



1. Project Data

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| Project ID P127086 | Project Name SADC Sustainable Groundwater Mangmt | |
| Country Eastern and Southern Africa | Practice Area(Lead) Water | |
| L/C/TF Number(s) TF-16748,TF-16970 | Closing Date (Original) 30-Jun-2019 | Total Project Cost (USD) 10,198,450.43 |
| Bank Approval Date 24-Apr-2014 | Closing Date (Actual) 30-Jun-2021 | |
| | IBRD/IDA (USD) | Grants (USD) |
| Original Commitment | 10,200,000.00 | 10,200,000.00 |
| Revised Commitment | 10,200,000.00 | 10,200,000.00 |
| Actual | 10,198,450.43 | 10,198,450.43 |

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2. Project Objectives and Components

a. Objectives

According to the Global Environment Facility (GEF) Trust Fund and Cooperation in International Waters in Africa (CIWA) Trust Fund Grant Agreement (p.7) dated January 15, 2015, and the Project Appraisal Document (PAD, p.4), the project objective was “to support sustainable management of groundwater at national and transboundary levels across Southern African Development Community (SADC) Member States.”



SADC is an inter-governmental organization established in 1980. SADC's main objectives are to achieve development, peace and security, and economic growth, to alleviate poverty, enhance the standard and quality of life of the peoples of Southern Africa, and support the socially disadvantaged through regional integration, built on democratic principles and equitable and sustainable development. The inter-governmental organization also aims at fostering cooperation and mutual benefit from shared waters among its 16 member states—Angola, Botswana, Comoros, Democratic Republic of Congo, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Tanzania, Zambia, and Zimbabwe.

b. Were the project objectives/key associated outcome targets revised during implementation?

No

c. Will a split evaluation be undertaken?

No

d. Components

According to the grant agreement (p.7), the project consisted of four components:

A. Operationalizing the SADC Groundwater Management Institute (GMI). (*Appraisal cost: US\$2.80 million; revised cost at the first restructuring: US\$3.70 million; actual cost: US\$3.70 million*)

This component included five activities: (a) Strengthening coordination and administration functions of the GMI; (b) raising awareness, knowledge management and communication to inform, engage, and maintain dialogue with key stakeholders in member states; (c) facilitating the establishment of national level partnerships and ownership of the project through the provision of subgrants to selected focal points in member states; (d) building the capacity for groundwater management at the regional level through the provision of training to technical underground practitioners, students and decision makers in member states; and (e) mobilizing funding, developing and implementing a plan for sustainable development of the GMI as a regional center of excellence.

B. Strengthening Institutional Capacity for the Sustainable Management of Groundwater in SADC. (*Appraisal cost: US\$1.50 million; revised cost at the first restructuring: US\$1.60 million; actual cost: US\$1.60 million*)

This component included five activities: (a) Analysis of legal, policy, and regulatory framework to identify and address gaps in groundwater management both at the SADC regional and member states level; (b) strengthening the compliance and advocacy of groundwater governance; (c) developing guidelines, standards and related management tools; (d) strengthening the capacity for groundwater monitoring and data management; and (e) facilitating transboundary cooperation to enhance integration and harmonization on groundwater management across the SADC region.

C. Advancing Knowledge on Transboundary and National Groundwater. (*Appraisal cost: US\$3.00 million; revised cost at the first restructuring: US\$1.90 million; actual cost: US\$1.90 million*)

This component included three activities: (a) Facilitating transboundary aquifer management through the cooperation of member states and regional basin organizations in data collection and sharing, and joint management of groundwater issues; (b) facilitating research on groundwater challenges to enable



information exchange on findings and implementation of solutions, and (c) facilitating information and communication technologies for knowledge sharing platforms.

D. Promoting Groundwater Infrastructure Management and Development. (*Appraisal cost: US\$2.90 million; revised cost at the first restructuring: US\$3.00 million; actual cost: US\$3.00 million*)

This component included four activities: (a) carrying out a program of activities to develop infrastructure design for improved groundwater management; (b) carrying out a program of activities to develop and disseminate manuals for groundwater infrastructure development; (c) strengthening the capacity for impact monitoring and evaluation, progress, trouble-shooting and reporting of results related to groundwater infrastructure; and (d) developing partnerships and mobilizing funding for groundwater infrastructure development.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Cost: The total project cost was originally estimated at US\$10.20 million. On June 30, 2021, the project closed with a total cost of US\$10.20 million.

Financing: At appraisal, the Global Environment Facility (GEF) grant was estimated at US\$8.20 million, and the Cooperation in International Waters in Africa Trust Fund (CIWA) grant at US\$2.00 million. The project fully disbursed the funds.

Borrower's contribution: At appraisal, no borrower's contribution was estimated, and none materialized at project closing.

