

# THE *Well* NEWSLETTER

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Climate Change  
is a threat to groundwater  
resources

Eng. James  
Sauramba, SADC-GMI  
Executive Director Received Global  
Recognition at the 50th IAH Congress

The unsung heroines  
and agents of  
transformative change



  
GROUNDWATER MANAGEMENT INSTITUTE



# THE WATER TOWN ZINE O C

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# YEAR-END



## Year-End Message from the SADC-GMI Executive Director – Eng. James Sauramba

**A**s we approach the end of another year, we would like to extend our gratitude for an incredible year. We have made significant progress towards achieving our objectives.

On the operation and implementation

front, we commendably scored on several innovative and impactful initiatives as part of executing Phase 2 of the Sustainable Groundwater Management in SADC Member States Project. These include the improvement of the Groundwater Information Portal, the development of the Limpopo Basin Groundwater Strategy, the establishment of National Focal Groups in 5 Member States, and the enhancement



of the Groundwater Literature Archive. Another highlight was the project on Policy, Legal, and Institutional Frameworks aimed at creating an enabling environment for sustainable groundwater management. All these accomplishments are aimed at promoting sustainable groundwater management in the region.

On the strategic front, the year 2023 offered us a chance to reassess our strategies, including our Business Strategy, Financial Sustainability Plan, Awareness, Knowledge Management, Communication Strategy, and Stakeholder Engagement Strategy. These strategies form part of our arsenal in achieving our strategic objectives as an institute. Reviewing them at this point was critical in equipping us to reposition ourselves for 2024 going forward. Thank you to our partners and stakeholders for the invaluable contribution you made towards the revamping of these key documents.

“The Well” is the SADC-GMI Annual newsletter packed with compelling stories pertaining to groundwater resources. We hope you will enjoy the stories that we have carefully selected for this edition. Thank you to the team who dedicated themselves to ensuring this piece of art comes to life.

Before we briefly put our tools down, I would like to take this opportunity to express my heartfelt gratitude and appreciation to all our valued partners, stakeholders, and the SADC-GMI team for the hard work, dedication, and commitment demonstrated throughout the year. Your contributions have been instrumental in our success and growth. Together, we have overcome challenges, achieved milestones, and made a positive impact on the lives of the people that we serve.

Your unwavering support and collaboration have propelled us forward, and I am truly grateful for every one of you. Our achievements over the past year

would not have been possible without the support we received from you. Thank you for being an integral part of our story and your continued efforts to make our organization thrive.

“We deeply value and appreciate your hard work, commitment, and the significant contributions you’ve made this year. As we look ahead, we’re filled with enthusiasm for what we can achieve together in the coming year.”

As the new year approaches, it’s important to reflect and show gratitude in all aspects of our lives, both personal and professional. In doing so, we foster stronger connections, encourage mutual respect, and cultivate a supportive and positive work environment.

As we collectively close our laptops and pack away our work for the festive season, we wish to extend our profound thanks for the unwavering support you’ve given us throughout 2023 and wish you and your loved ones a peaceful festive season and a prosperous new year filled with loads of blessings. 💧



Eng. James Sauramba

## FRENCH

# Message de fin d’année du directeur exécutif de la SADC-GMI – Eng. James Sauramba

Comme nous tendons vers la fin de l’année, nous tenons à exprimer notre gratitude pour cette année exceptionnelle. Nous avons accompli d’importants progrès vers la réalisation de nos objectifs.

En termes d’opérations et de mise en œuvre, nous avons obtenu des résultats dignes d’éloge dans le cadre de plusieurs initiatives novatrices et à

fort impact lors de la seconde phase du projet de gestion durable des eaux souterraines dans les États membres de la SADC. Il s'agit notamment de l'amélioration du portail d'information sur les eaux souterraines, de l'élaboration de la stratégie sur les eaux souterraines du bassin du Limpopo, de la création de groupes focaux nationaux dans cinq États membres et de l'enrichissement des archives de la littérature sur les eaux souterraines. Un autre fait marquant a été le projet sur les cadres politiques, juridiques et institutionnels visant à créer un environnement favorable à la gestion durable des eaux souterraines. Toutes ces réalisations visent à promouvoir la gestion durable des eaux souterraines dans la région.

Sur le plan stratégique, l'année 2023 nous a donné l'occasion de réévaluer nos stratégies, notamment notre stratégie commerciale, notre plan de viabilité financière, notre stratégie de sensibilisation, de communication et de gestion des connaissances ainsi que notre stratégie d'engagement des parties prenantes. Ces stratégies font partie de l'arsenal dont nous disposons pour atteindre les objectifs stratégiques que nous nous sommes fixés en tant qu'institut. Leur révision à ce stade a été essentielle en ce sens qu'elle nous a permis de nous repositionner pour 2024. Nous remercions nos partenaires et nos parties prenantes pour leur inestimable contribution à la refonte de ces documents clés.

"The Well" est le bulletin d'information annuel de la SADC-GMI qui fourmille d'histoires fascinantes sur les ressources en eau souterraine. Nous espérons que vous apprécierez les histoires que nous avons soigneusement sélectionnées pour cette édition. Nous remercions l'équipe qui s'est attachée à assurer que cette œuvre artistique prenne vie.

Avant d'interrompre brièvement nos travaux, je voudrais profiter de

l'occasion pour remercier sincèrement tous nos précieux partenaires, les parties prenantes et l'équipe de la SADC-GMI pour leur travail acharné, leur dévouement et leur engagement tout au long de l'année. Vos contributions se sont avérées vitales pour notre succès et notre croissance. Ensemble, nous avons relevé des défis, franchi d'importantes étapes et influencé positivement la vie des personnes que nous servons.

Votre soutien sans faille et votre collaboration inébranlable nous ont permis d'aller de l'avant, et je suis particulièrement reconnaissant envers chacun d'entre vous. Nos réalisations au cours de l'année écoulée n'auraient pas été possibles sans votre soutien. Nous apprécions le rôle important que vous jouez dans nos récits et les efforts que vous déployez en permanence pour assurer le succès de notre organisation.

***“ Nous saluons et apprécions vivement votre travail acharné, votre engagement et les contributions précieuses que vous avez apportées au cours de cette année. Pour ce qui est de l'avenir, nous sommes pleins d'enthousiasme en ce qui concerne ce que nous pourrons réaliser ensemble l'année prochaine. ”***

À l'approche de la nouvelle année, il est important de réfléchir et de faire preuve de gratitude dans tous les aspects de notre vie, tant personnelle que professionnelle. Ce faisant, nous renforçons les liens, nous encourageons le respect mutuel et nous cultivons un environnement de travail positif et favorable.

Alors que nous fermons collectivement nos ordinateurs portables et clôturons notre travail pour les fêtes de fin d'année, nous tenons à vous exprimer notre profonde gratitude pour votre soutien indéfectible tout au long de l'année 2023 et à vous souhaiter, ainsi qu'à vos proches, des fêtes de fin d'année paisibles ainsi qu'une nouvelle année bénie et prospère. 💧



# Mensagem de fim de ano do Director Executivo do SADC-GMI

## – Eng. James Sauramba

À medida que nos aproximamos do final de mais um ano, gostaríamos de estender a nossa gratidão por um ano incrível. Fizemos progressos significativos no sentido de alcançar os nossos objectivos.

Na frente de operação e implementação, conseguimos, com louvor, várias iniciativas inovadoras e impactantes como parte da execução da Fase 2 do Projecto de Gestão Sustentável das Águas Subterrâneas nos Estados Membros da SADC. Estas incluem o melhoramento do Portal de Informação sobre Águas Subterrâneas, o desenvolvimento da Estratégia de Águas Subterrâneas da Bacia do Limpopo, o estabelecimento de Grupos Focais Nacionais em 5 Estados Membros, e o melhoramento do Arquivo de Literatura sobre Águas Subterrâneas. Outro destaque foi o projecto sobre Políticas, Quadros Legais e Institucionais com o objectivo de criar um ambiente propício para a gestão sustentável das águas subterrâneas. Todas estas realizações têm como objectivo promover a gestão sustentável das águas subterrâneas na região.

Na frente estratégica, o ano de 2023 ofereceu-nos a oportunidade de reavaliar as nossas estratégias, incluindo a nossa Estratégia de Negócios, Plano de Sustentabilidade Financeira, Sensibilização, Gestão do Conhecimento, Estratégia de Comunicação e Estratégia de Envolvimento das Partes Interessadas. Estas estratégias fazem parte do nosso arsenal para alcançar os nossos objectivos estratégicos enquanto instituto. Revê-las nesta altura foi fundamental para nos equipar para nos reposicionarmos para 2024. Agradecemos aos nossos parceiros e partes interessadas o contributo inestimável que deram para a reformulação destes documentos fundamentais.

“The Well” é o boletim anual do SADC-GMI repleto de histórias convincentes relacionadas com os recursos hídricos subterrâneos. Esperamos que apreciem as histórias que seleccionámos cuidadosamente para esta edição. Agradecemos a equipa que se dedicou a garantir que esta obra de arte ganhasse vida.

