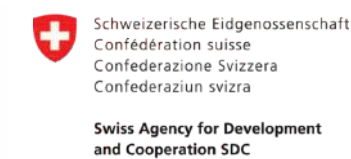




The Ramotswa Transboundary Aquifer Area. The Ngotwane River demarcates the border between Botswana (right) and South Africa (left) (photo: Manuel Magombeyi).



## Resources

### GGRETA/STAS:

1. <http://www.unesco.org/new/en/natural-sciences/environment/water/wwap/water-and-gender/projects/the-ggreta-project/>
2. <http://wis.orasecom.org/stas/>

### RAMOTSWA:

1. <https://conjunctivecooperation.iwmi.org/systems/>
2. <https://www.iwmi.cgiar.org/success-stories/striving-for-a-groundwater-secure-future-in-the-limpopo/>

## Endnotes

A number of other transboundary investigations have been implemented in SADC or are in the course of implementation: the Shire Transboundary Aquifer shared between Malawi and Mozambique, the Tuli Karoo Transboundary Aquifer shared between Botswana, South Africa and Zimbabwe, the Eastern Kalahari Karoo Aquifer shared between Botswana and Zimbabwe, the Nata Karoo Basin shared between Botswana, Namibia and Zambia, the Sand and Gravel Aquifer shared between Malawi and Zambia, and the Limpopo Basin Aquifer shared between Mozambique, South Africa and Zimbabwe.

The panel comprised of STAS National Focal Points (Botswana, Namibia and South Africa), SADC-GMI, IWMI,

University of Botswana, International Groundwater Resources Assessment Centre (IGRAC), University of the Western Cape, ORASECOM and regional consultants in TBA assessments. In total, the session was attended by 72 participants.

<https://conjunctivecooperation.iwmi.org/2021/05/17/policy-brief-implementing-transboundary-aquifer-cooperation-in-africa-lessons-learned-from-two-pilot-approaches/>  
<https://sadc-gmi.org/resource-centre/sadc-groundwater-information-portal/>

For example, the SADC revised Protocol on Shared Watercourses, and the Draft Articles on the Law of Transboundary Aquifers.

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# TRANSBOUNDARY AQUIFER COOPERATION AND MANAGEMENT LESSONS LEARNED THROUGH THE STAMPRIET AND RAMOTSWA PROJECTS





The United Nations Educational, Scientific and Cultural Organization - Intergovernmental Programme (UNESCO-IHP) has been implementing the project, 'Governance of Groundwater Resources in Transboundary Aquifers' (GGRETA), commencing with Phase 1 (2013-2015) and Phase 2 (2016-2019) and currently in Phase 3 (2019-2021). The project, funded by the Swiss Agency for Development and Cooperation (SDC), addresses key targets on reforming/updating legal, policy and institutional arrangements, strengthening capacity and implementing collective measures at national and regional level to develop sustainable management and governance of transboundary aquifers and associated ecosystems. One of three pilot transboundary aquifers (TBAs) of the project focused on the Stampriet Transboundary Aquifer System (STAS) in Southern Africa, shared between Botswana, Namibia and South Africa.

The International Water Management Institute (IWMI) implemented the project 'Resilience in the Limpopo Basin: the Potential Role of the Transboundary Ramotswa Aquifer' (RAMOTSWA), with Phase 1 (2015-2017) funded by the Resilience in the Limpopo Basin Program (RESILIM) under the United States Agency for International Development (USAID), while Phase 2 (2017-2019) was funded directly by USAID as a flagship project. The main objective of the RAMOTSWA Project was to support a long-term joined vision and cooperation on shared groundwater resources of the upper Limpopo region. The project aimed to facilitate joint management and better groundwater governance focused on coordination, scientific knowledge, social redress and environmental sustainability, in order to reduce poverty and inequities and to increase prosperity, livelihoods and food security in face of climate change and variability.

It is against this background of novel and increasing work on TBAs in the Southern African Development Community (SADC) that the UNESCO-IHP, through UNESCO Regional Office for South Africa and in collaboration with IWMI, set forward an initiative to document and disseminate lessons learnt and recommendations from the pioneer STAS and RAMOTSWA projects. The key aim of this initiative is to inform present and future TBA projects in the SADC region and beyond. This initiative has been implemented largely by means of a special session at the 3<sup>rd</sup> SADC Groundwater Conference held from the 24-26<sup>th</sup> of November 2020 as well as a joint report by IWMI and partners, including UNESCO-IHP, in 2019 distilling early lessons learned.

This Policy Brief summarizes policy pronouncements derived from the special session and subsequent panel discussion and key findings of the joint IWMI report.

**Projects should be demand-driven from the outset and political buy-in** from high-level political players in all aquifer states is central to the success of TBA projects.

