Document of
The World Bank

Report No: TBC

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(TF-55090)

ON A

GRANT FROM THE

GLOBAL ENVIRONMENT FACILITY (GEF) TRUST FUND

IN THE AMOUNT OF US$7 MILLION

TO THE

SOUTHERN AFRICAN DEVELOPMENT COMMUNITY

FOR A

GROUNDWATER AND DROUGHT MANAGEMENT PROJECT

THROUGH THE WORLD BANK AS GEF IMPLEMENTING AGENCY

October 31, 2011

Africa Water Resources Management (AFTWR)
Africa Region (AFCRI)

CURRENCY EQUIVALENTS
(Exchange Rate Effective October 2011)

Currency Unit = US$
SDR1 = US$1.55

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AMCOW	African Ministers Council on Water
AWRMI	Africa Water Resources Management Initiative
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (Federal Ministry for Economic Cooperation and Development)
DANIDA	Danish International Development Agency
DSG	Decision Support Guidelines
EC	European Commission
GDE	Groundwater Dependent Ecosystems
GIZ	Gesellschaft für Internationale Zusammenarbeit *(*German Development Service)
GMISA	Groundwater Management Institute of Southern Africa
GW-MATE	Groundwater Management Advisory Team (World Bank)
ICA	Incremental Cost Analysis
ICR	Implementation Completion Report
IPS	Inter-press Service Africa
ISR	Implementation Status Reports
LIMCOM	Limpopo River Basin Commission
M&E	Monitoring and Evaluation
OKACOM	Okavango River Commission
ORASECOM	Orange-Senqu River Commission
PAD	Project Appraisal Document
PDO	Project Development Objective
PIM	Project Implementation Manual
PMU	Project Management Unit
PSA	Project Services Agency
PSC	Project Steering Committee
RBO	River Basin Organization
RSAP-IW	Regional Strategic Action Plan for Integrated Water Resources Management
SADC	Southern African Development Community
SADC -WD	SADC Water Division
SIDA	Swedish International Development Cooperation Agency
TDA	Transboundary Diagnostic Analysis
UNILC	United Nations International Law Commission
UNDP	United Nations Development Program
UNESCO	United Nations, Education, Science and Cultural Organization
UNOPS	United Nations Office for Project Services
WRTC	Water Resources Technical Committee

Vice President:	Obiageli K. Ezekwesili
Country Director:	Ruth Kagia
Sector Director:	Jamal Saghir
Sector Manager:	Jonathan Kamkwalala
Project Team Leader:	Marcus Wishart
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A. Basic Information			
Country/Region:	Africa	Project Name:	Groundwater and Drought Management Project
Project ID:	P070547	L/C/TF Number(s):	TF-55090
ICR Date:	April 12, 2012	ICR Type:	Core ICR
Lending Instrument:	GEF Trustfund Grant	Borrower:	SADC
Original Total Commitment:	US$7 m	Disbursed Amount:	US$6.50 m (US$0.5 m undisbursed)
Revised Amount:	n/a		
Environmental Category: B		Global Focal Area: International Waters	
Implementing Agencies: Southern African Development Community (SADC) Project Support Agency: United Nations Operations and Project Services (UNOPS)			
Co-financiers and Other External Partners: Local Governments (Province, District, City) of Borrowing Country European Commissions (EC) Swedish International Development Cooperation Agency (SIDA) Government of Germany Government of France			

B. Key Dates				
Process	**Date**	**Process**	**Original Date**	**Revised / Actual Date(s)**
Concept Review:	19-Feb-2002	Effectiveness:	15-Mar-2006	n/a
Appraisal:	12-Jan-2005	Restructuring(s):	n/a	n/a
Approval:	14-Jun-2005	Mid-term Review:	19-May-2008	n/a
		Closing:	30-Nov-2009	31-Oct-2011

C. Ratings Summary	
C.1 Performance Rating by ICR	
Outcomes:	Moderately Satisfactory
Risk to Development Outcome:	Moderate to High
Bank Performance:	Moderately Satisfactory
Borrower Performance:	Moderately Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)			
Bank	**Ratings**	**Borrower**	**Ratings**
Quality at Entry:	Moderately Unsatisfactory	Government:	Moderately Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Moderately Satisfactory
Overall Bank Performance:	Moderately Satisfactory	**Overall Borrower Performance:**	Moderately Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Implementation Performance	**Indicators**	**QAG Assessments (if any)**	**Rating**
Potential Problem Project at any time (Yes/No):	Yes	Quality at Entry (QEA):	n/a

Problem Project at any time (Yes/No):	Yes	Quality of Supervision (QSA):	n/a
DO rating before Closing/Inactive status:	Moderately Satisfactory		

D. Sector and Theme Codes		
	Original	**Actual**
Sector Code (as % of total Bank financing)		
Central government administration	100	100

Theme Code (as % of total Bank financing)		
Water Resources Management	67	67
Environmental Policies and Institutions	33	33

E. Bank Staff		
Positions	**At ICR**	**At Approval**
Vice President:	Obiageli K. Ezekwesili	Gohind Nankani
Country Director:	Ruth Kagia	Mark Tomlinson
Sector Director:	Jamal Saghir	Michel Wormser
Sector Manager:	Jonathan Kamkwalala	Jaime Biderman
Project Team Leader:	Marcus Wishart	Leonard John Abrams
ICR Team Leader:	Louise Croneborg	n/a
ICR Primary Author:	Olusola Ikuforiji	n/a

F. Results Framework Analysis

1. **Project Development Objectives (from Project Appraisal Document).** The project development objective (PDO) of the SADC Groundwater and Drought Management Project was the development of consensus on a SADC strategic approach to support and enhance the capacity of its Member States in the definition of drought management policies, specifically in relation to the role, availability (magnitude and recharge) and supply potential of groundwater resources.[1]

2. **The Global Environment Objective (GEO) of the project** (as approved by the original approving authority, the Global Environment Fund) was to better understand and protect groundwater dependent eco-systems (GDE) in drought prone areas of SADC.

[1] The PDO and global environment objective were applied throughout the Project; against which the ICR assesses achievements. However, the PAD's data sheet included a slightly differently formulated PDO (PAD, page 2).

F(a) Project Development Objective and Global Environment Objective Indicator(s)[2]

Indicator	Baseline Value	Original Target Values (from approval documents)	Actual Value Achieved at Completion or Target Years
Indicator 1:	SADC, River Basin Organizations and Member States better able to mitigate against groundwater drought by adopting management guidelines and tools.[3]		
Value	Not defined.	100% adoption	Management tools and guidelines were produced and disseminated for use by policy makers and other groundwater stakeholders.
Comments	**Partially Achieved** • A series of management guidelines and tools[4] were developed to enhance the capacity of decision makers at both the local and regional level. In particular, these included: · Management plans from the physical and social pilot interventions to test groundwater and drought management solutions with seven communities in the Limpopo River basin across Botswana, South Africa and Zimbabwe; · Decision support tools at regional SADC level (including an inventory of Groundwater Dependent Ecosystems (GDE) in southern Africa); · Methodologies for establishing the economic value of groundwater to build capacity of decision makers; and · Decision Support Guidelines (DSG) for policy makers required to make groundwater-related decisions. • The collective guidelines, tools and methodologies are expected to inform planning and thus assist and inform decision makers in the management, policy analysis and development of groundwater resources. • The target remains partially achieved as the actual ability to mitigate groundwater drought is to be tested in a situation of drought conditions. Further, the causal relationship between the guidelines and tools on the one hand, and mitigation capacity on the other, is tenacious. Thus, the former remains indicative of the latter part of a results chain.		
Indicator 2:	Greater awareness of, and scientific knowledge about, groundwater dependent eco-systems [GDE] measured by referred reports on dependence in at least three representative ecosystems.		
Value	Not defined.	3 ecosystems (Referred reports on dependence in at least 3 representative ecosystems).	Scientific knowledge on GDE was generated and disseminated (e.g. the development of vulnerability maps in the SADC region).
Comments	**Achieved** • Methodologies for mapping vulnerable areas, and identifying GDE were developed. • Through the GDE probability-mapping program, SADC policy makers, groundwater and catchment managers have gained scientific knowledge on the occurrence and value of GDE. This was deemed a significant achievement compared to target of reports referring to them.		

[2] In reviewing the project's achievements against the number of target values presented in the original Results Framework, this ICR found it unattainable to apply the same indicator unit (for example '100% adoption' for PDO-level indicator 1) when estimating a actual value achieved at completion. No record was identified to which M&E methodology was to be used to evaluate such achievement, whereby the results associated has been presented with a descriptive manner instead.

[3] PDO-level indicator 1 and Intermediate level indicators 5, 8 and 15 were included in the Grant Agreement.

[4] See Annex 2 for a comprehensive list of project outputs.

F(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Actual Value Achieved at Completion or Target Years
Indicator 1:	Stakeholders and groundwater dependent eco-systems in the pilot areas are less vulnerable to drought impacts and regional implications are identified.		
Value	Groundwater Situation Analysis of the Limpopo River basin.	Significant improvement over baseline situation in pilot activity areas.	Physical and social interventions were developed and tested (7 pilot areas within the Limpopo River basin in Botswana, South Africa and Zimbabwe) to ensure communities and groundwater dependent ecosystems are less vulnerable to drought events.
Comments	**Almost achieved** • The interventions were: · Physical/Structural works consisting of small-scale infrastructures (such as monitoring boreholes, sand dams, windmill driven pumps, reservoirs, and farmland plots). · Social/Non-structural work encompassing strengthened groundwater user groups, training on monitoring as well as increased community awareness of the need to manage groundwater and groundwater dependent ecosystems on a long-term basis. • Interventions have strengthened physical and social capacity in pilot areas. • However, whether communities are as resilient as expected can only be measured in drought conditions - beyond the timeframe of the project.		
Indicator 2:	Pilot area management plans adopted and implemented (%).		
Value	Not defined.	80% adoption	Management plans were completed and handed over to communities in the 7 pilot areas.
Comment	**Partially Achieved** • Drought intervention and groundwater management plans were developed in collaboration with the communities. • The management plans were developed so that interventions can be implemented and maintained by the community with limited provision from outside sources; and handed over to the leaders of the communities in October 2011. • Due to time constraint, measuring adoption of the plans was not possible prior to closing.		
Indicator 3:	Senior responsible officials and professionals aware of/support pilot area interventions and able to ensure sustainability of interventions.		
Value	Not defined.	75%	Target was met as majority of key responsible officials and professionals were aware of, and in support of pilot interventions.
Comments	**Achieved** • Community leaders and relevant authorities (including senior officials in the local government institutions from agriculture, health and water sectors) were engaged throughout the pilot process. • Dialogue and participation was built and maintained during implementation to ensure exchange of information between identified officials/stakeholders and project team, as well as with the members of the wider communities.		
Indicator 5:	75% of stakeholders indicate confidence in measures to reduce vulnerability and willingness to		

	participate in the implementation of protective measures.		
Value	Not defined.	75%	Vast majority of stakeholder expressed confidence and willingness to participate in measures – as indicated by groundwater user groups and reported training events.
Comments	**Achieved** • Stakeholders were thoroughly consulted throughout the pilot intervention phase (2008 – 2011) to inform and maintain dialogue through the establishment of the groundwater user groups (water committees) and organization of training workshops. • The pilot interventions generated positive response from stakeholders.		
Indicator 6:	Monitoring network and interpretive processes in place.		
Value	Review of pilot area facilities at commencement of planning process.	80%	Groundwater monitoring was fully integrated in pilots. However, long-term monitoring was envisaged to be performed through the GMISA[5].
Comments	**Partially Achieved** • Water committees established in the 7 pilot communities were trained on the processes of groundwater monitoring, data recording, basic data assessment as well as operation and maintenance procedures related to the intervention. • Management plans handed over to each community included guidance on the monitoring indicators and processes. • The Groundwater Management Institute for Southern Africa (GMISA) is expected to continue the monitoring of the groundwater reference network and pilot communities. The institute was established but not in operation by project closing due to complications associated with re-categorization of the unallocated funds (US$0.5 m).		
Indicator 7:	Lessons learned summarized and passed onto those developing regional tools.		
Value	Not defined.	100%	Lessons learnt from pilot interventions were integrated into the Decision Support Guidelines.
Comments	**Achieved**		
Indicator 8:	Regional guidelines and tools endorsed by SADC Water Resources Technical Committee (WRTC) by end of project.		
Value	No management tools and guidelines available.	100%	The Decision Support Guidelines (DSG) were presented and adopted by the WRTC in May 2011.
Comments	**Achieved**		
Indicator 9:	Groundwater Management Institute of Southern Africa (GMISA) established and financially viable.		
Value	No groundwater institution.	Host institution identified by YR2 end. Director & staff appointed by YR4 end.	Host institution was identified and endorsed by SADC Member States;

[5] Groundwater Management Institute for Southern Africa (Component 3).

			the institution was established but not operationalized nor financially viable at the time of project closing; and Director and staff were recruited.
Comments	**Partially Achieved** Funding arrangements were not in place prior to project closing to operationalize GMISA fully.		
Indicator 10:	Planned guidelines and tools disseminated to 100% of Member States.		
Value	Not defined.	100%	Final drafts of the Decision Support Guidelines were disseminated to all PSC members and endorsed /adopted by WRTC and SADC Member States.
Comments	**Achieved**		
Indicator 11:	Governance structure agreed and established [GMISA].		
Value	Not defined.	Not defined.	The governance structure was agreed upon in consultation with SADC Member States; the GMISA Business Case was reviewed and endorsed by a majority of Member States.
Comment	**Achieved** 12 of 15 SADC Member States reviewed and endorsed the GMISA Business Case (March 2009).		
Indicator 12:	Host (institution identified and agreement signed) [GMISA].		
Value	Not defined.	100%	100%
Comments	**Achieved** • The University of the Free State in South Africa was endorsed by SADC Council of Ministers in August 2008 to be the host institution for GMISA. • The SADC legal department signed off on the GMISA's Articles of Association and the MoU with the approved host institution in November 2010.		
Indicator 13:	Director and senior staff appointed.		
Value	Not defined.	100%	Staff recruited but not employed; GMISA was not fully operational by project closing.
Comments	**Partially Achieved** • The posts for Director, technical and administration staff were advertised and candidates identified. The posts were not officially appointed at project closing. • Transfer of documentation to and briefing of the GMISA staff on their roles and responsibility and the vision of the GMISA could not take place before project closing.		
Indicator 14:	Work plan approved by Board of Directors and Institution functional.		
Value	Not defined.	100%	Governance structure and Business Plan agreed but not operationalized.