Antes de pousarmos brevemente as nossas ferramentas, gostaria de aproveitar esta oportunidade para expressar a minha sincera gratidão e apreço a todos os nossos valiosos parceiros, partes interessadas e à equipa do SADC-GMI pelo trabalho árduo, dedicação

e empenho ao longo do ano. As vossas contribuições foram fundamentais para o nosso sucesso e crescimento. Juntos, ultrapassámos desafios, alcançámos marcos e causámos um impacto positivo na vida das pessoas que servimos.

O vosso apoio e colaboração inabaláveis impulsionaram-nos para a frente e estou verdadeiramente grato a cada um de vós. As nossas realizações ao longo do ano passado não teriam sido possíveis sem o vosso apoio. Estamos gratos por fazerem parte integrante da nossa história e pelos vossos esforços contínuos para fazer prosperar a nossa organização.

“*Valorizamos e apreciamos profundamente o vosso trabalho árduo, o vosso empenho e as contribuições significativas que deram este ano. Ao olharmos para o futuro, estamos cheios de entusiasmo pelo que podemos alcançar juntos no próximo ano.*”

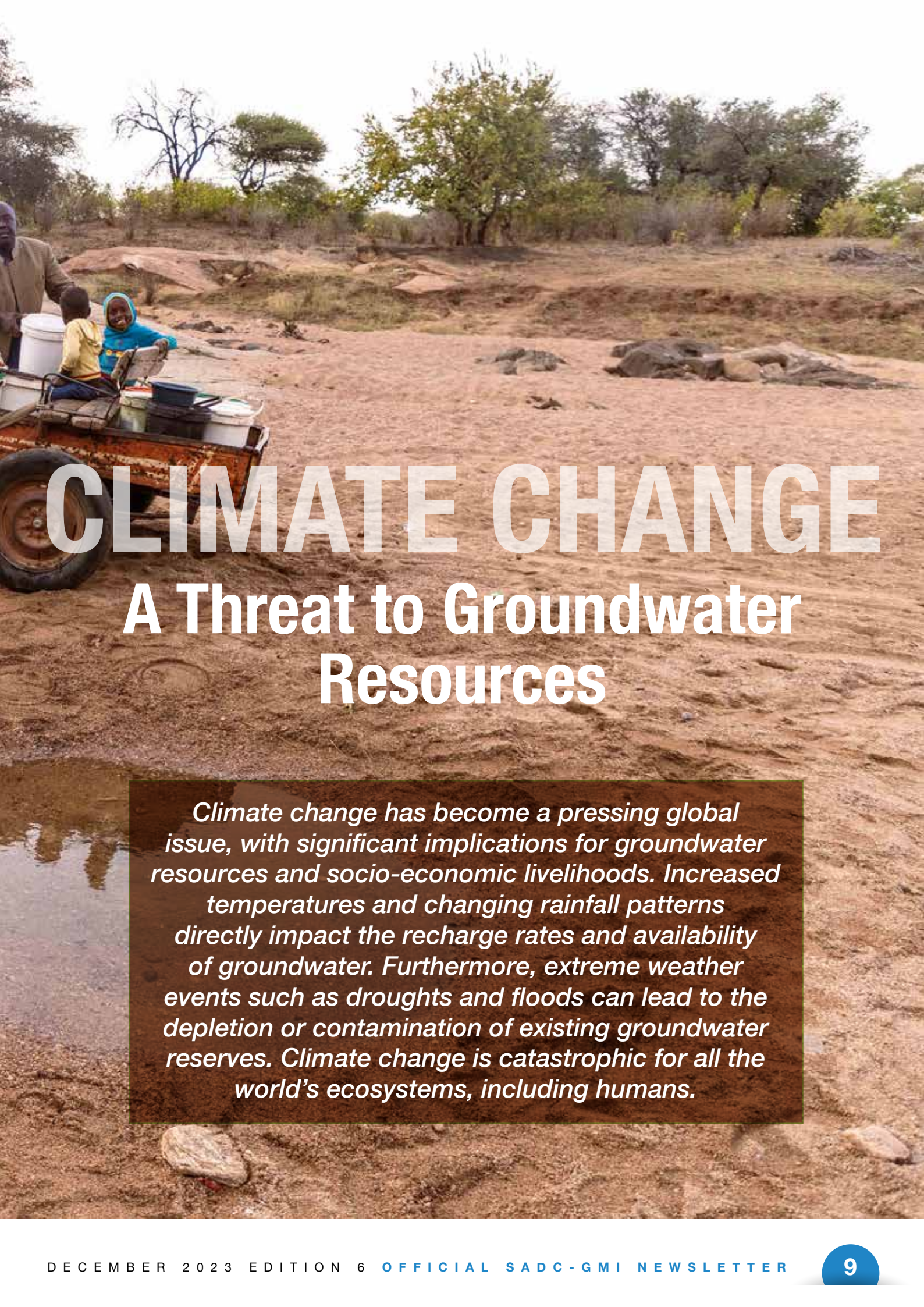
“À medida que o novo ano se aproxima, é importante reflectir e mostrar gratidão em todos os aspectos das nossas vidas, tanto pessoais como profissionais. Ao fazê-lo, fomentamos ligações mais fortes, incentivamos o respeito mútuo e cultivamos um ambiente de trabalho positivo e de apoio.

Ao fecharmos colectivamente os nossos computadores portáteis e arrumarmos o nosso trabalho para a época festiva, queremos agradecer profundamente o apoio inabalável que nos deram ao longo de 2023 e desejar-vos, a vós e aos vossos entes queridos, uma época festiva tranquila e um ano novo próspero e cheio de bênçãos. 💧









# CLIMATE CHANGE

## A Threat to Groundwater Resources

*Climate change has become a pressing global issue, with significant implications for groundwater resources and socio-economic livelihoods. Increased temperatures and changing rainfall patterns directly impact the recharge rates and availability of groundwater. Furthermore, extreme weather events such as droughts and floods can lead to the depletion or contamination of existing groundwater reserves. Climate change is catastrophic for all the world's ecosystems, including humans.*



As climate change continues to intensify, it is crucial to develop strategies that address the impacts on groundwater and ensure its sustainable management. These strategies may include implementing water conservation measures, such as rainwater harvesting and efficient irrigation practices, to manage the reliance on groundwater. Furthermore, promoting conjunctive management - the use of (recycled or desalinated water) can help alleviate the pressure on groundwater resources. Moreover, the implementation of nature-based solutions to achieve water security is also critical, e.g., Managed Aquifer Recharge (MAR)

Additionally, promoting the use of groundwater monitoring and management systems can help track changes in groundwater levels and quality, allowing for timely interventions and implementation of adaptation measures. Currently, in the SADC region, we lack robust monitoring systems to track water quality, quantity, and aquifer recharge rates to allow for proactive interventions.

Therefore, a comprehensive approach that combines mitigation and adaptation strategies is essential to safeguarding groundwater for future generations. Furthermore, investing in research and technology to improve our understanding of the complex interactions between climate change and groundwater is crucial.

This knowledge will enable us to develop more accurate models and predictions, allowing for better planning and management of groundwater resources in a changing climate.

However, groundwater has the potential to play a crucial role in adapting to climate impacts and mitigating the effects of climate change if well managed and alternative strategies are implemented to achieve sustainable management.

In the SADC region, to effectively manage and sustainably utilize groundwater resources, it is crucial to address challenges such as limited monitoring and data collection, inadequate governance structures, and the undervaluation of the importance of groundwater. Limited monitoring and data collection schemes present a serious limitation to the sustainable development of groundwater resources.

According to (Sindico & Hawkins, 2015), groundwater utilization and management should be prioritized in the SADC region to address challenges related to water scarcity, climate change, and economic growth.

As the climate impacts intensify, without proper management and efficient use of groundwater, the SADC region may face further water shortages and



agricultural productivity decline, which can ultimately hit hard on the region's economic growth.

Therefore, it is crucial to prioritize integrated watershed management approaches that promote sustainable agricultural productivity, conservation of soil and water, and improved livelihood opportunities for farmers in the SADC region (Pathak et al., 2013).

By effectively managing and efficiently utilizing groundwater resources, implementing integrated watershed management strategies, and prioritizing sustainable water management practices, the SADC region can reduce its dependence on surface water sources, mitigate the impacts of climate change, and ensure a more resilient and sustainable future for all its inhabitants.

Groundwater can also play a significant role in achieving Sustainable Development Goal 6, which seeks to ensure the availability and sustainable management of water and sanitation for all. Groundwater's steady supply in wet and dry seasons means it can contribute to ensuring water availability even during times of scarcity, a key aspect of SDG 6.1.

If managed sustainably, groundwater can also foster sustainable withdrawals which speaks to SDG 6.4 and helps in protecting and restoring water-related ecosystems such as wetlands (SDG 6.6). Therefore, efficient utilization and management of groundwater can be a critical element in pursuing SDG 6 in the SADC region, particularly when considering the impacts of climate change and socio-economic growth. 💧





# Why Do We Care About Transboundary Aquifers in SADC?

**W**e care about transboundary aquifers in the SADC region because they ensure equitable access to water resources. These aquifers span national borders, and their sustainable management is essential for addressing water scarcity and meeting the growing demands of agriculture, industry, and domestic water supply.

