

**TOWARDS SUSTAINABLE
WATER RESOURCES MANAGEMENT
IN SOUTHERN AFRICA**

Volume I: Final Report

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ABBREVIATIONS AND ACRONYMS

ADB	African Development Bank
BMP	Best Management Practices
BMZ	German Ministry of Development Cooperation
CIDA	Canadian International Development Agency
CCD	Convention to Combat Desertification
DANIDA	Danish International Development Agency
DDT	Dichloro-diphenyl-trichloroethane
DFID	Department for International Development
DGIS	Directorate General for International Cooperation (Netherlands)
DMC	Drought Monitoring Centre
DRC	Democratic Republic of Congo
EA	Environmental Assessment
EIA	Environmental Impact Assessment
FANR	Food, Agriculture and Natural Resources Sector of SADC
FAO	Food and Agriculture Organization of the United Nations
FINNIDA	Finnish International Development Agency
GEF	Global Environmental Facility
GWP	Global Water Partnership
GTZ	Department of Technical Development Cooperation (Germany)
HYCOS	Hydrological Cycle Observation System
IBRD	International Bank for Reconstruction and Development (part of the WB)
IMERSCA	India Musokotwane Environment Resource Centre
IMP	Integrated Management Plan
INBP	Integrated Niger Basin Plan
IR	Intermediate Result
ITCZ	Inter-Tropical Convergence Zone
IWRM	Integrated Water Resources Management
ISA	Initiative for Southern Africa
ISPAN	The Irrigation Support Project for Asia and the Near East
IUCN	International Union for the Conservation of Nature
JICA	Japan International Cooperation Agency
JWC	South Africa-Swaziland Joint Water Commission
KCS	Kalahari Conservation Society
KFW	Department of Capital Development Corporation (Germany)
KOBWA	Komati River Basin Water Authority
LHDA	Lesotho Highlands Development Authority
LHWP	Lesotho Highlands Water Project
LMSR	Lake Malawi and Shire River System
MCM	Million Cubic Meters
MW	Megawatt
NGO	Non-Governmental Organization
NORAD	Norwegian Agency for Development Cooperation

NRA	Natural Resource Accounts
OKACOM	Okavango River Basin Commission
ORACOM	Orange River Basin Water Commission
OMVG	Gambia River Basin Organization
OMVS	Senegal River Basin Development Organization
PVO	Private Volunteer Organization
RAPID	Regional Activity to Promote Integration through Dialogue
PWV	Pretoria, Witwatersrand, Vereeniging region of South Africa
RBC	River Basin Commission
RBO	River Basin Organization
RCSA	USAID's Regional Center for Southern Africa
SADC	Southern African Development Community
SADC-ELMS	Environmental and Land Management Sector for SADC
SAP	Strategic Action Plan
SAPP	Southern African Power Pool
SARP	Southern Africa Regional Program Regional Water Assessment
SATAC	Southern Africa Technical Advisory Committee
SIDA	Swedish International Development Agency
SNL	Swazi National Land
SO	Strategic Objective
TDA	Transboundary Diagnostic Assessment
TOR	Terms of Reference
TPTC	Tripartite Permanent Technical Committee
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Program
UNDTCD	United Nations Department for Technical Cooperation and Development
UNEP	United Nations Environmental Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USG	United States Government
WB	World Bank
WHO	World Health Organization
WMO	World Meteorological Organization
WCD	World Commission on Dams
WSCU	Water Sector Coordination Unit
ZACPLAN	Zambezi Action Plan
ZACPRO	Zambezi Action Project (one step of the ZACPLAN)
ZAMCOM	Zambezi River Basin Water Commission
ZRA	Zambezi River Authority

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EXECUTIVE SUMMARY

The overall intent of this report is to provide strategic direction for involvement in regional water issues to USAID's Regional Center for Southern Africa (RCSA). Water resources, particularly international river basins, have been repeatedly high (or highest) on the list among natural resource issues in need of attention (particularly the management of international rivers) in priority-setting exercises with a broad range of stakeholders in the SADC region. With increasing population and pressure on already scarce water resources, there is significant concern that without coordinated management of international waters, there is the potential for conflict between countries over these shared river basins. In addition, the careful and sustainable management of the region's water resources is an essential underpinning for regional economic development.

An additional aim of this report is to provide a framework through which one can begin to organize and analyze the range of information and priority setting exercises that the southern African region has generated. In keeping with USAID's Initiative for Southern Africa's focus on participatory planning, this study involved extensive discussions with a range of stakeholders in regional water resource issues. This study does not intend, however, to represent a regional consensus on water resource priorities, but rather to be thoroughly informed by the judgment of a range of stakeholders and represent a combination of consultation and analysis.

In order to arrive at a recommended set of activities for RCSA's involvement in this sector, I first generate a theoretically-derived sustainable water resources management framework (Appendix A). In this report, existing water management efforts in the southern African region are gauged against this framework to determine where along the spectrum of sustainable water resources management the region falls, and what are steps necessary to reach this endpoint. Five broad areas were identified in this framework as important steps to promote sustainable water resources management and include the following: 1) Basin Management, 2) Ecosystem Services, 3) Broad-Based Participation, 4) Analytical and Monitoring Capacity, 5) Human and Institutional Capacity, and 6) Demand Management.

Next, I provide a summary of the existing water management situation in southern Africa (Appendix B) that includes a description of the hydrological, institutional, and legal setting. Section 2 of this report, builds on this background information and looks at emerging trends in water resources management in the region to pinpoint critical problems or "flashpoint" areas in need of intervention, or positive efforts worthy of additional support. Section 3 presents an analysis of donor activities in the region to determine what activities other donors are already supporting. Section 4 compares a series of priority-setting exercises in the region to determine what activities a broad range of stakeholders considers to be of utmost importance.

Based on the analysis described above (critical issues and opportunities, existing and projected

donor involvement, and stakeholder priorities), and several other criteria (discussed in Section 5 of this report) including: 1) US comparative advantage, 2) lessons learned in river basin management world-wide, 3) commitment and capacity of development partners, and 4) potential for sustainable impact, the last section of this report presents a medium-term framework for RCSA support in water resources management in the water sector. This section concludes with a discussion of potential complementarities between these proposed activities with other aspects of the RCSA portfolio and other bilateral missions, and outlines potential partners and implementing mechanisms to further these proposals. The strategic direction outlined in this document is only a proposal for RCSA involvement in this sector and does not represent financial commitment by USAID.

In relationship to theoretically-derived sustainable water framework, the southern African region has a long way to go in all aspects of water management before it will reach a level of sustainable water resources management. Scattered throughout the region, however, are examples of “best practices” associated with sustainable water resources management. Second, there is significant understanding at high political levels in the region of the importance of water resources and the need to manage them in a sustainable and cooperative fashion. This understanding is also found in most of the government agencies, academic institutions, and NGOs in the region. The trick for southern Africa is to turn that understanding into action and to build the capacity of its human and institutional resources to do so. Experience seems to demonstrate that the countries in the region, however, have not been proactive in their approach to water resources management, but rather take significant steps forward only in response to critical situations and sometimes backslide into old practices once the crisis has passed. Forward thinking and advance planning is essential to avoid these situations in the first place. Furthermore, as water demand increases in the region, short-term responses will not be adequate to fend off ever-growing crises that could escalate into international conflict, if not tension between riparian countries. Management efforts on a regional and an international basin scale are essential and timely for regional cooperation and sustainable development and the USG through the RCSA can play a significant and important role in moving the region towards this endpoint.

I. INTRODUCTION

The overall intent of this report is to provide strategic direction for involvement in regional water issues to USAID's Regional Center for Southern Africa (RCSA). Water resources, particularly international river basins, have been repeatedly high (or highest) on the list among natural resource issues in need of attention (particularly from a regional platform) in priority-setting exercises with stakeholders in the SADC region. With increasing population and pressure on already scarce water resources, there is significant concern that without coordinated management of international waters, there is the potential for conflict between countries over these shared river basins. In addition, the careful and sustainable management of the region's water resources is an essential underpinning for regional economic development.

Although the Southern African Development Community (SADC) comprises fourteen member states, this report focuses on the continental countries (Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, and Zimbabwe) with the exception of the Democratic Republic of Congo (DRC) that joined SADC in September 1997 (along with the Seychelles) after this study commenced. Also, there is little information in this report on Angola as the political situation during the study time frame was such that travel and communication there were difficult. Further, the island states, Mauritius and Seychelles, are also not included in this report because water issues there are less regional in scope than the continental countries with their shared watercourse systems.

The final revision of this report has resulted in much of the background material being placed in the Appendices. In Appendix A, there is a derivation of a framework for sustainable water resources management. This framework provides a theoretical model for the report and is used to gauge the status of the existing situation and on-going activities in the region. Appendix B provides an overview of the water management situation in the region. Section 2 of this report builds on this overview and proceeds to analyze the major opportunities and issues associated with water resources in the region. The last section of this report proposes a framework for RCSA involvement in the water sector based on several criteria which are outlined in earlier sections of the report, including: 1) overlap in priority-setting activities in the region, 2) existing donor support, 3) US comparative advantage, 4) lessons learned in river basin management, 5) RCSA's regional focus and manageable interests, 6) commitment and capacity of development partners, and 7) potential for sustainable impact. This section concludes with a discussion of potential complementarities between the proposed activities with other aspects of the RCSA portfolio and other bilateral missions, and a discussion of potential partners and implementing mechanisms to further these proposals. The strategic direction outlined in this document is only a proposal for RCSA involvement in this sector and does not represent financial commitment by USAID.

II. PROBLEM AND OPPORTUNITY ANALYSIS

The intent of this section is to build on the information in Appendix A & B of this report and pinpoint critical problems or “flashpoint” areas in need of intervention and positive efforts worthy of additional support. In order to analyze these trends, I have developed a framework for sustainable water resources management that is developed in detail in Appendix A of this report and presented in Table 1 below. Appendix B focuses on the existing water management conditions in southern Africa and provides the background material necessary to outline problems and opportunities in this sector.

In addition to the five broad areas (Basin Management, Ecosystem Services, Broad-Based Participation, Analytical and Monitoring Capacity, Demand Management) that were identified in this framework as important steps to promote sustainable water resources, I have added an additional section on human and institutional capacity-building. This addition results from recognition of the existing lack of human and institutional capacity in the region and its importance in terms of implementing any framework on sustainable water resources management.

2.1 BASIN MANAGEMENT

Water resources issues emerge on a basin scale because the region is dominated by international river basins with 70 percent of the surface water in the region derived from these shared resources. Not only do these rivers (and large lakes) cross borders, they often form the borders between countries. In most cases, these rivers, however, are not being managed jointly and current development goals in different countries are premised on mutually exclusive claims for water from international basins. Given increasing population and urbanization, it is unlikely that these basins will be able to meet the sum of planned diversions.¹ Also, it is probable that many of the aquifers in the region are transboundary, and that issues over shared groundwater will appear as soon as surface water resources become fully appropriated.²

While countries continue to pursue **unilateral actions** to divert and impound water from shared systems, there are **few effective institutional arrangements** in place to address issues associated with managing a shared resource. The organizations that do exist and are addressing shared water issues usually focus on specific projects or programs (such as the Zambezi River Authority and the

¹ There are many proposed major development schemes underway or being seriously considered on international rivers in the region. For example, Namibia is considering taking water from the Congo to supply central Namibia. Phase 1B of the Lesotho Highlands Water Project has been approved and plans to divert water from the Orange River Basin in Lesotho to the Vaal River System in South Africa. In addition, Namibia is in the process of pushing ahead on the proposed Epupa Falls hydroelectric project on the Cunene River along the Angola-Namibia border. Other major water schemes on international rivers are in the planning stages in Swaziland, Namibia, Zambia, Zimbabwe and South Africa.

² There is already some concern about the joint management of the aquifer that crosses the Botswana and Zimbabwe border and supplies water to both Francistown, Botswana and Bulawayo, Zimbabwe.

Lesotho Highlands Development Authority) without considering the regional impacts or accounting for the total needs of the basin. Existing multi-national basin authorities are part-time organizations

**TABLE 1: FRAMEWORK FOR SUSTAINABLE
WATER RESOURCES MANAGEMENT**

BASIN MANAGEMENT :

1. DEVELOPMENT OF INTEGRATED WATER MANAGEMENT STRATEGIES
2. ADOPTION OF BASIN UNIT AS MANAGEMENT UNIT

ECOSYSTEM SERVICES:

1. MAINTAINING AQUATIC DIVERSITY AND ECOSYSTEM PROCESSES
2. ESTABLISHMENT OF INSTREAM FLOWS
3. PROMOTION OF PUBLIC INTEREST WATER LAW
4. ADOPTION OF WATER QUALITY MANAGEMENT PRACTICES
5. DEVELOPMENT OF LOCAL STEWARDSHIP

BROAD-BASED PARTICIPATION :

1. INCREASE PARTICIPATION IN WATER RESOURCE DECISION -MAKING
2. INVOLVEMENT OF WOMEN
3. DEVELOP EDUCATION AND AWARENESS MATERIAL FOR ALL LEVELS
4. INCORPORATION OF ENVIRONMENTAL JUSTICE CONCERNS
5. DEVOLVE WATER MANAGEMENT TO LOWEST APPROPRIATE LEVEL

ANALYTICAL AND MONITORING CAPACITY:

1. INSTITUTE STRICT COST /BENEFIT ANALYSES FOR WATER DEVELOPMENT PROPOSALS , INCLUDING USE OF EIA'S
2. DEVELOPMENT OF WATER BUDGETS
3. USE OF PERMIT AND ADJUDICATION PROCESSES

WATER CONSERVATION AND DEMAND MANAGEMENT :

1. INSTITUTE APPROPRIATE WATER PRICING AND MARKETING OF WATER RIGHTS
2. IMPLEMENTATION OF WATER CONSERVATION AND RE -USE STRATEGIES
3. REDUCTION OF WATER SUBSIDIES
4. IMPLEMENTATION OF DEMAND MANAGEMENT PRACTICES

5. USE OF NATURAL RESOURCE ACCOUNTING TECHNIQUES

(such as the Okavango River Basin Commission - OKACOM) meeting on an as-needed basis or a routinely scheduled basis without a functioning Secretariat. Members tend to come from national water organizations and bring national interests. In addition, most of the existing agreements or institutional arrangements do not have legal authority to make decisions or take action; they are just advisory bodies.³ A reasonable consensus among the countries is that typically most existing commissions designated to administer international water agreements commonly have insufficient expertise, capacity, or funding to fulfill their mission.