Comments	**Partially Achieved** • Seven Board members of the GMISA were identified and requisite documentation compiled in line with requirement of the South African Companies Act. A Business Plan was submitted to the Board but not finalized nor approved at the time of project closing[6]. • Institution established but not operational due to delays in funding arrangements at closing.		
Indicator 15:	Project activities successfully completed.		
Value	Not defined.	80%	The majority of project activities were completed with success at project closing
Comments	**Achieved** With majority of activities completed with success (target set at 80%) the indicator is achieved. The major outstanding activity is the operationalization of GMISA.		
Indicator 16:	Required reports produced and approved.		
Value	Not defined.	100%	Required reports were submitted in line with Grant Agreement.
Comments	**Achieved** • Quarterly financial monitoring reports produced were reviewed by the Bank mission and ensured they complied with the Grant Agreement. • Annual monitoring and evaluation reports prepared and submitted by the Project Management Unit for the Bank's review.		
Indicator 17:	Project audits approved.		
Value	Not defined.	100%	Project audit reports were submitted in agreement with set procedures.
Comments	**Achieved** • Annual audit reports were submitted by the Project Support Agency UNOPS to the Bank mission for review as per provisions of the Grant Agreement. • The Bank mission ensured that all auditing requirements were met and issues were addressed.		

G. Ratings of Project Performance in ISRs

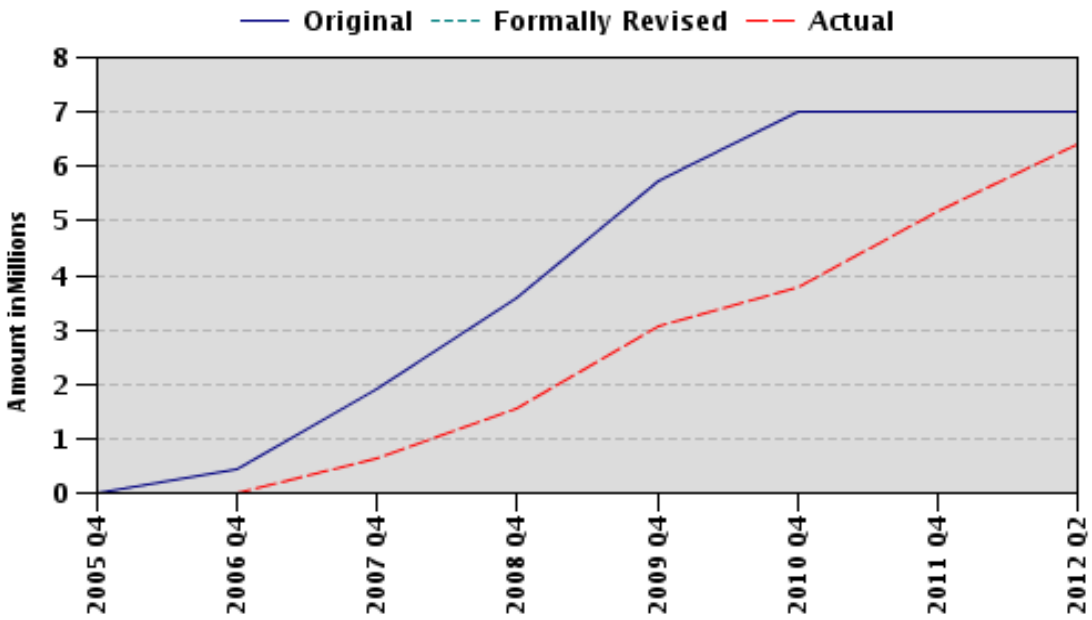
No.	Date ISR Archived	GEO	IP	Actual Disbursements (USD millions)
1	12/12/2005	Satisfactory	Satisfactory	0.00
2	06/19/2006	Moderately Satisfactory	Moderately Satisfactory	0.00
3	12/08/2006	Moderately Unsatisfactory	Moderately Unsatisfactory	0.65
4	06/27/2007	Unsatisfactory	Unsatisfactory	0.65
5	12/15/2007	Moderately Unsatisfactory	Moderately Unsatisfactory	1.13
6	03/19/2008	Moderately Satisfactory	Moderately Satisfactory	1.34
7	11/11/2008	Moderately Satisfactory	Moderately Satisfactory	3.08
8	05/10/2009	Satisfactory	Satisfactory	3.08
9	10/28/2009	Satisfactory	Satisfactory	3.08
10	06/02/2010	Moderately Satisfactory	Moderately Satisfactory	3.79
11	02/02/2011	Moderately Satisfactory	Moderately Satisfactory	4.20
12	12/02/2011	Moderately Satisfactory	Moderately Satisfactory	6.50

[6] Monitoring & Evaluation report 2011.

H. Restructuring (if any)

Restructuring Date(s)	Board Approved PDO Change	ISR Ratings at Restructuring		Amount Disbursed at Restructuring in USD millions	Reason for Restructuring & Key Changes Made
		DO	IP		
December 4, 2008	No change to PDO	MS	MS	3.08	Extension of Closing Date to December 31, 2010 to accommodate late project start. Reallocation of funds among expenditure categories due to increase in consulting fees.
December 4, 2010	No change to PDO	MS	MS	4.20	Extension of Closing Date to October 31, 2011 to ensure full completion of all activities. Reallocation of funds among expenditure categories due to increase in consulting fees.

I. Disbursement Profile



1. Project Context, Project Development Objective, Global Environment Objective and Design

1.1 Context at Appraisal

1. ***Regional context.*** The Southern African Development Community (SADC) mission is to foster co-operation and mutual benefits from shared resources amongst its Member States – Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, the Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.

2. The SADC region holds 15 major shared rivers and at least 14 major transboundary groundwater aquifer systems. In 1995, the SADC Member States signed the SADC Protocol on Shared Watercourse Systems and in 1996, established the SADC Water Sector (SADC WD). The Protocol acknowledges the importance of water as a natural resource that through cooperative management can bring shared benefits. Revised in the year 2000, the Protocol articulates the principle of cooperative framework for sustainable management of water resources that contributes to regional economic development.

3. In 1998, a Regional Strategic Action Plan for Integrated Water Resource Development and Management (RSAP-IW) was developed and agreed by the SADC Member States. This was the first of a series of RSAPs that outline key water management issues and remedial actions for sustainable management and development of both surface and groundwater.

4. As part of the RSAP-IW, the Groundwater Management Program (GMP) was developed. The aim was to promote the sustainable development of groundwater resources at regional level - incorporating research, assessments, sustainable extraction, and groundwater drought management. This provided a useful framework for articulating consensus around regional needs and crowding in support from cooperating partners around a common vision developed by the SADC Member States.

5. ***Sector background.*** In the early 2000s, the compounding pressure posed by drought and limited surface water availability was gaining increasing recognition in the SADC region. Groundwater resources, for both domestic and productive use (agriculture, urban development, industry and mining), were and continue to be under threat from overexploitation, pollution, and the introduction of exotic species. In particular, groundwater dependent ecosystems (GDE) in drought prone areas were exposed and threatened.

6. At the time of project appraisal, there was a lack of reliable information and data on technical and socioeconomic factors, capacity of technical staff and institutions at regional and national level, weak governance and inconsistent legal and regulatory frameworks for sustainable groundwater and drought management. Further, while the Revised SADC Protocol on Shared Watercourses had resulted in the creation of a number of River Basin Organizations (RBOs), it had not yet resulted in effective mechanisms to address the challenges of transboundary aquifers.

7. ***Rationale for Bank assistance.*** The project was consistent with the World Bank's 1996 Africa Water Resources Management Initiative (AWRMI) which sought to support water resources analysis and policy reform at the national level; as well as the development of cooperative frameworks and programs at regional level for shared water resources. The project further contributed by strengthening strategic partnerships with bi/multilateral donors and civil

society agencies, and by promoting cross-country operational work and strengthened transboundary water resources management.

8. Further, the project was consistent with the 2003 Water Resources Sector Strategy which called for increased engagement in the area of groundwater management. The project also supported the Strategy's commitment to cooperation on international waters as a powerful catalyst for broader regional cooperation, growth, and security.

9. ***Rationale for GEF support.*** Understanding the use, management and protection of groundwater in international river basins in drought prone semi-arid areas, and the impact of groundwater and land use practices on Groundwater Dependent Ecosystems (GDE), was aligned with a number of the GEF Focal Areas and Operational Programs. At the time of appraisal, the project was aligned with GEF's strategic priority for International Waters ('IW-2') to expand global coverage of foundational capacity building, addressing the two key program gaps (in particular that of water scarcity and competing water use) and support for targeted learning'[7]. Lastly, the project was also designed to contribute to strengthening the capacity of SADC Member States in the management of transboundary groundwater resources in drought prone areas to meet human development needs while protecting GDE. This further aligned with the said GEF International Waters focal area as well as the GEF Operational Program 9: Integrated Land and Water Multiple Focal Area.

1.2 Original Project Development and Global Environment Objectives (GEO) and Key Indicators

10. The Project Development Objective (PDO) was the development of consensus on a SADC strategic approach to support and enhance the capacity of its Member States in the definition of drought management policies, specifically in relation to the role, availability (magnitude and recharge) and supply-potential of groundwater resources.

11. The Global Environment Objective (GEO) of the project was to better understand and protect groundwater dependent eco-systems (GDE) in drought prone areas of SADC.

12. The PDO-level performance indicators were:

- SADC, river basin organizations and SADC Member States are better able to mitigate against groundwater drought by adopting the management guidelines and tools, by end of the Project; and
- Greater awareness of, and scientific knowledge about, groundwater dependent eco-systems [GDE] measured by referred reports on dependence in at least three representative ecosystems.

13. The following indicators were included in the Grant Agreement (which also included the first PDO-level indicator above):

- Pilot area management plans adopted and implemented 50% by November 30, 2008, and 100% by end of the Project.

[7] PAD, page 4.

- Regional guidelines and tools endorsed by SADC Water Resources Technical Committee by end of the Project.
- Project activities successfully completed by end of the Project.

1.3 Revised PDO/GEO and Key Indicators, and reasons/justification

14. The PDO and key indicators were not formally revised as they remained relevant to achievement of project outcomes. The implementing agency, SADC WD with its Project Management Unit (PMU) however, adopted a more detailed M&E framework[8] including the original framework as detailed in the PAD.

1.4 Main Beneficiaries

15. The primary target beneficiary groups of the project included the policy and decision makers with responsibility for groundwater management, as well as direct users of groundwater (in the pilot areas in the Limpopo River basin in particular). An additional (environmental) beneficiary is the groundwater dependent ecosystems in the SADC region, as identified in the PAD. In all, beneficiaries were categorized at three levels: regional, river basin and local levels.

16. At the regional level, technical staff and decision makers of SADC and its Member States were beneficiaries of the tools, training, and knowledge on groundwater management. These ranged from the maps illustrating transboundary and national aquifers, to the Decision Support Guidelines (DSG). Furthermore, the preparatory work and institutional establishment of the Groundwater Management Institute of Southern Africa (GMISA) has the potential of promoting long-term regional management of shared groundwater resources which in turn will expand the circle of beneficiaries beyond project closing.