Transboundary aquifers have the potential to provide a sustainable water supply for countries in the SADC region, such as Namibia and Angola, meeting water demands for the foreseeable future. Furthermore, transboundary aquifers can potentially reduce upstream pressure on river basins and ecosystems, such as the Okavango Delta, by supplying water for irrigation and meeting increasing agricultural production demands.

Be that as it may, managing transboundary aquifers in the SADC region also presents challenges and requires cooperation among Member States.

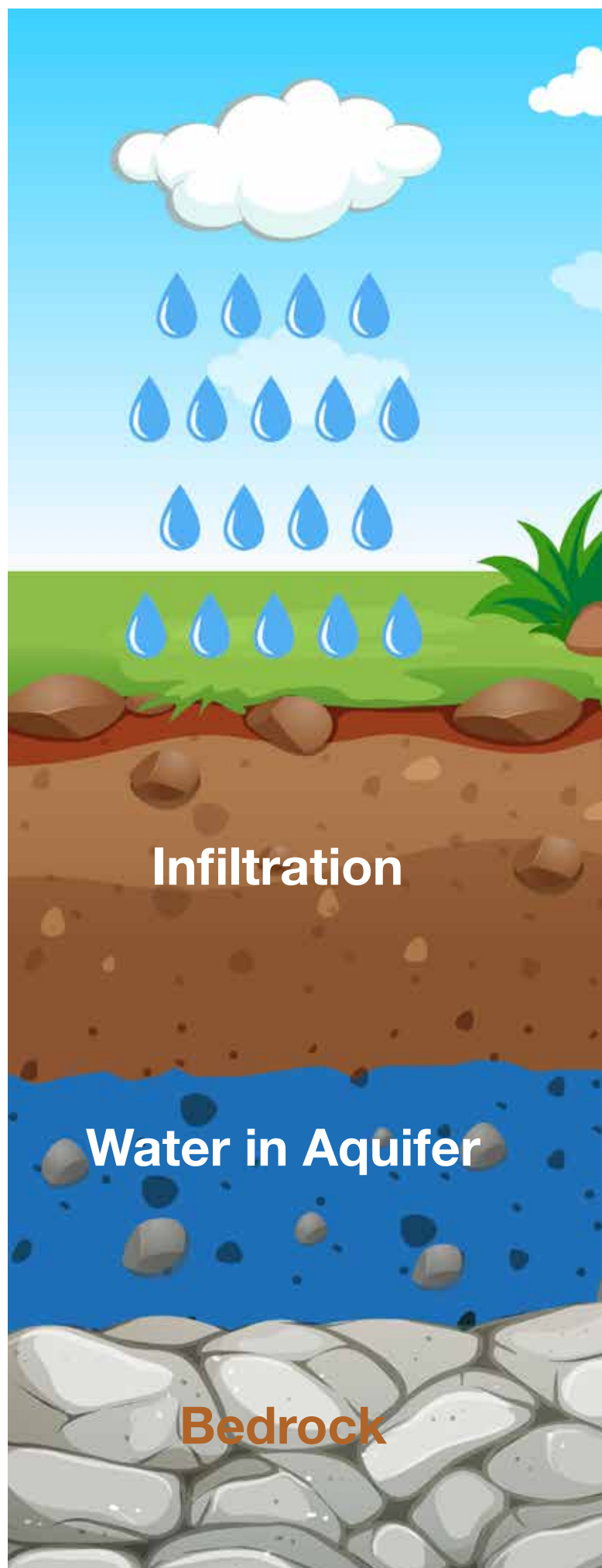
Transboundary aquifers can be a contentious issue due to competing demands for water resources and potential conflicts over their management and allocation among different riparian states. Therefore, understanding and effectively managing transboundary aquifers in the SADC region is vital for promoting sustainable development, preventing water conflicts, and ensuring long-term environmental and socio-economic stability.

Transboundary aquifers in the SADC region are critical for ensuring equitable access to water and addressing water scarcity. They support sustainable development and help meet the growing water demands of agriculture, industry, and urban development, reduce pressure on river basins and ecosystems, facilitate cooperation, and prevent conflicts among riparian states.

Therefore, effectively managing these resources in the SADC region is vital for promoting sustainable development, preventing water conflicts, and ensuring long-term environmental and socio-economic stability.

According to the Southern African Development Community (SADC) Protocol on Shared Water Resources, understanding and effectively managing shared water resources in the region is vital for promoting sustainable development and preventing water conflicts.

Agriculture is a crucial sector in the economics of SADC countries, providing livelihoods for a significant proportion of the population. Transboundary aquifers support this sector by offering a consistent and reliable source of irrigation water, helping maintain







and potentially increase agricultural productivity. This translates to food security and farmer income and contributes to economic prosperity.

Secondly, transboundary aquifers ensure a reliable water supply for industrial processes and rural and urban development. Clean, reliable water supplies are vital for many industries, including manufacturing and mining, which are significant contributors to the economies in the SADC region.

Similarly, providing drinking water and sanitation services in growing urban areas is made possible through access to these aquifers, stimulating urban development and contributing to public health outcomes.

Thus, through supporting agricultural productivity, industrial output, and urban development, transboundary aquifers contribute significantly to the socio-economic development in the SADC region.

**These critical resources must be well-managed and protected. Several critical steps could be taken to protect transboundary aquifers:**

1. **Developing and Implementing Legal Frameworks:** One of the first steps to protect transboundary aquifers is to establish legal and institutional frameworks that recognize the transboundary nature of these water resources and regulate their usage.
2. **Promoting Cooperation and Collaboration:** This includes enhancing communication, sharing data and information, and fostering cooperation between countries that share the aquifers. Joint management plans can be developed to reduce conflicts and promote equitable use.
3. **Conducting Research and Monitoring:** It is vital to understand the characteristics of the aquifers, including their capacity, recharge rates, and susceptibility to pollution. Regular monitoring can help detect changes or threats and promote timely response.
4. **Enhancing Sustainable Usage:** Encouraging practices that promote the sustainable use of these aquifers, such as efficient irrigation methods and careful industrial use, can help preserve these resources for future generations.
5. **Raising Awareness:** Educating all stakeholders, from local communities to policymakers, about the importance of transboundary aquifers and the need for their protection can help garner support for conservation initiatives.
6. **Building Capacity:** Improving countries' technical and institutional capacity to manage these aquifers effectively can help ensure their long-term sustainability.

These actions, taken together, could significantly contribute to the protection and sustainable management of transboundary aquifers in the SADC region and beyond. 💧



# **Groundwater Integration into River Basin Organizations in SADC: Benefits for the Water Sector**





*Photo credit: LIMCOM*



According to the Integration of Groundwater Management into Transboundary Basin Organizations in Africa Training Manual (2014), many African multi-state basin organizations do not have a mandate to manage transboundary groundwater or coordinate its management between the basin states. Even where such a mandate does exist, many of these basin organizations have limited capacity to do so.

In a region like SADC where 15 river basins and 30 transboundary aquifers (TBA) exist and are all shared across the borders, it is anticipated that enhancing the capacities of the transboundary basin organizations to address groundwater management could promote collaboration and coordination of groundwater management internationally as well as nationally. In addition, groundwater management could be integrated into overall water resources management. Fortunately, all the TBAs fall within one RBO or another, thus justifying the need to integrate the management/governance of TBAs into the RBOs.

In the Southern African Development Community region, the integration of groundwater into River Basin Organizations is crucial for the effective management and sustainable use of water resources, particularly as the region is constantly trying to come up with innovative and integrated climate-resilient approaches to mitigate the impacts of climate change.

### Research reveals that by integrating groundwater into River Basin Organizations, the water sector in the SADC region would benefit in several ways including:

1. Improved water resource management: Integrating groundwater into River Basin Organizations allows for a more comprehensive and holistic approach to water resource management. This integration would enable better understanding and coordination of surface water and groundwater interactions, leading to more efficient allocation and utilization of water resources.
2. Enhanced drought resilience: Groundwater serves as a natural buffer during periods of drought, providing a reliable and sustainable water source when surface water is scarce. By integrating groundwater into River Basin Organizations, the region can enhance its ability to withstand and adapt to drought conditions, reducing the impact on agriculture, communities, and ecosystems.

3. Better water supply planning and allocation: Integrating groundwater into River Basin Organizations would enable better planning and allocation of water resources. This would allow for a more accurate assessment of available water resources, including both surface water and groundwater, and ensure that water allocation plans are based on comprehensive and reliable data.
4. Improved ecosystem management: Integrated groundwater management would also contribute to the protection and preservation of ecosystems that rely on groundwater, such as wetlands and riparian areas. By considering the interconnectivity between surface water and groundwater, River Basin Organizations can develop strategies to maintain and restore the ecological balance of these ecosystems.
5. Enhanced transboundary cooperation: Integration of groundwater into River Basin Organizations promotes greater transboundary cooperation among SADC Member States. This cooperation is essential for effectively managing shared water resources, resolving conflicts, and promoting equitable access to water across borders. By integrating groundwater into River Basin Organizations in the SADC region, the water sector would benefit from improved water resource management, enhanced drought resilience, better water supply planning and allocation, improved ecosystem management, and enhanced transboundary cooperation.

Groundwater resources play a crucial role in the overall water availability and sustainability within a river basin. Integrating it into River Basin Organizations would allow for a more comprehensive and holistic approach to water resource management. This integration would enhance the understanding of the interconnectedness between surface water and groundwater, leading to better decision-making and a more effective allocation of water resources.