Although there is a growing understanding that water originating or flowing through a country is not the exclusive right of the country, but rather a shared resource in need of international cooperation, there are few people with the skills to move this understanding toward joint planning; **skills in international water law, conflict management, and large-scale water resources planning are needed.** For example, one of the stated functions of the SADC WSCU is to “provide advice and guidance on equitable resource allocation among riparian countries and assist in resolving potential conflicts over shared watercourse systems.” Although the SADC WSCU is adding additional staff, particularly with skills in international water law, at present, they do not have the capacity to carry out this function.

Although there is an increased understanding of the need for an integrated approach to water resources management as evidenced in the language of policy documents, there are few on-the-ground models of integrated planning on an international or even national level. In integrated water resources planning, water is seen not just as a basic human need, but also as an integral part of the ecosystem and a social and economic good, and the management of surface and groundwater are integrated through the application of conjunctive use practices. **This lack of integrated planning has been recognized as one of the major constraints in promoting sustainable development and equitable sharing of water resources in the region.** Integrated water resource management requires a strong mechanism for inter-sectoral planning and coordination that currently does not exist. In order to apply integrated water management techniques, the SADC countries need to be able to acquire appropriate information, manage this information in an integrated manner, make it available to a wide range of end-users, and then apply it to decision-making processes. The sectoral approach to water resources management is well established in the region and will take significant institutional, policy, and legal reform for this way of thinking to be changed. In some countries, this reform is starting to take place, but a critical mass has yet to be reached.

³ Most of the existing agreements or institutional arrangements do not have legal authority to: 1) contract, 2) settle disputes with binding decisions, 3) sue and be sued, 4) raise funds and borrow money to become financially self-sustaining, and 5) make decisions which bind member states (Southern Africa Regional Water Sector Assessment. 1995. Prepared by Stanley Consultants for the US Agency for International Development).

A first step for integrated management on a basin-scale is national-level water master plans. Very few of the countries in the region have **water master plans** which include: 1) a comprehensive water demand survey with results entered into a database to facilitate easy updating, 2) a detailed assessment of both surface and groundwater resources by basin, 3) reconciliation of present and projected demand with resources, and 4) generation of medium to long-term water management proposals.⁴ Ideally, a water master plan should also determine beneficial and equitable needs within the context of sharing waters on international river basins, define criteria to protect aquatic habitat, determine provisions for integrating water management with land, develop a water pricing policy, develop water conservation and water quality objectives, and be reviewed every three years.

In addition to institutional weakness and limited skills in this area, there are **existing legal barriers** that may inhibit regional cooperation. In many SADC countries, national legislation responds to particular situations without concern for regional interests. Further, it is thought that many of the national water laws may conflict with international water principles, treaties, and the SADC Protocol on Shared Watercourse Systems.⁵ National water law, constitutions or enabling agreements must be reviewed to determine if there are any provisions that restrict implementing a regional agreement. In addition, at a national level, there are often several different laws that pertain to water resources and they are at times conflicting. Further, this legislation is often inadequate and weakly enforced. Reform and integration of national water legislation and institutional arrangements are needed to provide the necessary "building blocks" to scale-up to international decision-making.

The extent to which the larger river systems are shared by more than one country has often resulted in rivalry between countries in the region as each strives to derive maximum benefits from the available water resources. Although this rivalry has contributed to **significant tension between countries** in the region, the role of water in virtually all of the international water-related conflicts to date in southern Africa has been secondary to considerations of territorial sovereignty. In most cases, these disputes have been driven by perceptions that the territorial integrity or sovereignty of one country is compromised or threatened by the claims of a neighbouring territory.⁶ Complex international issues associated with these shared watercourses, however, could potentially escalate to conflict due to the lack of functioning regional institutions with the expertise and experience to deal with these issues. The management of international river basins in southern Africa should be seen as a **flashpoint for international conflict**, particularly the Okavango, Zambezi, Orange, Kunene, Limpopo, and Incomati Basins.

The so-called colonial "scramble for Africa" that took place during the last half of the nineteenth century and early twentieth century⁷ has added one dimension to the potential causes of water-related

⁴ Government of Swaziland. 1997. Water Sector Situation Report. p. A4-24.

⁵ Under the ZACPRO 2 project in 1993, a review of the national laws of each SADC country indicated a need for harmonization with international water laws. Most SADC treaties are not applicable at the national level unless their obligations are incorporated in national law.

⁶ See Ashton, P.J. 2000. "Southern African Water Conflicts: Are They Inevitable or Preventable?" Presented at "Hydropolitical Hotspots in Southern Africa: Will there be a Water War?" 24 February 2000, University of Pretoria.

⁷ See Packenham, T. 1991. *The Scramble for Africa*. Doubleday Publishers, London.

conflicts in the region. In particular, the failures of boundary surveyors to define the exact locations of international borders located along river systems have resulted in considerable confusion.⁸ This situation was then aggravated by the terms and conditions of border treaties and agreements drawn up by Colonial powers as a means of partitioning the African continent and resolving or satisfying their competing territorial claims.⁹

Although there is reason to be concerned about water becoming a flashpoint for future conflict in the region, there is also reason to believe that **water could serve as a catalyst for cooperation**. Despite the limitations outlined above, there is **significant political commitment** toward this shared approach – a critical element in the process of managing regional resources. SADC countries are showing increased interest in regional cooperation - nowhere more evident than in the water sector. At present there is an emerging political milieu and level of awareness that promises to support international basin management efforts. The signing and ratification of the **Protocol on Shared Watercourse Systems** by the majority of member states is a clear manifestation of SADC's political commitment and recognition of the need for regional integrated water resources development and collaborative management of shared watercourse systems.¹⁰ Further, in August 1996, the SADC Ministers, recognizing that water resources had not been given adequate attention at national and regional levels, established the **Water Sector Coordination Unit (WSCU)**. SADC established the WSCU in order to achieve “sustainable integrated planning and management of water resources that contribute to the attainment of SADC's overall objective of an integrated regional economy on the basis of balance, equity and mutual benefit for all member States.” The SADC WSCU also has firm support from the SADC Secretariat and good working relationships with them. Further, SADC with UNDP has initiated the SADC Round Table on Integrated Water Resources Management replete with a Strategic Action Plan outlining priority issues and activities for regional water resources management.¹¹

In addition, the SADC structure allows for water resources managers and policy makers at the government level to meet periodically. For example, in addition to the WSCU, there are three levels to SADC water management: 1) the Sectoral Committee of Ministers which is comprised of Ministers responsible for water resources in member states, and meets at least once a year; 2) the Sectoral Committee of Senior Officials which is comprised of Permanent Secretaries or National Directors for Water Resources in the SADC member states and is in charge of mobilizing country participation in the work of the WSCU; and 3) the Technical Committee (and Sub-Committees)

⁸ See Hangula, L. 1993. *The International Boundary of Namibia*. Gamsberg Macmillan Press, Windhoek, Namibia. 161 pp, and Fisch, M. 1999. *The Caprivi Strip During the German Colonial Period 1890-1914*. Out of Africa Publishers, Windhoek, Namibia. 151 pp.

⁹ In particular, the Berlin Treaty that was drawn up on 1 July 1890 and redefined some of the geo-political boundaries between German colonies in southern and eastern Africa and their neighbouring Portuguese, English and South African counterparts, has left a legacy of problems for successive administrations.

¹⁰ The signing of the Protocol, however, is only a first step in a long and complex process necessary to achieve truly integrated management. For example, river basin commissions need to be established, joint data collection and monitoring needs to be undertaken, and vague terms such as “equitable”, “sustainable”, and “participation” need to be defined and incorporated into management operations.

¹¹ See Section III of this report for a description of the activities prioritized under the SADC Round Table process.

which is made up of Directors or senior officials with technical water resource backgrounds and responsibilities and provides technical support and advice. These meetings allow for information exchange and many chances for decision-makings from various countries to meet and discuss water issues in a variety of settings (the meetings rotate around the region).

In addition to political commitment and the beginnings of a regional policy framework for international river basin management, there have been several **promising steps toward international water resources planning**. The accomplishments of the ZACPLAN, although reportedly slow in developing, should be noted. The management of the Zambezi River involving eight riparian nations has served to focus the region on the issue of shared water resources. In recent years there has been significant progress determining what information is needed, and what steps should be taken to develop an equitable and sustainable long-term management scheme for this river. Further, the development of a Zambezi River Basin Commission (ZAMCOM) is near completion. In recent years, OKACOM has held regular meetings and with support from GEF has taken the first steps toward basin planning including the development of a Transboundary Diagnostic Assessment (TDA). Initiatives on the Limpopo and the Orange River Basin are also underway. Reforms in line with the international consensus on integrated water resources management, including aligning management units with basin boundaries have already also started at a national level in the region. For example, Tanzania, Swaziland, and South Africa¹² have all started moving towards basin management with multi-stakeholder management units.

2.2 ECOSYSTEM SERVICES

The ecosystem services component of this framework for sustainable water resources management has several elements, including: 1) maintaining aquatic diversity and ecosystem processes, 2) establishing instream flows or environmental demand, 3) promotion of public interest water law, 4) development of local stewardship, and 5) adoption of water quality management practices (Appendix A). This section will evaluate the situation in the region against these aspects of sustainable water resources management.

Southern Africa has some of Africa's most important and pristine wetlands in the world, such as the Okavango Delta in Botswana (newly designated a Wetland of International Importance under the Ramsar Convention, claiming the title of the world's largest Ramsar site), the Bangweulu Swamps in Zambia, the Malagarasi and Utengule swamps in Tanzania. The upland plateaus of Zambia, Tanzania, Malawi, and Zimbabwe are also characterized by *dambos* (headwater swamps), which support both traditional agriculture and wildlife.¹³ The riverine ecosystems associated with all the major perennial rivers (and also the ephemeral rivers) are also important aquatic environments. Floodplains along rivers are also very important ecosystems in southern Africa; the regular flooding

¹² Principle 5 of South Africa's new water policy states: "In a relatively arid country such as South Africa, it is necessary to recognize the unity of the water cycle and the interdependence of its elements... the basic hydrological unit is the catchment."

¹³ The use of dambos in the small valleys of Zimbabwe has been a successful form of micro-irrigation. In Zimbabwe, dambos collectively cover about 20,000 hectares, nearly 10 percent of the irrigated land. During the 1986-87 drought, dambos were the only lands in some areas in Zimbabwe that yielded any of the staple maize.

provides fish habitat, grazing for wildlife and stock, and the basis for floodplain agriculture, such as the *molapo* in Botswana.¹⁴ Estuaries are also critical aquatic ecosystems and are widely distributed along the coast. Major estuaries are found at the mouths of the Zambezi, Rufiji, Orange, Cuanza, and Congo Rivers. In addition, Lakes Tanganyika and Malawi have high fish diversity with many endemic species.¹⁵

Overgrazing and deforestation, unregulated development and pollutant discharges threaten many of the wetlands and river systems in the region and the ecological functions that they perform. These environmental impacts have direct impact consequences for water quality and supply, fisheries, biodiversity, and for tourism earnings and agricultural productivity.¹⁶ In addition, given that water in the region is often concentrated in areas that are distant from the population centers, large-scale infrastructure projects have been built throughout the region. The water supplied by these large schemes comes at a high ecological cost. These water transfer schemes are becoming increasingly complex, costly, and international in nature.

Several countries in the region have begun to consider the ecological services that aquatic ecosystems provide and are beginning to institute environmental policies and legislation to conserve their scarce and often fragile water resources. For example, the Government of Botswana has just designated the Okavango Delta a wetland of international importance under the Ramsar Convention, and there are biodiversity projects underway in Lake Malawi and Lake Tanganyika. Overall, however, the region is **lacking an ecological understanding of the importance of aquatic systems** and thus, is far from taking significant steps to manage these resources to maintain aquatic diversity and ecosystem processes. Further, there is little recognition of the fact that clean and abundant water resources are critical underpinnings for the growing ecotourism industry in the region.

South Africa is the exception to this statement, and has begun to take serious steps to define the amount of water needed to maintain aquatic ecosystems. In fact, under South Africa's new water law, a public interest in water is clearly articulated through the establishment of a **water reserve**, which has been established for two purposes. The first purpose is to ensure that all people have access to sufficient water. The second purpose is so that a quantity and quality of water is available to maintain ecological function and so that human use of water does not individually or cumulatively compromise the long-term sustainability of aquatic and associated ecosystems. The amount of water required to meet both the basic human needs and the needs of the environment is called "the Reserve" and has priority over all other purposes.