Restructurings: There were two project restructurings:

- **First Restructuring (Level 2 – February 1, 2019):** The project closing date was extended by 18 months from June 30, 2019 to December 31, 2020 to allow time for the completion of the project activities that were delayed during the first two years of project implementation because of the slow progress of administrative processes for the establishment of the GMI as a not-for-profit company hosted by the University of Free State in South Africa (UFS). Funds were allocated between components according to the priorities, especially regarding the operationalization of the GMI (see revised project costs under each component above). The ICR (p.6) states that one intermediate indicator was dropped at this restructuring, but the restructuring paper does not report on this (Restructuring Paper, Report No.: RES28614). The target values of two other intermediate indicators were revised down (see section 9.b M&E Implementation)
- **Second Restructuring (Level 2 – November 24, 2020):** The project closing date was further extended by six months from December 31, 2020 to June 30, 2021 to compensate for the delays caused by the onset of the COVID-19 pandemic.

Dates: The project was approved on April 24, 2014. The Grant Agreement was signed on January 15, 2015 and the project became effective on June 30, 2015. The Mid-Term Review was conducted in March 2019. The original closing date was June 30, 2019. It was extended by two years, and the project closed on June 30, 2021. The reasons for closing date extensions were outlined in the project restructuring entries above.



3. Relevance of Objectives

Rationale

The project objective was relevant to the regional context in southern Africa. Around 250 million people depend on water, including groundwater, that is shared between multiple states in the SADC region. Sustainable management of groundwater is vital for the well-beings of the population, industrial production, and commercial activities. The project and its objective are aligned with the priorities set in the SADC Regional Strategic Action Plans (RSAPs) on Integrated Water Resources Development and Management Phase IV (2016 -2020). It corresponds to Sub-Program 6.2: Groundwater Development and Management that aims the institutionalization of GMI, strengthening institutional capacity in the SADC member states, advancing knowledge on transboundary and national groundwater management, and promoting groundwater infrastructure management and development.

The project objective was aligned with the World Bank's strategy as defined in the Africa Regional Integration Strategy Update, Fiscal Years 2021-2023. The project sought to address the development problem of insufficient transboundary and national cooperation for sustainable management for groundwater to enhance water security in the region. The project was to address this problem through technical assistance to GMI and national governments with the goal of strengthening their institutional and technical capacities in groundwater management. These objectives correspond to Focus Area 4, "Transboundary water and natural resource management," under the "Strategic Pillar 4: Reinforcing Resilience" of the World Bank's Africa Regional Integration Strategy.

The project objective was aligned with the focal areas of GEF and CIWA. The project supported the GEF-5 focal area's two objectives: to catalyze multi-state cooperation in balancing conflicting water uses in transboundary surface and groundwater basins while considering climactic variability, and to support foundational capacity building, portfolio learning, and targeted research needs for joint, ecosystem-based management of transboundary water systems. The project also supported the CIWA objective to strengthen cooperative management and the development of international water resources.

The 2000 Revised SADC Protocol considers groundwater as a part of watercourses faced with management issues of control of abstraction, pollution control, protection of recharge area, and shared management. However, surface water priorities often supersede the operationalization of commitments to groundwater. To support SADC and the member states in groundwater management, the World Bank first implemented the SADC Groundwater and Drought Management Project. That project supported the establishment of GMI by the SADC council, the preparation of its first business plan, and the initial registration of GMI as a non-for-profit company in South Africa. The project under this review is a follow-on project that aimed at further supporting GMI to become a fully operationalized entity as a subsidiary of SADC hosted by the University of Free State, which were expected to lead transboundary and national coordination of groundwater management in the SADC region. While the project objective was more challenging, it was overly ambitious for a technical assistance project that primarily targeted the operationalization of GMI and some capacity strengthening to address the issues related to sustainable management of groundwater at the transboundary and national levels in the SADC region. Sustainability aspect of the project objective or how it would be achieved was not clearly defined.



Overall, the relevance of the objective is rated Substantial.

Rating

Substantial

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

To support sustainable management of groundwater at national and transboundary levels across SADC Member States.

Rationale

Theory of Change

The project's theory of change (ToC) indicates that the project's inputs, i.e., grants, were to be used under four components to finance the provision of (i) consultant services and technical assistance; (ii) goods, equipment and non-consulting services, including equipment for purposes such as monitoring, mapping, computers, vehicles and office equipment; (iii) works; (iv) operating costs, (v) training and capacity building; (vi) audits; and (vii) sub-grants for limited pilot investments. According to the ToC presented in the ICR (p.3), these activities were to be expected to result in the following four groups of outputs:

- MoU between the SADC and the University of the Free State (UFS) is signed to host GMI at UFS; GMI provides seminar and workshop activities and training for groundwater practitioners; GMI meets member states' demands in groundwater management; and funds and revenues are secured to sustain the operation of GMI.
- Groundwater national focal points are established; interns are seconded with the regional internship program at GMI; guideline notes on policy and legislation for transboundary and national aquifers are developed; Transboundary Diagnostics and Joint Strategic Plans are developed; and training activities are implemented for the strengthening of legal policy and institutions for groundwater management.
- Advanced scientific studies on groundwater are completed; operational support manuals for groundwater infrastructure development are developed; documents on financing of construction and maintenance of groundwater infrastructures are produced; trainings activities on groundwater data collection, management and sharing are implemented.
- Sub-grant pilot groundwater management projects are completed at SADC member states; and training activities on infrastructure solutions are implemented.

