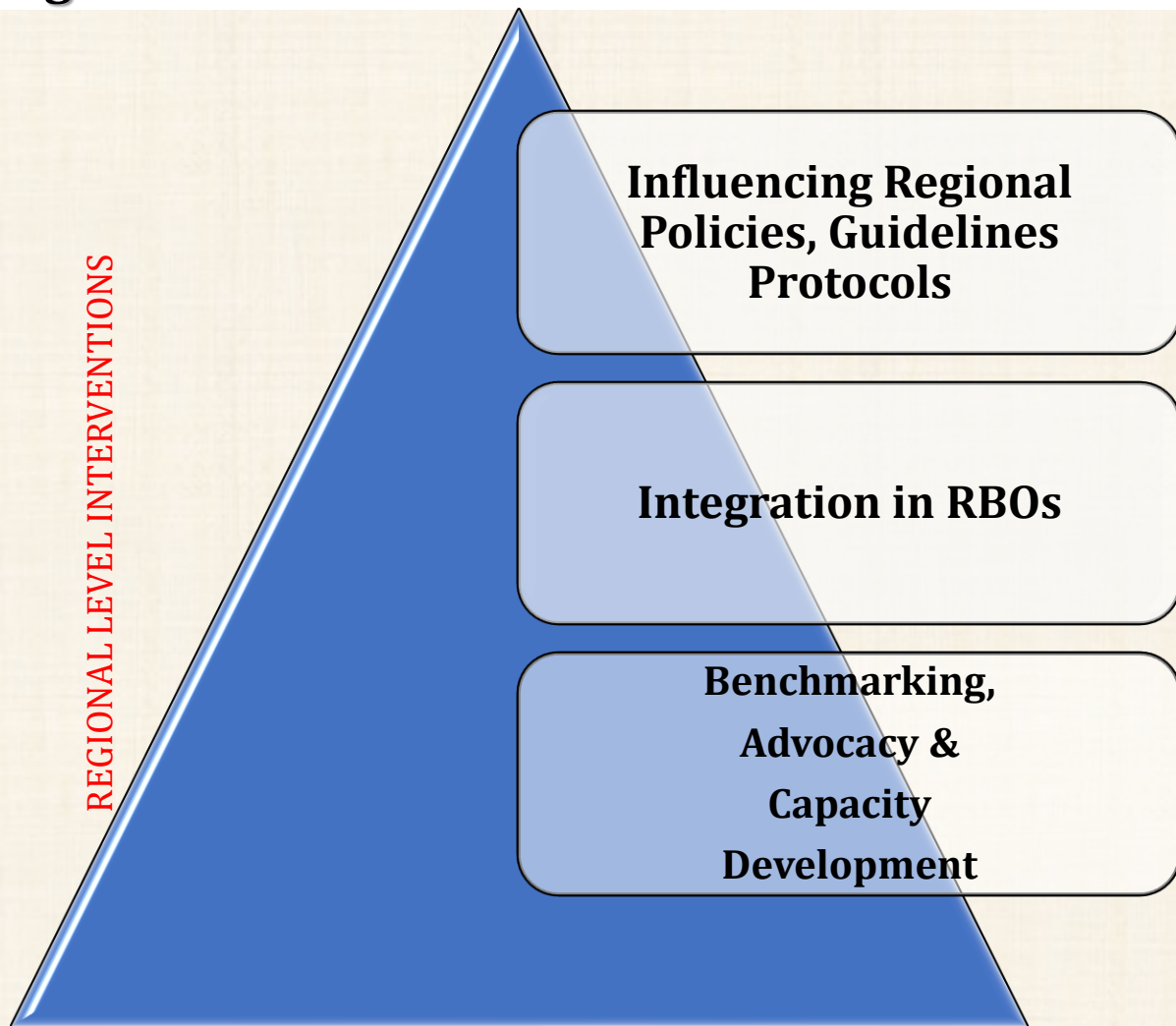
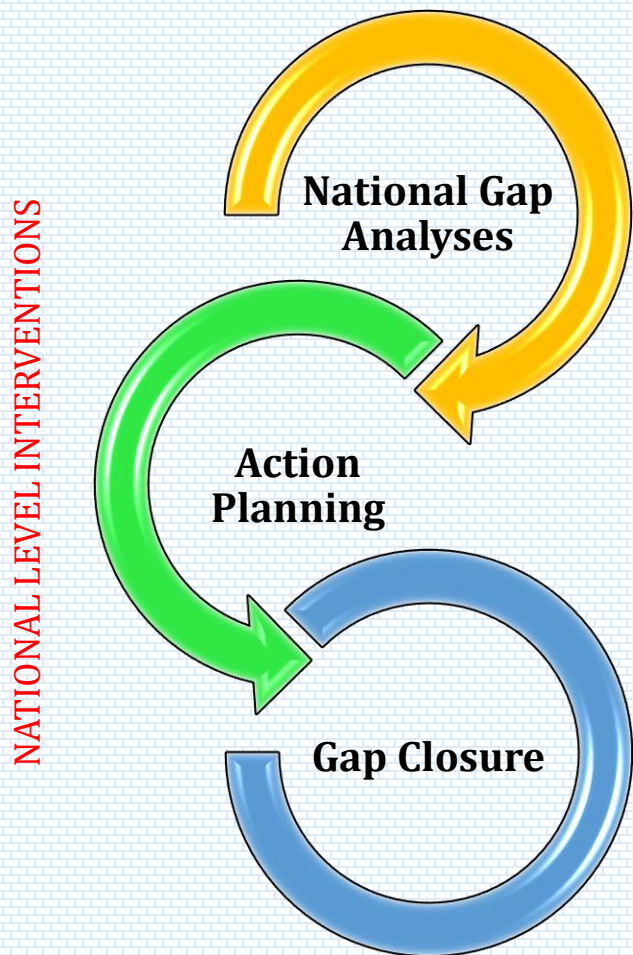