SADC-GMI as the Centre of Excellence in sustainable groundwater management has long realized the important role River Basin Organizations could play in the management of groundwater resources. As a result, since 2018, SADC-GMI has been championing various activities to ensure that River Basin Organizations are not left behind but are part of sustainable groundwater management. Utilizing the training manual developed by the consortium of partners including BGR, AGW-Net, IWMI, and others,



*From left: Eng. James Sauramba, SADC-GMI Executive Director exchanged signed Memoranda of Understanding with Mr Edward Mswane, Interim Executive Secretary of Incomati and Maputo Watercourse Commission (INMACOM) and Mr Trevor Shongwe, Chief Executive Officer of Komati Basin Water Authority (KOBWA).*

SADC-GMI rolled out training on on an Integration of Groundwater Management into Transboundary Basin Organizations in Africa to SADC Member States. To ensure that all 16 SADC Member States were accommodated, the training was delivered in English, French, and Portuguese.

Over and above that, SADC-GMI has signed Memoranda of Understanding with few River Basin Organisations in the region, the latest being signed with Incomati and Maputo Watercourse Commission (INMACOM) formed by three Member States, Eswatini, Mozambique and South Africa and Komati

Basin Water Authority (KOBWA) shared between Eswatini and South Africa, on 04 October 2023, in Maputo Mozambique. These agreements are aimed at strengthening the partnership and becoming a framework, guiding future collaborations.

In conclusion, integrating groundwater into River Basin Organizations in the SADC region is important for improved water resource management, enhanced drought resilience, better water supply planning and allocation, improved ecosystem management, and enhanced transboundary cooperation. 💧









# **Groundwater is Becoming More Important for Irrigated Agriculture**





*A happy farmer from one of the SADC-GMI's gardening Projects in Zimbabwe.*

**G**roundwater is less susceptible to meteorological conditions compared to surface water; therefore, it plays a crucial role in improving irrigated agriculture as it can provide a reliable and continuous water source, regardless of weather conditions or seasonal variations in surface water availability.

The resilience of groundwater resources ensures that crops are adequately irrigated and not suffer from drought stress, even during times of low rainfall. According to (K et al., 2021), Irrigation using groundwater has been particularly important in areas where surface water supplies are limited or unreliable.

Because of its resistant ability to drought, groundwater has over the years become the source of water for agricultural irrigation in many regions including the North China Plain where 60% of freshwater comes from groundwater, and agricultural irrigation in this area relies heavily on groundwater. Based on the in-

formation provided, it appears that there is a significant untapped potential in both land irrigation and utilization of renewable freshwater resources. Despite the availability of irrigable land, less than 30% is currently being irrigated. Similarly, less than 5% of available renewable freshwater resources are being used. This could imply a need for more effective resource management strategies.

In the SADC region alone, groundwater is increasingly depended on for human development, both for the supply of domestic and drinking water as well as for productive uses, like irrigation, mining, and industry. About one-third of the people in SADC live in drought-prone areas where groundwater is the primary source of water for the human population and livestock and most other activities (World Bank, 2005a). This dependency signifies the role that groundwater plays in water and food security for improved livelihoods of the population.



Research also indicates that groundwater contains dissolved minerals that can be beneficial for the soil and plants, enhancing their growth and productivity. Additionally, using groundwater for irrigation helps to reduce the pressure on surface water sources, preserving them for other uses such as drinking water and ecosystem support.

Climate change poses serious risks to the agricultural sector in Southern African countries, and it may ultimately depress the economic growth of the region. As a result of the climate change impact which results in dwindling surface water resources, groundwater is becoming more important for building climate resilience and alleviating poverty through improving human well-being, livelihoods, food production ecosystems, industries, and growing cities in the SADC region. In the face of climate change, groundwater can be used as a substitute for surface water.

It is important that our initiatives are targeted at responding to communities' water plights and improv-

ing their livelihoods. We always need to answer one big question "Water for What?". Asking this question will guide us in implementing impactful and agile projects, says Eng. James Sauramba, SADC-GMI Executive Director. James continued to say SADC-GMI has and is continuing to implement impactful community water supply projects. These projects help the communities access potable water for domestic use and agricultural purposes.

Noting its significance, groundwater needs proper development, use, and protection to ensure sustainable access and long-term groundwater security. In this regard, It is important that a concerted and integrated approach is adopted to develop robust strategies and tools to guide and regulate the sustainable development of the resource for food and water security. Such tools could include robust Policies, Legal and institutional frameworks, effective monitoring systems, and capacity development to mention a few. 💧



*Through the SADC-GMI Water Supply Project, the community in Whunga and Dite, Zimbabwe can now have sustainable water supply and support their families.*





*Photo credit: LIMCOM*







# LIMCOM Groundwater Strategy to Bolster Sustainable Groundwater Development in the Limpopo Basin

*Photo credit: LIMCOM*

**R**iver Basin Organizations (RBOs) have an important role to play in the achievement of holistic and sustainable management of both surface and groundwater. However, many RBOs have not been able to achieve this because of many reasons that include separate institutional mechanisms for surface and groundwater management, differing levels of expertise and knowledge, and the geographical disparities between the boundaries of aquifer systems and river basins. These factors have impeded the seamless integrated management of resources.

Recognizing the substantial role of RBOs in promoting the sustainable development of groundwater resources in the SADC region, SADC-GMI commenced an initiative to integrate groundwater management into these organizations. To cement this collaborative approach, the institute has signed Memoranda of Understanding with RBOs in the Southern Africa region.

A notable case of such cooperation is the establishment of the Limpopo Groundwater Committee (LGC) in 2019. Supported technically by the SADC-GMI, this Committee is striving for the harmonization of groundwater management across all the four riparian states of the Limpopo Basin. The Limpopo Watercourse Commission (LIMCOM) is the second of 15 international river basin organizations in the SADC region to establish a formal and dedicated institutional mechanism to oversee groundwater development and management.

The Limpopo Groundwater Committee agreed that there is a requisite for a Groundwater Strategy to bolster the sustainable development and management of groundwater in the Limpopo Basin. The strategy will encompass aspects such as joint groundwater development and management, aligning ongoing and future groundwater projects across the basin, and endorsing a holistic, multi-sectoral approach to groundwater management. The blueprint of the groundwater strategy represents a conjunction of efforts from SADC-GMI, the LIMCOM Secretariat, and the LGC.

Institutionalization of groundwater management at the river basin level in LIMCOM has been strongly supported by SADC-GMI and other partners through various understanding of transboundary aquifers in the Limpopo Basin and across the region.

SADC-GMI contracted the consulting firm OneWorld Sustainable Investments to develop the Limpopo

Groundwater Strategy in collaboration with the Limpopo Watercourse Commission Secretariat and the Limpopo Groundwater Committee. The development of the strategy is being done through a comprehensive consultation process. Key challenges identified during the stakeholder engagement process which the strategy needs to address include:

- Deficient infrastructure for effective data collection and dissemination.
- Lack of established protocols to promote data sharing between riparian states.
- The necessity to enhance the capacity of the LIMCOM Secretariat and Member States in groundwater management.
- The need to create linkages between regional, transboundary, and national groundwater management structures for more effective and cohesive management.

## Why is Groundwater important for the Limpopo Basin?

The Limpopo Basin, shared between Botswana, Mozambique, South Africa, and Zimbabwe, is home to approximately 18 million habitants. The basin is currently grappling with significant climate change-induced challenges. Fluctuating and unpredictable rainfall patterns have detrimentally impacted the region's water resources, exacerbating water stress in an area already sensitive to water scarcity. Given current trends, it's projected that these conditions could deteriorate further if no immediate and targeted intervention measures are put in place.

Within the Limpopo Basin, groundwater is heavily utilized for irrigation, rural water supply, and mining. The basin has aquifer systems of varying nature including three major transboundary aquifers (Ramotswa Aquifer, the Tuli Karoo Aquifer, and the Limpopo Aquifer Basin) shared by multiple countries. In recognition of this, sustainable management of groundwater resources can only be attained through cooperative efforts.





# Mining and its Impact on Groundwater



“ What mining companies can do to reduce their impact on groundwater resources? ”



**M**ining has a significant impact on groundwater resources. This impact can manifest in various ways, such as water pollution from ore processing and waste disposal. Additionally, mining can lead to land degradation and vegetation cover loss, further affecting groundwater quality and availability.

Furthermore, the extraction of minerals can contribute to soil erosion and the altering of hydrogeological settings, leading to issues like acid mine drainage and the contamination of water sources by sediments (Dino et al., 2022). These effects ultimately threaten the health and well-being of communities that rely on groundwater as their main water source.

In Ghana specifically, where many mining communities depend on groundwater for their water supply, the environmental challenges associated with mining are particularly pronounced (Gyawu-Asante et al., 2017). The poor handling of ore processing, tailings facilities, and waste dump sites in Ghana has resulted in water pollution and land degradation. As a result, there is growing awareness of the negative impact of mining activities on groundwater resources and the need for better environmental management practices.

This awareness is also fuelled by the concerns of residents in mining areas, who fear that the operations of mining companies are contaminating their water sources and making them unsafe. Overall, the impact of mining on groundwater resources is a complex issue that involves water pollution, land degradation, and potential health risks for affected communities.