17. At the river basin level, the government staff responsible for international waters and groundwater in the riparians of the Limpopo River basin benefited from institutional strengthening and capacity building. River Basin Organizations in the region (such as the Limpopo Watercourse Commission – LIMCOM, the Orange-Senque River Commission – ORASECOM, and the Okavango River Basin Water Commission – OKACOM) also benefited from project awareness activities and knowledge products. These have in turn increased understanding of how groundwater can be integrated into planning strategies.

18. At the local level, the communities living in the seven pilot areas in Botswana, South Africa and Zimbabwe will benefit from the small-scale infrastructures and improved 'soft' management skills built as part of the interventions. For example, awareness and knowledge on the importance of groundwater management was heightened through the establishment of groundwater committees and engaging local schools through the pilots.

1.5 Original Components

19. The project consisted of four components. These were:

[8] The M&E reports were shared with the Bank, informed supervision and filed in Iris/WBDocs.

- Component 1: Development, testing and demonstration of a groundwater drought management plan for the Limpopo River basin area (US$2.3 m). The component involved developing and testing small-scale groundwater management techniques and methodologies in local communities;

- Component 2: Regional groundwater drought management (US$2.4 m). The component focused on developing information and decision support tools relevant at the regional SADC level;

- Component 3: Establishment of the Groundwater Management Institute of Southern Africa (US$0.5 m). The component involved the establishment of an institution that would raise understanding of groundwater management through research, knowledge management, coordination and capacity building in the long-term; and

- Component 4: Project management and administration (US$1.8 m). The last component was designed to provide external support to SADC WD through a Project Steering Committee, a Project Services Agency with a Project Management Unit to be established in Gaborone, Botswana (where the SADC headquarters is located).

1.6 Revised Components

20. There was no formal revision of the approved project components.

1.7 Other significant changes

21. The project closing date was extended twice from the planned completion of May 31, 2009. The first extension was to December 31, 2010 to accommodate the delay in project activities as a result of nine month effectiveness delay. The second extension to October 31, 2011 was done to facilitate the completion of all project activities. The extension was also justified to ensure that the Decision Support Guidelines under Component 3 were endorsed by the SADC WRTC at their annual meeting.

22. Funds were reallocated as part of the restructuring with extension of closing dates in December 2008 and December 2010 so as to accommodate the increases in consultants fees.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

23. ***Project preparation was moderately satisfactory.*** The nature of planned activities was comprehensive and the project's ambitions in addressing regional groundwater management issues was commendable. However, preparation faced a number of challenges outlined below, of which some were carried over into implementation. This results in a moderately satisfactory rating of the preparation phase.

24. Preparation was financed through a GEF-Project Development and Preparation Facility Block B (PDF-B). A detailed overview was undertaken to assess the existing groundwater and drought situation in the SADC region. Technical and multi-disciplinary expertise of the World Bank's Groundwater Management Advisory Team (GW-MATE) was brought in to support

project design which elevated the ability to bring in international best practice and lessons learnt from other projects.

25. The project was built upon the momentum and context of the Revised SADC Protocol on Shared Watercourses. The Groundwater Management Program in the SADC Regional Strategic Action Plan informed the scope of the project, and subsequent proposed activities went through a series of consultations with stakeholders at regional, river basin and local levels. Attention to alternatives, safeguards, and lessons learned from previous operations in the Africa region, SADC and GEF operations also informed design. In particular:

- The need for riparian countries to establish a common vision for action as well as the need for political commitment at the highest level to ensure successful projects related to shared international waters;
- The importance of full stakeholder involvement in the project preparation and implementation;
- Use of project management service when capacity of implementing agency is limited; and
- Importance of working, together with stakeholders, at multiple levels – from micro to macro – and to ensure that associated activities are mutually reinforcing.

26. Project preparation took longer time than anticipated. Initially scheduled for 18 months preparation spanned over three years. The delay was attributed to limited capacity of the implementing agency - the SADC Water Division - to undertake necessary project management functions due to staff constraints as well as limited experience with Bank procedures. In 2003, the Water Division was undergoing restructuring that led to downsizing of key staffs that had hitherto been driving the preparation process. Concurrently, the SADC Environmental and Land Management Sector was transferred from being located in Maseru, Lesotho to the new SADC Secretariat in Gaborone, Botswana. One final challenge was the delayed submission of the audit for the GEF preparation funds, as a requirement of GEF. This postponed disbursement of funds for project implementation.

27. During preparation, it became evident the SADC WD was not designed to implement the type of project planned. Hence, a different mechanism was explored to outsource to a Project Support Agency. UNOPS[9] was subsequently mandated with the responsibility to support the Project Management Unit (PMU) for the administrative, financial and procurement activities. The decision to contract UNOPS to provide procurement and financial support necessitated the alignment of the UN system with that of the Bank. This created, in part, parallel routines for project administration and delays due to a lack of clarity of which procedures to apply at the level of day-to-day management of the project.

28. In retrospect, the anticipated results from the project activities were ambitious given the governance and decision making structure in both SADC and its Member States. Furthermore, because the project aimed at working from the local, up to the regional, the project became inherently complex and later put exceptional pressure on the implementing agency and PMU. This is evident in that each component implemented could in itself have been operated as separate fully-fledged project.

[9] United Nations Office for Project Services.

29. ***Risks and mitigation measures.*** Some crucial risks were identified and mitigation actions taken:

- Structuring the Project Steering Committee to facilitate access to all stakeholders at national level mitigated the risk of weakness in promotion of partnerships with civil society and academic research institutions;
- The risk of government institutions limited ability to utilize regional tools was mitigated by undertaking an intensive awareness campaign specifically targeted at increasing support at political, management and community levels; and
- Contracting UNOPS as project support agency mitigated the risk of SADC's constrained ability to implement the project.

30. With regards to the Groundwater Management Institute for Southern Africa (GMISA) to be operationalized with funds from Component 3 ($500,000), the preparation did not specify the details for the mechanism and formal arrangements for transfer of funds intended for GMISA's operationalization. However, the PAD had earmarked these funds for the establishment of a 'Groundwater Drought Monitoring Fund' to support the operation of GMISA. Yet in the Grant Agreement, the sum was unallocated and did not specify which project activities these funds would be financing. Likewise, the project management services contract for UNOPS did not include the management of the unallocated fund. This discrepancy could have been an oversight in reflecting the necessary operational due diligence.

31. The necessary process for allocating and thus transferring the funds to GMISA (both in terms of operational procedures as well as time and necessary endorsement from key stakeholders) was underestimated. The legal implications and bureaucracies associated with this type of transfer should better have been recognized earlier and addressed during preparation so as to facilitate implementation and overcoming the obstacles faced due to confusion over what was stipulated in the legal agreement. The team tried to address and solve these issues, but due to these unresolved complications and legal implications, the request for reclassification of the funds (December 2010) into a new Grant Category could not completed before project closing.

32. The participatory process during preparation ensured all stakeholders, from rural communities to government officials at local and national levels, were consulted and engaged during preparation. This helped inform project design. A preparation launching workshop was held in March 2002 which afforded key stakeholders the opportunity to contribute to the direction of activities. Further, a project preparation steering committee was set up to guide the preparation process in detail, and ensured stakeholder engagement until implementation when responsibilities transferred into the Project's Steering Committee.

2.2 Implementation

33. ***Project restructuring.*** There were two extension of the project's closing date (first to December 31, 2010 and the second to October 31, 2011) to allow more time for implementation and reallocation of funds.

34. ***A mid-term review (MTR)*** was conducted in May 2008, which analyzed the overall progress of the project towards meeting its objectives. The MTR concluded the project did not need restructuring as it remained highly relevant to the SADC context. In spite of delayed implementation, the project was expected to achieve its objectives. The review recommended an extension of the project closing date.

35. ***Factors that contributed to success.*** The following main factors contributed to the projects' achievements:

- The implementation of a comprehensive and consistent communication strategy ensured successful communication and awareness raising activities. These were conducted so that target group understanding of groundwater and its management improved. The communication strategy enabled a wide variety of activities including media press-releases, workshop materials, radio interviews, one-on-one interviews with strategic partners, and so forth. These reinforced and were strengthened by the other groundwater programs and projects.
- Project Steering Committee meetings, combined with technical workshops, provided a mechanism that enabled SADC Member States to assume ownership, contribute to the GEF project, and created a critical mass of expertise to constitute a hydro-geological working group.
- The establishment of local water committees in the seven pilot areas fostered community cooperation and buy-in to the pilot interventions (the committees consisted of recognised representatives from the community such as chiefs, women and men, and small-scale farmers; as well as representatives from the local district).
- The infrastructure interventions of the pilots were designed to be robust, simple to use with minimal maintenance. The communities were involved in the selection of sites and demonstrated ownership and acceptance to the interventions. Instructions and trainings were given on site on the use of monitoring of groundwater availability. Collaboration with Non-Governmental Organizations (NGOs) and other development partners was maintained throughout implementation; notably on the other activities of the project such as on the hydro-geological mapping program. These collaborations meant that the project became an integrator for groundwater management issues across SADC.
- After the initial delay in effectiveness and early implementation, the PMU displayed a high degree of commitment and productivity.

36. ***Factors that gave rise to challenges and delays***. The following main factors worked against the project's ability to fully achieve its objectives.

- Project effectiveness occurred six months after signing. This late start-up of the project coming after a protracted preparation period further delayed the establishment and staffing of the SADC PMU and subsequently, implementation of activities.
- The pilot sites were dispersed across three countries and large distances. This created complex challenges for logistics, consistency and adaptability of the physical and social interventions, as well as procurement processes.
- Project implementation was hampered by a number of procurement problems. These were attributed to the SADC PMU's limited experience with the Bank's procurement procedures, conflicting procedures between institutions (between the World Bank, UNOPS and SADC); lack of clarity on which procedures were overriding, and the frequent change of the Bank's procurement support as reflected in the team and missions. Specifically, the procurement issues causing challenges were:

  – While UNOPS was employed to provide procurement support to the SADC PMU given its knowledge and experience of the Bank's procedures, its own procurement procedures conflicted with the Bank's. One telling example included the procurement procedure for the physical infrastructure and social interventions in the seven pilot

communities in Botswana, South Africa and Zimbabwe. These were comparatively small contracts in terms of financing yet complex in terms of implementation in remote areas, and incorporated both detailed design and construction, as well as community engagement and training. The response from bidders was low because the budget for these low-technology pilots was not commensurate with these complexities and bid security requirements were said to be too high. Hence, larger firms capable of managing the construction (and familiar with large-bid procurement processes) did not bid. The smaller firms (despite constituting a small pool of such companies in the region) would have been capable of doing the work, were deterred by the very complex and detailed procurement procedures. For example, the complexity of this activity rendered implementing the pilot in the drought-prone Mozambican part of the Limpopo River basin (located in remote and isolated areas near the border with South Africa and Zimbabwe), too challenging in terms of logistics and cost implications.

- Conforming UNOPS procurement and financial management procedures to the World Bank's guidelines under the Grant Agreement caused delays. For example, the UNOPS's system of advances to project implementation agencies was not consistent with World Bank's disbursement procedures which relied upon the approval of financial reports; causing delays in disbursements.
- During the latter period of implementation, major factors including the financial crisis of 2008 and the increasing costs of civil works, construction materials and consultancies across southern Africa (at the time leading up to the 2010 football World Cup) negatively affected contracts under the Project. For example, the tools and knowledge products under Component 2 were initially intended to be procured under one large contract. However, the fall in the value of the preferred currency of the wining firm meant they were not willing to extend their bid validity. Therefore, time was lost and the contract had to be split into smaller contracts requiring re-packaging and re-advertisement. A year was reported to have been lost in implementation.

· The process of transferring the unallocated fund ($500,000) to GMISA was delayed as outlined in paragraph 31 above.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

37. ***Design of monitoring and evaluation***. The Grant Agreement (GA) required that the SADC PMU maintain policies and procedures that would enable it to monitor and evaluate the project on an ongoing basis. While the project's results framework in the PAD was endorsed to measure project performance, the implementing agency chose to use a larger scope of indicators to fully track the impact of the project activities. The Bank's M&E specialist was consulted in the design of a broader M&E framework that would allow the PMU to effectively measure project impact. The new, broader and more detailed M&E framework included performance indicators built on those defined in the PAD and GA, as well as GEF process indicators. The changes were meant to ensure effective monitoring of the PDO through more measurable indicators and equip the PMU with a roadmap to better understand the key performance indicators in terms of definitions, data acquisition techniques, units of measurement and critical assumptions.

38. ***M&E Implementation and Utilization***. An M&E consultant, hired under an individual contract, monitored performance against these indicators [10] . The PMU had the overall responsibility of updating the M&E framework and ensuring that the annual M&E report outlined the progress achieved in the project including recommendations to ensure the efficient carrying out of the project and specific objectives achieved during the preceding implementation period. Annual monitoring and evaluation reports were submitted to the Bank and the team assessed the indicator results in the annual reports against the targets and discussed, and when applicable, slippages with the PMU. Progress was reported on in the Bank's implementation status reports and Aide Memoires which in turn informed progress ratings. The project's results framework, as reflected in the PAD, was not updated during restructuring.