These outputs would be expected to lead to the four main outcomes defined in the ToC:

Outcome 1: GMI is developed into a regionally recognized center of excellence (Group A outputs).



Outcome 2: Transboundary and national institutions are strengthened to improve regional cooperation (Group B outputs).

Outcome 3: Capacity for sustainable transboundary and national groundwater management in the ministries and departments responsible for groundwater in SADC member states is enhanced (Group C outputs).

Outcome 4: Infrastructure solutions for development and management of groundwater resources are demonstrated and promoted (Group D outputs)

These outcomes were expected to contribute to the achievement of the project objective of sustainable management of groundwater at national and transboundary levels across SAC member states.

Overall, the causal pathways from inputs to expected results were broadly valid and direct. The outcomes achieved could be broadly attributed to the project's intervention. However, the link between the expected outcomes and how they would contribute to the sustainable management of groundwater is not clear. The expected outcomes are the operationalization of GMI, some capacity strengthening at the national level in groundwater management, and demonstration of infrastructure solutions. It is not clear how these outcomes would lead to the sustainable management of groundwater in the regions and to what extent such sustainable management of groundwater could be attributable to the project's intervention. Since the indicators in the result framework do not capture the outcomes relevant to the sustainable management of groundwater, they are insufficient to test these links in the ToC.

Outputs

Following indicators measured the achievement of the project outputs.

- **MoU Signed between SADC Secretariat and the University of the Free State.** Hosting agreement was signed in May 2017.
- **GMI obtains Subsidiary Status of SADC.** The subsidiary status of GMI was approved at the 38th SADC Summit in August 2018, but the subsidiary status could only be obtained in August 2020. The target was to obtain the subsidiary status in 2017.
- **Number of manuals produced which provide operational support for groundwater infrastructure development.** The project financed the production of the following guidelines as planned: (a) O&M Manual for GW Infrastructure; (b) Guideline on Preparation of ESS Close-out Reports; (c) GMI ESS Reporting Protocols for Small Grant Infrastructure Projects; (d) Simplified ESMP template; and (e) Training Manual & Guidelines for Preparation of GW project proposals.
- **Number of guideline notes on policy and legislation for transboundary and national aquifers developed and disseminated.** The target was 10. The project developed and disseminated 16 guideline notes, such as groundwater data collection and management framework, guidelines on groundwater infrastructure O&M, policy development, strategic finance, establishment of national focal points, and integration of national databases (ICR, p.30).
- **Improved strategic analyses conducted and knowledge products developed.** Following four reports were prepared as planned: SADC Drought Risk Assessment, Big Data Analytics, Groundwater Assessment and Malawi Deep Aquifer Study.
- **Number of research studies completed on groundwater management challenges selected by SADC Member States.** The following seven studies were completed surpassing the target of nine: 1. Groundwater Data Collection and Management; 2. Groundwater Infrastructure Operation and