The mining activities disturb the natural hydrogeological settings of an area, leading to changes in groundwater flow patterns and contamination of water sources.

This can occur through the formation of acid mine drainage, which releases harmful chemicals into the surrounding groundwater. Additionally, the handling of ore processing and waste disposal sites can result in the release of pollutants that contaminate groundwater.

Furthermore, the alteration of sediment and soil composition due to mining activities can also lead to the contamination of groundwater sources.

**There are several strategies that mining companies can implement to reduce the impact of their activities on groundwater resources. These include:**

1. Use of environmentally friendly mining technologies: Adoption of technologies that minimize land disruption, water pollution, and other environmental damages are beneficial.
2. Effective Waste Management: The implementation of proper waste management practices can reduce the contamination of groundwater. This includes safe disposal of mining waste and the construction of structurally secure tailings.
3. Water Management: It is important to efficiently manage water in the mining processes to reduce water pollution and the over-extraction of groundwater.
4. Rehabilitation of Mining Sites: Rehabilitation of mining sites can reverse land degradation and contamination. This includes steps like reforestation, afforestation, and soil restoration.
5. Regular Monitoring: Mining companies should regularly monitor their impact on groundwater resources. This can help them identify and address issues early.
6. Compliance with Environmental Regulations: Compliance with international and local environmental regulations and standards can help to minimize the impact of mining on groundwater.
7. Community Engagement: Engaging with local communities can ensure that their concerns are addressed in the management of groundwater resources. 💧



# RURAL WOMEN





# The Unsung Heroines and Agents of Transformative Change in Southern Africa

**I**n today's world, where the availability of water is becoming increasingly unpredictable, it is crucial to recognize the vital role of rural women in managing groundwater resources. Groundwater, despite being hidden beneath the surface, acts as an essential source of sustenance for countless communities around the world. These communities, particularly those in rural areas, heavily depend on groundwater for drinking, cooking, irrigation, and various other daily activities. On the 15th of October 2023, the world celebrated International Rural Women's Day 2023, under the theme "Rural Women and Girls Building Climate Resilience". This year's theme aimed to highlight the role of rural women and girls in building climate resilience and promoting sustainable development in rural areas. It also aimed to raise awareness about the challenges faced by rural women and girls, including poverty, gender inequality, and lack of access to basic services such as healthcare, education, and clean water.



As SADC-GMI we joined the world in celebrating the rural women in the SADC Region. Groundwater is the main source of water supply in the SADC Region and rural women have the overall role and responsibility to provide and ensure water security for their families.

On this occasion, SADC-GMI took the opportunity to highlight the remarkable intersection of resilience and sustainability that rural women bring to groundwater management, underscoring their crucial contributions to their communities and the region at large. Rural women have long been the backbone of their communities, exhibiting unmatched resilience in the face of challenging circumstances that include disproportionate vulnerabilities to the effects of climate change, gender-based violence, barriers to economic empowerment, and exclusion from decision-making processes.

This resilience is most evident in their ability to adapt and address the uncertainties associated with water availability. For SADC-GMI, rural women play an important role in our institutional knowledge management processes as they possess a deep understanding of their local ecosystems and have developed traditional knowledge and practices that contribute to sustainable groundwater management. Rural women have developed innovative techniques to conserve water, such as rain-water harvesting, use of traditional wells, and the construction of small ponds to store water. These innovations complement SADC-GMI's efforts and have been instrumental in projects that SADC-GMI has undertaken such as managed aquifer recharge and sand dams.

As primary users of water for domestic use, agriculture, and livestock rearing, rural women are directly exposed to the effects of over-abstraction or contamination. These women are actively involved in community-led initiatives that promote sustainable groundwater management. SADC-GMI has consciously made deliberate efforts to ensure that women particularly at community levels participate in decision-making processes within established water point committees and garden committees in the pilot projects implemented by the institute.

SADC-GMI aims to harness the full potential of rural women in groundwater management by equipping them with the requisite knowledge and resources for informed decision-making. This objective supports the SADC-GMI's Gender Equality and Social Inclusion Mainstreaming Strategy and Implementation Plan (2021-2025).

The strategy recognizes that involving rural women at every level of decision-making processes is vital for the equitable and sustainable management of groundwater resources that will enable transformative change. More on our strategy here [www.sadc-gmi.org](http://www.sadc-gmi.org)

In the first phase of the SADC-GMI Subgrant Scheme, which was funded by GEF and CIWA through the World Bank, rural women emerged as a critical group, playing a significant role in the successful implementation of projects that SADC-GMI implemented in various Member States. Through these initiatives, women managed to enhance their families' livelihoods, augment their income, and develop their leadership skills. They served as leaders in water point committees, successfully coordinating fellow community members in maintaining sustainable community water supply schemes and livelihood projects. For more on these projects, please visit [www.sadc-gmi.org](http://www.sadc-gmi.org) – previous activities.

Empowering rural women with knowledge, resources, and decision-making authority is vital for sustainable water management. This empowers not only their communities but also contributes to global efforts to achieve the United Nations' Sustainable Development Goals, specifically SDGs 5 (gender equality) and 6 (water security). As the globe celebrated International Rural Women's Day, we pledged our commitment to positioning rural women at the heart of crafting a more sustainable and water-secure future. We aim to achieve this by enhancing their involvement in decision-making processes related to groundwater development, use, and management.

Despite strides that have been made by SADC-GMI and other key players in the water sector to emancipate women and young girls from water challenges, it is evident that more work and efforts are still required to ensure that women and young girls do not bear the brunt of current and future water crises. Concerted efforts and an integrated approach will go a long way in addressing issues that negatively impact women and young girls in our society. 💧





*Photo credit: Steve Johnson*



# SADC-GMI Partners with Dr Alice Aureli and Ms. Gettie Mulokoshi– Shiinda as SADC-GMI Ambassadors

**A**s a regional Centre of Excellence in promoting equitable and sustainable groundwater management in the SADC region, it is imperative that SADC-GMI continuously raise awareness about the work they do and groundwater issues in the region. To achieve this objective, SADC-GMI has adopted various approaches including the development of an Awareness, Knowledge Management, and Communication strategy and the Stakeholder Engagement Strategy. These strategies have recommended a spectrum of tools to utilize in order to elevate the SADC-GMI brand, one of







*Photo credit: USAID Resilient Waters Program*





**DR ALICE AURELI**

*Dr Alice Aureli: former Head of UNESCO IHP Groundwater Resources and Water Cooperation Department partners with SADC-GMI as an Ambassador, she will act as SADC-GMI Senior Special Advisor. SADC-GMI is extremely excited to partner with this maestro, considering her wealth of experience and networks in the water sector.*

those tools is for SADC-GMI to have brand Ambassadors who will facilitate raising awareness about the SADC-GMI's work on different platforms.

To that end, SADC-GMI has partnered with Dr Alice Aureli, former Head of UNESCO IHP Groundwater Resources and Water Cooperation Department, and Ms. Gettie Mulokoshi-Shiinda from the Ministry of Agriculture, Water and Land Reform Windhoek, Namibia to be SADC-GMI Ambassadors.

Both these dynamic women will use different strategic platforms to help SADC-GMI raise awareness about

SADC-GMI as the institute and the work that we do to promote sustainable groundwater management in the region. Through their authentic passion for groundwater and extensive network, we believe that they will be instrumental in helping SADC-GMI raise awareness about groundwater and the SADC-GMI as the Centre of Excellence.

**D**r Aureli is an honorary member of the International Water Resources Association (IWRA). She is also a member of the French Partnership for Water and Senior Advisor to the IAH Commission on Transboundary Aquifers. She has been involved in various water resources management-related think tanks, including the Observatory of the Sahel and Sahara (OSS) strategic Orientation Committee. She is an author of numerous scientific literatures on water diplomacy and editor of international journals.

Laureat of several international awards, including the International Association of Hydrologists (IAH) Presidents' Prize in 2015 for her work on transboundary aquifer governance, and the Gilbert Castany Hydrogeology Prize in 2022.

**G**ettie is a seasoned Groundwater professional with nearly a decade of hands-on experience in groundwater investigation, monitoring, and management gained while working in her home country, Namibia. She holds a master's degree in water resources management from the University of Namibia and possesses a great ability to communicate with young minds.

As the SADC-GMI's Ambassador and champion,



she will play a pivotal role in advancing SADC-GMI's mandate by promoting its invaluable work through an array of channels and platforms.

Her achievements include involvement in the Stampriet Transboundary Aquifer System (STAS) - Governance of Groundwater Resources in Transboundary Aquifers (GGRETA) Project Phase I-III, where her contribution was instrumental in advancing comprehension of transboundary aquifers and advocating for the effective governance of groundwater resources.

Gettie is a 2023 Mandela Washington Alumna and is keen to leverage her expertise and communication skills to further SADC-GMI's mandate and objectives. This powerful and dynamic woman is not new to the SADC-GMI family. She is currently participating in the SADC-GMI Young Professionals programme which aims to develop and capacitate young professionals in the region. Gettie firmly believes that such programs should go beyond theoretical knowledge but also strive to provide a platform for young minds to participate actively in water research, management, and conservation issues.