¹⁴ The Rufiji Basin in Tanzania contains three important floodplains: the Kilombero, Usanga, and Rufiji. Zimbabwe's largest floodplains, Mana Pools, is on the Zambezi River between Kariba Dam and Mpata Gorge. Major floodplains in Zambia include the Lukanga Swamp on the Kafue River, the Kafue Flats, and the Luapula floodplain. In Namibia, the Cuvelai River flows from Angola into a flat terrain and flooded soils to form *oshanas* - important ecosystems in that region. Other important floodplains in the region include: those of the Angolan coastal rivers, and those associated with the Okavango/Cubango River.

¹⁵ Angola is reported to have 268 species of freshwater fish, Botswana 150 species, Malawi 600, Namibia 977, South Africa 220, and Zambia 156.

¹⁶ Chabwela, H.N. 1995. Southern Africa Wetlands Conservation Program. IUCN.

Mitigation strategies to reduce the impact of large dams on aquatic ecosystems is being discussed for the Cahora Bassa dam on the Zambezi River in Mozambique, but has not been incorporated into operations of other existing dams in the region. Furthermore, in general the region has not developed and adopted policies, guidelines, or legislation (on a national or regional level) for **comprehensive environmental assessments**, which would weigh the costs and benefits of large water infrastructures such as, water storage or hydroelectric dams. Where such legislation exists, there is little capacity to implement it or pay heed to the recommendations that proceed from such environmental impact assessments. Also, the environmental assessments of proposed water projects which are done typically have focused on river reaches as distinct entities, not as river systems. The resulting piecemeal evaluations have ignored the cumulative environmental impact caused by several projects and by the interaction of processes within the ecosystem.

The development of **local stewardship initiatives** has begun in several communities in South Africa through activities associated with citizen-based monitoring of local rivers and streams. These types of activities, however, are not widespread throughout the region. In addition, the **declining water quality** in the region due to agricultural pollution from pesticides and fertilizers, sediment loading due to overgrazing and deforestation, sewerage discharge, oil spills, and industrial wastes are major threats to aquatic ecosystem health. These inputs have been identified as major issues of concern and building upon policies espoused in the Rio Summit for Environmentally Sustainable Development, the southern Africa community is striving to clean and protect its water resources with SADC-ELMS assuming a leadership role in this area. Although there is increased activity for monitoring for pollution of surface and groundwater, there is little being done to reduce or eliminate these sources of pollution, especially in relation to non-point sources of pollution.

2.3 BROAD-BASED PARTICIPATION

There are several elements under this section of the framework including: 1) increased participation in water resources decision-making, 2) involvement of women in all aspects of water resources management, 3) the development of education and awareness material for all level of societies, 4) incorporation of environmental justice concerns, and 5) devolving water management to its lowest appropriate level.

Artificial floods are created on the Phongolo River in northeast **South Africa** by releasing water from Pongolapoort Dam to maintain downstream recession agriculture, fishing, and other wetland resources. Initial releases from the dam were made at the wrong time of the year so that crops either rotted or were washed away. In 1987, the managing authority decided to experiment with participation with the result that a successful water release and floodplain management scheme was created by user groups of fishers, livestock keepers, and health workers (Acreman, M. 1996. "Water: the convention's challenge for the 21st century: " *The Ramsar Newsletter*: Issue 22:4-5).

The SADC region has come to realize from past experience that the legitimacy of development and management programs is dependent on public awareness, transparency and participation of stakeholders and beneficiaries in the development process. This awareness is evident in almost any policy or strategy document related to water resources management. There is, however, a major problem in the region in terms of implementing this understanding and thus, there are **few examples of broad and significant stakeholder participation in the water sector**. Often stakeholders are only consulted once a plan has already been developed and usually during a one-day meeting in a capital city at which the stakeholders have had little advanced warning and no previous access to information or the ongoing process.

Although all of the countries in the region report that they have **inadequate community participation**,¹⁷ the one area of water resource management where there is evolving stakeholder involvement is rural water supply at a community level. There seems to be a regional trend toward **devolution of authority** to local authorities¹⁸ and to communities. In some of these community projects, women are also playing a significant role. On a national-level there has been some movement toward development of multi-stakeholder boards (Tanzania) to advise decision-making on a basin-level management. In regards to international river basin management, there have been extensive consultations with stakeholders (Zambezi), but not full-fledged participation from a range of stakeholders over the entire project cycle. A coalition of NGOs in Botswana, Namibia, and Angola are planning on working with communities in the Okavango Basin. This project called "Every River Has Its People" (Every River) will raise community awareness of international water issues associated with the Basin and will develop a "Participation Protocol" to guide future planning in the basin in relation to stakeholder participation. "Every River" has been endorsed by OKACOM as an important aspect of basin planning.

In Namibia, the Department of Water Affairs has outlined a Community Based Management Program that puts communities in charge of the operation and maintenance of their own rural water points. This program aims to empower communities so that by 2007, they will fully manage their rural water supply infrastructure with full cost recovery.

Women are particularly lacking in all aspects of water resources management.¹⁹ There are few women who are involved at a professional level in water resources management in the

¹⁷ SADC Water Sector Coordination Unit. 1988. Regional Strategic Action Plan for Integrated Water Resources Development and Management in the SADC Countries (1999-2004). Summary Report, p. 36.

¹⁸ Mozambique plans on privatizing the water management of the five major cities in the country - Maputo, Beira, Quêimane, Nampula, and Pemba (Republic of Mozambique. 1998. Government Statement and Projects for the 1st Round Table Conference on Water Resources Development and Management in the SADC region, p. 2).

¹⁹ In fact, all of the countries in the region report that there is inadequate involvement of women in water resources management (SADC Water Sector Coordination Unit. 1988. Regional Strategic Action Plan for Integrated Water Resources Development and Management in the SADC Countries (1999-2004). Summary Report, p. 36). In Swaziland, women can gain access to irrigated land only through membership of a farmers association. Development of irrigable land with tenure arrangements that allow men to monopolize land holds the threat of excluding women from dryland cropping. If household food security is to be maintained, then

region, nor are there many women in leadership positions in the water sector. Further, there is little capacity to analyze gender issues and incorporate the concerns of women in water management activities.

In the SADC region, there is a **lack of awareness among the general public** about the state of water resources, as well as the economic, social, and environmental aspects of managing water resources. Extending this understanding to all beneficiaries requires extensive awareness building among political leaders, decision-makers, the media, academics, donors, NGOs, and the public.²⁰ In some very water scarce countries such as Namibia, there have been extensive water conservation campaigns and efforts to include water resource management issues into the school curricula.

In most SADC countries, the development and management of water resources have been **traditionally dominated by the central government**. It was believed that only the central government could handle the large operations necessary for water supply systems. The problem with this top down approach is that the beneficiaries are not given any choice in the systems supplied, and thus, they do not maintain them. The result is that there are often major shortfalls in the performance of the systems because without beneficiary help, the government can not afford to maintain so many widely distributed systems. The **deteriorating water supply infrastructures** and the serious institutional deficiencies of many government agencies has demonstrated the weaknesses in government control of water operations. One proposed remedy is to increase the use of the private sector in water resource management. This approach can introduce appropriate incentives to improve accountability, constrain political interference, increase efficiency, and lower the financial burden on governments and is being promoted and adopted in many SADC countries including Mozambique.²¹ At present, there is a trend in the region to decentralize and in some cases, privatize water supply responsibilities. Questions of equity, however, need to be addressed under these new approaches.

Regarding **environmental justice concerns**, many water policy documents refer to equitable access to water resources and there have been significant efforts made to extend water supply and sanitation services to the rural and urban poor. There is still much work to be done as evidenced by the fact that today less than half of the region's 145 million people have access to safe water and sanitation. These rural and urban people are the region's poorest and most vulnerable, in part because of lack of such services. For example, in South Africa alone, 13 - 16 million people do not have access to clean drinking water while 21 million do not have access to adequate sanitation. The

better access and security of the claims of women to irrigated land must be pursued (Government of Swaziland. 1997. Water Sector Situation Report. p. A2-5).

²⁰ SADC Water Sector Coordination Unit. 1988. Regional Strategic Action Plan for Integrated Water Resources Development and Management in the SADC Countries (1999-2004). Summary Report, p.viii.

²¹ Mozambique is decentralizing water resources management down to Regional Water Administrations (ARAs). An ARA has been established for the southern part of the country, and such management entities are being planned for the north and central parts of the country, as well as for the Zambezi.

lack of potable water and sanitation contributes to the poverty trap into which these people are caught.²²

Furthermore, by far the greatest water use in the region is for irrigated agriculture, accounting for approximately 70 percent of all water used. Most of the land area currently under irrigation is commercial farms and until recently, the commercial farms in many parts of the region were owned and managed by Africans of European descent, and there was a tremendous gap between the living standards of the relatively few land owners and the numerous farm workers.²³

2.4 ANALYTICAL AND MONITORING CAPACITY

Analytical capacity to research and plan for sustainable water resource management is weak in most parts of the region. Analytical capacity involves the skills necessary to think through complex decision-making processes. Such skills are needed in all sectors as they apply to water resources management, including economic, political, social, environmental, legal, cultural, institutional, and political. But more importantly, the region lacks people with analytical capacity to think in an interdisciplinary way across sectors. Methods of applying interdisciplinary analytical skills include cost-benefit analysis across sectors and the use of multiple-criteria decision-making models. Without this type of analytical capacity, the transboundary water issues in the region will remain intractable. In addition, the use of permit and adjudication systems and the development of water budgets to promote sustained yield of water resources have been inhibited by lack of capacity within governmental agencies and lack of information systems.

In order to apply integrated water management techniques, the SADC countries need to be able to acquire appropriate information, analyze it, and make it available to a range of end-users. **Data and information systems are generally inadequate** throughout the SADC region.²⁴ Regional and local capacities to acquire, analyze, and disseminate information need to be developed. Inadequacies in the availability and dissemination of data on shared watercourse systems inhibit strategic planning and could lead to misunderstandings and unnecessary conflicts among riparian countries.²⁵ In addition, disparities between countries in their capacity to collect and analyze data also inhibit regional cooperation; Mozambique, Angola, Swaziland, and Malawi are in particular need of

²² In South Africa, short-term aims of the African National Congress - led Government of National Unity are to provide every household in the country with at least 20-30 liters per capita per day within a 200-meter radius.

²³ In the Fourth National Development Plan (1983-1987) in Swaziland, large-scale plantation type irrigation projects were no longer considered appropriate and more attention was aimed at smaller schemes to alleviate high risk situations faced by farmers. The growing of vegetables for home is encouraged as well as plot ownership for women (Government of Swaziland, 1997, National Water Sector Situation, p. A1-7).

²⁴ The World Bank/UNDP Hydrological Assessment of Sub-Saharan Africa found the hydrometric network in southern Africa severely lacking.

²⁵ In the development of plans of mutual advantage to countries sharing a river basin, data collection, analysis, and dissemination must be covered explicitly or implicitly by an agreement to ensure the availability of adequate compatible information for the conduct of studies in water resources management. The type, formatting, and accuracy of the data must be uniform and to an agreed standard, such as that set by the World Meteorological Organization in its Guide to Hydrological Practices and Technical Regulations.

assistance in this area. Furthermore, methodologies are needed to decide on priority parameters for measurement, to standardize data collection, and develop systems for sharing data among countries.

The SADC-HYCOS and the FRIENDS project (described in Appendix B) are both good starting points for hydrologic data collection and dissemination in the region. Although hydrologic parameters such as flow rate and chemical parameters are measured, **biological data to determine ecosystem health of a watershed are almost always lacking** in the existing data collection efforts.

2.5 HUMAN AND INSTITUTIONAL CAPACITY

There is a gap between an expanding mandate for integrated and sustainable water resource management and the capacity of agencies and institutions to implement these mandates. There is a **shortage of trained water professionals and the limited stage of development of national and regional institutions** constrains significant progress in sustainable water management in the region.²⁶

On a national level, lack of financing resources and lack of human resources results in weak national water institutions in most parts of the region.²⁷ Frequent restructuring has also led to institutional instability. In addition, many countries have inefficient, local or national government-run utilities. Most national organizations have a core of technicians who are well trained in technical fields, but lack multidisciplinary planning and management skills;²⁸ **much of the water resource management in the region is being undertaken by civil engineers.**²⁹ Planning skills, especially river basin planners are generally non-existent.³⁰ There is usually one water law specialist per country and most countries do not have even one freshwater ecologist on staff. There are only a handful of economists in the region who have applied their skills to water resources management. Senior technical managers vary by country. Further, limited capacity in the private consulting industry leads to extensive reliance on international consultants and advisors. Regional river basin management units such as OKACOM are still in their infancy and have yet to establish functioning Secretariats.

There are, however, new efforts in the region to help address these capacity needs. The Global Water Partnership (GWP) with the World Bank and other donors (including the RCSA) organized an African Water Resources Management Policy Conference, which took place in Nairobi, Kenya in

²⁶ For example, the University of Zimbabwe recently launched a M.S. program in integrated water resources management, but due to civil unrest, the University has been closed on and off since May 1998.

²⁷ With the possible exception of Botswana, Mauritius, Namibia, and South Africa.

²⁸ South Africa, Namibia, Zimbabwe, and Botswana have relatively strong national water organizations, while Zambia and Tanzania have limited, but capable individuals. Lesotho and Swaziland have gained experience over the years working with South Africa, but their staffs remain small and focused on selected interests. Mozambique and Angola are struggling because of their recent and (on-going) disruptive past histories.