- Maintenance; 3. Groundwater Resilience; 4. Conjunctive Water Management Report; 5. Regional Gap Analysis and Action for Policy, Legal and Institutional Development for Groundwater Management in the SADC Member States; 6. Sixteen National Gap Analyses & Action Plans for Policy, Legal and Institutional Development for Groundwater Management in the SADC Member States; 7. Prioritization of groundwater priority intervention areas; 8. Updating groundwater drought risk and population vulnerability map; and 9. Hydrogeology of the Eastern Karoo Transboundary Aquifer report.
- **Advanced scientific knowledge enabling sustainable transboundary groundwater management among SADC Member States.** Six transboundary aquifer scientific studies were completed against the target of four: Shire, Eastern Kalahari, Tuli Karoo, Ramotswa, Stampriet, and Khakea transboundary aquifers.
 - **Number of joint activities conducted with international groundwater organizations.** Twenty-one activities were implemented with other organizations, such as conferences, meetings, trainings, and exchange visits. Thirteen memoranda of understanding were concluded with various national and international organizations. The target was to conduct 25 activities. (ICR, pp.24-25)
 - **Number of people received training dedicated to groundwater data collection, management and sharing.** Two-hundred and ninety-three people from member states and river basin organizations were trained on review and validation of data gap analyses reports, QGIS, groundwater modelling, and data collection, processing and storage under the groundwater information portal, groundwater literature archive and datacom projects. The target was 120 people.
 - **Number of people receiving training in infrastructure solutions in priority areas of Member States.** A total of 354 people received training against the target of 180. The breakdown is as follows: (a) 80 trainees from miscellaneous training workshops; (b) 23 trainees from the training on proposal writing; (c) 40 trainees from O&M of groundwater infrastructure training; (d) 30 participants from the Chimbiya Village Water Management Committee in Malawi training; (e) 45 participants from the Whunga and Dite community garden livelihood projects in Zimbabwe; (f) 10 Mochocolate Village Water Committee members from Mozambique; and (g) 126 from the training on project proposal development.
 - **Number of trainings dedicated to providing guidance to stakeholders on identifying solutions for strengthening legal, policy, and regulatory tools.** Ten trainings were conducted as planned: 1. International Water Law and Gender (100 participants from 12 Member States); 2. Droit international de l'eau et les instruments des Nations Unies, y compris des articles sur les eaux souterraines (5 participants from DRC); 3. A lei internacional sobre a água e os instrumentos das Nações Unidas incluindo artigos sobre as águas subterrâneas (6 participants from Mozambique); 4. Training on Negotiation skills in transboundary surface and ground water resources management (3 participants from Tanzania sponsored by GMI); 5. Two validation workshops on National and Regional Gap Analyses; 6. Workshop in Dodoma, Tanzania on Roadmap development; 7. Workshop in Dodoma for validation and adoption of Roadmap; 8. All Stakeholders' Meeting for the Development of the Kingdom of Eswatini Roadmap; 9. SADC WRTC training and advocacy workshop on PLI products.
 - **Percent of participants satisfied with seminars and workshops conducted on knowledge transfer with 'excellent' outcome.** The level of satisfaction was 78 percent, slightly lower than the target of 80 percent. It was measured through questionnaires at the end of each training event.
 - **Percent of trained groundwater practitioners who deemed training and manuals satisfactory.** Similar to the previous indicator, the level of satisfaction was 78 percent, slightly lower than the target of 80 percent. It was measured through questionnaires at the end of each training event.
 - **Number of people learning applied skills from demonstration/pilot groundwater infrastructures.** A total of 65 people were trained consisting of 33 people from sub-Grantees and Member States, 23 from the training on proposals and 9 from a telemetry installation training. The target was 60.



- **Number of Interns seconded with the regional internship program at GMI.** A total of 65 people attended internships in the SADC Data Collection and Management project, SADC-GIP and SADC-GLA projects. The target was 45.
- **Financial resources sought and secured for long-term sustainability and/or expansion of operations.** Additional financial resources amounting to about \$9Million secured from the new CIWA project starting in 2021. A grant of about \$310k was received from JRS Biodiversity Foundation to implement a biodiversity project in Khakea/Bray TBA. The balance of the actual funds raised was sourced from conferences, trainings as well as rendering professional services to other institutions such as GIZ, UNESCO-IHP and IWMI. An additional grant amounting to \$5Million from GEF is under preparation.
- **Sub-grant Manual Implemented.** The manual was implemented starting from 2017 and reviewed and updated in 2020.
- **Number of visitors to SADC GMI website.** The target was 20,000 visitors annually by project closing. The actual number of visitors at project closing was 241,430.

Outcomes

Following indicators capture the achievement of outcomes:

- **Transboundary institution strengthened to improve regional cooperation.** The project outputs resulted in the SADC Groundwater Management Institute (GMI) becoming a fully operational entity and fulfilling its role as an interlocutor and regional integration contributor in managing groundwater. Its financial plan is being implemented. Transboundary cooperation is further improved through the signing of MoUs between GMI and five river basin organizations. The GMI engages with these river basin organizations through groundwater technical committees and provision of technical assistance on transboundary aquifers, training and capacity building. However, currently GMI implements activities only in five transboundary aquifers out of 30. This is a limited achievement for the project implemented in eight years.
- **Development of the GMI to a recognized center of excellence.** GMI supports the implementation of the regional groundwater strategy, facilitates the meetings of the SADC Subcommittee on hydrogeology, develops research programs, manages and disseminates knowledge about groundwater raising awareness, and engages and maintains dialogue with key stakeholders (ICR, p.8). The institute has the tools to fulfill its role. It disseminates information through SADC Groundwater Information Portal and SADC Grey Literature Archive developed under the project. Direct linkages have been established between GMI and the SADC member states that facilitate the sharing of best management practices and tailored solutions to the local conditions in groundwater management. The ICR (p.8) reports that GMU satisfactorily fulfilled 94 percent of requests from member states and stakeholders compared to the target of 80 percent, but it is not clear how this achievement was measured.
- **Enhanced capacity for sustainable transboundary and national groundwater management in the Ministries and departments responsible for groundwater in SADC Member States.** The project outputs achieved through training, information sharing, development of studies and guidelines, implementation of pilot projects, preparation of action plans for each of the 16 SADC member states should be expected to have a positive impact on enhancing the capacity at the national authorities responsible for groundwater. According to the ICR (p.9), GMI conducted “a capacity needs assessment for groundwater management in the member states to assess the priorities for capacity strengthening to ensure that interventions are demand driven. Based on the data, the ICR reports



(p.21) that the capacity needs of national ministries and departments were met by 81 percent against the target of 70 percent. But the ICR does not report what those capacity needs were, how they were met, and how they led to enhanced capacity.