2.4 Safeguard and Fiduciary Compliance

39. ***Safeguard compliance is rated satisfactory.*** The project complied with the one safeguard operational policy that was trigged: OP 7.50 Projects on International Waterways was triggered due to the interventions to be carried out in the pilot communities across the Limpopo River basin. The four riparian countries - Botswana, Mozambique, South Africa and Zimbabwe - were represented in the Project Preparation Steering Committee, the body responsible for overseeing the preparation of the project and approving the selection of the pilot areas. Importantly, each of the four countries had sent specific Letters of Endorsement in line with GEF requirements. The obligation of riparian notification was deemed non-applicable at appraisal.

40. ***Environmental assessment is rated satisfactory.*** At appraisal, the project was classified as a Category C project given the small scale of the project activities related to infrastructure interventions in the pilot areas. The project activities did not require resettlement, nor deemed to have any significant impact on the environment. During implementation, concerns about the environmental impact of the physical civil works - including construction of sand dams, wells, and fences - was raised. Screening procedures were thereafter fully integrated into the construction activities with consultants overseeing environmental impacts at each site. These were subject to review and approval from respective environmental authorities. Based on field visits and discussions with consultants, an environmental specialist from the Bank undertook an environmental review during the August 2009 supervision mission; concluding that project activities would not result in any appreciable negative environmental or social impacts.

41. ***Procurement is rated moderately satisfactory***. The project encountered challenges with procurement processes during the initial years of project implementation (see section 2.2). This was in part due to the SADC PMU's limited knowledge of Bank procurement procedures as well as a lack of clarity in the project's implementation manual (PIM). The frequent changes in the Bank's fiduciary team members, often with different views and interpretation, further compounded the issues.

42. The Bank's team provided support and monitored progress of the PMU on procurement procedures ensuring full compliance with procurement plans. The procurement plan was updated with assistance from procurement specialist to accommodate the specific needs of the pilot projects (see section 2.2). Post-procurement reviews conducted during implementation of the

[10] The SADC PMU ensured that these requirements were reflected in the terms of reference for the contracts.

project concluded that procurements were satisfactory and contracts adhered to Bank's requirements. They did however observe weaknesses in the filing of procurement documents and undue delays, which was corrected afterwards.

43. ***Financial management is rated satisfactory***. The project's financial management was delegated to UNOPS on behalf of the SADC WD. An Administrative and Accounting Assistant was recruited and based in the PMU office in Gaborone, Botswana. The Assistant processed minor local currency transactions and submitted the information to UNOPS headquarters located in Denmark for consolidation into the main accounts and reports. The UNOPS's information system, ATLAS, was used for accounting and reporting. These financial arrangements, while satisfactory, had some initial impacts on implementation efficiency due to delays in processing purchase orders and payments by the local UNDP office. Timely submission of audit reports; problems related to time-consuming bureaucracy and delays resulted in downgrading of ratings to moderately unsatisfactory in 2008. This delay also impacted processing of the reallocation and extension, and impacted overall implementation performance towards the end of the project.

44. ***Covenants.*** The conditions for effectiveness were met and there were no covenants during implementation.

2.5 Post-completion Operation/Next steps

45. At project closing, the GEF-supported project has created new knowledge and raised awareness about groundwater management in the SADC region. The momentum generated by this, along with strengthened capacity at both regional and national level is setting the foundation for future work that can further develop additional knowledge, broaden awareness of groundwater and increase the ability of decision makers to manage groundwater sustainably in the SADC region. A critical intervention for keeping the momentum is the operationalization of the Groundwater Management Institute of Southern Africa (GMISA).

46. The development of management and decision support tools, and the demonstration of groundwater drought mitigation measures at the community level through the pilots, have further strengthened SADC's position in fostering regional groundwater management and to the extent possible, increasing the resilience of the region to groundwater droughts. In addition, the commitment of the SADC region to groundwater issues is reflected in initiatives taken by some of its Member States. For example, Malawi is mainstreaming groundwater management in national water resource management programs. Endorsement of the Decision Support Guidelines by the SADC-WRTC is also expected to provide guidance to policy makers in the region beyond closing. The project has also contributed to reconstituting a SADC hydro-geological working group.

47. Already in the PAD, it was recognized that assessing the full success of the pilot interventions would depend entirely on whether they worked in drought conditions. The full utilisation of the pilot's low-technology infrastructures (such as the sand dams and wind-driven distribution of water to nearby use on communal farm land) will become apparent should the area experience a drought, especially a prolonged one. The construction of the pilot interventions (i.e. the construction of drought-mitigating measures including sand dams, groundwater monitoring training, protection of wells etc) were being completed in the final year of project implementation; rendering impact evaluation of vulnerability/resilience difficult. It is expected that with the support provided, communities are better equipped to manage and have access to increased groundwater during a drought.

48. The project has been pivotal in creating consensus amongst the SADC Member States on the need to establish a regional institute to strengthen the long-term management of groundwater across southern Africa. The Groundwater Management Institute for Southern Africa (GMISA) will play a critical role in establishing long-term engagement. At project closing, the GMISA was established and staff identified. However, the funds necessary to operationalize the institution were not transferred due to legal constraints that could not be addressed in due time.

49. SADC has expressed its support and request for a project as evidenced from the PSC's endorsement at their meeting in April 2008. Letters of endorsement have also been received from the Member States. The Bank and GEF is deliberating further support and the Bank team has maintained an active engagement with other cooperating partners, who have shown interest in providing support to a SADC groundwater management program. The project concept note for the future project is being reviewed at the time of the ICR.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

50. ***The project and its objectives remain relevant to SADC, the World Bank and the GEF***. The project objectives were consistent with SADC's priorities of promoting the sustainable development, extraction and protection of groundwater resources. The GEF-funded project was designed to implement one of the priority projects[11] outlined in the SADC Regional Strategic Action Plan for Integrated Water (RSAP-IW). Given the importance of groundwater, especially in reference to the unpredictable impacts of more adverse future climate variability, the project remains relevant to the SADC Member States.

51. The World Bank's 2008 Regional Integration Strategy for Africa provides a coherent and strategically focused framework to guide Bank support for regional integration and programs for management of regional public goods. The strategy acknowledges that regional approaches to the management of shared waters can provide improved water security and more sustainable management of these resources than through national action.

52. In line with the GEF priorities, the project contributed to increasing the recognition of important transboundary environmental resources through the activities surrounding groundwater dependent ecosystems (GDE). This was fully consistent with the GEF strategic priority for International Waters: to expand global coverage of foundational capacity building, addressing the two key program gaps in particular that of water scarcity and competing water use and support for targeted learning (IW-2).

53. In addition, the project supported one of the objectives of the GEF-5 International Waters strategy which seeks to catalyze multi-state cooperation to balance conflicting water uses in transboundary surface and groundwater river basins through the development and implementation of regional policies and measures identified in agreed basin action plans which through collaborative action would promote sustainable functioning of already existing joint legal

[11] "Project 6: Regional Groundwater Management Program in the SADC region".

and institutional frameworks or help establish new ones. 3.2 Achievement of Project Development Objectives and Global Environmental Objectives

54. ***Achievement of the PDO and GEO is collectively rated moderately satisfactory.*** By project closing, the PDO was to have achieved consensus among the SADC Member States for a regional strategic approach to support and enhance capacities in defining drought management policies, specifically in relation to the role, availability, recharge and supply potential for groundwater resources.

55. The achievement of the PDO is rated moderately satisfactory as there have been different levels of success among the project's three main components. Overall, the project has been catalytic in enhancing awareness and bridging the knowledge gaps on groundwater management at regional, national and local levels. This has helped put in place a demand and consensus for greater attention to the needs of groundwater management. This creates a useful framework for crowding in support from cooperating partners around a common vision developed by the SADC Member States. In terms of enhancing capacity in the definition of drought management policies, the project has been pivotal in influencing Member States to make informed decisions on management of groundwater resources. It is, however, difficult to clearly delineate and identify a causal relationship between the project's activities, on the one hand, and any improvement to specific national policies governing groundwater management, on the other.

56. The achievement of the GEO is rated satisfactory as the project was able to enhance the understanding and protection of groundwater dependent eco-systems (GDE) in drought prone areas of SADC. This was done through the generation of scientific knowledge of GDE across the region (e.g. vulnerability maps), the dissemination of this knowledge through effective communication methods to decision makers in the region, and through the small-scale pilot interventions in rural, drought-prone areas.

57. ***The pilot projects have improved the capacity of members of the communities in the 7 pilot sites, that could reduce vulnerability of these communities to the impact of prolonged drought conditions.*** The low-technology infrastructures and the training under the pilots could increase water supply and storage capacity in the seven remote locations in the Limpopo River basin in South Africa, Botswana, and Zimbabwe (see Annex 2 for details). The interventions have been designed so as to: improve food security through a number of small-scale irrigation garden systems where water could be supplied from nearby sand-dams and wells constructed so as to better capture unpredictable water flows[12]; improve water supply through construction and rehabilitation of water pumps[13]; and through awareness raising of how to monitor shallow groundwater levels to better plan abstractions. Furthermore, the way the pilots involved and transferred skills to the local water committees set up under the project, has empowered them to take a more active role in managing local groundwater resources. For example, at a pilot site in Maheni in South Africa, a V-notch system was constructed at the natural communal spring in the village. Community members can now monitor groundwater levels and report to necessary authorities if flows are very low due to over-abstraction in nearby unregulated wells. In summary, the following factors contributed to the achievements of the pilot interventions:

[12] Piloted in Zimbabwe and Botswana.

[13] Water pumps were constructed at pilot sites.

- Appropriate design considering the local social, technical and institutional context of each site which differed across the region;
- Major stakeholders (including local government, local anthropologists, groundwater and agricultural experts etc.) were consulted in the design of interventions that received strong commitment from the local decision makers and communities; and
- Water user groups were formed to promote ownership and sustainability of the interventions. The members received training with support from local teachers and students on groundwater and monitoring mechanisms.

58. The project has the potential to continue raising awareness on the importance of groundwater and its management, facilitate the engagement of communities, and demonstrate the replicability of the appropriate low-technology interventions should they be pursued by future projects. In addition, the development of the specific approaches, methodologies, and the lessons learned from the pilots have been integrated into the development of the Decision Support Guidelines (DSG) for the SADC Member States.

59. ***A wide range of technical studies were undertaken and knowledge tools developed that have further enhanced the capacity and contributed to empowering Member States to make decisions on mitigating and minimizing the effects of groundwater drought.*** Prior to the project, one of the major challenges that the region faced with regards to groundwater was the paucity of information on groundwater resources, such as hydro-geological maps. In particular, there was little consensus on the measurement and management of any transboundary groundwater. Through technical studies, knowledge has been generated and decision makers who work on policy formulation, are better equipped to plan long-term strategies. The GEF funds have, in particular, enabled the development of a number of regional knowledge products and decision support tools - all of which contributed to strengthening groundwater drought management. These include:

- Trans-boundary Aquifer (TBA) monitoring assessment classifying international aquifers within the SADC[14] region and importantly, identified the aquifers that needed to be monitored in order to enhance understanding between neighboring states.
- Regional Groundwater Vulnerability Maps with specific focus on drought vulnerability were developed and disseminated widely in the SADC region. The maps illustrated the level of vulnerability of different areas within the region to groundwater depletion under drought conditions.
- Methodologies for identifying and classifying GDE were developed as well as regional maps identifying GDE locations and their extents.
- Economic valuation of groundwater positioned the importance of valuing groundwater which is needed to inform decisions and foster management of the resource. Groundwater valuation methodologies developed were tested in four SADC regions (Botswana, Namibia, South Africa and Tanzania) following training and consultation.
- Decision Support Guidelines were developed (based on the outputs of the aforementioned technical studies and lessons learnt from the pilot projects) packaged and distributed to decision makers through the Project Steering Committee members and River Basin Organizations.

[14] Fourteen TBA were identified within the SADC hydrogeological maps.