²⁹ There is a critical to go beyond traditional engineered solutions to water shortages and incorporate economic and ecological goals in water resource planning.

³⁰ South Africa is an exception, having developed a full range of technical and planning skills.

May 1999. This conference was the first time that water resources managers from sub-Saharan Africa met to share experiences and to discuss approaches to water issues on the continent. Follow-on policy forums and meetings are planned to build on the momentum created by this conference. The GWP has developed a Southern African Technical Advisory Committee (SATAC) one intent of which is to highlight regional capacity in various aspects of water resources management. Lastly, there are several training and capacity building efforts underway to promote sustainable regional water resources management, including, Waternet, the Water Consultancy Fund, RCSA's training activities, and RCSA's STRENGTH program (all of which are described in detail in Appendix D). These efforts, although important, are only the first steps needed to bring the region to a place where it has the human and institutional capacity to manage these complex resource issues.

SADC has for many years provided a forum for coordination between member states as was evidenced during the severe southern Africa drought of 1992-1993 and through its ability to shepherd the Water Protocol process to ratification by the required two-thirds quorum for it to go into effect. Implementation of joint measures on a regional scope, however, has proven in some cases somewhat cumbersome and time consuming considering the layering of responsibilities and various approvals up to and including the Council of Ministers. **The WSCU currently lacks the staff and experience to carry out its broad mandate.** The Unit does, however, have plans to increase its professional staff and to provide additional training to its existing staff members. At present, most of the SADC Units appear to be busy or overwhelmed with their existing workplan and little effort has been made to coordinate efforts between Coordination Units.³¹

NGOs and CBOs working in the water sector, particularly on regional water issues, are weak or non-existent, with a few exceptions. The ones that do exist are often limited by lack of organizational capacity, technical expertise, financial resources, and access to water management decision-making processes.

2.6 DEMAND MANAGEMENT

The drought in southern Africa that occurred in the early 1990's brought about an increased awareness of water resource issues and the **need to institute conservation measures.** It is now evident that the water resources of the region, though sufficient to meet existing requirements in normal rainfall years in many parts of the region, are not unlimited and shortage and conflicting demands are going to continue and increase with economic development and population growth. The average annual regional population growth rate of 3 percent will provide an enormous challenge to manage water resources so that both urban and rural populations have access to sufficient water. At present, there is no cushion of security in the rural water supply, and recurring climatic patterns often have devastating effects. Coverage for the urban poor is low as well. This situation will persist or worsen if significant efforts are not made to curb existing demand and to conserve the existing resources.

³¹ There are several SADC Units that all water related responsibilities including, the Environment and Land Management Unit, Tourism, Energy, and Wildlife and Fisheries.

Water development and water use has been heavily subsidized in the region resulting in environmental damage, inefficient use, inadequate conservation measures, inequitable access to water resources and higher budget deficits. Efforts are being made in some countries in southern Africa to eliminate water subsidies and to ensure that the true value of water is beginning to be reflected in the pricing structure. Efforts are also being made to implement other demand management measures. In South Africa, the government has introduced the National Water Conservation Campaign to improve the efficiency with which water is used and to achieve equity in water allocation. In Windhoek, Namibia, while the population has almost doubled since independence seven years ago, its annual consumption of water has not increased significantly since then due to water saving efforts.³² Mozambique aims to reduce the present water loss in its water distribution systems from an estimated 60 percent to 25 percent and to increase revenue collection over its current billed amount.³³ Despite this increased attention, there are still **inadequate water conservation and demand management measures being implemented** in the region, particularly in relation to irrigated agriculture, the largest consumer of water resources in the region. There is a heavy dependence for economic development on agriculture, with generally very low water-use efficiency.

One of the most important debates going on in the international water community is the question of **food security versus national self-sufficiency in food**. The idea of national food self-sufficiency is leading many nations in the region to grow expensive, subsidized food with non-renewable water resources. For example, semi-arid South Africa is growing grain in the middle reaches of the Orange River which has caused water scarcity in South Africa and has necessitated that South Africa seek new water sources, some as far north as the Zambezi. At the same time, there is unexploited irrigation potential in Zambia with abundant water in the floodplain of the Kafue River, yet Zambia imports grain from South Africa. In this case, trade in food, not water, could create a more sustainable regional water management situation and would bring greater opportunities for regional economic integration and significant benefits to the poorer northern area of the region.³⁴

Exceedingly high evaporation rates in the region make broad-surfaced storage inefficient or impossible.³⁵ In the more arid parts of the region such as Namibia, Botswana, and parts of South Africa, the impoundment of water can result in serious evaporative losses. For example, the Namibian government estimates that the proposed Epupa Falls reservoir would result in the

³² Windhoek already recycles 13 percent of its wastewater for domestic consumption, while Harare, Zimbabwe, recycles 10 percent. In Gaborone, Botswana, the government aims to support efforts to recycle about 60 percent of its urban flow by the year 2020. Under South Africa's new water legislation, the following policy has been adopted, "Conservation and other measures to manage demand shall be actively promoted as a preferred option..." In general, however, the conservation measures that are introduced are usually done so when communities are facing water shortages. In response, urban areas will introduce water rationing which is then suspended as soon as adequate rains replenish reservoirs.

³³ Republic of Mozambique. 1998. Government Statement and Projects for the 1st Round Table Conference on Water Resources Development and Management in the SADC region, p. 2.

³⁴ This same concept of regional security versus national self-sufficiency can be applied to energy development.

³⁵ SARP - Southern Africa Regional Water Sector Assessment. 1995. Prepared by Stanley Consultants for the US Agency for International Development, Vol. 1, p. 1-1.

evaporation of more than 600 million m³ each year - this volume of water is more than the current total water use in Namibia for both surface and groundwater.

2.7 SUMMARY

In relationship to the framework derived in Appendix A, the southern African region has a long way to go in all aspects of water management before it will reach a level of sustainable water resources management. Most obviously, there is an urgent need to address issues associated with equitable access to safe water and sanitation with half the population lacking such services. Limited human and institutional capacity to address the challenges associated with the management of shared watercourse systems underlies most water management issues in the region. Skills in international water law, conflict management, water economics, large-scale water planning, data collection and analysis, and the maintenance of ecological services are needed to promote integrated water resources management. Existing governmental institutions and NGOs are generally not equipped to deal with emerging water issues on a regional scale. This lack of capacity leads to the development of unilateral water schemes on international rivers, which, in turn, threatens to increase tension over these shared resources. In addition, the aquatic ecosystems that support the growing market in regional tourism and provide a range of ecological services are threatened by various impacts. In general, the region is not adequately controlling sources of water pollution, implementing mitigation strategies to offset the impact of large infrastructure projects, nor does it have the capacity to routinely employ comprehensive environmental impact assessments to weigh the full costs and benefits of these large projects. Further, there are few models for broad and significant stakeholder participation, and women are noticeably under-represented in all aspects of water management in the region. Lastly, given the range of activities that can be used to promote water conservation and demand management (instituting appropriate water pricing, use of markets to sell water rights, implementation of water conservation and re-use strategies, reduction of water subsidies, and use of natural resource accounting techniques) and the relative scarcity of water in the region, much of the focus in water resource management has been on securing additional supplies and not on reducing demand.

Southern Africa, however, is not alone in just beginning to tackle these issues. Most of the countries in the world are just now waking up to the importance of water as a vital natural resource and developing strategies to reflect its importance. Southern Africa has several advantages. First, scattered throughout the region are examples of “best practices” associated with sustainable water resources management in almost all categories described above. Second, there is significant understanding at high political levels in the region of the importance of water resources and the need to manage them in a sustainable and cooperative fashion. This understanding is also found in most of the government agencies, academic institutions, and NGOs in the region. The trick for southern Africa is to turn that understanding into action and to build the capacity of its human and institutional resources to do so. Experience seems to demonstrate that the countries in the region, however, are not proactive in their approach to water resources management, but rather take

significant steps forward only in response to critical situations and sometimes backslide into old practices once the crisis has passed. Forward thinking and advance planning is essential to avoid these situations in the first place. Furthermore, as water demand increases in the region, short-term responses will not be adequate to fend off ever-growing crises that could escalate into international conflict, if not tension between riparian countries. Management efforts on an international basin scale are essential and timely for regional cooperation and sustainable development.

III. REGIONAL PRIORITY-SETTING EXERCISES

As the water sector has gained more attention in the southern African region, there have been a number of exercises to establish priorities for support, including 1) the Regional Water Sector Assessment and follow-up questionnaire supported by USAID; 2) the SADC-USAID Stakeholder Workshop; 3) Global Water Partnership SATAC Work Plan; 4) SADC-EU Conference on the Management of Shared River Basins; and 5) the SADC/UNDP Round Table on Integrated Water Resources Management. In Appendix C of this report, these priority-setting exercises are described in detail including information on their general intent and specific outcomes. Below, I summarize the overlap between these priority-setting exercises in order to clarify regional priority in this sector. I have also conducted county-level meetings with government, academics, donors, NGOs, and other stakeholders to confirm the priorities described below.³⁶

When comparing the various priority-setting exercises, considerable overlap occurs. Below, I have grouped priority activities under the six approaches from the sustainable water framework derived in Appendix A. There were several activities that we mentioned within the priority-setting exercises that did not fit within the framework. These activities mostly related to funding for development of infrastructure projects or feasibility studies for them and are included in an “Other Activities” category. Activities with the highest overlap are marked with a “(1)” indicating that among the five priority-setting exercises, the activity was mentioned in four of them (none of the activities appeared in all five exercises). The activities marked with “(2)” have three areas of overlap and those marked with “(3)” have two areas of overlap. Other activities that were only mentioned once when the priority-setting exercises were compared are also listed under each of the six approaches.

3.1 BASIN MANAGEMENT

Water Resources Planning (1) This activity involves the collection, analysis, and distribution of water resource planning information in the region, and the support of water resource planning efforts in shared watercourse basins across the region. **Preparation of Guidelines and Model River Basin Agreements (1)**. This activity involves developing guidelines for the management of international river basins, including information on best practices associated with participation, environmental protection, equitable distribution, etc., and a model agreement containing the specific powers to enable a commission to function effectively, including outlines for structure, functions, committees, meetings, review processes, and dispute resolution. **Harmonizing National Laws with the Protocol on Shared Watercourse Systems (1)**. The SADC Protocol on Shared Watercourse Systems is a bold step towards the management of shared watercourse systems in the

³⁶ Trip Reports are on file with the author.

region. National legislation has not always kept abreast of this regional advancement. This activity would provide assistance in bringing national legislation and policies in line with the Protocol and other international agreements. **Integrated Management for the Okavango Basin (2)**. This activity is aimed at facilitating international collaboration for the management of the Okavango Basin's natural resources, including the development and implementation of an integrated basin management plan. **ZacPro 6, Phase III (3)**. This activity is part of the massive ZACPLAN that has been on going since 1987. ZacPro 6 involves formulating and implementing an integrated management system for the entire basin. **Develop Water Resource Management Strategy for the Limpopo River Basin (3)**. This activity would involve developing a management strategy for the entire basin as well as the development of a hydrologic model for the upper and middle Limpopo River with a focus on determining the interaction between surface and groundwater.

Other activities that were mentioned once in these priority-setting exercise and fall within this section of the framework include: 1) Develop Guidelines for Appropriate Water Management Institutional Structures and Mandates, 2) Catchment Protection/Rehabilitation Project, 3) Development of Interactive Simulation Models, 4) Establishment of a river basin commission for the Pungue and the Save Rivers, 5) Chobe River-Capriivi Strip Development Planning, 6) Pongola and Maputo Rivers Development Planning, and the 7) Joint Inkomati Basin Water Resources Investigation.

3.2 ECOSYSTEM SERVICES

Establishing a Set of Water Quality Standards and Monitoring System (1). This activity entails developing a set of region-wide water quality standards and a system for monitoring compliance. Development of regional cooperation is dependent upon agreement among riparian countries over acceptable pollution loads in a shared river system. **Okavango River Basin Environmental Assessment and Planning (2)**. This assessment would determine existing environmental conditions along the river and would provide baseline information for planning processes now starting in the basin. This activity is also aimed at assisting the planning process in general (also listed under Basin Management above). **Lake Malawi/Nyasa Biodiversity Conservation Project (3)**. Lake Malawi is the southernmost rift lake and has a unique ecology. The activity is aimed at conserving the unique biodiversity in the lake. **Control of Aquatic Weeds (3)**. This activity is aimed at developing sustainable policies and programs to control alien aquatic weed infestations.

Other activities that were mentioned once in these priority-setting exercise that fall within this section of the framework include: 1) Designing and Implementing Basin-Wide Environmental Initiatives; 2) Pollution Control and Other Measures to Protect Biodiversity in Lake Tanganyika, 3) Baseline Ecosystem Assessments of Shared Watercourses, and 4) Identification of Regional Pollution "Hot Spots" and Determination of Monitoring Strategies.

3.3 BROAD-BASED PARTICIPATION

Publicize and Popularize the Protocol (3). One aspect of this activity is to develop and distribute a brochure on the Protocol to a range of stakeholders in the region. **Promotion of Stakeholder Participation in Water Resources Management (3).** The challenge for all SADC countries and for international efforts in the SADC region is to promote stakeholder participation in water resources management. This activity is aimed at evaluating water resources management processes and determining a means to develop participatory programs. **Empowerment of Women in Water Resources Management (3).** This activity is aimed at developing support for the involvement of women in all aspects of water resource management from community level to international discussions.