- **Percentage of time on demand technical assistance requests from SADC Member States met.** According to the annual feedback of the member states, 83.40 percent of technical assistance requests were met. The target was 80 percent.
- **Strengthened transboundary institutions with improved analytic tools, knowledge products, data, forecasting, and/or capacity for improved water and climate risk management.** Five RBOs were strengthened in various ways, viz LIMCOM, ZAMCOM, ORASECOM, OKACOM and CUVECOM, which include training on specific topics, technical assistance on undertaking groundwater initiatives, knowledge transfer in Groundwater Committees, support in undertaking groundwater assessments and preparing groundwater strategies. However, the evidence is insufficient how these achievements led to a capacity increase at the transboundary institutions, if any.
- **Number of people directly benefitting from demonstration/pilot groundwater infrastructures.** The project financed 13 national pilots in ten states under the sub-grant component. The types of interventions were groundwater monitoring, groundwater database integration, deep aquifer exploration and monitoring, and groundwater development for water supply. One project in Zimbabwe addressed groundwater depletion and quality deterioration through the establishment of a groundwater monitoring system. Approximately 3,600 community members are reported to have benefited from this intervention. The number of beneficiaries was higher in groundwater development for water supply projects. Only in Chongwe, Zambia, 137,461 inhabitants benefited from access to clean water because of three boreholes drilled to augment the existing water reticulation system. Similarly, the rehabilitation of the water supply infrastructure in Tsetsebjwe and Bojojongo in Botswana benefited around 7,000 people, as reported, by providing access to safe and adequate water. At appraisal, the target for this indicator was set at 3,000. The project team commented in their June 13, 2022 email rather than using the funds for demonstration projects, some members states, as explained above, used the funds to develop groundwater resources to supply villages, towns, and community gardens; hence, the number of people benefitting from these sub-projects was significantly higher than the target value.

Overall, the project achieved the outputs expected from the technical assistance activities and pilot investment projects, and these outputs should be expected to contribute to the achievement the outcomes defined in the ToC section, but evidence is weak to fully assess the achievement of the project objective in sustainable management of groundwater. Hence, the efficacy of the project in achieving the project objectives is rated Substantial but with moderate shortcomings.

Rating
Substantial

OVERALL EFFICACY

Rationale



The project provided necessary tools to the GMI to function as a center in groundwater management and cooperation among the SADC countries. The project also supported the SADC member states in developing action plans and technical knowledge in groundwater management. However, implementation of pilot projects was limited to ten member states although all 16 were targeted. The sustainability aspect of the project objective was not sufficiently captured.

The overall efficacy of the project in achieving the project objective to support sustainable management of groundwater at national and transboundary levels across SADC member states is rated Substantial with moderate shortcomings.

Overall Efficacy Rating

Substantial

5. Efficiency

Economic Analysis

The project activities were mostly focused on technical assistance, research, international cooperation, capacity building, regulation and monitoring, and institution building. While the project, under Component D, was to support SADC member states in developing pilot infrastructure solutions to strengthen the management of groundwater for human and productive use, it was not found feasible at appraisal “to assess the exact value of ... any small demonstration civil works under the project” because they were expected to have limited direct beneficial impact on people and economic activities (PAD, p.15 and ICR, p.43). Regarding the socio-economic value of groundwater in SADC, case studies were conducted on four aquifers, i.e., Namibia, South Africa, Botswana, and Tanzania, in 2011 as part of the previous SADC Groundwater and Drought Management Project. The PAD (p.15) states that the Usangu Alluvial Aquifer in Tanzania has a present value of around US\$735 million at a discount rate of 16 percent over 25 years, the socio-economic contributions stemming from irrigation, regulation of groundwater dependent ecosystems, fishing in reservoirs, hydropower generation and tourism.

Groundwater is a fundamental resource for socio-economic and environmental sustainability across the 16 SADC member states. At appraisal, groundwater was the primary source of water for 70 percent of the 250 million people living in the region. Availability of groundwater is critical for human wellbeing, livelihoods, food security, ecosystems, natural habitats, industries, and growing cities. Therefore, the project was deemed to be economically viable at appraisal.

An economic analysis was not attempted at project closing, neither for selected sub-projects nor for technical assistance activities that could have clear measurable benefits such as improved efficiency and faster processing/time reduction in approvals, for example.

Operational and Administrative Efficiency

There were three task team leader changes without any adverse impact on project implementation, as reported. The project funds were fully disbursed. Project’s financial aspects were efficiently managed by UFS through which the funds were channeled. However, procurement was adversely affected by the delays in hiring staff



within GMI. A procurement specialist could only be appointed in December 2017 after which the Sub-Grant Manual was developed. Furthermore, project implementation was delayed by 24 months because of the slow progress of administrative processes for the establishment of the GMI as not-for-profit company hosted by UFS in South Africa. Limited implementation capacity within the SADC Secretariat and the UFS also contributed to the delays (ICR, p.13). As a result, project milestones could be achieved with delays. The onset of COVID-19 pandemic slowed down project implementation resulting in a further 6-month extension of project closing date.