As the brand Ambassador, she is committed to ensuring that young voices are recognized for their contribution to the sector. Her passion for nurturing the next generation of water professionals is evident in her involvement as a founding member of the UNESCO Groundwater Youth Network.

Gettie currently serves in the ORASECOM Groundwater Hydrology Committee and Namibia Hydrogeological Association where she constantly makes impact-



**MS GETTIE MULOKOSHI-SHIINDA**

*We are delighted to announce and welcome Ms. Gettie Mulokoshi-Shiinda as the young SADC – GMI Brand Ambassador.*

ful contributions. She proudly serves on the Project Coordination Team as the Regional Lead for Africa, driving initiatives that empower young professionals and facilitate knowledge exchange. 💧



*Photo credit: LIMCOM*





*Eng. James Sauramba, SADC-GMI Executive Director is receiving the Distinguished Associate Award at the 50th International Association of Hydrogeologists (IAH) Congress held in Cape Town, South Africa*



# Eng. James Sauramba, SADC-GMI Executive Director Received Global Recognition at the 50th IAH Congress

**F**ollowing six years of committed efforts toward sustainable and fair management of groundwater in the SADC region, SADC-GMI has finally gained worldwide acknowledgment. The 50th International Association of Hydrogeologists (IAH) Congress awarded Eng. James Sauramba, the Executive Director of SADC-GMI, with the Distinguished Associate Award. This award was in recognition of his exceptional contributions towards the comprehension, advancement, management, and preservation of global groundwater resources.

After six years of diligent work, SADC-GMI has established itself as a leader in sustainable groundwater management within the SADC region. To achieve its mandate of promoting sustainable groundwater management and tackling regional groundwater challenges, SADC-GMI has implemented an array of inventive and influential projects that support Member States in building resilience against climate change.

Throughout these years, SADC-GMI in collaboration with other strategic partners has

been solving groundwater issues by working towards creating an enabling environment, developing expertise, promoting research, and developing policy, legal, and Institutional frameworks for sustainable groundwater management in the SADC region.

Under the exceptional leadership of Executive Director, James Sauramba, SADC-GMI has spearheaded impactful initiatives that have contributed to human well-being, livelihoods, food security, and ecosystem preservation, all of which rely heavily on groundwater. We extend our congratulations to Eng. James Sauramba, the SADC-GMI team, and all collaborative partners for making significant impacts and achieving global recognition for their contributions.

Eng. Sauramba declared that this award stands as proof of SADC-GMI's steadfast commitment and dedication towards the promotion of sustainable groundwater management and the improvement of water security in the region. 💧











**G**roundwater is a critical resource, supporting various aspects of life and livelihoods such as drinking water supply, agriculture, and industry. Therefore, it is essential to strengthen communications about groundwater issues to ensure sustainable and effective management of this resource. Groundwater is facing a plethora of challenges, and one of them is the lack of awareness about the nature and the dynamics of the resource, which is caused by ineffective communication or lack thereof.

“Currently, communication initiatives are perceived as a cost rather than an opportunity or an investment, and if we want to change the groundwater landscape through robust communication initiatives, we need to shift our paradigm. We need to consider communication as key in sustainable groundwater management, and work on improving our engagement and awareness approaches”, said Thokozani Dlamini SADC-GMI Communication and Knowledge Management Specialist.

Institutions need to start investing in capacity development and talent that will drive groundwater narratives.

We need to work on improving communication between hydrogeologists, policymakers, and the public to create awareness about the importance of groundwater and the need for its protection. Strengthening communications will facilitate the sharing of information and best practices among different stakeholders, enabling them to make informed decisions regarding groundwater management.

Moreover, effective communication can help address the lack of awareness and understanding about groundwater among various communities. By raising awareness and providing accurate information, stakeholders can better understand the role of groundwater in their daily lives and the potential impacts of their actions on this resource. Robust communication can also enhance the integration of groundwater into water and ecosystem management plans.

This integration is crucial for achieving the Sustainable Development Goals related to water and ensuring the sustainability of groundwater resources where it is seen as vital.

By strengthening communication, we can ensure that groundwater management is linked to other sectors such as agriculture, rural development, health, and environment – aligning policies and practices to

address the interconnectedness of groundwater with these sectors. This will ultimately contribute to the sustainable development of groundwater resources and improve the overall quality of life for people dependent on it.

To date, the management of groundwater in Africa is hindered by various challenges, including ineffective governance structures, undervaluation of groundwater's importance, and a limited understanding of groundwater resources. Therefore, strengthening communication is crucial in overcoming these challenges and promoting effective and sustainable groundwater management in Africa. In summary, strengthening communication for groundwater issues is necessary to ensure sustainable and effective management of this vital resource. Lack of or fragmented communication is a serious limitation in driving narratives that promote the resources, therefore water management institutes need to start engaging in proactive awareness campaigns that educate stakeholders about groundwater issues and involve them in the decision-making processes.

Enhancing communication for groundwater issues can foster collaboration among various key players in the sector including, hydrogeologists, policymakers, and communities. This collaboration can facilitate the exchange of knowledge, expertise, and perspectives, leading to more informed decision-making and the implementation of effective measures for groundwater management.

## The Role of the Media in Groundwater Communication

It is imperative that media is brought on board as they play a crucial role in raising awareness, promoting understanding, and driving action towards sustainable management of this vital resource. By providing in-depth reporting, investigative journalism, and educational content, the media can help inform the public about the importance of groundwater, its current challenges, and potential solutions.

Media are also important for facilitating dialogue and engagement among stakeholders, including experts, policymakers, and the public, fostering a sense of urgency and collective responsibility towards groundwater conservation and protection.

A large proportion of our population has limited knowledge about groundwater. Media can educate the public about the importance of groundwater, highlight its vulnerabilities and threats, showcase conservation efforts, and promote sustainable practices to ensure its long-term availability. By amplifying the voices of affected communities and sharing their stories, the media can humanize the issue of groundwater and create a sense of empathy among the audience towards those who are directly

However, reporting on groundwater issues can be complex and challenging. Journalists must have a solid understanding of groundwater science, water management practices, and the potential impacts of groundwater depletion or contamination. Therefore, it is important that water management institutes collaborate with media houses on capacity development for journalists who hold interest in reporting groundwater issues. This will support accurate reporting on the resource. 💧







## PHASE 2

**SADC-GMI Continues to make  
a difference in sustainable  
Groundwater management in  
the SADC region through the  
implementation of Phase 2  
of the Sustainable  
Groundwater Management in  
SADC Member States Project**

**T**o support its mandate of promoting sustainable groundwater management and providing solutions to groundwater challenges across the SADC region for improved livelihoods, SADC-GMI is implementing phase 2 of the Sustainable Groundwater Management in the SADC Member States Project.

The project commenced in November 2021 and is closely aligned to the SADC Regional Strategic Action Plans (RSAPs) on Integrated Water Resources Development and Management, Phases IV (2016-2020) and V (2021-2025). The project builds on the achievements of the Sustainable Groundwater Management in SADC Member States Project that was implemented from 2015 to 2021. The project will help address the findings of the regional Policy, Legal, and Institutional Gap Analysis conducted by SADC-GMI in 2019 which revealed gaps that exist in Capacity development, Knowledge management, and the use of groundwater to build resilient livelihoods across the region. The second Phase project will address the identified gaps through three main components: Capacity Building for Sustainable Groundwater Management, Knowledge Development, Dissemination and Advocacy, and Building Resilient Livelihoods and Inclusive Groundwater Management.

The 5-year project is funded by the Global Environment Facility and the Cooperation in International Waters in Africa through the World Bank Group. Since its inception in November 2021, the project has made impressive progress in its implementation. Several initiatives in different Member States are at various stages of implementation and are all earmarked for completion before the end of the project contract in November 2025.

## Highlights of the Projects Currently Under Implementation

### Groundwater Information Portal Enhancement

The SADC-Groundwater Information Portal enhancement project is aimed at augmenting the SADC Groundwater Information Portal that was first revived in 2019/2020 with more features, for example incorporating time series data, ability to generate graphs, maps and where data is missing, apply big data analytics and machine learning to generate useful information for stakeholders. The project aims to harmonise and enhance sharing of hydrogeological data among Member States, and it follows up to the (SADC-GW-DataCoM project) which was implemented during phase 1.

## GMI Policy, Legal & Institutional (PLI) Enabling Environment Roadmaps and Implementation of PLI Quick-win interventions in Selected SADC Member States and at SADC Regional Level

The project emanates from the PLI project which was implemented between May 2018 and October 2019 which culminated in the development of 2 Roadmaps in 2 of the 16 SADC Member States, thereby leaving 14 SADC Member States without roadmaps.

SADC-GMI is implementing the 2nd phase of the Policy, Legal and Institutional project. The aim of the project is to develop roadmaps in 5 of the remaining SADC Member States as well as implement Quick-win interventions in selected Member States at national and regional level.

## Groundwater Literature Archive Project 2nd Phase

In 2020, the SADC-GMI Groundwater Management Institute initiated a project to update the SADC Groundwater Literature Archive to make it a fully functional online archive of groundwater literature for the SADC region. Following the initial update, the platform consisted of 4530 records which were available to users. As part of the Sustainable Groundwater Management in the SADC Member States Project phase 2, SADC-GMI is undertaking further enhancement of the Groundwater Literature Archive platform with the aim of adding more records, providing comprehensive and easily accessible resources for users in the SADC region.