60. ***A critical element of the results chain that built consensus and capacity of SADC Member States was the development and implementation of a Communication Strategy.*** Early on, there was a clear need to increase the understanding of groundwater issues among policy and decision makers, media and the rural communities in the pilot sites. Likewise, the transfer of expertise and scientific knowledge on groundwater to different stakeholders and decision makers was limited. Such limitations needed to be overcome to inform and motivate policy and management actions. To bridge this gap, a Communication Strategy was designed and implemented. Due to its high quality, it resulted in broad awareness raising and knowledge creation across the intended target groups. The communication methods and activities built on on strategic and effective activities. The success of these rested on: i) defined target audience including policy and decision makers, regional water resources technical people, media, groundwater scientists, and local communities; ii) articulated goals in contributing to increased awareness on groundwater management issues by facilitating informed debate on sustainable management of groundwater and presenting information in ways suitable for various target audiences; iii) clearly formulated messages that transferred knowledge effectively; and iv) leveraging communication through established channels in the region. The project was successful in working with existing organizations and mechanisms to communicate the message widely and beyond the scope of the projects immediate counterparts. This rested on the PMU's capacity in securing promotional partnerships with organizations with shared interests and goals. For instance, rather than establishing a Groundwater Newsletter under the project as a medium for pushing the messages across to the different target audiences, the communication team contributed news articles to existing publications that target audiences would normally read; and use of non-traditional awareness creation initiatives. In particular, the following communication achievements contributed to the project objectives:

- Development of a graphic profile (including a unique logo) that facilitated the branding of the project and SADC groundwater as well as increased recognition, confidence and relationship with end users.
- Project brochures with summarized information about the project and its outputs were used as informational awareness tools to targeted audiences. They were produced in three languages: English, Portuguese, and French.
- Management of an information-sharing website[15] (www.sadc-groundwater.org) which was launched on October 2008 and by June 20011 had a record of 9,050 visits from 92 countries and over 25,000 page views.
- Regular regional media releases and radio inserts reaching significant number of people. At least 25 news feature articles we published and reproduced in more than 30 media and online outlets reaching more than an estimated two million people between November 2007 and September 2009.
- Engaging policy makers and senior officials from different sectors in the region on groundwater awareness issues through the more than 18 awareness-oriented meetings which the project organized, co-organized or participated since 2007.
- Engaging in high level stakeholder dialogue at the political level through a partnership with the Groundwater Management Advisory Team (GW-MATE).
- Preparation and delivery of a series of presentations to key decision makers in the region, either through individual national level meetings, or through regional events such as the

[15] Can also be viewed via the SADC website

SADC Water Ministers, Water Resources Technical Group meetings, and annual River Basin Organization meetings.

- Radio interviews on the "State of Groundwater in SADC". The first Radio Programme interview with Channel Africa highlighted the product and the role the project would play in support of sustainable groundwater management.
- Production of informational material targeted at decision makers (for example, "Groundwater Matters for Decision Makers in SADC" [16] which served as a quick reference material to aid policy and decision makers with the understanding of groundwater management concepts and related issues for their attention.

61. As part of the awareness raising activities targeting river basin organizations, the number of organizations that included groundwater in their plans/strategies doubled from 2007 to 2011[17]. The project also supported a number of countries (Malawi, Mozambique, Namibia and South Africa) in developing Strategic Groundwater Management frameworks. Enhanced awareness on groundwater in the region was also exemplified by the mainstreaming of groundwater in the SADC Water Division's communication strategy.

62. The endorsed aspiration for long-term regional cooperation on groundwater management is recognized in the establishment of the Groundwater Management Institute for Southern Africa (GMISA). It illustrates the broad consensus among the SADC Member States and achievement of having a shared, joint strategic approach towards groundwater management. This provides a useful framework for crowding in support from cooperating partners around a common vision developed by the SADC Member States. The GMISA is intended to function as a centre of excellence in groundwater for the region, source of reliable technical assistance, research hub for adaptive measures to climate change specific to groundwater, and the repository for the outputs of the SADC Groundwater Management Program (GMP under the RSAP). It would also play a coordinating role in groundwater intervention, research and study among the region's Member States.

63. Another achievement of the project is that it strengthened regional networks and facilitated the exchange of ideas for continued professional development of the regional groundwater expertise though the bi-annual Project Steering Committee (PSC) meetings combined with technical workshops. The PSC meetings provided a mechanism for SADC Member States to contribute to the project. This approach made an important contribution towards achieving the project objective of developing consensus among SADC Member States.

3.3 Efficiency

64. Estimating the economic efficiency of the funds applied through the project is particularly difficult in the context of the type of benefits that the project achieved; focusing primarily on regional capacity building, knowledge creation and effective communication with groups such as decision makers. Project preparation did recognize that the economic benefits accrued from groundwater are generally not fully known and that this contributes to groundwater not being optimally factored into decision making. A valuation methodology was outlined during preparation; founded on an Ecosystem Services Approach illustrating the potential services that

[16] http://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b081227664

[17] Monitoring & Evaluation Report 2011

groundwater provides (i.e. domestic water use, agriculture and industry, recharge of surface waters and carbon storage benefits, and cultural services etc.). From this, an incremental cost analysis in the PAD recognizes that "…the relation of the alternate case to the baseline could fluctuate, making it difficult to accurately establish the potential unquantifiable cost associated with a future baseline drought scenario (in the socio-economic and ecological sense) that would be offset by undertaking this project components"[18]. In other words, the full economic value of the project's interventions (ranging from knowledge products to the pilots) could only be understood in terms of their ability to improve the management of groundwater - especially in drought conditions.

65. Overall assessment of GEF Grant's efficiency is considered satisfactory given the wide scope of project benefits (local, regional, and global) compared to the funds invested. The project was designed and implemented to be cost effective by ensuring the inter-relatedness among components such that incremental improvements within the pilot areas, for example, being transferred to the regional level. Through an integrated and collaborative process, the project contributed to broad knowledge management. These have the capacity to help bring all Member States onto a more even footing, with subsequent potential in contributing to long-term sustainable management of globally important groundwater resources.

3.4 Justification of Overall Outcome Rating

66. ***The overall outcome is rated moderately satisfactory*** given the achievement of the majority of project activities (both outcomes and outputs)[19] – notably in Component 1 and 2. Due to the challenges in operationalizing the Groundwater Management Institute for Southern Africa of Component 3, coupled with the challenges in project implementation (such as the lengthy and complex procurement processes), a moderately satisfactory rating is granted. In essence, the three main components could stand as single projects and although some were more satisfactory than others, the overall rating is brought down by the mentioned challenges.

67. The development of knowledge products and decision support tools on groundwater of Component 2 (many of which were formally endorsed by the SADC Water Resources Technical Committee) and the catalytic role of the project in fostering agreement amongst the SADC Member States on the need for a regional groundwater institute signals that the overall achievement towards outcomes was commendable.

68. Other key outcomes that have been essential to success are:

- The improved coordination and cooperation among existing institutions as well as water resources experts in the SADC region involved in technical training, management and research in groundwater;
- The support for communication initiatives that have played pivotal role in creating awareness leading to the inclusion of groundwater issues in basin management frameworks and plans of river basin organizations;

[18] PAD, Annex 15, page 66.
[19] See the Results Framework and Annex 2 for overview of achievements and project outputs.

- The enhanced leadership of SADC on regional groundwater management issues as highlighted by the African Ministers Council On Water (AMCOW) recognition of the SADC region as a pioneer in groundwater; and
- Being instrumental in developing partnership amongst stakeholders and donors. The project partnered with the global Capacity Building for Sustainable Water Resources Management Network (CAP-NET) by supporting the development of training materials for use among the African Groundwater Network.

3.5 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

69. The communities at risk of groundwater drought in the seven pilot areas (including female-head households, landless laborers, pastoralists and displaced person) were the prime beneficiaries of the pilot interventions. These communities depend largely on groundwater resources for drinking water, small-scale irrigation and livestock watering. The physical and social interventions were designed to reduce vulnerability to groundwater droughts and enhance water security. These interventions have the capacity to improve food security through the small-garden irrigation systems set up as part of some of the pilots, as well as the increased potential improved water supply systems (shallow and protected wells with hand-pumps). While it is acknowledged that the ability of the interventions to help mitigate against the negative effects of groundwater drought in the long-term, this will depend on the actual response with respect to drought conditions and the operations and maintenance of the infrastructure.

70. The pilot projects facilitated a participatory process in the communities through the establishment of water user committees and paid particular attention to involving both women and men in the activities.

(b) Institutional Change/Strengthening

71. The project addressed aspects of institutional weakness in the SADC region by supporting decision support tools and through the establishment of the GMISA. As a future center of excellence, it has the capacity to enhance and broaden knowledge on groundwater management. The consensus reached on the establishment of the institute indicates the increased trust of the Member States and the institutional strengthening of SADC. The project has also fostered regional cooperation amongst SADC Member States including defining new management schemes for transboundary aquifers and improvement in coordination among government agencies.

72. The project has facilitated the availability and access to knowledge and information of groundwater management that could enhance capacity and thus strengthen key players in the region, especially River Basin Organizations, groundwater experts and policy experts.

(c) Other Unintended Outcomes and Impacts

73. Other outcomes include:

- The PSC representatives from Malawi successfully advocated for the inclusion of resources for groundwater monitoring in the national budget;

- Enhanced knowledge on groundwater and interest created by stakeholders outside the immediate reach of the project (governments, community members, donors, schools, and academic institutions); and
- With GW-MATE, the PMU facilitated training on the importance of groundwater in policies and decision making, targeting key policy makers from the water ministries. As a result, GW-MATE worked in Mozambique with the PSC members to develop a SADC Strategic Groundwater Management Framework. Additionally GW-MATE got commitment from four member states to use the process to develop Groundwater Management in respective countries (Malawi, Mozambique, Namibia and South Africa).

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops (optional)

74. As part of the ICR, a number of stakeholders - including PSC members, consultants and pilot projects beneficiaries - were consulted to gather their opinions and experiences of the project. In particular, the following points emerged from interviews with stakeholders (more details in Annex 4):

- The endorsement and establishment of the Groundwater Management Institute for Southern Africa was one of the most useful achievements of the project, but the lack of sustainability to operationlize it is a key concern;
- The project fostered good synergy amongst Member States as evidence from the regional monitoring network;
- The project design had good intentions but was oversized. It would have been more efficient to reduce project components and have more time for fewer activities. Project objectives could have been less broad and more refined;
- The hydro-geological mapping study was very successful and it established good database that would support groundwater related technical work and enhance public awareness; and
- Having Consultants work remotely on detailed and country context specific issues, especially for Component 2, should have been given the opportunity to work more time within the countries. This would have increased the involvement of Member States and facilitated the exchange of best practices.

4. Assessment of Risk to Development Outcome

75. ***The overall risk to development outcome is rated moderate.*** The long-term sustainability of the project is however hinged on an operational GMISA. While an agreement was reached on the establishment of the institute, the process took longer time than anticipated and the allocation of the grant funding for the institute was not well planned for; with legal obstacles forestalling the actual operationalization of the institute. Further support would sustain progress made and ensure the GMISA is fully functional.

76. The sustainability of completed pilot interventions depend on continuous monitoring and utilization by communities during the forthcoming periods. In order to ensure the physical interventions are maintained and operated in a manner the community, and specifically water committees were provided with training courses on the operation and maintenance of the infrastructures such as windmill pumps, hand pumps, water distribution lines, the sand dams and hand-dug wells. Communities were also provided monitoring equipments and as well as management plans that would further provide guidance on the monitoring process.

77. The knowledge tools have supported the increased knowledge and enhanced the capacity of key personnel within the SADC region. The Decision Support Guidelines, endorsed by the SADC-WRTC can also be utilized by policy makers in the region. The outputs can be integrated into more cohesive, comprehensive SADC communication toolkit so as to ensure the long-term application of the tools.

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

78. **(a) Quality at entry:** ***The Bank performance during identification, preparation and appraisal of the project is rated moderately unsatisfactory***. Preparation did not identify a mechanism nor formally arrange for the management of the unallocated funds ($500,000) in the Grant Agreement. The Grant Agreement was not specific on which project activities the funds would be financing. Likewise the project management services contract for UNOPS did not include the management of the unallocated fund. The PAD, on the other hand, slated this fund for an envisaged Groundwater Drought Monitoring Fund that would support the operation of GMISA. The process of transferring these funds was underestimated, and the legal implications and bureaucracies associated with such a transfer should have been recognized and addressed during preparation.

79. In addition, greater attention on the Bank's part to procedural details of everyday management of the project, along with greater clarity in roles of responsibilities was needed for such complex implementation arrangement of three large institutions (the World Bank, UNOPS and SADC) and activities that ranged from setting up an institution, to developing high-level decision making tools, to constructing small scale groundwater interventions for remote communities. The Bank would ideally have supported a more thorough development of the Project Implementation Manual (PIM) that should have stipulated these detailed procedures along with roles and responsibilities. Yet, the PIM was weak on these areas and subsequently caused notable confusion for the implementing agency and its PMU. This became particularly evident in terms of procurement challenges elaborated earlier.

80. **(b) Quality of Supervision:** ***The Bank performance during supervision is rated satisfactory.*** In spite of initial hurdles faced by the supervision team, the Bank responded to implementation issues and provided due support to the PMU. There were at least two supervision missions annually, which gave full account of project implementation in Aide Memoires and implementation status reports (ISR), and alerted risks that could potentially impact the achievement of the PDO and GEO. Issues were addressed and record of actions were documented. The ISRs also detailed progress and issues with implementation. However, a review of the ISRs shows inconsistency with the reporting of indicators against a number of the results indicators in the PAD.