Other activities that were mentioned once in these priority-setting exercise that fall within this section of the framework include: 1) Involving the Media in Water Issues, 2) Feasibility Study for Creating Fund to Support NGO and CBO Participation, 3) Raise Awareness About International River Basin Management Issues, 4) Develop Awareness Tools, 5) Establish Regional Network of Water Managers, Experts, Stakeholders, 6) Consultative Forum in Water Issues, and 7) Study for Expanding Private Sector Involvement in Water and Sanitation.

3.4 ANALYTICAL AND MONITORING CAPACITY

In relation to monitoring capacity, the following activities were mentioned: **Regional Groundwater Assessment (1).** There are many localized efforts for developing groundwater in the region, but a broader assessment could provide better overall strategies and improve information analysis. **Improved Hydrological Data Collection (3).** Hydrologic data collection systems are lacking in southern Africa. Countries such as Angola, Mozambique, Malawi, and Swaziland whose data collection systems do not match the rest of the SADC community need extra assistance to bring their systems up to a basic level of confidence. **Forecasting Water Supply and Demand for the Region (3).** This activity would involve developing detailed regional water balance statements including an assessment of existing surface and groundwater resources, existing and projected demand. **Develop Flood and Drought Early Warning Systems (3).** This activity responds to the aridity of the region through development of programs that would supply early information about drought and floods. This activity would also enhance collaboration with existing drought warning systems.

Other activities that were mentioned once in these priority-setting exercises that fall within this section include: 1) Expansion of the SADC-HYCOS project, 2) Rehabilitation of Joint Monitoring Systems between Angola and Namibia, 3) Lower Shire River Flood Forecasting Project, 4) Basement Groundwater Study and Pilot Irrigation Development, 5) Harmonize EIA Processes for SADC Countries, 6) Regional Guidelines for Water Policy and Review, 7) Develop Water Policy/Strategy in at least 8 Countries, and 8) Establish Regional Water Sector Policy and Strategy.

3.5 HUMAN AND INSTITUTIONAL CAPACITY-BUILDING

Training on Legal Aspects of International Water Management (3). Well developed contracts and agreements are an important part of cooperative management of shared watercourse systems. This proposal is for short courses or seminars to train lawyers and policy makers in the region who will be involved with drafting, reviewing, and negotiating international agreements.

Support to International River Basin Commissions (3). These institutions are seen as the key to managing the shared water resources in the region. Existing international river basin commissions in the region are inadequately prepared for optimal management of the resources for which they are responsible. Deficiencies include: inadequate staffing, insufficient training, too broad a scope of responsibilities, and lack of information on “lessons-learned” globally. This activity is focused on increasing the number of commissions in the region and strengthening them and the few that currently exist. **Support to SADC WSCU (3).** The WSCU can play a key role for coordinating water planning throughout the region. This activity would focus on supporting and building capacity for this Unit.

Other activities that were mentioned once in these priority-setting exercise that fall within this section of the framework include: 1) Training in Surveying, Mapping, and GIS, 2) Awareness Building for Decision-Makers, 3) Human Resources Development Program, 4) Support for Waternet, 5) Training in Water Resource Economics, 6) Training in Hygiene Education, 7) Scholarships in Legal Training, 8) SADC Hydrometric Technicians Training Program, and 9) Assessment of Regional Capacity Needs.

3.6 DEMAND MANAGEMENT

Conservation and Demand Management (1). An activity to promote conservation and demand management was one of the highest ranking activities across the priority-setting exercises. Various components such as training in water economics, developing of appropriate water pricing structures, promoting of water efficient agricultural practices and wastewater reuse schemes, and support for natural resource accounts that investigate water subsidies were all areas that received wide support.

3.7 OTHER ACTIVITIES

There were several activities that we mentioned once within the priority-setting exercises that did not fit within the framework. These activities mostly related to funding for development of infrastructure projects or feasibility studies for them. They include: 1) Strengthen and Extend Coverage of Rural Water Supply and Sanitation Services, 2) Develop and Rehabilitate Urban Water Supply and Sanitation Infrastructure, 3) Control and Development of Lake Malawi and Shire Rivers, 4) Study on the Navigability of the Zambezi and Shire Rivers, 5) Feasibility Study of Storage Dam of the Lower Orange River, 6) Orange River Project Replanning Study, 7) LHWP Phase 2 Feasibility Study, 8) Feasibility Study of the Caledon Cascade Scheme, and 9) Zambezi Southern Transfer

Reconnaissance Study. Another infrastructure project rated third was the **Songwe River Channel Stabilization (3)**. This activity would stabilize the border between Malawi and Tanzania and according to the Stanley Report, it is expected to “reduce flooding, improve farming conditions, and alleviate land degradation.”

Also, there were several activities that were not focused on infrastructure development or increasing water supply and sanitation coverage, but did not seem to fit into other categories. These included: 1) Donor Coordination, 2) Determine Minimum National Level Water Budgets, and 3) Regional Guidelines for Dam Safety Legislation and Procedures.

3.8 SUMMARY

When the priority-setting exercises conducted in the region related to water resources management are compared, there is significant overlap between them. This overlap gives direction to future support for the water sector. In addition, from Table 2, it is clear that the priority activities largely fit within the broad headings established under the water sustainability framework. The headings of Basin Management and Ecological Services receiving the most number of high ranking activities.

In terms of Basin Management, stakeholders prioritized basin planning in general as a high ranking activity and then identified the Okavango, the Zambezi, and the Limpopo as basins in highest need of support. In addition, they acknowledged a need to develop guidelines and model river basin agreements and harmonize national laws with the Protocol and other international agreements as other priority activities under this heading. To support ecological services in the region, stakeholders concluded that the development of water quality standards and monitoring systems, as well as the control of aquatic weeds were top priority issues. For a geographic focus, they identified the Okavango Basin and Lake Malawi/Nyasa as the areas in need of environmental assessment and conservation efforts. To promote broad-based participation in water resources management, stakeholders recommended a general activity aimed at evaluating water resources management processes and determining a means to develop participatory programs. In addition, they recommended an activity to empower women to become involve in all aspects of water resources management, and an activity to publicize and popularize the Protocol. In relation to increasing analytical and monitoring capacity in the region, top priority activities included the development of a regional groundwater assessment and the improvement of hydrological data collection particularly in countries such as Angola, Mozambique, Malawi, and Swaziland to bring their systems up to a basic level of confidence. In addition, stakeholders recommended support for a system to forecast water supply and demand for the region, and the development of flood and drought early warning systems. In terms of human capacity-building, training in legal aspects of international water law was targeted as the area in most need of attention. International river basin commissions and the SADC WSCU were the institutions identified for capacity-building. An activity to promote conservation and demand management was one of the highest ranking activities

across the priority-setting exercises. Various components such as training in water economics, developing of appropriate water pricing structures, promoting of water efficient agricultural practices and wastewater reuse schemes, and support for natural resource accounts that investigate water subsidies were all areas that received wide support. Although it does not fit into any of the categories above, the Songwe River Channel Stabilization was mentioned several times as an activity in need of support.

TABLE 2: REGIONAL PRIORITY-SETTING EXERCISES

BASIN MANAGEMENT
1. WATER RESOURCE PLANNING (1)
2. GUIDELINES AND MODEL RIVER BASIN AGREEMENTS (1)
3. HARMONIZING NATIONAL LAWS WITH PROTOCOL (1)
4. INTEGRATED MANAGEMENT FOR THE OKAVANGO BASIN (1)
5. ZACPRO 6, PHASE III (3)
6. STRATEGY FOR LIMPOPO RIVER BASIN (3)
ECOLOGICAL SERVICES
1. WATER QUALITY STANDARDS AND MONITORING (1)
2. OKAVANGO BASIN ENVIRONMENTAL ASSESSMENT AND PLANNING (2)
3. CONTROL OF AQUATIC WEEDS (3)
4. LAKE MALAWI / NYASA CONSERVATION PROJECT (3)
BROAD-BASED PARTICIPATION
1. PROMOTION OF STAKEHOLDER PARTICIPATION (3)
2. EMPOWERMENT OF WOMEN IN WATER RESOURCES MANAGEMENT (3)
3. PUBLICIZE AND POPULARIZE THE PROTOCOL (3)
ANALYTICAL AND MONITORING CAPACITY
1. REGIONAL GROUNDWATER ASSESSMENT (1)
2. FORECAST WATER SUPPLY AND DEMAND FOR THE REGION (3)
3. IMPROVED HYDROLOGIC DATA COLLECTION (3)
4. DEVELOP FLOOD AND DROUGHT EARLY WARNING SYSTEMS (3)
HUMAN AND INSTITUTIONAL CAPACITY-BUILDING
1. TRAINING IN LEGAL ASPECTS OF INTERNATIONAL WATER LAW (3)
2. SUPPORT TO INTERNATIONAL RIVER BASIN COMMISSIONS (3)
3. SUPPORT TO SADC WSCU (3)
DEMAND MANAGEMENT
1. CONSERVATION AND DEMAND MANAGEMENT (1)
OTHER ACTIVITIES
1. SONGWE RIVER CHANNEL STABILIZATION (3)

IV. DONOR INVOLVEMENT IN THE WATER SECTOR

Appendix D of this report outlines both regional and national-level activities supported by donors in the region. In order to collect this information, I developed a draft donor report that was then sent to donors in the region for corrections and additions; the information contained in Appendix D reflects these comments. This donor report will continue to evolve over time and toward that end it has now been posted on the Africa Water Page on the internet where it will be periodically updated by donors in the region.³⁷ Below is an analysis of donor support in light of the five approaches to sustainable water resources management derived in Appendix A and used throughout this report. This exercise focuses more on the regional activities supported by donors rather than the significant work that is being supported to extend water supply and sanitation coverage to communities in the region due to USAID's regional mandate at the RCSA.

At the end of each section, I provide a brief "gap analysis" that compares what is being supported in each area versus what needs to be done to promote sustainable water resources management (as described in Appendix A and Section 2) and in terms of what activities have been prioritized by stakeholders in the region (as outlined in the previous section).

4.1 BASIN MANAGEMENT

On a regional level, DANIDA, NORAD, and SIDA have been supporting the planning process associated with the Zambezi Basin. SIDA is now supporting Zacpro 6, Phase II and development of ZAMCOM. DANIDA has supported the development of the Sector Studies Project. SIDA, with the Land and Agriculture Policy Centre in South Africa and with IUCN, is developing a set of thematic papers on how to equitably share international rivers. GEF has supported a Diagnostic Assessment of the Okavango Basin and plans on supporting parts of the Strategic Action Plan. USAID is assisting efforts to develop guidelines for the management of international river basins and to define the roles and responsibilities of the various institutions proposed by the Protocol. USAID is also providing assistance to harmonize the Protocol with the UN Convention on Non-Navigational Uses of International Rivers, and has chosen the Okavango River Basin as an area of focus. In addition, USAID will assist the riparian countries within the Okavango Basin to harmonize their laws, policies, and strategies with the Protocol, the OKACOM agreement, and with other international agreements. GTZ has also expressed interest in helping to support basin management efforts on the Limpopo River.

On a national level, DFID supports the Joint Permanent Technical Commission for the Lesotho Highlands Water Project. DFID is also supporting the evaluation and development of guidelines for the use of decision networks at local and catchment scales. In Mozambique, the World Bank is

³⁷ The website that this report can be found on is: <http://wn.apc.org/afwater/index.htm>.

funding a project that focuses on identifying options for developing and managing key international rivers and on related capacity-building needs. In Tanzania, the World Bank is supporting a River Basin Management Project and in Zambia, the World Bank is planning a pilot project in the Kafue River Basin.

Summary: Of the 15 international river basins in the region, significant support towards basin-wide planning has been given only to the Zambezi, and more recently to the Okavango. The Orange River/Vaal River System through the LHWP has received some support, but this is largely related to the development of the upper basin and not to basin-wide management efforts. Although GTZ has expressed interest in supporting work on the Limpopo River, activities have yet to begin. Given the complexity of international river basin planning, significant multi-donor support is needed for all the shared rivers in the basin as they move towards joint planning. USAID has committed to supporting the development of guidelines for the management of international river basins and articulating the roles and responsibilities for the various river basin organizations and authorities called for in the Protocol. Once developed, it will take significant resources to refine and implement these guidelines on a basin-scale. In addition, USAID has committed to assisting with the harmonization of national laws with regional and international agreements for the Okavango Basin, but there is a need for similar assistance on many of the other international basins.

4.2 ECOSYSTEM SERVICES

On a regional level, CIDA is supporting a Zambezi Wetlands Conservation and Resource Utilization Program. GEF is also supporting a Biodiversity Conservation Project in Lake Malawi/Nyasa. The EU is funding a project called "Population, Development, and Environment that will predict water quality trends in surface water in selected watersheds in Botswana, Namibia, and Mozambique. With SADC-ELMS, UNEP and WHO have funded the development of water quality guidelines. In Lake Tanganyika, UNDP has budgeted US\$10 million for a project to promote pollution control and other measures to protect biodiversity.

On a national level, in Zimbabwe, SIDA is supporting the development of a water quality monitoring system. Also, in Zimbabwe, SIDA is planning on initiating a course in water quality management at University of Zimbabwe. In South Africa, DFID is supporting a water quality analysis lab. In Malawi, DFID is also supporting water supply and sanitation projects to look at sources of siltation in the Shire River. In Zambia, DFID supports water supply and sanitation activities with a focus on the conservation and management of Kafue Flats and the Bangweulu. UNDP is providing support to Botswana's National Conservation Strategy Agency to work on the management of wetlands, among other activities.