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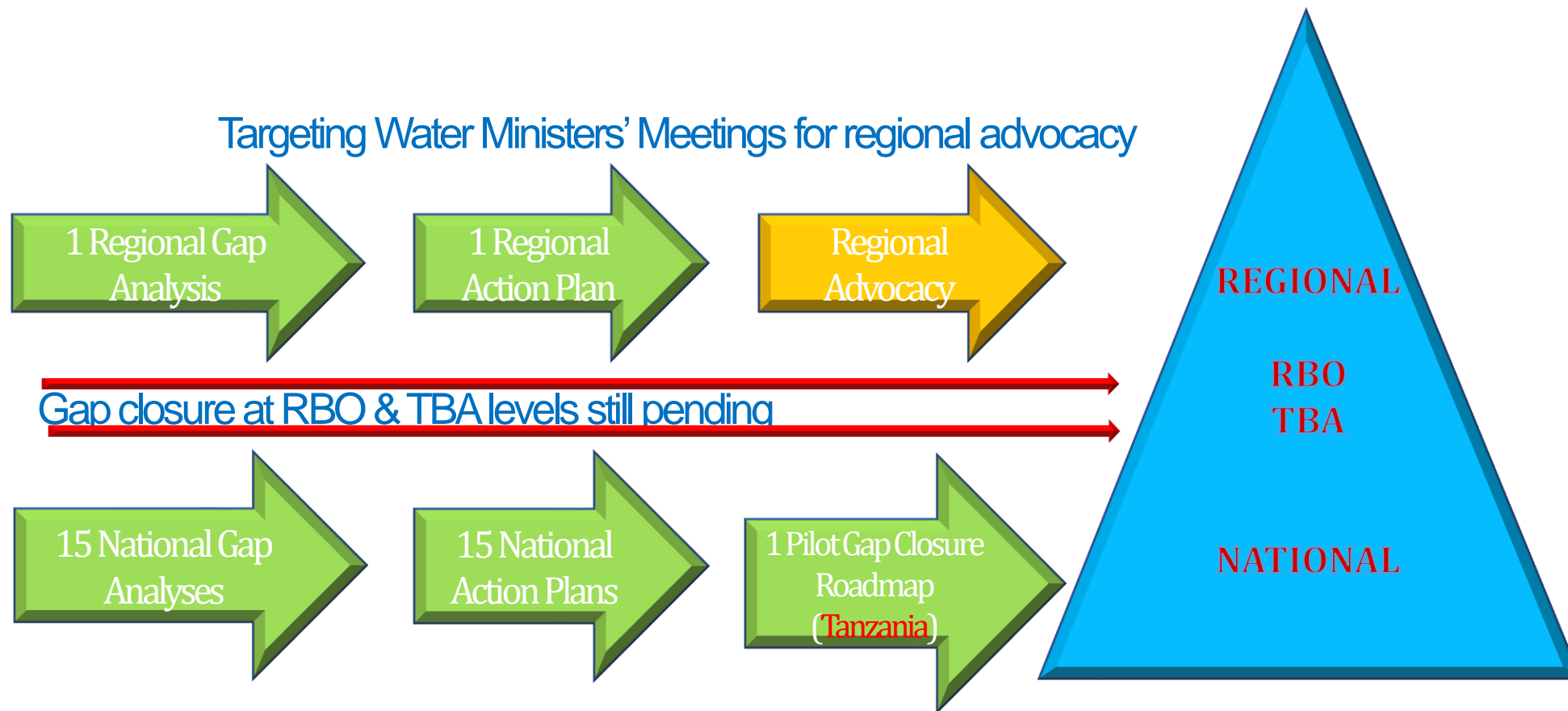
# SADC-GMI Implementation Model