81. In reference to bringing technical expertise to the client, the Bank team provided support through high-level Technical Assistance through the Bank's Groundwater Management Advisory Team (GW-MATE). Yet challenges were encountered in securing sufficient and consistent expertise in fiduciary management as part of the team. This latter problem improved over the course of supervision. Financial Management and Progress Reports were submitted, post procurements assessments were conducted every year and in all, provided a more aligned support to the SADC WD on groundwater issues as the project progressed.

82. **(c) Justification of rating for overall Bank performance*: In view of the Bank performance in providing adequate support to project design and ensuring all aspects of project implementation were covered during Bank supervision mission, the ICR rates the overall performance of the Bank as moderately satisfactory.***

5.1 Borrower

83. **(a) Regional Agency Performance: *The ICR rates the performance of the regional agency as satisfactory.*** The SADC Member States demonstrated a high level of commitment to the project and to the achievement of the PDO and GEO. Project ownership was evidence from a high level of participation in the PSC meetings. The PSC was particularly successful in providing a strong and cohesive framework for guiding implementation and constituted as a hydro-geological sub-committee to continue work with the SADC Member States and the SADC Secretariat toward better management of groundwater in the regional transboundary context and development of key projects.

84. The SADC Secretariat provided an effective mechanism for reinforcing the implementation of the project and facilitated dialogue among the SADC Member States. SADC was instrumental in coordination of the work of the PMU, awareness creation (especially among parliamentarians), facilitated work at the pilot level, and took full ownership of the project.

85. **(b) Executing Agency and PMU/PSA Performance: *The ICR rates the performance of implementing agency as moderately satisfactory***. The SADC Water Division was cooperative and facilitated the flow of information from SADC to the key personnel involved in groundwater issues at the national level. The agency also showed strong commitment to the project, played a lead role in the PSC meetings and provided advice and guidance, especially regarding strategy and water initiatives, to the PMU. In spite of some of the challenges encountered, including its limited staff resources, the PMU showed strong commitment to the project.

86. UNOPS, contracted as a Project Support Agency (PSA), provided administrative and financial management support as needed during project implementation. In providing its services, however, UNOPS faced a number of challenges in facilitating project implementation. Delays were created at the early stages due to obstacles to set up the Project Management Unit, procurement of necessary project management functions, replacement of project manager when the need arose, as well as delayed submission of early audit reports. Following some momentum in project implementation, UNOPS financial management processes were unsatisfactory as they delayed payment and procurement processes which caused problems for the project. Reviews conducted during supervision missions had rated the financial management as moderately satisfactory to unsatisfactory due to UNOPS delayed submission of required audit reports. While UNOPS was obligated to provide support to the SADC PMU, they did not facilitate the necessary collaboration and procurement support was not forthcoming. There was limited participation by UNOPS in the field or supervision missions.

87. **(c) Justification of Rating for overall Borrower performance: *The ICR rates overall performance of the Borrower as moderately satisfactory***. Despite the project management complications encountered that delayed implementation and achievement of PDO and GEO, the overall rating is deemed moderately satisfactory.

6. Lessons Learned

88. The main lessons learned are:

- **Establishing realistic objectives of the project is essential.** In hindsight, the project objectives were deemed too broad and complex to easily track results (which is reflected in the PMU adopting a more comprehensive and detailed results monitoring framework). It is imperative to ensure project objectives are set realistically with respect to the context and available resources as a foundation for project success, such as the borrower's level of capacity and market forces that can enable the achievement of objectives (such as procurement of small contracts in highly complex environments in southern Africa).
- **Communication and awareness raising initiative proved to be very effective in bringing stakeholders together at a regional level and building a foundation of consensus for the importance of groundwater management.** The project use of a broad and consistent communication strategy through innovative delivery mechanisms not only gave visibility to the project but improved the understanding of groundwater and its management amongst key stakeholders. The success of such strategy is, among others, demonstrated in the inclusion of groundwater in management plans of some SADC Member States. The project demonstrated the importance of far-reaching dissemination through non-traditional project activities, such as media releases, presentations at parliamentarian forums and so forth.
- **PSC Meetings combined with technical workshops** provided peer-to-peer learning through facilitating the exchange of ideas, the strengthening of regional networks and the continued professional development of the regional pool of groundwater expertise.
- **Alignment of procedures between large organization is challenging.** The implementation of a GEF Grant by the Bank in collaboration with an equally large international organization, UNOPS as the PSA, demonstrated the challenges of coordinating different disbursement and procurement processes. In hindsight, it may have been more productive and efficient to strengthen the capacity within the implementing agency.
- **The regional project design should be more realistic in terms of assuming that knowledge creation and decision support tools would directly result in improved policy or legal actions at national level** (alongside physical interventions in the pilot areas and establishment of a new regional institute, the GMISA) – as was articulated in the PDO. This would have called for greater recognition of the time required for the political and institutional processes that lead to decisions on legal or policy. Procurement systems for community based project interventions need to be simplified so as allow for community level procurement of goods and services where infrastructure development is a central component of project interventions.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

89. An independent evaluation of the project carried out by UNOPS, in fulfillment of the GEF requirements, was submitted to the Bank in December 2011. The evaluation concludes that the project has been successful in generating awareness about the value of groundwater to socio-economic development and producing tools and decision guidelines for use by policy makers. A number of challenges, as identified in this ICR, are also stipulated. The summary of the evaluation report can be found in Annex 7.

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD Million equivalent)

Components	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Pilot testing	1.74	1.35	77.5 %
Regional Drought Management support	2.03	1.93	94.8 %
Regional Groundwater Management Institution	0.58	0.43	73.0 %
Project Management and Administration	2.15	2.75	127.0 %
Groundwater Monitoring fund	0.50	0.50	100.0 %
Total Baseline Cost	**7.00**	**7.00**	100.0 %
Physical Contingencies	0.00	0.00	-
Price Contingencies	0.00	0.00	-
Total Project Costs			
Project Preparation Facility (GEF-PDF B)	0.38	0.38	100.0 %
Front-end fee IBRD	0.00	0.00	-
Total Financing Required	**7.38**	**7.38**	**100.0 %**

(b) Financing

Source of Funds	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Borrower	0.00	0.00	100.0 %
EC: European Commission	1.00	1.00	100.0 %
Global Environment Facility (GEF)	7.00	7.00	100.0 %
FRANCE, Govt. of (Except for Min. of Foreign Affairs-MOFA)	0.08	0.08	100.0 %
GERMANY, Govt. of (Except for BMZ)	1.22	1.22	100.0 %
Local Govts. (Prov., District, City) of Borrowing Country	3.52	3.52	100.0 %
SWEDEN: Swedish Intl. Dev. Cooperation Agency (SIDA)	0.50	0.50	100.0 %

Annex 2. Outputs by Components

Component 1: Development and Testing of a Groundwater Drought and Management Plan for the Limpopo River Basin Pilot Areas (US$2.3M)	
Establish a local framework involving all stakeholders to ensure a transparent learning environment- during and after the pilot interventions and to ensure maximum benefit from the pilot demonstration activities.	Water user groups were established representing stakeholders (local authorities, specific community groups, farmers, men and women) in each of the seven pilot sites in Botswana, South Africa and Zimbabwe in the Limpopo River Basin. Site interventions in Mozambique were cancelled due to cost and logistics implications of the remoteness of locations. The water user groups also included representatives of the districts which helped strengthen the linkages between the community and public authorities.
Collate and assess existing information and knowledge on the institutional, biophysical, socioeconomic, formal and customary water rights aspects associate with groundwater droughts in the pilot areas.	Detailed baseline analysis of the communities were done (in terms of groundwater resources and livelihoods) and informed design and delivery of pilot interventions.
Assess regulatory provisions and institutional arrangements in the pilot areas in the context of implementation of groundwater protection and management. Identify impediments to implementation and propose measures to address these impediments.	Interventions were adapted to the local context of the different pilot areas. Specific questions were asked at community level to inform choice of intervention and appropriate sites including water availability, accessibility, affordability and acceptability, impacts of drought on community water supplies and coping strategies deployed, and any socioeconomic and sociocultural constraints and opportunities for improved water management.
Establish representative 'nodes' within the pilot areas for interventions for groundwater drought mitigation.	Representative nodes were identified using a selection criteria endorsed by the PSC members. A set of three matrices were designed – the Groundwater Potential Matrix, the Data Availability Matrix and the Water Supply Matrix – and applied.
Develop management plans for the selected nodes.	Management plans were developed and disseminated in October 2011 to each of the seven pilot sites.
Undertake data collection with assistance from local education institution: - inventory of boreholes - basic hydrogeological characteristics - groundwater quality - permeability - recharge areas - wetland ecology	School-teachers and students were engaged during trainings offered to each pilot communities to facilitate monitoring and data collection.
Implement physical interventions and associated capacity building (for professionals, technical staff and local government staff such as water bailiffs) and awareness raising initiatives.	Physical interventions included (i) the construction of four small sand dams; (ii) installation of windmill pumps in four communities to transfer water from shallow wells to water storage tanks ('jo-jo' tanks); (iii) water storage tanks in four localities; (iv) fencing and preparing demonstration plots for small-scale irrigation in four localities to benefit the community; and (v) community management plans. Training workshops were conducted for water committees and relevant local government staff. Gobojango, Botswana – Construction of sand dam, well, windmill pumps, reservoir and fenced community farm plot, training, monitoring and management. Tsetsejbwe, Botswana – Construction of sand dam, well, windmill pumps, reservoir and fenced community farm plot, training, monitoring and management. Maheni, South Africa – Rehabilitation of existing well, training, monitoring and management

	Sagole, South Africa – A "V" notch weir constructed in natural spring, training, monitoring, and management. Shakadza, South Africa – Rehabilitation of pump, training, monitoring and management Dite, Zimbabwe – Construction of sand dam, windmills, storage tanks, community farm plot, rehabilitated hand pumps, training, monitoring, and management. Whunga, Zimbabwe – Sand dam, windmills, storage tanks, community farm plot, training, monitoring, and management.
Establish lessons learnt from representative nodes and integrate into awareness creation programme .	Lessons learnt were established and incorporated into the awareness activities.
Component 2: Regional Groundwater Drought Management Support (US$ 2.4 million)	
Development of a Regional Groundwater Vulnerability Map (based on hydrogeological map and database).	A regional groundwater vulnerability map was developed and presented to the PSC in April 2011 and disseminated to stakeholders. A study on the international transboundary aquifers in the SADC region was finalized in September 2011.
Research of Groundwater Dependent Ecosystems was generated to address the general knowledge gaps in the region.	Research in groundwater dependent ecosystems was undertaken which developed a methodology on the occurrence of GDE in the region. A GDE map was presented PSC in April 2011, and disseminated to stakeholders.
Regional Awareness creation regarding groundwater.	A broad communication strategy developed to execute an awareness campaign on groundwater issues.
Develop Decision Support Guidelines (DGS) and a Knowledge System for Groundwater Drought Management in the Region	Lessons learned from execution of other project components were collated to develop the Decision Support Guidelines. The DSG were endorsed in May 2011 and widely disseminated to SADC WRTC, PSC members and stakeholders.
Component 3: Establishment of the Groundwater Management Institute of Southern Africa(GMISA) (US$0.42 M); plus US$0.5 M Groundwater Drought Monitoring Fund (GDMF).	
Obtain re-endorsement of the concept of the GMISA and the criteria for selection of a host for the institution.	The Water Resources Technical Committee (WRTC) consisted of representatives from 12 of the 15 SADC Member States. The WRTC unanimously re-endorse GMISA concept and made recommendations on the shortlisted institutions in May 2008.
Refine and approve the criteria for host institution selection in consultation with relevant Member States stakeholders.	In order to ensure a transparent and fair process for short-listing the most appropriate potential host institutions, a set of criteria for the evaluation of the potential host institutions was developed. The criteria was developed in consultation with the PSC.
Present a shortlist o f candidate institutions and select the GMISA host through SADC procedures	Four potential host institutions were shortlisted for GMISA based on a rigorous set of criteria approved by the PSC. The selected institution was the University of the Free State in South Africa.
In conjunction with Member States: - design the GMISA - develop a mandate or charter for the Institution, including relationship with existing SADC bodies and staffing/planning/financial aspects for an initial period of 5 years.	A strategic business plan for GMISA was prepared.
Generate the Terms of References of Institution staff and assist with their employment.	Terms of references for the post of Director, Administrator and Technical Specialist was prepared and candidates had been selected.
Initiate the functioning of the institution and the transfer of component outputs to be accommodated by the GMISA.	Not completed.
Prepare GDMF Agreement including governing rules and procedures	Not completed.