Summary: The protection of ecosystem function and aquatic biodiversity through such techniques as determining instream flows and use of economic valuation methodologies, is a not a new concept, but its application is currently limited in the region and has only begun to be applied

and supported in the Zambezi Basin, Lake Malawi, and Lake Tanganyika. Water quality management is still a major issue at a national level despite increasing donor involvement in this area. On a regional level, the water quality guidelines developed by SADC-ELMS need to be operationalized by countries sharing a river basin and joint monitoring systems put in place. The issue of control of aquatic weeds also needs to be addressed on a regional scale.

4.3 BROAD-BASED PARTICIPATION

On a regional level, DFID is funding provision and dissemination of well focused practical tools to enable engineers and managers to incorporate gender issues effectively into the project cycle for water and sanitation and other infrastructure works. UNDP will also fund several activities to promote broad-based participation in the water sector including: 1) involving the media in water issues, 2) conducting a feasibility study for the creation of a fund to support NGO and CBO participation, and 3) an activity to empower women's participation in the water sector. DFID is considering providing support to a regional initiative that would focus on private sector participation in water and sanitation. USAID has funded the development of a brochure to publicize the Protocol and the WSCU's role to a range of stakeholders. Sida is funding an activity called "Every River Has Its People" which is being implemented by a coalition of NGOs in the Okavango Basin and is aimed at increasing stakeholder participation in the Okavango Basin planning process.

On a national level, SIDA is supporting the Desert Research Foundation, Namibia to develop educational materials about water conservation and sustainable management.

Summary: Involvement of a broad-base of stakeholders in the management of water resources, particularly international river basins, is another area of involvement with which donors in the region have just begun to become involved. The work that Sida is supported on the Okavango could serve as a model for other basins. UNDP and USAID's support for generating awareness amongst the general public is the beginning of a program to address the lack of public awareness concerning these issues, but more support is needed in this area. The UNDP-supported feasibility study on the creation of a fund to support NGO and CBO participation in water resources management should give direction to further work in this area. The work that DFID is supporting on the development of practical tools to incorporate gender into water infrastructure projects should be reviewed for relevance to the management of shared watercourse system, and UNDP's activity to empower women's involvement in the water sector should be followed up and implemented.

4.4 ANALYTICAL AND MONITORING CAPACITY

On a regional level, DFID is supporting the development of an early warning system of groundwater drought for vulnerable areas and a menu of actions that could trigger the system. DFID is also supporting the Southern African FRIEND project that is developing a common hydrological monitoring center, under the UNDP/WMO Drought Monitoring Project. Also, WMO and the EU are supporting the SADC-HYCOS the goal of which is to build capacity for the

development of regional water resources information systems. Further, CIDA with IMERSCA is implementing a Disaster Management Information Project to provide accessible and accurate information on disasters and vulnerabilities associated with such events as drought, floods, storms, etc.

With University of Natal, SIDA is supporting research cooperation on the shared Komati River System with Swaziland, Mozambique, and South Africa. This activity will involve joint collection of riverine ecosystem data and disseminate results under the "Shared Rivers Research Program." SIDA is also considering funding a regional groundwater assessment and is awaiting a full proposal from the Department of Geology, University of Zimbabwe. SIDA is also considering funding the ZRA to increase research and GIS capacity. GTZ is supporting INFONET that is an information system for laws and regulations regarding water management in southern Africa. SIDA's Regional Research Fund will promote and facilitate the implementation of IWRM practices.

On a national level, DFID is supporting a drought assistance program in South Africa that will provide assistance to NGOs for emergency relief and drought preparedness activities. UNDP has funded a flood forecasting system along the Shire River and its major tributary, and a groundwater data computer unit for Malawi. In Zimbabwe, SIDA is funding a national hydrological and sediment monitoring and modeling program. SIDA is also funding a groundwater assessment in and around Bulawayo.

Summary: On a regional level, through SADC-HYCOS and FRIEND, there are institutional arrangements for regional hydrological monitoring, and some on-the-ground monitoring systems. There is also considerable on-going effort in the region to provide climatic and hydrological information on drought and floods. In addition, the development of a regional groundwater assessment is underway. Within specific watersheds, there is a need to extend the coverage of hydrological data collection in many countries (particularly in countries such as Angola, Mozambique, Malawi, and Swaziland), and to develop a methodology for wide dissemination of information and use of this information in decision-making processes. Further, efforts to involve communities, schools, and civic groups in "citizen-based" ecological and hydrological monitoring is lacking. In addition, stakeholders recommended support for a system to forecast water supply and demand for the region, a system that is currently lacking.

Although hydrological monitoring has received significant donor support in the region, there is little support for increasing analytical capacity, particularly in terms of supporting tools that promote interdisciplinary analysis of water management situations including, use of multiple-criteria decision-making models, and use of cost-benefit analysis associated with comprehensive environmental impact assessments.

4.5 HUMAN AND INSTITUTIONAL CAPACITY-BUILDING

The Netherlands have committed US\$4 million over the next five years to strengthen universities in the region to teach courses in IWRM. This capacity-building project is called "Waternet". USAID will fund short term training in various aspects of water resource management, including environmental aspects of river basin management, water conservation and demand management, international water law and conflict management. In addition, USAID is reviewing for possible funding, proposals received from NGOs in the region for activities to improve the management of shared natural resources. UNDP has committed to provide institutional support to SADC WSCU.

Summary: There is need to build institutional capacity in the region at many levels including: national level government agencies, policy makers, technicians, NGO's, CBO's, universities, river basin commissions, and the WSCU. The activities described above, begin to address some of the gaps associated with capacity-building, but medium-term, on-going efforts are needed.

4.6 DEMAND MANAGEMENT

On a regional basis, SIDA with IUCN ROSA has just finished a regional research study on case studies in water demand management in the region. DFID is funding a study on how utilities can use pricing and service differentiation to benefit all and move towards financial sustainability. USAID is also funding activities related to the development of Natural Resource Accounts in Namibia, Botswana, and South Africa and water is one of the resources being analyzed to determine its role in economic development, and in particular its pricing across countries.

Summary: The SIDA, USAID, and DFID-funded work are a start in identifying existing efforts to promote water conservation and demand management. Follow-on work such as training, further dissemination of information, support of pilot projects, etc, will ensure that significant steps are taken towards water conservation and demand management in the region.

4.7 SUMMARY

Although there appears to be significant donor involvement in the water sector in southern Africa, much of this involvement is at a national level focused on water supply and sanitation. Regional level water activities are largely just beginning and given the range of activities needed to promote sustainable water resources management across 15 international river basins in the region, there is considerable scope for increased donor involvement.

More specifically, of the 15 international river basins in the region, donors have supported basin-wide planning in the Zambezi, and more recently in the Okavango. Given the complexity of international river basin planning, multi-donor support is needed for planning efforts in all the shared rivers in the region as they move towards joint planning. Although funding has been

committed to support the development of guidelines for the management of international river basin, once developed, these guidelines will take significant resources to refine and implement on a basin-scale. In addition, harmonization of national laws with regional and international agreements is needed for all basins in the region with the exception of the Okavango.

Approaches to protect aquatic ecosystems are currently limited in the region and support for these efforts are limited to the Zambezi Basin, Lake Malawi, and Lake Tanganyika. Water quality guidelines under development by SADC-ELMS need to be operationalized and joint monitoring systems put in place. Control of aquatic weeds also needs to be addressed on a regional scale. Involvement of a broad-base of stakeholders in the management of water resources, particularly international river basins is another area of involvement with which donors in the region have just begun to become involved. Generating awareness amongst the general public for water management issues is another area with limited support at present. A feasibility study on the creation of a fund to support NGO and CBO participation in water resources management should give direction to further work in this area. Development of practical tools to incorporate gender into water infrastructure projects should be reviewed for relevance to the management of shared watercourse system and the activity to empower women's involvement in the water sector should be followed up and implemented.

Within specific watersheds, there is a need to extend the coverage of hydrological data collection and to develop a methodology for dissemination and use of this information in decision-making processes. Further, efforts to involve communities, schools, and civic groups in "citizen-based" ecological and hydrological monitoring is lacking. In addition, stakeholders recommended support for a system to forecast water supply and demand for the region. At present, there is little support for increasing analytical capacity in the region, particularly in terms of supporting tools that promote interdisciplinary analyses of water management situations. Despite on-going efforts, there is need to build institutional capacity in the region at many levels. Lastly, follow-on work such as training, further dissemination of information, support of pilot projects, etc, will ensure that significant steps are taken towards demand management in the region.

V. USG INVOLVEMENT AND COMPARATIVE ADVANTAGE

5.1 USG INVOLVEMENT IN REGIONAL WATER ISSUES

The United States has been involved in regional water resources management in southern Africa for a number of years. During the regional drought of 1991-92, host government officials approached U.S. Ambassadors to SADC countries to help address the long-term problem of regional water scarcity. In 1995, USAID completed a study entitled "Southern Africa Regional Program Regional Water Assessment" (SARP). The objectives of SARP were three-fold: 1) to determine what institutional and legal structures exist within the southern Africa region for the development and management of water resources; 2) to assess how water resources can be effectively coordinated on a regional basis; and 3) to prioritize specific projects worthy of financial support by USAID and other sponsors. The study reviewed and analyzed 52 potential regional projects and short-listed 30 activities and ranked them (these activities are presented in Appendix C). Over 250 water resource managers and stakeholders in the SADC region were consulted in this process. The assessment concluded that there was a need and a desire among the water sector entities in the region to pursue a more regional emphasis on water management. Given that the USAID missions in the SADC region were reorganizing during the timeframe that the study was completed, USAID did not respond immediately to the recommendations from the report.³⁸

In 1995, the United States opened a USAID Regional Center for Southern Africa, based in Gaborone, Botswana. The intent of this Center is to focus on issues that are inherently regional or could benefit from a regional approach. Through several different mechanisms, RCSA has updated and evaluated the information and recommendations presented in SARP. First, a questionnaire was sent to over a hundred stakeholders in the region to ascertain their response to the prioritized activities in the SARP Report. Second, under the RCSA activity entitled, "Regional Activity to Promote Integration through Dialogue and Improved Policy (RAPID)", the RCSA conducted regional consultations and held a stakeholder workshop on implementing the SADC Protocol on Shared Watercourse Systems (May 1997) to help specify the RCSA's role in this sector. Third, to hold more in-depth discussions on regional water issues, country visits were conducted to eleven of the countries in the region. Fourth, a donor study was completed that describes the role of donors in water resource management in the region. The information and priorities acquired through these various contacts and meetings are represented in this report. From this information and discussions, USAID began to provide limited assistance to the WSCU in 1997.

³⁸ Although USAID did not respond immediately to the recommendations from this report, other donors such as SIDA and UNDP used the study extensively in designing their approach to regional water issues.

USAID's Regional Center for Southern Africa has been working with the SADC Water Sector Coordination Unit for the last two years on several activities related to basin management. First, the RCSA has assisted the WSCU to develop Terms of Reference (TOR) for development of guidelines for the management of international river basins and to define the roles and responsibilities of the various institutions proposed by the Protocol. Second, USAID has provided technical assistance to prepare TOR for defining catchment boundaries associated with river basins in the region. In addition, TOR have been prepared to address harmonization between the Protocol and National Water Laws. All three of these Terms of Reference have been finalized with significant input from the SADC Water Resources Technical Committee and Global Water Partnership SATAAC. The RCSA has committed to implemented these TORs, but will focus the harmonization and mapping activities on the Okavango Basin.

In addition, a legal study on the relationship between the SADC Protocol and the UN Convention on Non-Navigational Uses of International Rivers has been drafted and presented to the SADC Water Technical Committee for use in amending the Protocol to assure conformity with the UN Convention. The RCSA has also supported a workshop to finalize the amendments to the Protocol in an effort to ensure that all the SADC countries will ratify it. Also, the RCSA has helped the WSCU develop a brochure in three languages with to publicize the Protocol and the WSCU's role to a range of stakeholders.

To help build human capacity in the region, USAID also will fund short term training in various aspects of water resource management, including environmental aspects of river basin management, water conservation and demand management, international water law and conflict management. These short courses will be targeted both at providing an understanding of key issues to policy makers, as well as strengthening the technical skills of active practitioners. This training program is now being designed. An overview course in integrated water resources management was offered to 30 water policy makers from the region in July 1999 and was very well received, the only complaint being that the week long training was "not long enough." To implement this follow-on training, USAID hopes to work in collaboration with the on-going Waternet activity, and in close consultation with the SADC Water Sector Coordination Unit. In addition, the RCSA provided funding for teams of water professionals from Lesotho, Namibia, Zambia, and Zimbabwe, and the WSCU staff to attend the African Water Policy Conference in Nairobi in May 1999.

USAID is also funding activities related to the development of Natural Resource Accounts in Namibia, Botswana, and South Africa. Water is one of the resources being analyzed to determine its role in economic development. The analysis will look at economic decision-making for water in several of the region's watersheds. In addition, the RCSA is reviewing for possible funding proposals received from NGOs in the region for activities to improve the management of shared natural resources -- including water or selected watersheds; these proposals have been submitted for funding under a USAID agreement signed with SADC to strengthen the role of NGOs in the

regional economy called STRENGTH.

5.2 USG EXPERTISE AND COMPARATIVE ADVANTAGE

The United States' experiences in water resources management (both positive and lessons learned) could have significant relevance for southern Africa.³⁹ The US has negotiated and managed only a few international water agreements, however, water law in the US is largely state law, and therefore the states themselves act as if they are independent nations in coordinating joint uses of shared water resources. Thus, there is considerable experience in the US in terms of managing competing claims along a shared basin.