Overall, while the project was deemed beneficial in terms of its contribution to the sustainable management of groundwater in SADC member states where it is a vital source of water for the population in the region, there were significant shortcomings in the administrative and operational efficiency of the project that delayed the achievement of the project milestones and resulted in the extension of the project closing date by almost two years. This is a significant delay considering that the project was a follow-on project to the SADC Groundwater and Drought Project that supported the SADC to start the formal establishment of GMI in South Africa. Therefore, the project’s efficiency in achieving the project objective to support sustainable management of groundwater at national and transboundary levels across SADC member states is rated Modest.

Efficiency Rating

Modest

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

| | Rate Available? | Point value (%) | *Coverage/Scope (%) |
|--------------|-----------------|-----------------|--|
| Appraisal | | 0 | 0 <input type="checkbox"/> Not Applicable |
| ICR Estimate | | 0 | 0 <input type="checkbox"/> Not Applicable |

* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

The project objective was substantially relevant to the regional context and the World Bank’s regional strategy for Africa where transboundary and national groundwater sources are vital for the well-being of around 250 million people, industrial production, and commercial activities. Hence, the relevance of project objective is rated Substantial. The project successfully supported the institutionalization and operationalization of GMI, contributed to some capacity strengthening at the transboundary and national levels, and financed pilot projects in groundwater management with minor shortcomings. However, there were gaps in evidence at the outcome level. Therefore, the project’s efficacy in achieving the project objective to support sustainable management of groundwater in national and transboundary levels across SADC member states is rated Substantial with moderate shortcomings for insufficient evidence at the outcome level. Because of the significant delays during the first 24 months of project implementation, the project’s efficiency in achieving the project objective is rated Modest. Overall, per the Bank guidance, the project’s outcome is rated Moderately Satisfactory.



- a. **Outcome Rating**
Moderately Satisfactory

7. Risk to Development Outcome

Insufficient funds could weaken GMI's interlocutor role in ensuring transboundary cooperation in groundwater management. GMI has developed a Financial Sustainability Plan. This plan includes fundraising mechanisms, systems, and procedures (ICR, p.17). While the GMI is a fully operationalized institute, the long-term sustainability of its works depends on how well those fundraising channels would be utilized to secure sufficient funds for the institute. The World Bank continues to support the operationalization of the Financial Sustainability Plan through the Sustainable Groundwater Management for SADC Member States Phase 2.

Varying levels of institutional capacity, lack of funding for water resources monitoring, water infrastructure maintenance and effective sector coordination mechanisms in SADC member states pose a moderate risk for the sustainable management of groundwater in the region. The project supported institutional capacity building at both the transboundary and national levels. The SADC member states started implementing policies and strategic plans related to water resources management and development. GMI will play a pivotal role in the development, implementation, and coordination of plans at the national level. But the success of the regionwide sustainable groundwater management will depend on how well member states will be able to address the risks stemming from insufficient institutional capacity and lack of funding (PAD of the Financial Sustainability Plan through the Sustainable Groundwater Management for SADC Member States Phase 2, pp.29-30).

8. Assessment of Bank Performance

a. Quality-at-Entry

At project entry, the goal to foster cooperation and mutual benefit from shared water among its member states was of high strategic importance for SADC, since 250 million people living in southern Africa heavily depended on groundwater and transboundary aquifers (PAD, pp.2-3). The project design benefited from the experience gained and lessons learned during the implementation of the SADC Groundwater and Drought Management Project between 2005 and 2011. The project's approach to support the sustainable management of groundwater across SADC member states through technical assistance activities with the aim to operationalize the GMI, strengthen institutional capacity at national level, and demonstrate pilot groundwater investment projects was appropriate. Limited environmental impact expected from the implementation of pilot investments was adequately addressed and the requirements of the Projects in International Waterways safeguard policy were satisfied. Project-related risks were identified, and mitigation measures were listed. However, the risk that the GMI might be slow to operationalize and rapidly meet the role of an interlocutor of groundwater issues in the region and implement the project was not adequately identified. The project was not fully ready for implementation.



The efforts made by the SADC Secretariat, the University of the Free State (UFS, the hosting agency of GMI) and the World Bank during project preparation were insufficient to consolidate the readiness of GMI so that it could take project implementation responsibilities quickly. Administrative delays in establishing GMI and the limited implementation capacity within SADC and UFS delayed project's actual start by 24 months (PAD, p.12). The monitoring and evaluation (M&E) arrangements was overall sufficient to measure the project's outputs and outcomes, but there was a shortcoming in the Results Framework in capturing the sustainability aspect of the project objective.

Overall, because of the moderate shortcomings in project preparedness and shortcomings in the M&E design, the Quality at Entry is rated Moderately Satisfactory.