### The Development of the Limpopo Groundwater Strategy

The LIMCOM Groundwater Committee resolved that a groundwater strategy for the basin is required to promote the recognition of the strategic value, equitable access, and sustainable use of groundwater in the basin. As a result, SADC-GMI in collaboration with the Limpopo River basin riparian Member States are working on developing the strategy. The implementation framework of the strategy will provide a logical format and point from which to reform groundwater development and management in the LRB over a set time.



## Establishment of the National Focal Groups in Member States

During the implementation of phase 1 of the Sustainable Groundwater Management (SGM) in SADC Member States Project, 5 National Focal Groups were established in the following countries: Eswatini, Malawi, Mozambique, Namibia, and Zimbabwe. The primary objective of the National Focal Groups is to serve as an advocacy group that has a collective voice in the country to increase the profile of groundwater. Component 1.1 of phase 2 of the SGM in SADC Member States project has made provision for the establishment of 3 additional National Focal Groups and for the intensive capacity building of the accumulated 8 National Focal Groups. While OneWorld Sustainable Investments is busy with the finalization of the first 8 NFGs, SADC-GMI using its internal resources is also rolling out further National Focal Groups in the remaining 8 Member States. This will ensure that all 16 SADC Member States have NFGS structures established and operational.

## Sub-grant Projects

Component 3 of the Sustainable Groundwater Management in SADC Member States project Phase 2 speaks to Building Resilient Livelihoods and Inclusive Groundwater Management. Under this component, SADC-GMI is awarding small grants to Member States to implement pilot projects that can be scaled up in the future. To date, the following Member States have submitted concept notes and proposals for project implementation. The projects are at various stages of implementation.

### ANGOLA



Caimbabo Water Supply Project.

### DRC



Mandimba City drinking water supply project in Congo Central through Groundwater.

### ESWATINI



Improving knowledge of groundwater availability through the assessment of available groundwater resources, capacity development, and innovative groundwater information management.





## LESOTHO



Construction of Groundwater Monitoring And Water Supply Systems.

## MALAWI



Rehabilitation of 20 existing monitoring wells.

## MAURITIUS



Groundwater Monitoring through the installation of automatic data logging, transmissions, and acquisition Systems for representative boreholes in the main aquifers of Mauritius.

**MOZAMBIQUE** Groundwater Assessment of Machangulo Region Matutuine District.



## NAMIBIA



Enhancing Sustainable Groundwater use in arid Southern Namibia /Karas Region: Towards an understanding of groundwater resource occurrence in the deep Karoo and the crystalline basement aquifers in the Region.

**SOUTH AFRICA** Review and Update of Hydrogeological Map Series and Information Brochure of Polokwane Area, South Africa.



**TANZANIA** Groundwater Development and Management of Nzunguni Aquifer.



**ZAMBIA** Groundwater Mapping and Development at Sumbwa Basic School in Kazungula District Southern Province - Zambia.

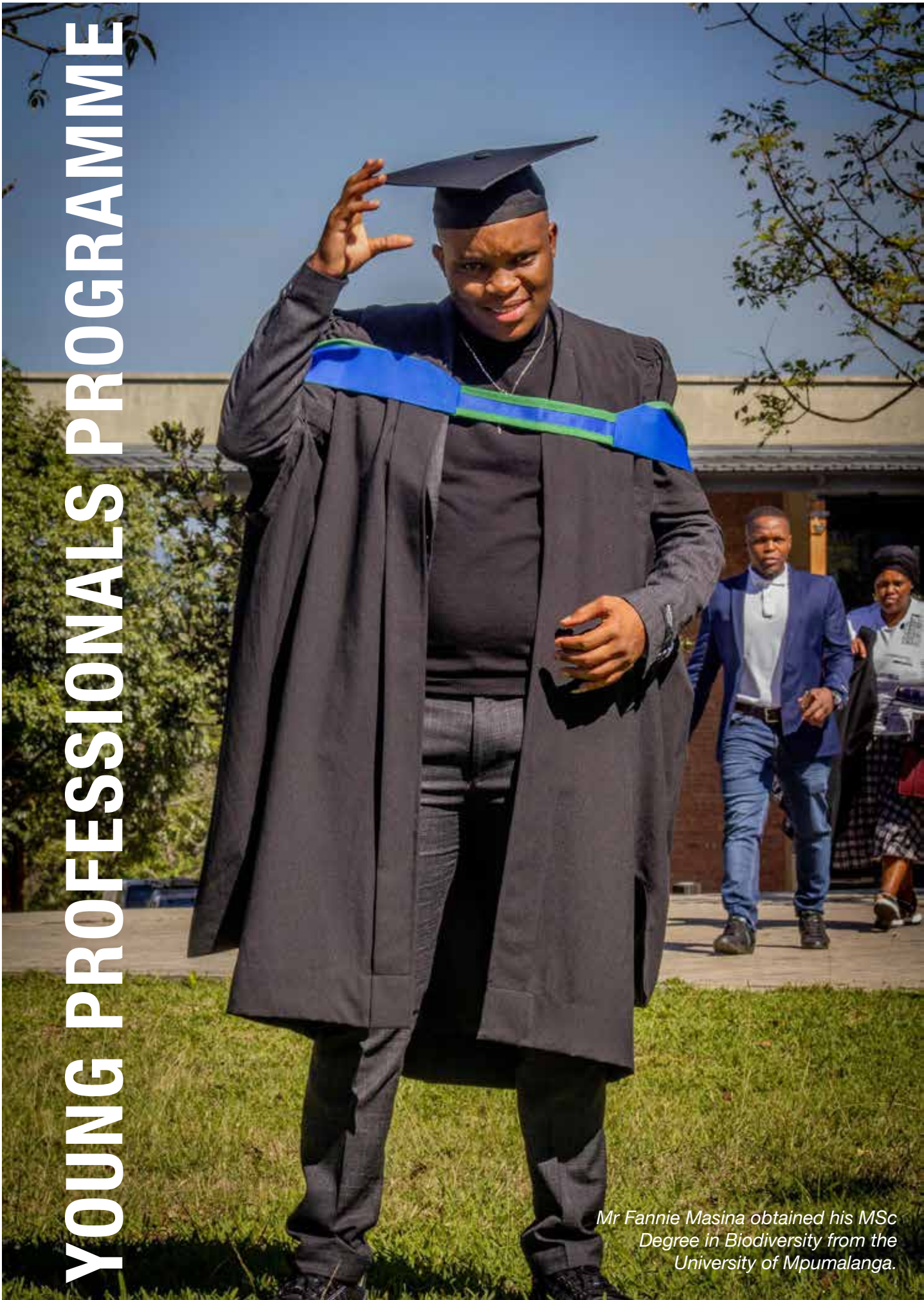


**ZIMBABWE** Groundwater Monitoring in the Save Alluvial Aquifer of Zimbabwe.





# YOUNG PROFESSIONALS PROGRAMME



*Mr Fannie Masina obtained his MSc Degree in Biodiversity from the University of Mpumalanga.*



# SADC-GMI Continues to Invest in the Young Professionals Programme

Capacity building is one of the most important pillars and focus areas for SADC-GMI. Independently or in collaboration with other key players in the water sector, SADC-GMI provides capacity-building initiatives to senior and young professionals in the public sector in the SADC region. Through these capacity-building initiatives, SADC-GMI aims to bridge the skills gaps in the water sector and ensure that young professionals are empowered and provided with the opportunity to reach their full potential.

Through initiatives such as the Young Professionals Program and collaborative projects, SADC-GMI has successfully capacitated approximately 100 young professionals in the water sector from the SADC region. These young professionals have gained valuable skills and experience through their participation in the program, and many have gone on to secure full-time employment in their home countries, contributing to the development of the water sector in their respective countries.

Between 2020 and 2023 SADC-GMI implemented the “Groundwater Dependancy Ecosystems and Biodiversity in the Khakea/Bray Transboundary Aquifer (shared between Botswana and South Africa) project. This project provided opportunities for seven students to pursue their postgraduate qualifications, with four MSc students who already completed their degrees and one MSc student nearing completion. The two PhD students, one from Rhodes University and another one from the University of the Western Cape are due to finalize their thesis and complete their qualifications by the end of 2023. These students have conducted research and contributed valuable insights into the understanding of groundwater-dependent ecosystems and biodiversity in the transboundary aquifer.

The following students were able to attain their MSc qualifications in 2023: Ms. Thandeka Ngobe from the Kingdom of Eswatini (University of the Free State), Mr. Fannie MASINA from South Africa (University of

Mpumalanga), Mr. Kudzai Mpakairi (University of the Western Cape), and Mr Frank Bute (Rhodes University) both from Zimbabwe.

SADC-GMI fully comprehends that tertiary education is quite expensive, and most young people coming from previously disadvantaged communities find it difficult to access funding to further their studies. When funding opportunities arise, SADC-GMI ensures that such opportunities are given to the most deserving students, preferably from previously disadvantaged communities, while at the same time applying gender and social inclusion principles.