In addition, there are important similarities between the western US and southern Africa, including the fact that large rivers dominate both areas with headwaters in mountainous rainy states and long river runs through semi-arid and arid areas. Further, one cannot help seeing the similarities of the agricultural situation in southern Africa and the southwestern United States. Vast arid regions could be brought into production if water can be found or transferred from moister northern areas. Lessons learned from the development of the Colorado River in the United States could help to devise optimum, sustainable, and ecological development plans for the agricultural lands in southern Africa. In addition, the US has significant experience and arguably a comparative advantage over other donors working in the region in several areas of water resources management, including:

- 1) In river basin management, the US has pioneered techniques in conflict management and legal analysis and legal resolution over competing claims. The US has also developed techniques for stakeholder participation in water management, including strong NGO involvement.⁴⁰ The US has developed and tested transparent multi-stakeholder decision-making techniques including analytical models that are now being applied around the world. The US is also taking the lead in citizen involvement in water quality monitoring and promoting local stewardship initiatives. Given the highly engineered rivers in many parts of the US, the country is strong in applied research associated with hydrological modeling and river forecasting.
- 2) Because there are large population centers and agricultural production in semi-arid areas in the country, the US has advanced experience in water management in arid and semi-arid areas including, demand management, water conservation and reuse, water pricing and

³⁹ Gleick, P. H. 1996. "State of the world's water and the implications for the western United States." Background paper for the November 18, 1996 USGCRP Seminar: Global Change, Capitol Hill, Washington, D.C.

⁴⁰ In the US, the states of Florida, Washington, California, and Massachusetts are all implementing innovative watershed management approaches. The October 1997 EPA publication "Top Ten Watershed Lessons Learned" (#EPA840-F-97-11-) offers: 1) the best plans have clear visions, goals, and action items, 2) good leaders are committed and empower others, 3) having a coordinator at the watershed level is desirable, 4) environmental, economic, and social values are compatible, 4) plans only succeed if implemented, 5) partnerships equal power, 6) good tools are available, 7) measure, communicate, and account for progress, 8) education and involvement drive action, 9) build on small successes.

marketing, soil analysis in terms of appropriate agriculture, and public/private partnerships in water management.

- 3) Due to a dismal track record in terms of the management of aquatic ecosystems, the US has quickly developed and implemented methodologies to protect the remaining systems and to try to rehabilitate others and thus, has gained considerable experience in determination of ecological demand in aquatic systems, maintenance of instream flows, mitigation strategies associated with large dams, and techniques to rehabilitate degraded systems. The US has also pioneered methods for environmental impact assessment applied to aquatic ecosystems, and has significant transferable knowledge in the areas of water pollution monitoring, reduction and prevention.
- 4) The university systems in the US combined with a range of consulting firms and other institutions are extremely strong and among the best in the world in terms of training and research in all aspects of water resources management, including analytical capacity to articulate complex water issues and develop appropriate policies and strategies, legal and institutional analysis, information management systems, and in the use of GIS methodologies in water resources management.

In addition to the US-based strengths described above, there are three main reasons that the RCSA is uniquely positioned to implement a regional water strategy. First, and most obviously, the RCSA functions under a regional mandate. Unlike USAID's bilateral missions and most other bilateral donors that focus on national level support, the RCSA is mandated to focus on issues that are regional in scope or could be significantly advanced by a regional approach. Water issues in the SADC region are inherently regional, and thus, it is only through a regional platform that these issues could be addressed.

Second, the RCSA combined with the bilateral missions in the region and the U.S. Embassies have significant in-country presence and staff. There is no other donor in the region that can bring this type of human resources to the issues of transboundary water resources management. These issues, especially issues of managing international rivers, are complex, often highly political, and fast moving; they require close contact and collaboration with regional governments, NGOs, and the private sector. Without significant on-the-ground staff (particularly professional staff from the region), it would be risky for a donor to become involved with these issues.

Lastly, the RCSA has invested three years in the exploration of and initial involvement in this sector. When dealing with 12-14 countries and complex issues, it takes at least this length of time to develop relationships with regional stakeholders and to investigate an appropriate role for a donor. In addition, the RCSA is perceived in the region both as an active donor in the sector, and also as a donor who can help move regional water resources management forward. The RCSA is a Reference Group member for both GWP and for the SADC/UNDP Round Table process, and has played a

significant role in donor coordination.⁴¹

5.3 LESSONS-LEARNED IN RIVER BASIN MANAGEMENT

In the process of developing a water management strategy, there are significant lessons that have been learned world-wide in terms of international river basin management. It is important not only to keep these lessons in mind when making decisions about funding specific activities, but also throughout design and implementation of activities. Below are summaries of lessons-learned in water resources management in a range of settings around the world. Some of these examples come from national level planning and thus are only relevant in part to international river basin management.

In Sri Lanka and Tunisia, USAID has learned that in implementing water policy, the following apply:⁴²

- Successful policy change tends to be evolutionary, not revolutionary.
- Leadership continuity is more important for policy change than is charismatic leadership.
- Minimizing the number of institutions affected by a policy change is a critical element of any policy formulation process.
- The distinction between top-down and bottom-up approaches to policy formulation is an artificial one. Successful policy change requires support and commitment at both grassroots and senior policy levels.
- A specific policy change should never be used as an occasion to address other peripheral or unrelated problems.

In addition, USAID supported a seven-year activity (1987-1994) called the Irrigation Support Project for Asia and the Near East (ISPAN). The initial focus of the project was irrigation water management, but within three years the emphasis broadened to cover such water sector issues as flood management, water pricing and cost recovery, water policy adoption, participatory irrigation management, water dispute resolution, coastal zone management, and water resource sustainability. Towards the end of the activity, a document entitled, "ISPAN Lessons Learned" was produced. Below I outline some of the recommendations that arose from this experience:

- **Water allocation and use patterns generally do not reflect water scarcity.** Conservation and reuse measures that should be considered everywhere include: integrated approaches that consider complete systems, incorporation of a range of stakeholders through transparent, participatory decision-making, conservation of water through minimization of transmission losses and reduction of wastage (such as through excessive evaporation), management of demand through water pricing and removal of subsidies, reuse of wastewater

⁴¹ In addition to preparing a document on donor activity in the water sector, the RCSA has been requested by OKACOM to assist in hosting an Okavango Basin Stakeholder and Cooperating Partners Sensitization Meeting to take place mid-2000.

⁴² From "Future Directions for Implementing Water Policy", a USAID sponsored workshop in 1994.

and sludge, conservation of energy, and maintenance of base flows to support ecology and biodiversity, and conduct of studies to quantify such needs.

- **In terms of flood management, embankment systems designed to separate rivers from their floodplains are unlikely to be sustainable** (except to protect certain high value areas such as cities).
- **The combined collection of sewerage and industrial wastes contaminates otherwise recoverable water and sludge with toxic and carcinogenic chemicals.** The separation of non-biodegradable and toxic/hazardous waste streams from sewerage should be encouraged, and industrial wastes should be minimized.
- **The effective management of water requires interactions with water users representatives and other stakeholders in ways not familiar to many water agencies.** Managing water effectively and equitably generally requires significant changes in organizational cultures, skills and approaches. These changes depend on policies for change by responsible senior decision-makers plus iterative and consultative action-planning procedures.
- **Water management decisions made by narrowly focused government agencies tend to be biased.** Equity and efficiency in water allocation and management, and protection of the environment, require balanced decision-making processes that provide integration across subsectors and that identify and accommodate stakeholder interests.
- **While no generic approach to policy formulation can apply to all situations, some bases for effective policy change include a sound analysis, non-confrontational approaches and coordinated donor support.**
- **Appropriate technologies for use in developing countries are not limited to those that are simple and easily institutionalized.** Where the need exists, the cost is low, and an unsustainable maintenance burden is not created, hi-tech applications such as geographic information systems can be very appropriate.
- **Including host country and regional professionals in technical assistance teams in both leadership and technical capacities adds appreciably to the benefits.**
- **Cost recovery for water is a critical and contentious topic in many developing countries and is politically extremely difficult, exacerbated by the prodding of donors.** Instituting effective cost recovery measures depends heavily on having adequate information on costs and distribution of benefits, and on dissemination of the data to stakeholders.
- **Project-related workshops held at the beginning of and regularly during the project cycle, can provide an opportunity for host government officials, donors, and technical assistance teams to clarify and modify expectations and objectives, discuss problems, and identify strategies of overcoming implementation constraints.**

In addition, USAID has significant experience in supporting international river basin planning in

Africa. For example, between 1975 and 1987, USAID provided technical assistance and training to the **Senegal River Basin Development Organization (OMVS)** in agricultural research, environmental studies, socioeconomic studies, basin mapping, fiscal management, computer applications, and river basin groundwater monitoring. USAID also provided extensive assistance in institutional restructuring and helped the OMVS establish an internal planning unit. In addition, starting in 1977, USAID provide institutional strengthening technical assistance and training to the River Niger Commission (the predecessor to the Niger River Authority. Between 1982 and 1987, USAID's Niger River Development Planning Project assisted the **Niger Basin Authority** to establish an institutional capacity for water resources management, identify sustainable development projects, facilitate member states' agreement on river basin activities. USAID supported river system analyses, conducted a socio-economic survey and environmental baseline study of the basin, and supported the drafting of the Integrated Niger Basin Plan (INBP). Further, between 1981 and 1987, USAID provided the **Gambia River Basin Organization (OMVG)** with training for its staff on river basin planning and management as well as with expatriate advisors in the fields of environment, river basic planning, aerial photography and mapping, macroeconomics and finance, and socioeconomics. Four of these advisors were long-term staff for the OMVG planning unit and provided hands-on, on-the-job training to African counterparts.

Lessons learned from existing river basin authorities in Africa and USAID's previous efforts in strengthening them can be used as models from similar efforts in the SADC region.⁴³ For example, the river basin structures discussed above all allow for the full range of authorities and responsibilities to carry out river basin development and management. Those in the SADC region, however, are generally single purpose organizations and/or have limited authorities.⁴⁴ It has been recommended that before new river basin management schemes are set up in southern African countries, organizational structure issues need to be studied and resolved.⁴⁵

In September 1998, an International Round Table on "Transboundary Water Management – Experience of International River and Lake Commissions," took place in Berlin, Germany. Out of this meeting came the "Berlin Recommendations," a combination of lessons-learned, challenges, and issues for the future, many of which are summarized below:

Importance of the Development Context. The approach to a river basin management must be based on a realistic view of the development context. Strategies need to take full cognizance of socio-economic development constraints and issues such as scarcity of capital, and levels of

⁴³ This information is from SARP - Southern Africa Regional Water Sector Assessment. 1995. Prepared by Stanley Consultants for the US Agency for International Development.

⁴⁴ The general scope of activities of a fully chartered river basin authority include the following: data collection and processing, planning, water allocations, fundraising for studies and projects, project cost sharing allocations, project implementation, and monitoring of water use, pollution control, and environmental preservation (SARP - Southern Africa Regional Water Sector Assessment. 1995. Prepared by Stanley Consultants for the US Agency for International Development).

⁴⁵ SARP - Southern Africa Regional Water Sector Assessment. 1995. Prepared by Stanley Consultants for the US Agency for International Development.

managerial and technical capacity. The scope of river basin commission's programs and size of their staff and structure should be consistent with available financial resources. External support should not be viewed as a medium or long-term means to meet the financial requirements of commissions.

Importance of the Environmental Context. Many past initiatives were founded on the premise that supply expansion was the primary goal, but experience suggests that this strategy results in environmentally damaging practices that cost billions of dollars of damage to downstream water user. There needs to be strong linkages to environmental conditions, particularly those that affect public health or degrade natural resources such as land and forests.

Diversification in the Roles of Commissions. Commissions are not static in their nature. Agreements that establish commissions should allow for modification in the roles of these organizations. Also, sharing of water and benefits is not a static process, but a dynamic one that requires agreements with mechanisms for periodic review and negotiation.

Multiple Approaches for Cooperation. There are no fixed models and the range of institutional examples and experiences should be reviewed in the process of establishing the framework for any new organization.

Development of Legal Frameworks. Legal instruments are essential, but the process of their development is as important as their substantive content. An early agreement without commitment is not enforceable or sustainable. Also, there is not blueprint for an effective legal framework for cooperation on transboundary waters. As a general rule, building confidence and nurturing cooperative action will lead to the security that a legal agreement will provide.

Careful Design of Management Structures. The long-term success of commissions is based on the careful design of management structures. The structures that succeed best are based on joint fact-finding and sharing of information that creates a climate of trust among the parties. Often the skills and capacity of those involved in transboundary water resource management issues are low in the early phases, and the use of a "step-by-step" process can be important to the development of institutions and management structures.

Fundamental Importance of Information and Knowledge. Where management of international water resources is concerned, knowledge is power. Without knowledge, riparian states are often extremely nervous about threats to their sovereignty, especially when another riparian is deemed to have that knowledge and is therefore "powerful." Information asymmetry must be resolved so that the parity of skills and information is increased. Building confidence and capacity is a slow process.

Transboundary Management Organizations do Not Need to Be Large. These organizations can rely on available national technical support from their cooperating parties in joint committee structures. External support is best directed to complement the technical work that the

management institution requires to develop policy and provide guidance on issues of common interest.