Quality-at-Entry Rating

Moderately Satisfactory

b. Quality of supervision

Formal supervision missions were held twice a year. The project team was based in the region and frequently contacted the project implementation entities. There were three task team leader changes during project's seven-year implementation period, but according to the ICR (p.13) these changes were smooth. The project team's supervision of financial management and safeguards aspects of the project was sufficient. The project team supported GMI to address delays in procurement through advanced recruitment of procurement staff and establishment of management systems (ICR, p.15). The performance reporting in the Implementation Status and Result Reports (ISR) and Aide Memoires was candid and adequate, as reported by the ICR. However, while the significant delays and lack of progress in the first 24 months of project implementation were documented, they were not adequately reflected in the ISR ratings (ICR, p.13). The project was restructured in February 2019, five months before the original closing date in June 2019. The shortcomings in the M&E design were not addressed to adequately capture the outcomes of technical assistance and investment activities, and the sustainability aspect of the project objective.

Quality of Supervision Rating

Moderately Satisfactory

Overall Bank Performance Rating

Moderately Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The project objective was clearly specified. The theory of change was clearly presented in the ICR. The indicators were sufficient to capture the outputs related to the development and operationalization of GMI and the delivery of trainings and production of studies and guidelines for national institutions in charge of groundwater management. However, the results framework had significant shortcomings in capturing the



outcomes of the technical assistance activities in achieving institutional and technical strengthening at the transboundary and national levels that were to be expected to lead to sustainable management of groundwater. The sustainability of groundwater management was not directly captured by the results framework. The large number of intermediate results indicators were overly sufficient to capture the project's activities and outputs. They were specific, measurable, achievable, and relevant. Because most of the activities were technical assistance activities, baselines were either "zero" or "no." Targets were available for every indicator. M&E data were to be collected from progress reports and surveys. GMI was to be responsible for M&E, but this was delayed because of the delays in hiring staff by GMI.

b. M&E Implementation

The indicators in the results framework were adequately measured and reported, but they were mostly at the output level. The shortcomings in the results framework in capturing the project's outcomes and the sustainability of the groundwater management were not addressed during project implementation. An M&E specialist within GMI was responsible for collecting M&E data and reporting the findings. Based on M&E data, GMI reported progress in project activities and achievement of outputs. There were no major revisions to the indicators during project implementation. The ICR reports that the indicator "Running of a fully integrated data management system: stores, connects, collects and makes available information from groundwater initiatives and data sources" was deleted at the first project restructuring in February 2019 and will be implemented in the second phase of the project, but the restructuring papers do not include any information related to that. The project team confirmed in their email dated June 13, 2022 that "[t]he indicator was deleted and has been picked up in the new phase 2 project." At the first restructuring, the number of transboundary institutions to be strengthened was decreased from seven to five, and the number of policy notes from 20 to 10.

c. M&E Utilization

The M&E findings were communicated to project's stakeholders and used to steer project's course through two restructurings and allocation of resources to achieve project outputs and outcomes. The M&E data are insufficiently used to provide evidence of achievement of outcomes such as the sustainability aspect of the project objective. The M&E data and findings influenced the subsequent Sustainable Groundwater Management in SADC Member States Project – Phase 2 (P175355).

Overall, the M&E system as designed and implemented was sufficient to assess the progress at the output level, however there was a shortcoming in the Results Framework in fully capturing the sustainability aspect of the project objective.

M&E Quality Rating

Modest

10. Other Issues



a. Safeguards

The project was classified as Category B under Environmental Assessment (OP/BP 4.01) and triggered the Physical Cultural Heritage (OP/BP 4.11), the Involuntary Settlement (OP/BP 4.12), and the Projects in International Waterways (OP/BP 7.50) safeguard policies.

Environmental Assessment (OP/BP 4.01): The project was classified as Category B because of the expected limited environmental impact of the pilot 15 or less sub-projects to be financed by the project, such as managed aquifer recharge (e.g., small water retention structures such as sand dams, river bank infiltration, and infiltration ponds), pollution control, well drilling and exploration practices, groundwater monitoring stations, operation and management of groundwater wells, and aquifer stations (PAD, 18). A simplified Environmental Management Framework (EMF) and an Environmental Management Plan (EMP) were prepared and disclosed on the Bank's InfoShop and in the member countries. The project benefited from the safeguards experience gained during the implementation of pilot-schemes of the previous SADC Groundwater and Drought Management Project (PAD, p.18).

During implementation, site-specific EMPs were prepared. An environmental consulting firm was hired for monitoring and reporting on the implementation of the EMPs in all SADC member states. The ICR (p.15) states the project remained fully compliant with this safeguard policy.

Instead of a project-wide grievance mechanism, each sub-project had a separate grievance mechanism. The project recorded one grievance in Zimbabwe and another in Botswana. These grievances led to the adjustment of site-specific designs and were closed after the approval of the respective communities (ICR, p.15).