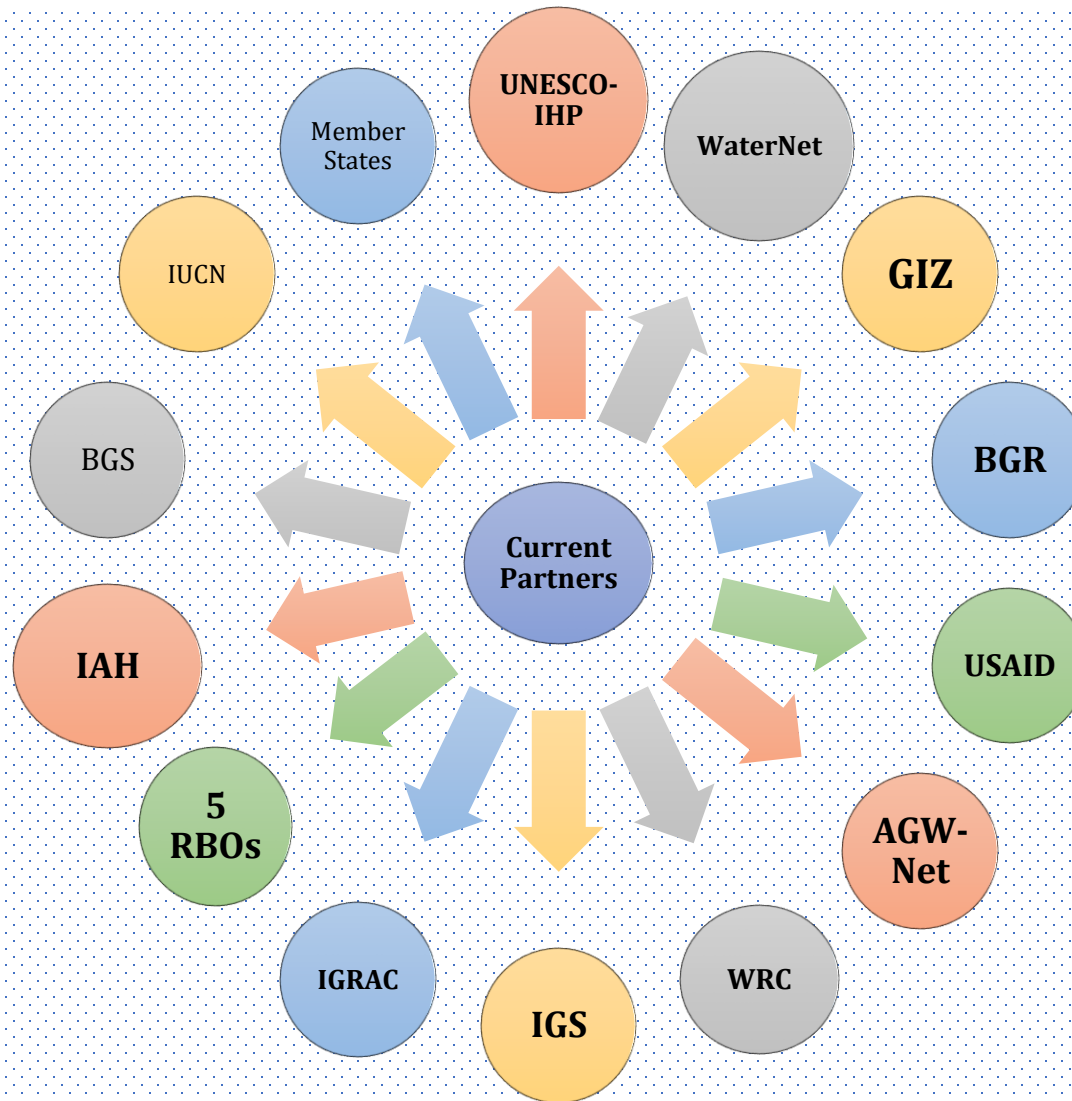
# Conceptual Framework for Creating An Enabling Policy, Legal & Regulatory Environment For Groundwater Management