Establishment of GDMF Account.	Not completed.
Raise funds and initiate ongoing monitoring and research activities	Not completed.
Component 4: Project Management and Administration	
Establish and activate/commission the project steering committee representing the technical, government and community groups benefiting from the project outputs.	The PSC was commissioned and represented water managers the SADC Members States.
Convene and hold annual meetings and advise SADC WD on project implementation.	A total of 9 PSC meetings were held throughout the project implementation.
Procure and contract PSA according to World Bank guidelines.	SADC signed an agreement with UNOPS as the PSA on February 20, 2006.
Establish the PMU and assist in the procurement of the Project Manager from within the region.	The SADC PMU was established in Gaborone, Botswana in January 2007. The project manager started on January 5, 2007.
Undertake administration, financial management and procurement activities in support o f the PMU (and on behalf o f SADC Secretariat) for the full duration of the project.	The Bank mission reviewed the project's financial management arrangements and procurement provisions with the SADC PMU.
Undertake financial and procurement reporting.	Financial and procurement reports were undertaken and reviewed.
Develop project work plan.	A work plan outlining the performance targets agreed by the Bank mission, SADC PMU and SADC was developed.
Implement, manage and monitor the work plan.	The work plan was implemented and managed by the PMU. The Bank mission closely monitored the implementation of the plan.
Prepare Replication Plan by project Mid-Term.	Not completed.
Carryout project advocacy and project awareness creation roles and responsibilities.	Activities supporting regional awareness regarding groundwater were supported as required with contracts with communications and media specialist. A comprehensive communication strategy was prepared and implemented through the project.

Annex 3. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Supervision/ICR			
Leonard John Abrams	Consultant	AFTWR	Previous Task Team Leader
Modupe A. Adebowale	Consultant	AFTFM	Financial Management
Henri A. Aka	Operations Officer	SASHN	Procurement
Belinda Lorraine Asaam	Program Assistant	AFTUW	Team Support
Andrew Osei Asibey	Sr Monitoring & Evaluation Specialist	AFTDE	Monitoring & Evaluation
Devendra Bajgain	Operations Officer	AFTUW	Operations quality
Slaheddine Ben-Halima	Consultant	MNAPR	Procurement
Antonio L. Chamuco	Senior Procurement Specialist	AFTPC	Procurement
Simon B. Chenjerani Chirwa	Senior Procurement Specialist	AFTPC	Procurement
Lungiswa Thandiwe Gxaba	Sr Environmental Specialist	AFTEN	Environmental Assessment
Tandile Gugu Ngetu	Financial Management Specialist	AFTFM	Financial Management
Jonathan Nyamukapa	Sr Financial Management Specialist	AFTFM	Financial Management
Chitambala John Sikazwe	Procurement Specialist	AFTPC	Procurement
Samuel Taffesse	Operations Officer	AFMZW	Co-Task Team Leader
Albert Tuinhof	Consultant	TWIWA	GW-MATE
Patrick Piker Umah Tete	Sr Financial Management Specialist	AFTFM	Financial Management
Marcus J. Wishart	Sr Water Resources Specialist	AFTWR	Task Team Leader
Louise Croneborg	Water Resources Management Specialist	AFTWR	ICR Task Team Leader
Olusola Ikuforiji	Junior Professional Associate	AFTWR	ICR Main Author

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY00	0	4.38
FY01	4.95	34.31
FY02	8	22.13
FY03	0.13	16.91
FY04	4.95	60.67
FY05	17.12	73.74
Total:	35.15	212.14
Supervision/ICR		
FY06	15.1	66.64
FY07	18.73	97.14
FY08	13.99	91.22
FY09	8.23	39.62
FY10	13.11	72.76
FY11	14.51	59.12
FY12	20.36	81.59
Total:	104.03	508.09

Annex 4. Beneficiary and ICR Survey Results

A. Context

1. Beneficiaries at the national and regional level of project intervention - the SADC Water Division and PSC members - were consulted to obtain their feedbacks on the project implementation and outcomes.

2. Beneficiaries at the local level of the seven pilot communities were consulted through a eight day long ICR mission to Botswana, South Africa and Zimbabwe.

3. Consultants contracted to deliver project activities were consulted, as were other cooperating partners (notably GIZ).

B. Scope

4. Consultations included the administration of a questionnaires sent via email to all PSC members. Phone interviews were also used when necessary to follow up directly with members. Staff from the PMU were consulted in detail and the ICR mission of October 2011 involved a series of meetings with stakeholders at various levels.

C. Summary Findings

I. Overall

5. Setting up of the Groundwater Management Institute for Southern Africa, would support a continued sustainable management of groundwater within the Member States and remind local water managers of their role in sustaining the project outputs.

6. Increased access to groundwater information to facilitate sound technical decisions by policy makers which Groundwater Management Advisory Team (GW-MATE) facilitated was one of the best achievement of the Project

7. The PSC meetings were necessary and effective. The idea that water managers from various countries who are also critical in the management of transboundary groundwater resources sat in the same PSC gave a good breeding ground for rapport. There have been increased communications among Malawi, Tanzania, Zambia and Mozambique who are strategic water resource neighbors.

8. The project had made a few gains in fostering good synergy amongst Member States as evidence from the regional monitoring network.

9. The project design had good intentions but was oversized. It would have been more efficient to reduce project components and have more time for fewer activities. Project objectives could have been less broad and more refined.

II. Specific Findings

10. There is need to sustain targeted awareness campaigns for Policy makers to fully understand the importance of having politically invisible projects like groundwater monitoring included in the national budgets at all times.

11. The Bank provided very useful technical guidance and groundwater materials for policy makers. UNOPS and SADC PMU successfully organized PSC meetings and provided platforms for technically vibrant discussions among representatives from Member States. However, most of the critical outputs of the Project were not finalized by the time the Project was closing.

12. The groundwater and drought vulnerability tools and the Groundwater Dependent Ecosystems Assessment and Mapping and Groundwater Valuations have greatly validated the need to seriously consider groundwater issues in our policies and national strategies as emphasized earlier on in our awareness campaigns.

13. Deliberate arrangements could have been put in place to reach out to those Member States not in the pilot scope but had/have serious groundwater issues since they are the ones pulling the regional score down on groundwater management. Countries like Malawi that have very limited data on groundwater resources could benefit from the project by having one or two consultancies or works that would close in on this gap. Limited data on groundwater resources has even affected the quality of the regional groundwater drought and management maps produced thus the representation is very crude.

Annex 5. ICR Mission and summary of pilot visit

In October 2011, a two week mission was organised in Botswana, South Africa and Zimbabwe as part of the project implementation completion review. The purpose of the field visits for the Mission was partly to assess status and progress, but primarily in terms of collecting first hand information as part of the project implementation completion review.

The ICR mission consisted of detailed consultations with the SADC Water Division, past and present staff from the Project Management Unit/UNOPS, Consultants and Firms contracted to deliver project activities, cooperating partners including GIZ, and importantly, field trip visit to the seven pilot communities supported under Component 1 in the Limpopo River basin. The team visiting the pilots the included staff from the ICR team, SADC PMU and the Wellfield consultants (with a Hydrogeology Specialist from the British Geological Survey and three Socio-anthropologists, one for each of the three countries).

The following is an account of the main interventions and findings from the field visits:

It was clear that the pre-conditions for ensuring the interventions met local needs were very different in each country despite the fact that hydro-geological, climate and groundwater dependency conditions are generally similar. In South Africa, the government responsibilities and procedures are well developed albeit facing challenges in responding quickly to local needs. The South African communities are also better connected through roads, electricity and telecommunication. In Zimbabwe, the continued political challenges and high reliance on support from NGOs create a complex environment and any intervention to buffer the livelihoods from external shocks is considered a valuable contribution. In Botswana, the communities were highly organized, vocal and clearly communicated their concerns and demands through the 'Khotla' method of public participation and consultation.

Progress towards completion of the interventions according to the original plan had faced a number of challenges. Further efforts were needed to ensure construction and installations of necessary civil works and post-construction monitoring and evaluation. The final pump mechanisms or pipes were not installed in some instances due to the dependency on the water levels needed within the wells and as a result the contractor has not been able to provide the agreed training. The retention funding were held back to ensure completion of these agreed works and tasks and needed to be managed by the SADC Water Division and local authorities. Due to the project closing, together with delays in implementation and a sense of fatigue from community members, the interventions were completed without sufficient time for long-term post-construction monitoring.

South Africa.
Maheni. The management of the intervention in Mahedi was strong linkages to the local school and teachers. Through their involvement, pupils were involved in the daily monitoring of the well which fed into a reservoir. The storage facility functioned as a back up during spells of shortage/drought and helped supply the associated lengthening of the pipeline (with 1.8 km to Maheni from well, and further 0.4 km to next village). Along the lines were 5 standposts/taps serving community member.

Sagole. The reliance on water in Sagole is primarily from a number of individual boreholes. However, the community has two natural springs that can supply water during drought periods when the shallow wells fail. The natural spring has a spiritual and religious significance for the community which informed the intervention to protect it. The intervention is based on creating a small v-notch weir structure to give the community an indication of flow patters as well as protect the sides of the well from disturbance; and on training of the local community of how to measure basic water quality parameters. Nearby, a clinic has recently installed a borehole and when they started abstracting, the community could notice a reduction in flow from the spring and as a result could communicate with the manager of the clinic.

Shakadza. The third intervention in South Africa included training on monitoring groundwater levels (with electronically connected dipper) of an electronically pumped well. The well supplies a reservoir tank at an elevated position above the community which then feeds into a piped network. The reservoir is solely reliant on the pumped well, meaning that when the pump is out of service the reservoir is not refilled and

communities either have to buy from neighbors with individual boreholes or use the water in the streams. During the visit, this had occurred and the pump was said to be under preparation by the Municipality. It was believed that the water level may not have been monitored and falling below the pump level, the pump may have drawn in air damaging its internal mechanisms.

Zimbabwe.
The two Zimbabwean sites are situated in the Beitbridge district along the border with Botswana, South Africa and Mozambique. In stark contrast to both South Africa and Botswana, the two communities were isolated both physically and economically. Poverty levels are very high, and reliance on outside support (primarily from NGOs such as Care) is also high. Thus, the buffer interventions to help communities during drought period are of high value. The interventions included rehabilitation of bush-pumps, construction of one sand dam in each village along their adjacent ephemeral sand rivers, construction of wells connected to the dams, construction of smaller windmills to pump from the wells into two 5ML reservoirs situated with a tap on a one hectare large and fenced farming plot.

Whunga. At Whunga, water had already started collecting behind the sand dam. The community said this was a big surprise. The reservoir connects to a well with a windmill where some minor civil works were needed. The well then connected to a reservoir tank that supplied a communal farming plot that was prepared as part of the Project. Despite needing to be some minor works, the community had already prepared the land for the season and was deciding upon best crops.

Dite. A similar situation to Whunga, the Dite community had already prepared the land benefiting as part of the interventions. The repaired hand pumps were also welcomed improvements for women that are responsible for water collection. No water had yet collected in the sand dam and some civil works was needed to complete the windmill driven

Botswana.
The communities of Tsetsejbwe and Gobojango were very well prepared and organised for the official handover and visit. Through the 'Khotla' mechanism of consultation (structured process of sharing information updates, concerns and involving members of the community), the Mission was informed of the concerns of the community and the way that the construction company had executed their tasks.

Tsetsejbwe. The members of the community at Tsetsejbwe were most vocal about reflections on the intervention. The intervention has the capacity to act as a buffer during drought period and that it was important to prepare the allocated community land for when the intervention is finalized. The impression from the visit was that the community was appreciative of the works and training, but that there were perceived risks associated that held back engagement at this stage.

Gobojango. The intervention in Gobojango included the construction of a sand dam with connected well, windmill pump, connected reservoirs and fenced communal farming plot. The SADC PMU and Wellfield representatives, together with the Mission, met with the community and Water Committee through a 'Khotla'. The concerns raised emphasized the importance of civil works being finalised and community involvement. The Wellfield representatives assured the Village Chief and the community members of the necessary follow-up actions.

Overall, the physical interventions had been substantially completed, requiring only installation of minor works that are dependent on water levels in the wells, as well as the operation and maintenance training for members of the Water Committees and the communities which was being completed in October 2011.