**There is no blueprint to developing TBA cooperation.** Nevertheless, generic challenges and commonalities in biophysical and developmental context help shape incentives for cooperation and for developing harmonized approaches across diverse countries and various TBAs.

**Common threats and the same SADC states sharing multiple TBAs help develop an emerging community of practice** around targeting, prioritizing and operationalizing cooperation. Common threats include climate change, population growth, and urbanization.

**Conjunctive water management approaches are required** to put sustainable cooperation around TBAs in place. Most TBAs are either fed by surface water resources, or feed them, and management solutions need to be found through integrated approaches, including also unconventional water sources like wastewater.

**Trust between aquifer states and stakeholders** is a key factor in unlocking access to data and data sharing. **Joint assessments and diagnoses are 'seedbeds' for building trust** and developing interest in further data sharing.

**Lengthy negotiation processes** should be expected around some issues, e.g. data standards and harmonization, and coordinated long-term monitoring.

**Given the general data scarcity around TBAs in SADC, decision-making needs to be done on basis of the best available data and expert knowledge.** Concurrently, priority on expanded data generation and monitoring related to TBAs is required.

**Information or data sharing/exchange protocols are critical** for continued sharing of data and these need to be co-developed. **Information systems have become central to the TBA projects.** The use of free and open-source software increases access to data, e.g. the new platform of the SADC Groundwater Information Portal (SADC-GIP).

**Groundwater modelling as a tool for management in TBAs should be promoted,** taking cognisance of the data challenges with decisions having to be made on whether to build regional models or a suite of models. Both the STAS and the RAMOTSWA projects have developed numerical models as management tools, and experiences can be drawn from these exercises.

**Groundwater quality** is an increasingly critical issue, which is usually underemphasised in most TBA investigations. The RAMOTSWA performed pre-feasibility investigations into nitrate pollution in peri-urban water supply, identifying best remediation solutions going forward.

**Existing River Basin Organizations (RBOs) are critical in institutionalizing TBA cooperation mechanisms, whether formal or informal.** Institutional arrangements for cooperation benefit greatly if nested in existing transboundary water management institutions, as shown by the Multi-Country Cooperation Mechanism (MCCM), nested in the existing Groundwater Hydrology Committee (GWHC) in the Orange-Senqu River Commission (ORASECOM), and the LIMCOM Groundwater Committee (LGC) nested in the Limpopo Watercourse Commission (LIMCOM) - outcomes of the STAS and the RAMOTSWA Project, respectively.

**The capacity of the RBOs** to handle transboundary groundwater issues is critical to elevate and sustain cooperation on particular TBAs post-projects. Whereas in the ORASECOM, a GWHC was in place, in RAMOTSWA, the Ramotswa Advisory Committee was set up as an interim body to bridge different regional bodies and to hand over project progress to these bodies, until the LGC under LIMCOM was functional.

**The STAS and RAMOTSWA projects made a direct response/contribution to the regional water mandate, as expressed in the SADC Regional Strategic Action Plan, phase 4 (RSAP-IV),** which is very explicit on the need for financial support to TBA management through Transboundary Diagnostic Analysis (TDAs) and Strategic Action Plans (SAPs).

**The STAS and RAMOTSWA projects benefitted strongly from high-level political support of SADC** and technical and institutional support from the SADC subsidiary Groundwater Management Institute (SADC-GMI).

**The TDA and SAP products are highly cooperative outcomes as well as critical joint processes** that support the identification of priority focus areas (thematically and

geographically) for future attention and investments.

**The STAS and RAMOTSWA projects benefitted strongly from multi-partner collaboration (international development organizations, governments and national water authorities, multi-disciplinary research organizations, and local stakeholders)** as well as cross-project learning. Concerted capacity development and two-way learning with national universities and national partners is crucial. Specific emphasis of learning has to be on international water law, water diplomacy, hydrogeological and environmental assessments, and socioeconomic and institutional analyses.

**Cooperation and support to local communities was much appreciated by national and regional partners and should be factored into TBA project design,** e.g. as in the RAMOTSWA project, which had components on Agricultural Water Management Solutions, Managed Aquifer Recharge, and aquifer remediation.

**Regional and international water cooperation protocols are inspiring and guiding the work on TBAs in SADC, while formal transboundary treaties have not been put in place yet.** Conversely, TBA work in the region should also inform protocols and best practice on TBA cooperation and management going forward.

While there is no blueprint in terms of developing cooperation around TBAs, which our project cooperation and comparison also illustrated, it is clear that some generic lessons can be derived. It is anticipated that this Policy Brief will help inform and guide present and future activities and negotiations around transboundary aquifer cooperation for the water security and resilience of all countries in Southern Africa and beyond.



*Botswana-South Africa  
Joint Strategic Action Plan  
(JSAP) discussions  
(photo: Karen G. Villholth).*