# Progress on Creating An Enabling Policy, Legal & Institutional Environment For Groundwater Management



# Creating An Enabling Environment Through Partnerships



# **Institutional Strengthening by Integrating Groundwater in RBOs**

- 1. Participation in all ORASECOM Groundwater Hydrology Committee since launch of SADC-GMI in September 2016;**
- 2. Signed MOU with LIMCOM (Dec 2018) and established LIMCOM Groundwater Committee on 28 Feb 2019 whose TOR are below:**
  - a. Transboundary cooperation to facilitate the integration and harmonisation of groundwater provisions between the national and basin level commitments;
  - b. Support updating of protocols/agreements to address shared groundwater challenges, sharing of data and benefits from the cooperation;
  - c. Promotion of Transboundary Aquifer Management in the riparian Member States and in collaboration with relevant government authorities;
  - d. Address groundwater challenges through Transboundary Diagnostic Analysis (TDA) and Strategic Action Plans (SAP).
  - e. Joint pilot studies, information exchange and training;
  - f. Establishment and operationalisation of institutional arrangements for shared Transboundary Aquifer management;
  - g. Joint planning and implementation of workshops, research projects, etc including solicitation of funding where necessary;
  - h. ICT platforms for knowledge sharing and integrated data management systems





# **Institutional Strengthening by Integrating Groundwater in RBOs**

**Signed MoU with ZAMCOM and proposal for establishment of similar Groundwater Committee approved in principle at ZAMTEC meeting of 22 November 2018**

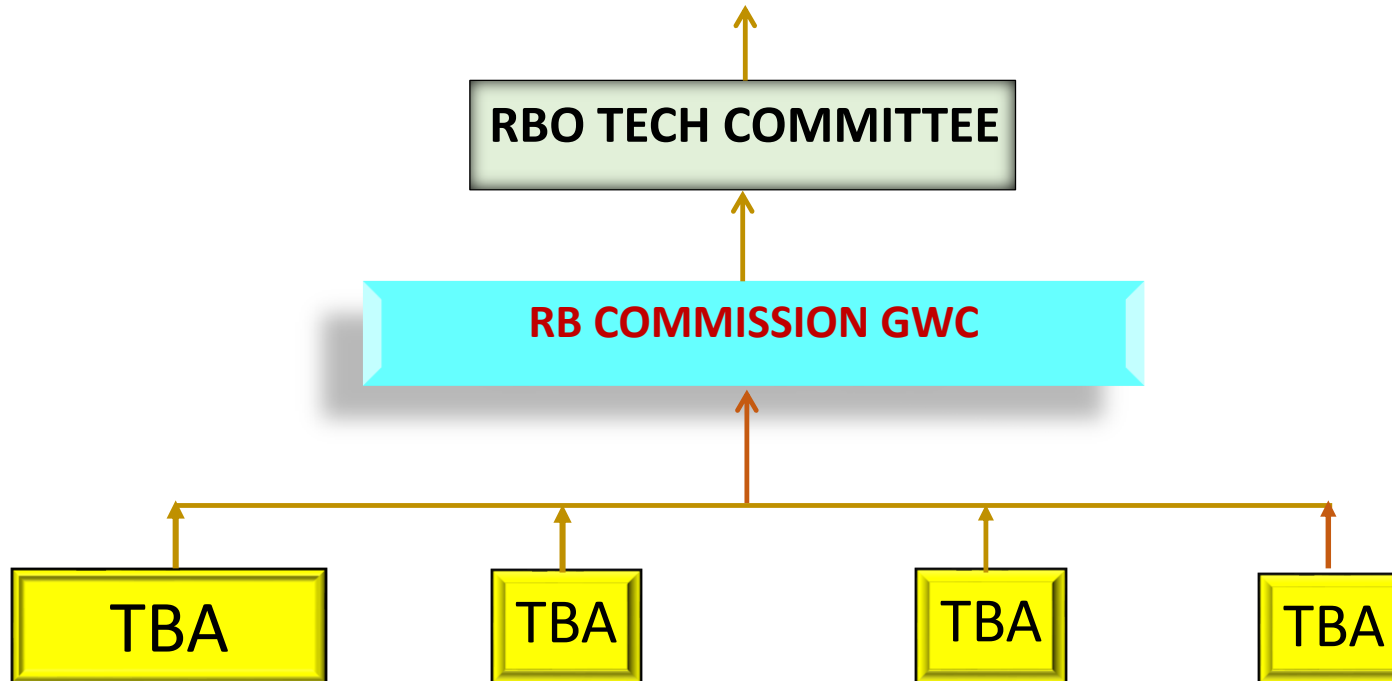
**Signed MoU with OKACOM and engaged on Groundwater Assessment project**