Annex 6. Summary of Borrower's ICR and/or Comments on Draft ICR

Executive summary of the borrower's Project Evaluation report

A. Key Findings and Conclusions of the Evaluation

1. The project was conceived as part of the SADC Regional Strategic Action Plan for Integrated Water Resources Management (SADC RSAP-IWRM) starting in 1998. The project was therefore a component of the programme that articulated SADC priorities in water resources management.
2. Project was implemented through the classical GEF model of having an Implementing Agency and an Executing Agency. The World Bank performed the role of the Implementing Agency while the SADC Secretariat Water Division assumed the role of the Project Executing Agency with support from the United Nations Office of Project Services (UNOPS) which was engaged as a Project Service Agency through a Management Services Agreement to provide general project administration and financial management support to the SADC WD. A Project Management Unit was established in Gaborone, Botswana to oversee day-to-day project implementation. Both UNOPS and the PMU were to report to SADC on all aspects of project management and implementation.
3. A Project Steering Committee (PSC) made up of representatives of SADC member states, a representative of the SADC Environment Sector and the private sector was also set up to provide technical and administrative guidance to the project. The PSC reported to the sector Committee of Ministers responsible for water resources through the Water Resources Technical Committee made up of senior officials responsible for water resources management in each member state.
4. In the initial phases of project implementation it was evident that staff at the PMU was knowledgeable of World Bank procurement and financial management procedures but did not have the technical experience with the application of these procedures. The UNOPS constituency operates on a system of advances to project implementation agencies while the World Bank disburses finances upon the approval of financial reports. UNOPS therefore found it difficult to adapt their financial management systems to those of the World Bank as required under the Grant Agreement. These inconsistencies in management systems caused delays in financial disbursements which had a negative impact on project implementation. As a result, the project performance was rated as **Unsatisfactory** in this initial phase and was threatened with closure. The recommendation that GEF rationalize project management systems among all Implementing and Executing Agencies across their whole portfolio would help resolve this problem.
5. The project was aimed at changing the attitudes and practices of SADC decision makers in groundwater management. By their very nature and due to the short timeframes over which such projects are implemented they usually take a long time to yield results. The project had produced a lot of outputs at its closure which were ready for packaging and finalization before empirical results could be measured. These included a wide range of targeted awareness products and tools and guidelines for groundwater management for use by both community groups and policy makers. An area of concern was with the operationalization of the Groundwater Management Institute for Southern Africa which had not occurred at the end of the project although all the necessary planning for its establishment had been completed. SADC-WD will need to focus on turning these outputs into results through deliberately focusing on these outputs under the proposed follow-on project.

B. Overall conclusion

6. The overall conclusion of the evaluation is that the project has been **Successful (S)** in generating awareness about the value of groundwater to socio-economic development and producing tools and decision guidelines for use by policy makers. SADC and the World Bank will however need to ensure that these outputs are packaged and handed over to the Groundwater Management Institute for Southern Africa for continued implementation. This way project outputs will be sustained beyond the life of the project.

C. Lessons Learnt and Recommendations

I. Lessons

7. This evaluation has indicated that the SADC Groundwater and Drought Management Project came to an end before it yielded empirical results and impacts. Despite this, a number of its outputs were developed to a level where they, with a little more investment, would start showing results.

8. The following lessons have been learned from the implementation of the project:

i. The project revealed that although groundwater and surface water are interlinked components of the hydrological cycle, groundwater has largely gone un-managed. Sustainable water resources management requires that these two streams be managed together through water management institutions at all levels expanding their approaches and activities to include the management of the groundwater.

ii. Complex projects like the SADC Groundwater and Drought Management Projects require that management entities recruited to implement them are equipped with all the skills needed to get them off the ground as quickly as possible. The SADC PMU had a slow start to project implementation due to limited technical experience with World Bank project implementation procedures. The World Bank should have conducted provided training in project administrative and financial management procedures to the PMU at the very outset to avoid the delays that were experienced.

iii. The relationship between Implementing and Executing Agencies under the GEF need to be standardized to avoid the problem of lack of alignment of these systems as occurred between UNOPS and the World Bank under this project.

iv. The provisions of Grant Agreements need to be explained and agreed to by all concerned stakeholders at project inception. This will assist in clarifying what is possible and what is not possible under these agreements and avoid raising unfounded expectations. The issue of the capitalization of the SADC Groundwater Management Fund is a case in point.

v. Awareness campaigns in and of themselves yield little impact unless they are targeted at specific stakeholders. The development of specific discrete messages for decision and policy makers under this project has resulted in some countries allocating financial resources specifically for ground water management in their national budgets. In addition, at least four countries in the region have developed plans for incorporating groundwater management into their water resources management policies as a result of these targeted awareness campaigns.

vi. The project has demonstrated the value of research as a foundation for the valuation of groundwater at various scales. The methodology for valuation of groundwater developed under the project will be a valuable contribution to groundwater management in the region. It is therefore important that SADC continues supporting the initiatives that have produced knowledge about groundwater and use these to inform the processes of valuation of the resource. The project has produced tools such as groundwater vulnerability maps and maps showing the distribution of groundwater dependent ecosystems which are critical in assessing the value of the resource for socio-economic development. These will be lost if continued support is not provided. The Groundwater Management Institute of Southern Africa will provide an important venue for such support.

vii. This project has demonstrated that community involvement, education and empowerment in the development and management of water resources results in these communities being able to secure their own livelihoods in periods of drought at minimal cost and without the involvement of central government agencies. Conventional approaches to water supply and management therefore need to be reviewed in light of the experiences from the pilot projects that were supported through this project.

viii. Procurement systems for community based project interventions need to be simplified so as to allow for community level procurement of goods and services where infrastructure development is a central component of project interventions. A possible innovation could be to make procurement a part of the contracts issued to service providers.

II. Recommendations

9. Final evaluations usually do not focus on making recommendations except in situations where issues of sustainability of outputs arise. The following recommendations are therefore being made to ensure that the gains from the current project are not lost.

- Issue: The Impact of Project Closure

10. This Final Evaluation was conducted at a time when the project was being closed and was limited by the fact that some evaluation activities could not be conducted after October 31st 2011, the official date of project closure. It was observed that a lot of project outputs were left hanging without being consolidated into comprehensive packages that could be handed to a responsible entity or successor project. A decision has already been taken by SADC to transition to a successor project to the Groundwater and Drought Management Project. **It is recommended that the World Bank and SADC WD collate the outputs and outcomes of the project and transfer these to GMISA and the follow-on project for continued implementation and finalization.**

- Issue: Sustainability of Project Outputs

11. A critical outcome of the project was the establishment and operationalization of the Groundwater Management Institute for Southern Africa. GMISA would then assume responsibility for continuing with some of the activities initiated under the project for purposes of sustainability. SADC member states through the Secretariat and the Project Execution Agency have finalized all plans for the establishment of this institute which is now registered and incorporated as a not-for-profit organization under South African law. A host organization in South Africa has been identified and agreed to by all member states and core staff needed to make the institution functional identified. At the time of project closure however, the World Bank had not disbursed the GMISA Fund that was provided for in the project as initial funding for the operationalization of the institution. **It is recommended that the World Bank clarify their position regarding the disbursement of these funds and engage with SADC Secretariat on a way forward with regards the establishment and operationalization of GMISA.**

- Issue: Continued development of tools for effective groundwater management

12. The project has produced tools and guidelines for effective groundwater resources management. This process has however been hampered by a general lack of good data on groundwater resources in most SADC member states. **It is recommended that SADC Secretariat continues to encourage member states to improve the quality and availability of groundwater data for use in regional programming. In this respect, SADC should ensure that the tools that have been developed to date which include groundwater vulnerability maps, maps on distribution of groundwater dependent ecosystems continue to be refined as more information becomes available so that they provide a scientific basis for effective** ground**water resources management.**

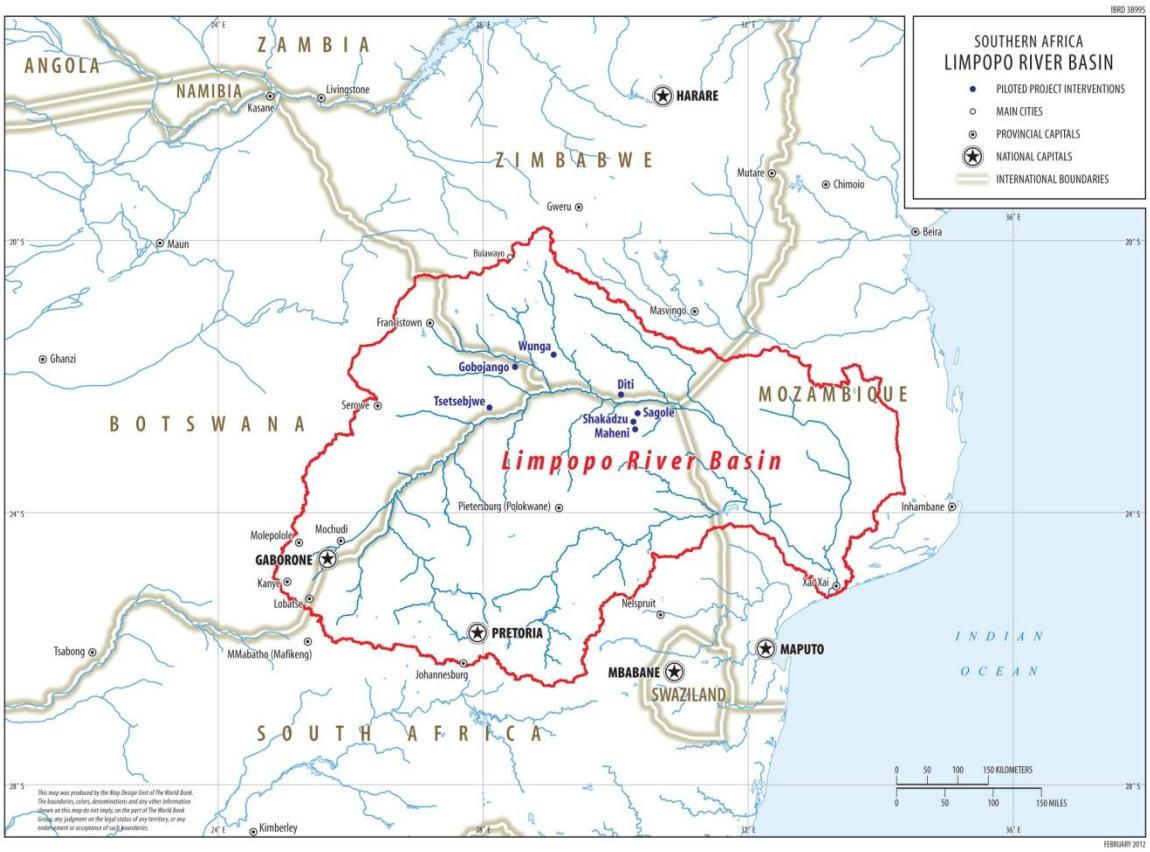
- Issue: Continued awareness creation

13. Awareness creation is a continuous process. Although the project has raised the profile of groundwater to a point where some governments in the region now provide budgetary allocations for groundwater management, awareness creation should be treated as an on-going activity to ensure that the momentum gained so far is not lost. It is recommended that the SADC Water Division Communication Specialist assume responsibility for ensuring that this aspect of project implementation is incorporated into the follow-on project that SADC has agreed upon."

Annex 7. List of Supporting Documents and Products

Output	Link
Development and Testing of Groundwater and Strategies in the Limpopo Basin Pilot Areas	http://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b081208da4
Groundwater Valuation	http://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b081208ded
Regional Groundwater Monitoring Network: Transboundary Aquifers in SADC Review and Classification with respect to Regional Groundwater Monitoring	http://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b081208df1
Pilot Management Plans	Dite Pilot Site: http://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b0812dde56 Wunga Pilot Site: http://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b0812dde57 Maheni Pilot Site: http://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b0812dde58
SADC Regional Vulnerability Mapping	http://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b081208deb
Groundwater Dependent Ecosystems (GDE)- occurrence, vulnerability, value and protection	http://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b081208def
The SADC Decision Support Guidelines Brochure	http://wbdocs.worldbank.org/wbdocs/drl.html?objectId=090224b0812dde59
Project Brochure (Communication & Awareness Activities)	http://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b081221311
Videos	SADC Groundwater/Climate Change Awareness (less than 2 minutes) www.youtube.com/watch?v=24obPRB5pXA SADC Groundwater Management Awareness (8 minutes) www.youtube.com/watch?v=NznnYusu99g SADC Groundwater Protection (less than 2 minutes) www.youtube.com/watch?v=w7T-G51SASs SADC Groundwater Threat Awareness (less than 2 minutes) www.youtube.com/watch?v=PCoaI8QQ8NE

MAP


IBRD 38995
SOUTHERN AFRICA
LIMPOPO RIVER BASIN
PILOTED PROJECT INTERVENTIONS
MAIN CITIES
PROVINCIAL CAPITALS
NATIONAL CAPITALS
INTERNATIONAL BOUNDARIES
ZAMBIA
ANGOLA
NAMIBIA
ZIMBABWE
BOTSWANA
MOZAMBIQUE
SOUTH AFRICA
SWAZILAND
INDIAN OCEAN
Limpopo River Basin
HARARE
GABORONE
PRETORIA
MAPUTO
MBABANE
Kasane
Livingstone
Mutare
Chimoio
Gweru
Beira
Maun
Bulawayo
Masvingo
Francistown
Wunga
Gobojango
Diti
Sagole
Shakadzu
Maheni
Tsetsebjwe
Serowe
Ghanzi
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Inhambane
Molepolole
Mochudi
Kanye
Lobatse
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