SADC-GMI also recently introduced a Bursary Scheme for Young Professionals. To date, 2 students are enrolled for Master’s study at the University of the Western Cape and the University of Botswana. Gettie Mulokoshi-Shiinda a young professional from Namibia says she would like to see such programs go beyond theoretical knowledge and strive to provide a platform for young minds to participate actively in water research, management, and conservation.

SADC-GMI is committed to investing in capacity building and providing opportunities for young professionals, with a focus on bridging skills gaps and empowering individuals in the water sector for sustainable development.

At SADC-GMI we regard such initiatives as critical because they empower the region while contributing to the SADC-GMI’s Corporate Social Responsibility (CSR) programs, concludes James Sauramba, SADC-GMI Executive Director. 💧



*Ms Thandeka Ngobe obtained her MSc Degree in Hydrogeology from the Institute for Groundwater Studies - University of the Free State.*



# SADC-GMI Raises the Region's Flag High at Regional and International Platforms

It is imperative that SADC-GMI participates in national, regional, and International water events and drive groundwater narratives. Since its inception, the institute has ensured that it participates in key strategic events to elevate groundwater resources and raise the SADC-GMI brand.

## In 2023, SADC-GMI participated at the following events: World Water Week 2023

In the quest to demonstrate strides made by the SADC region in sustainable groundwater management and development, the SADC-Groundwater Management Institute in collaboration with INMACOM, ZAMCOM, BU-PUSA, ORASECOM, KOBWA, OKACOM, and IUCN,

participated at the SIWI World Water Week held in Stockholm, Sweden on 20 – 24 August 2023.

The theme of the World Water Week was Seeds of Change – Innovative Solutions for the Water-wise World. This theme provided participants with the opportunity to draw on the latest scientific knowledge and experiences from around the world to explore how water can be a powerful tool for addressing water crises, global warming, biodiversity loss, and poverty.

To showcase the SADC region's headways in sustainable groundwater management, SADC-GMI and its partners secured a booth that allowed all SADC region partners who were participating at the event to demonstrate what they have/are doing towards achieving sustainable development in the region.

## 50th International Association of Hydrogeologists (IAH) Congress

The SADC-GMI also participated at the 50th International Association of Hydrogeologists (IAH) Congress which was convened in Cape Town from 18 – 22 September 2023 under the theme "Groundwater: A Matter of Scale". At the event, SADC-GMI had an interactive booth where they showcased their work and convened 3 Special sessions under the following topics: Enhancing inclusive Groundwater Governance and Man-



From Left: The Kingdom of Eswatini Principal Secretary Mrs. Dorcas Dlamini, Mr. Edward Mswane INMACOM Interim Executive Secretary, Honorable Deputy Minister of Water and Sanitation – South Africa Ms. Judith Tshabalala, Mr. Phera Ramoeli OKACOM Executive Secretary and Mr. Sabelo Mdziniso INMACOM Administrative Assistant. They all converged at the SADC Booth during the World Water Week



*From L: Mr. Phera Ramoeli OKACOM Executive Secretary, Ms. Palesa Mokorosi Technical Team Leader for the Sustainable Groundwater Management in the SADC Member States Project Phase 2, Mr. Anders Jagerskog - Program Manager for the Cooperation in International Waters in Africa (CIWA), and Ms. Ai-Ju Huang - Deputy Program Manager for the Cooperation in International Waters in Africa (CIWA)*

agement in Transboundary Aquifers, Advancing the knowledge of Strategic aquifers in SADC and Sustaining Local-scale Resilient Hubs Using Groundwater.

### 10th SADC River Basin Organisations / Shared Watercourse Institutions (RBOs/SWIs) Workshop

The SADC-GMI's presence was felt at the 10th SADC River Basin Organisations / Shared Watercourse Institutions (RBOs/SWIs) Workshop which was convened in Maputo, Mozambique under the theme "Promoting water security through inclusive transboundary and conjunctive management and development of water resources, on 02 – 04 October

2023. At this event, which was attended by more than 100 participants from the SADC region, SADC-GMI convened a Special session on "Enhancing inclusive groundwater governance and management in Transboundary Aquifers.

### 24th WaterNet/WARFSA/GWP-SA Symposium

Lastly, on the 27th of October 2023, SADC-GMI highlighted the importance of Policy, Legal, and Institutional Frameworks for enabling environment for sustainable groundwater management at the 24th WaterNet/WARFSA/GWP-SA Symposium which was held in Zanzibar, Tanzania. 💧



*Mr Thokozani Dlamini, SADC-GMI Communication and Knowledge Management Specialist interacting with partners at the 10th SADC River Basin Organisations / Shared Watercourse Institutions (RBOs/SWIs) Workshop held in Maputo, Mozambique.*



# Dive in...

# Test your water wizdom!

## ACROSS

2. System
4. Hydrology
7. Data
8. Contaminate
9. Resilience
11. Aquifer
14. Conditions
15. Divide

## DOWN

1. Precipitation
3. Involvement
5. Ecology
6. Aquifer Shared
10. Inclusion
12. Cultivation
13. Gateway

Use the clues to fill in the words above.  
Words can go across or down.  
Letters are shared when the words intersect.

ANSWERS :  
1. Climate 2. Transboundary aquifer 3. Pollution 4. Rainwater  
5. Groundwater 6. Portal 7. Information 8. Sustainability 9. Watershed  
10. Agriculture 11. GESI 12. Watersector 13. Environment 14. Participation  
15. Mechanism

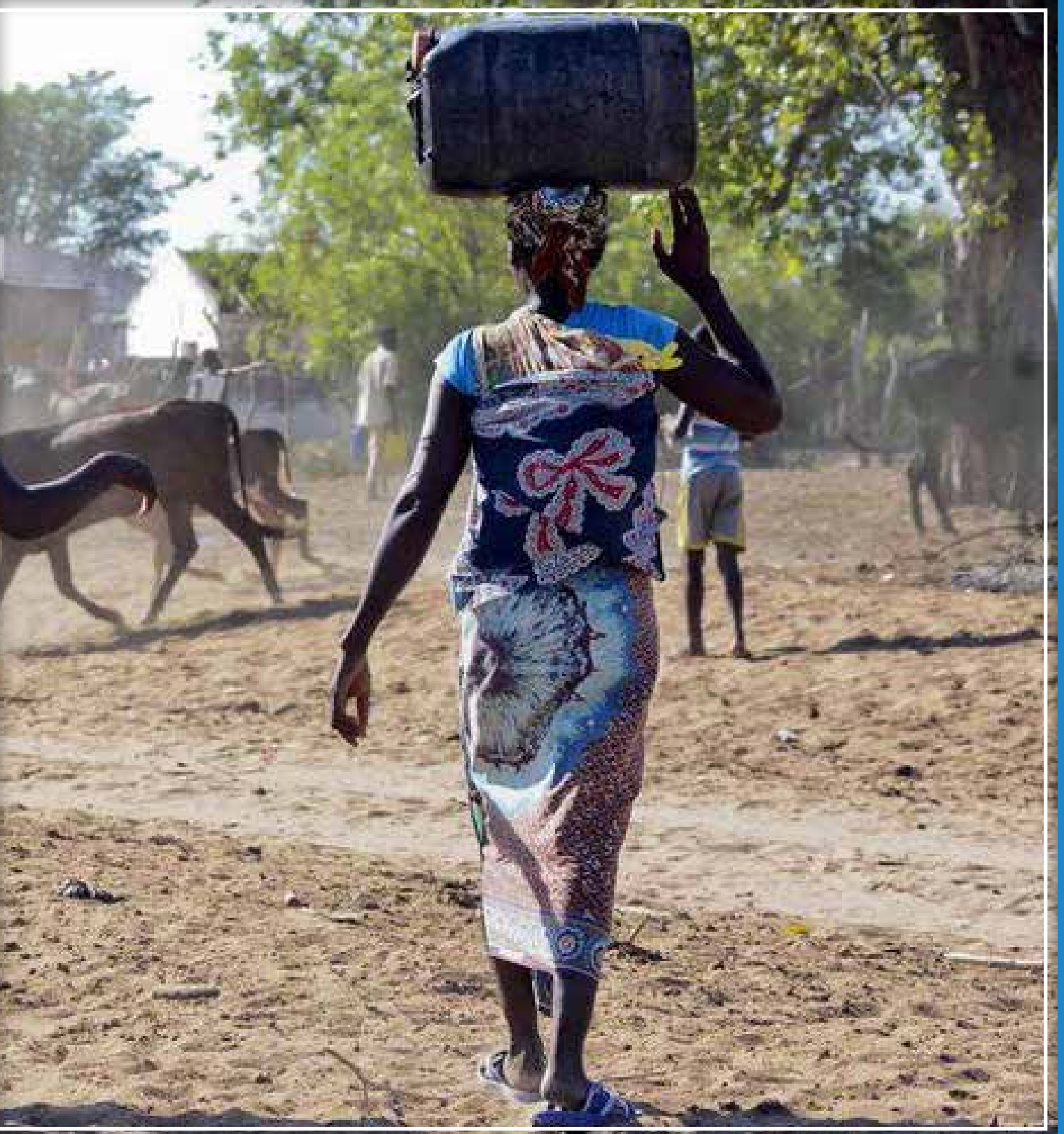








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