**Role of SADC-GMI on the LIMCOM GW Committee defined as:**

- a. Secretariat to the LGC;
- b. Technical Assistance on national and transboundary groundwater related matters;
- c. Capacity building on groundwater involving riparian state representatives and the LIMCOM secretariat and other stakeholders;
- d. Contribution of funding to facilitate the establishment and operation of the LGC;
- e. Advise on groundwater activities for inclusion in the strategic and annual plans;
- f. Avail opportunities for cross-learning from other relevant regional initiatives
- g. Support resources mobilisation efforts to implement activities on the approved workplan;
- h. Reporting/facilitate reporting on groundwater activities to relevant structures of LIMCOM as required

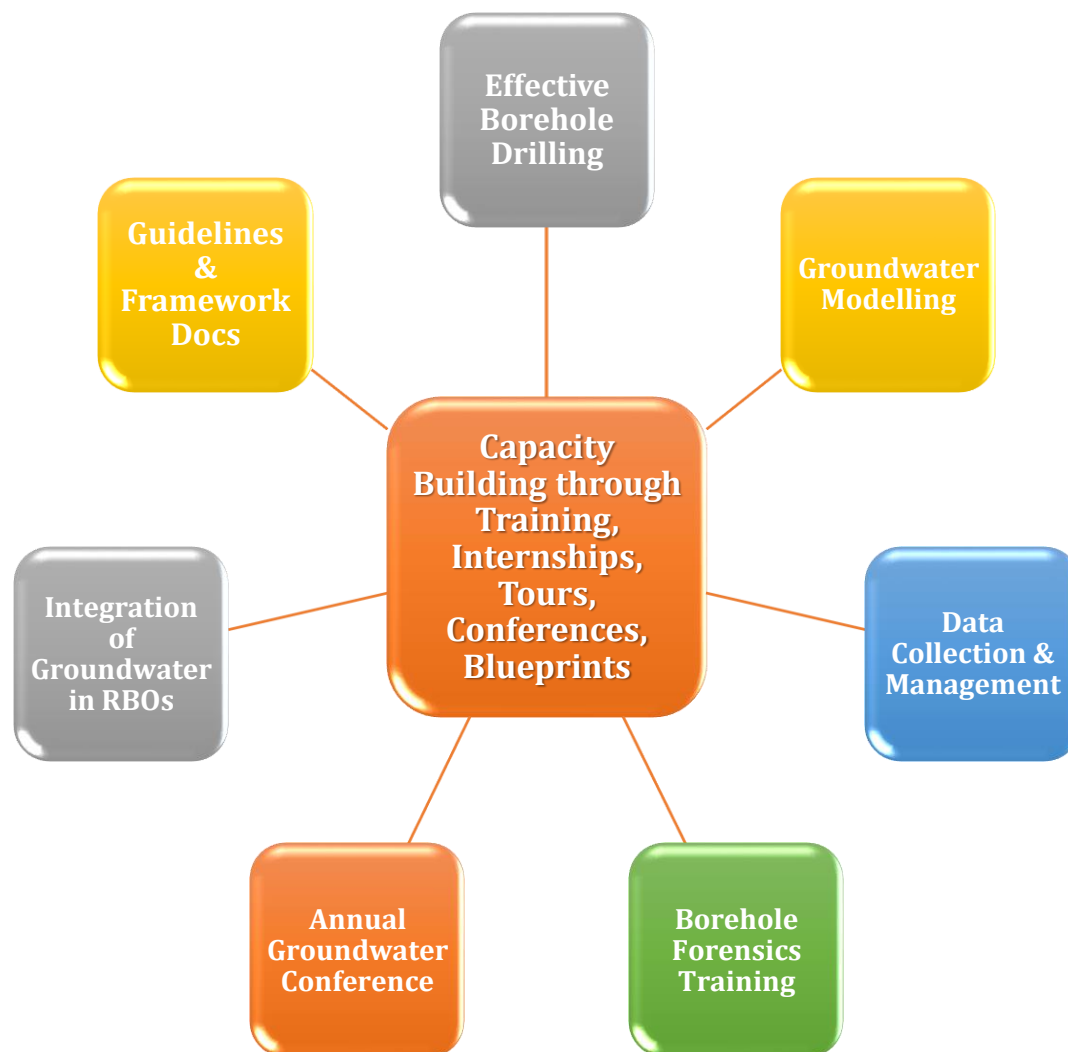


# Institutional Framework for GW Governance in RBO



Intention is to upscale nesting of TBA governance in RBOs using the Multi-Country Cooperation Mechanism (MCCM) model initiated by UNESCO-IHP in the Stampreit Aquifer System

# SADC-GMI Capacity Building & Knowledge Management Menu



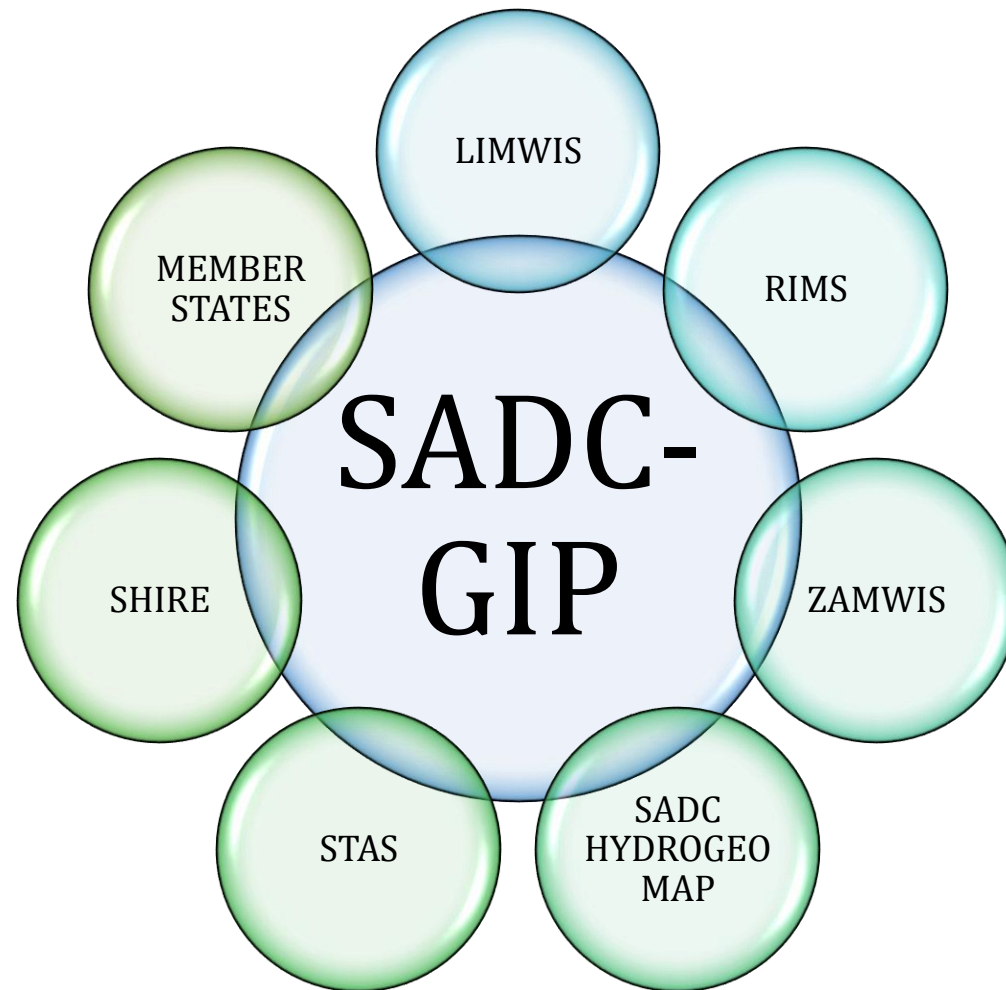
## Enhancing GW Knowledge Through Research