Involuntary Settlement (OP/BP 4.12): The project triggered this policy because of the possibility that pilot project activities might affect some persons. A Resettlement Policy Framework (RFP) was prepared and disclosed on the Bank's InfoShop and the SADC member states. During project implementation, the pilot projects did not affect any persons.

Projects in International Waterways (OP/BP 7.50): The project triggered this policy because of "the planned investments relating to diagnostics of select transboundary aquifers within the SADC region" (PAD, p.18). Some pilot projects were also expected to take place over transboundary aquifers within SADC member states. The riparian notification process was deemed satisfied because all riparian SADC member states were project beneficiaries and involved in project preparation through the Project Steering Committee. Because of the GEF requirement, 13 member states had already submitted GEF Endorsement letters acknowledging awareness of the key design elements and components of the project (PAD, p.19).

The ICR does not provide information about the implementation of the Physical Cultural Heritage (OP/BP 4.11). In the email dated June 13, 2022, the project team commented that "None of the sub-projects under the Phase 1 project triggered OP 4.11 Physical Cultural Heritage due to the small scale of the interventions and due to the screening checklist not mentioning any likely known cultural heritage significance in the sub-project footprints."



b. Fiduciary Compliance

Financial Management

Project’s quarterly interim financial reports and annual financial statements submitted to the Bank by University of Free State were acceptable. These reports were acceptable to the World Bank. Audit reports were unqualified. The UFS was assessed to have the financial management capacity with an overall risk rating of low. Flow-of-funds arrangements were adequate. Funds were channeled through UFS, and payments were made from the designated account directly to the providers of goods, works, and services. No issues of corruption or misuse of funds associated with the project are reported in the ICR. All project funds were accounted for at the time of project evaluation. Project’s financial management performance was rated Satisfactory through to project closing.

Procurement

Procurement was delayed because of the delays in hiring staff within the GMI. A procurement specialist could only be appointed in December 2017, after which the Sub-Grant Manual was prepared, and procurement improved. Overall, procurement was conducted according to the relevant World Bank procurement guidelines.

c. Unintended impacts (Positive or Negative)

None.

d. Other

None.

11. Ratings

| Ratings | ICR | IEG | Reason for Disagreements/Comment |
|------------------|--------------|-------------------------|--|
| Outcome | Satisfactory | Moderately Satisfactory | IEG concurs with the ICR’s modest rating for Efficiency. IEG assesses the Efficacy as substantial with moderate shortcomings for insufficient evidence at the outcome level. |
| Bank Performance | Satisfactory | Moderately Satisfactory | There were moderate shortcomings both in Quality at Entry and Supervision. |
| Quality of M&E | Substantial | Modest | Weaknesses in M&E design that were not addressed. |



Quality of ICR

Modest

12. Lessons

Two lessons are taken from the ICR with modification of language.

Dependence of transboundary organizations on their own financial basis can adversely affect the sustainability of their institutional capacity and operations because of lack of sufficient funds. According to the agreement establishing GMI, member states will not finance the institution. GMI has to build its own long-term financial basis to finance its operations and maintain institutional capacity. During project implementation, the institute successfully generated income from project management fees and training events and conferences, but it relied on grants to cover more than 80 percent of its costs. Since sourcing grants is not a feasible option for long-term financing, the institute's operations and institutional capacity can be adversely affected if mechanisms for a strong and financially sustainable institution are not fully developed and operationalized.

Complex institutional set-up and administrative processes to establish a new entity that has a central role in project implementation can result in significant delays. The GMI was to be established as a not-for profit company according to South Africa laws and act as project implementation entity, as well, which was a complex set up. The involvement of 16 SADC member states, which was not avoidable, and the placement of the GMI within the University of Free State further complicated the establishment of the institute. Such complications resulted in a delay of 24 months in early stages of project implementation. This led to a project restructuring and extension of project closing date.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR provides a comprehensive overview of the project. The ICR, including its annexes (especially Annex 1. Results Framework and Key Outputs), does not present a sufficient evidence base to support the achievements of outcomes. While the report tries to focus on what occurred as a result of the project, and the Theory of Change is adequately presented in the ICR, all the indicators and plausible outcomes are not reported. There is a logical linking and integration of the various parts of the report, but it is not sufficiently outcome oriented. The report follows majority of the guidelines. However, the Outcome is erroneously rated as Satisfactory rather than Moderately Satisfactory because the ratings for Relevance of Objectives, Efficacy, and Efficiency were High, Substantial, and Modest, respectively, and a Modest rating for Efficiency results in a Moderately Satisfactory rating for Outcome. The ICR does not provide information about the implementation of the Physical Cultural Heritage (OP/BP 4.11). The ICR did not attempt a cost-benefit analysis of selected sub-projects or technical assistance activities that could have clear measurable benefits. The sections on Quality of Supervision, Procurement, and M&E could have benefited from a more detailed discussion in line with the guidelines. The



lessons are sufficiently based on evidence and specific experiences of the project, but they are mostly in the form of findings.

a. Quality of ICR Rating
Modest