1. Huge demand acknowledged with 30 TBAs & only 4 researched to date
2. SADC model for enhanced TBA Conjunctive Water Resources Management
  - a. Transboundary Diagnostic Analysis (TDA)
  - b. Joint Strategic Action Planning (JSAP)
  - c. Collaborative SAP implementation anchored on:
    1. Establishment & operationalisation of GW Governance institutional structure
    2. Installation of GW Monitoring infrastructure
    3. Joint Data Collection & GW Modelling
    4. GW security for domestic & agricultural use



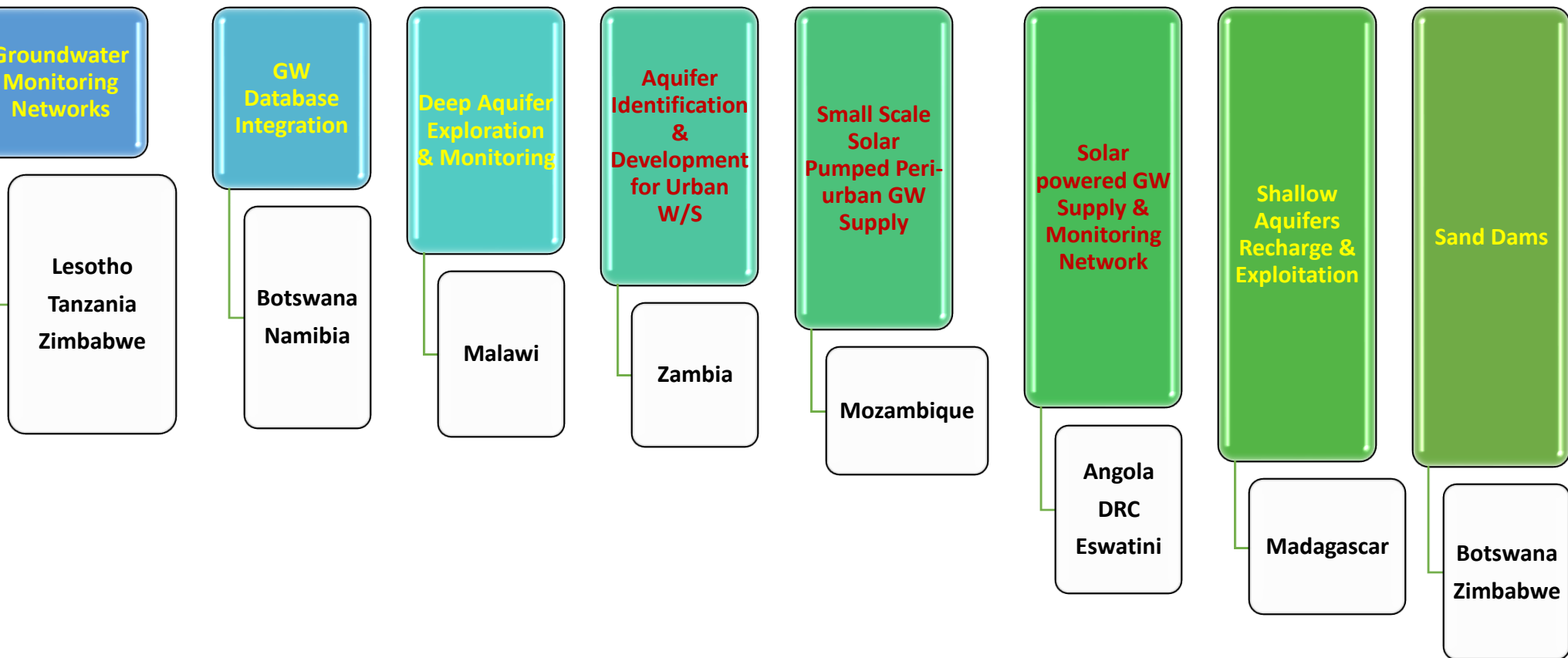
# Enhancing GW Knowledge Through Data Sharing

## SADC-GMI's One-Stop Regional Data Sharing Vision



# Infrastructure for Sustainable Use & Protection of GW

Learning by doing through Pilot Projects





# Groundwater Supply Infrastructure - Malawi

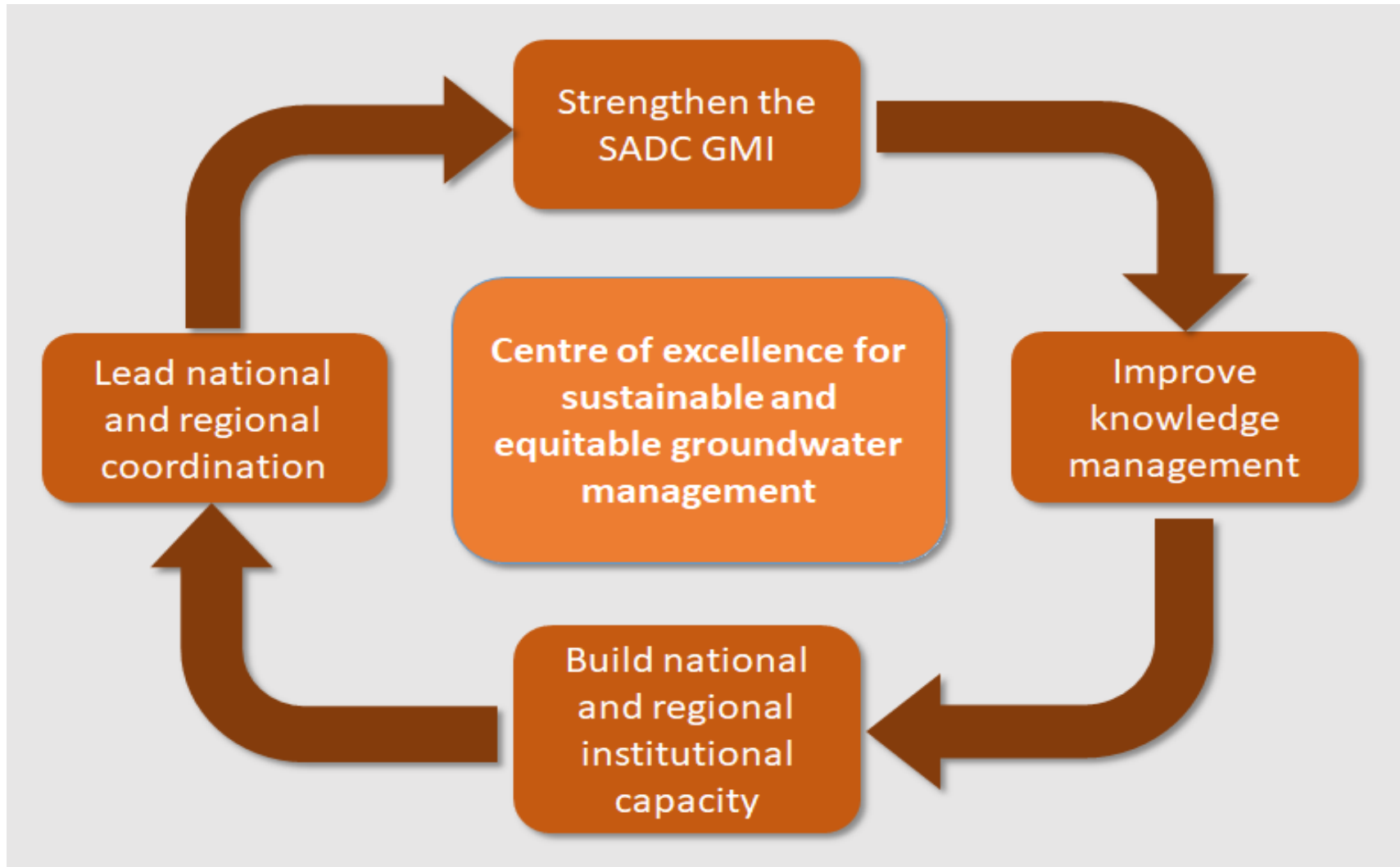




# SADC-GMI STRATEGIC FOCUS (2018 – 2023)



# SADC-GMI Strategic Business Objectives (2018 – 2023)



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# THANK YOU



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