Careful Selection of Staff. Executive management of commissions should have broad qualifications that allow them to show independence in judgment and to take a leadership role of behalf of the jointly established organization. Experience has shown that competitive selection of professional, technical and support staff, with an adequate consideration given to nationality mix, contributes significantly to the performance and efficiency of such organizations.

Expanding Cooperation – Broadening the Range of Partners. Expanding cooperation enhances the long-term success of these efforts. Experience with transboundary river management demonstrates the importance of working at three complementary levels – international, national, and subnational. At the international level, a commission provides the basis for joint approaches and actions among cooperating parties. At a national level, different ministries integrate the actions of the commission into national policies, strategies, and programs. At the subnational level, the participation of local governments, private sector, nongovernmental organizations, civil society institutions and various stakeholders is needed to translate these policies and programs into action and to provide feedback. In addition, participation of non-governmental organizations in partnership with commission processes can harness the energy of community organizations, scientific and applied research groups, and other stakeholders to promote local implementation of key measures.

Environmental Demand for Water. Significant efforts will be required to include provisions for meeting the environmental demand for water as an integral element of transboundary water resources management programs. Current management frameworks for shared river basins should be reviewed to ensure that they adequately recognize environmental needs for water for aquatic ecosystems, related aquatic and terrestrial biodiversity and the people who directly rely on these resources for survival.

Shifting to Integrated Water Resources Management. Major opportunities exist for commissions to lead and support the critical process of shifting water management paradigms from traditional and fragmented approaches to the adoption of integrated approaches to water resources management.

Sharing Benefits Rather Than Sharing Water. Many commissions have focused mainly on the issue of sharing water, an issue that is often a source of discord and stress between the cooperating parties. Greater emphasis in the future should be given to the identification and mutual understanding of all the benefits that can be obtained through cooperation.

Promote Efficient Water Use. Actions to promote efficient water use need to be an integral part of water resource management strategies supported by commissions at the international level, by

national governments at the country level and by a wide range of authorities at the subnational level. In addition, there needs to be a shift from continuous augmentation of supply to the management of water demand.

Downstream Linkages to Estuaries and Coastal Zones. Increasing attention should be given by commissions to the implications of current and proposed water resources development strategies on estuaries and coastal zones.

Lastly, the World Bank has outlined some lessons learned in the management of international river basins in Africa. Many of these recommendations overlap with those outlined above and are summarized below:⁴⁶

Level the Playing Field. The rationale for this is because negotiations on, and subsequent allocation and management of, international waters can only take place effectively where there is a more-or-less “level playing field” of capacity and information among riparian countries. This capacity then forms the building blocks for inter-riparian dialogue between countries.

Correct Information Asymmetry. It is important to remember that knowledge is power and that asymmetry in data collection, analysis and its interpretation for policy formulation and decision-making must be addressed.

Develop Dialogue on Different Tracks: e.g. information, capacity, technology. It is important to engage in and expand basin-wide dialogue on diverse issues, with the goal of seeking common ground.

Start with the Achievable. It may be worthwhile focusing on simpler issues and achievable goals first, before addressing more complex and challenging concerns. Seeking to establish formulae at the outset for sharing a resource or for sharing the costs for managing a resource could hinder the process of developing a workable mechanism for managing shared waters.

Recognize that Progress May Be Slow. It is important to recognize that progress on complex water systems may be slow, but dialogue needs to be sustained and trust needs to be established. It took the US and Canada (two nations with very high levels of capacity, information and resources) more than a decade and a half to establish a joint basis for managing the North American Great Lakes. The Indus Water Treaty took about 12 years to be signed from the time the dispute surfaced between India and Pakistan. By contrast, the Tripartite Agreement for Lake Victoria was developed in a relatively short period of four years. Even if it appears that little progress is being made, it is important that dialogue be maintained.

⁴⁶ World Bank Technical Paper No. 414. 1998. *International Watercourses: Enhancing Cooperation and Managing Conflict*. Proceedings of a World Bank Seminar. Edited by Salman M.A. Salman and Laurence Boisson de Chazournes. Pgs 96-98.

5.4 SUMMARY

The United States' involvement in regional water resources management issues in southern Africa was sparked by the drought of 1991-92 when host government officials approached U.S. Ambassadors to SADC countries and requested assistance in addressing the long-term problem of regional water scarcity. In response, USAID completed the SARP study, the objectives of which were to determine existing institutional and legal structures, assess how water resources can be effectively coordinated on a regional basis, and prioritize specific projects. In 1995, USAID opened the RCSA to focus on issues that are inherently regional or could benefit from a regional approach. The RCSA updated and evaluated the information and recommendations presented in SARP and from this information and discussions, USAID began to provide limited assistance to the WSCU in 1997.

The RCSA has assisted the WSCU to develop TOR to develop guidelines for the management of international river basins, to define catchment boundaries associated with international river basins, and to harmonize national water laws with regional and international agreements. The RCSA has committed to implementing these TOR, but will focus the harmonization and mapping activities on the Okavango Basin. In addition, the RCSA has supported a legal study on the relationship between the SADC Protocol and the UN Convention on Non-Navigational Uses of International Rivers, a workshop to finalize the amendments to the Protocol, and a brochure in three languages to publicize the Protocol and the WSCU's role to a range of stakeholders.

To help build human capacity in the region, the RCSA has also committed to fund short term training in various aspects of water resource management, including environmental aspects of river basin management, water conservation and demand management, international water law and conflict management. In addition, the RCSA provided funding for teams of water professionals from Lesotho, Namibia, Zambia, and Zimbabwe, and the WSCU staff to attend the African Water Policy Conference in Nairobi in May 1999. USAID is also funding activities related to the development of Natural Resource Accounts in Namibia, Botswana, and South Africa with water as one of the resources being analyzed to determine its role in economic development. Lastly, the RCSA is reviewing for possible funding proposals received from NGOs in the region for activities to improve the management of shared natural resources -- including water or selected watersheds

The United States' experiences and expertise in water resources management could have significant relevance for southern Africa. There are important similarities between the western US and southern Africa, including the fact that large rivers dominate both areas with headwaters in mountainous rainy states and long river runs through semi-arid and arid areas. In addition, the US has significant experience and arguably a comparative advantage over other donors working in the region in several areas of water resources management, including: 1) conflict management and legal analysis; 2) stakeholder participation in water management, including strong NGO involvement and citizen water quality monitoring programs; 3) transparent multi-stakeholder decision-making

techniques including the application analytical models; 4) applied research associated with hydrological modeling and river forecasting; 5) demand management, water conservation and reuse, water pricing and marketing; 6) determination of ecological demand in aquatic systems, maintenance of instream flows, mitigation strategies associated with large dams, and techniques to rehabilitate degraded systems; 7) environmental impact assessment applied to aquatic ecosystems, and 8) water pollution monitoring, reduction and prevention.

In addition to this US-based expertise and comparative advantage, the RCSA is uniquely positioned to implement a regional water strategy. First, the RCSA operates under a regional mandate. Water issues in the SADC region are inherently regional, and thus, it is only through a regional platform that these issues could be addressed. Second, the RCSA combined with the bilateral missions and the U.S. Embassies in the region have significant in-country presence and staff. Issues associated with managing international rivers, are complex, often highly political, and require close contact and collaboration with regional governments, NGOs, and the private sector. Without significant on-the-ground staff, it would be risky for a donor to become involved with these issues. Lastly, the RCSA has developed significant experience over the last three years in this sector and is poised to play a leadership role in moving forward a transboundary water initiative.

There is significant experience globally in both national and international river basin management. This section captures some of that wisdom through a limited review of “lessons learned.” This review reveals several common threads. First, river basin management must be based on a realistic view of the development context. Strategies need to take full cognizance of development constraints and the scope of river basin commission’s programs and size of their staff and structure should be consistent with available financial resources. In addition, experience suggests that the environmental context is equally important and that past initiatives, which focused on supply expansion, often resulted in environmentally damaging practices that cost billions of dollars of damage to downstream water user. In future endeavors, there needs to be strong linkages to environmental conditions and a shift to integrated water resource management approaches that include: 1) taking into account environmental demand for water, 2) promoting water conservation and demand management, 3) recognizing linkages with downstream coastal zones, and 4) broadening the range of partners involved in the decision-making process. In addition, it is noted that the distinction between top-down and bottom-up approaches is an artificial one; successful policy change requires support and commitment at both grassroots and senior policy levels.

In terms of the establishment and function of river basin commissions, there needs to be careful attention paid to management structure and staffing. There are no fixed models for river basin commissions and the range of institutional examples and experiences should be reviewed in the process of establishing a framework for any new organization. For example, transboundary management organizations need not necessarily be large. Commissions are not static in nature and establishing agreements should allow for modification of these organizations and their roles. Legal instruments are considered essential, but the process of their development is considered as

important as their substantive content. In addition, the fundamental importance of information and knowledge is stressed and it is important to correct information asymmetry among riparian countries. In relation to moving transboundary water planning processes forward, experience suggests that it is helpful to develop dialogue on various tracks, start with achievable goals, and focus on sharing benefits rather than sharing water. It is also important to recognize that progress on complex water systems may be slow, but dialogue needs to be sustained and trust needs to be established.

VI. RECOMMENDED APPROACH

Building on the information and analysis of the previous sections related to critical issues and opportunities in the water sector, overlap in regional priority-setting exercises, gaps in donor involvement, USG expertise and RCSA's on-going involvement, comparative advantage, and lessons learned in river basin management, this section makes recommendations for near and medium-term involvement for USAID's RCSA in regional water resources management.

First, the overall approach is discussed with an emphasis on how these activities emerged in light of the previous information and analysis in this report. Next, the activities are presented and briefly described and a proposed timeline and illustrative funding levels offered. Then, the recommended activities are placed within the RCSA's Strategic Objective: Increased Regional Capacity to Manage Shared Natural Resources under four Intermediate Results (IRs). USAID's terminology is briefly explained as well as the evolution of a new proposed Strategic Objective. For each IR, expected results of this approach are discussed. Next, critical assumptions are outlined in an attempt to determine the risk to USAID of following this proposed approach. Lastly, this section discusses commitment and capacity of implementing partners, synergy with other RCSA activities, relation of proposed RCSA involvement with other USAID's bilateral missions, and management issues.

6.1 RATIONALE FOR APPROACH

In this section, I will first summarize the information and analysis gleaned from the previous sections and then will detail how this information has led to the proposed strategy and why certain directions were prioritized over others.

First, Section 2 of this report concludes that in relationship to the framework derived in Appendix A, the southern African region has a long way to go in all aspects of water management before it will reach a level of sustainable water resources management. Most obviously, there is an urgent need to address issues associated with equitable access to safe water and sanitation. Limited human and institutional capacity to address the challenges associated with the management of shared watercourse systems underlies most water management issues in the region. This lack of capacity leads to the development of unilateral water schemes on international rivers, which, in turn, threatens to increase tension over these shared resources. In addition, the aquatic ecosystems that support the growing market in regional tourism and provide a range of ecological services are threatened by various impacts. Further, there are few models for broad and significant stakeholder participation, and women are noticeably under-represented in all aspects of water management in the region. Lastly, given the range of activities that can be used to promote water conservation and demand management and the relative scarcity of water in the region, much of the focus in water

resource management has been on securing additional supplies and not on reducing demand.

Section 3 of this report compares the priority-setting exercises in the region and provides more detailed recommendations to address the broad issues described in Section 2. Stakeholders prioritized basin planning efforts in general and then identified the Okavango, the Zambezi, and the Limpopo as basins in highest need of support. In addition, they acknowledged a need to develop guidelines and model river basin agreements and harmonize national laws with the Protocol and other international agreements. Stakeholders also concluded that the development of water quality standards and monitoring systems, as well as the control of aquatic weeds were top priority issues. From a conservation perspective, they identified the Okavango Basin and Lake Malawi/Nyasa as the areas in need of attention. Stakeholders also recommended evaluating water resources management processes to determine a means to develop participatory programs, empowering women to become involve in all aspects of water resources management, and an activity to publicize and popularize the Protocol. In relation to increasing analytical and monitoring capacity in the region, top priority activities included the development of a regional groundwater assessment and the improvement of hydrological data collection particularly in countries such as Angola, Mozambique, Malawi, and Swaziland. In addition, stakeholders recommended support for a system to forecast water supply and demand for the region, and the development of flood and drought early warning systems. In terms of human capacity building, training in legal aspects of international water law was targeted as the area in most need of attention. International river basin commissions and the SADC WSCU were the institutions identified for capacity building. Lastly, an activity to promote conservation and demand management was one of the highest-ranking activities across the priority-setting exercises.

When these priority activities were put through the lens of existing donor funding, the majority of them remained in need of support. There is, however, significant donor support in several areas including development of a management plan for the Zambezi Basin, regional-level hydrologic data collection and analysis, flood and drought early warning systems, regional groundwater assessment, and institutional support for the WSCU. Section 4 concludes that although there appears to be significant donor involvement in the water sector in southern Africa, much of this involvement is at a national level focused on water supply and sanitation. Regional level water activities are largely just beginning and given the range of activities needed to promote sustainable water resources management across 15 international river basins in the region, there is considerable scope for increased donor involvement.

Section 5 argues that the US has significant experience and arguably a comparative advantage over other donors working in the region in several areas, including: 1) conflict management and legal analysis; 2) stakeholder participation in water management, 3) transparent multi-stakeholder decision-making techniques including the application analytical models; 4) hydrological modeling and river forecasting; 5) demand management; 6) determination of ecological demand in aquatic systems; 7) environmental impact assessment applied to aquatic ecosystems, and 8) water pollution

monitoring, reduction and prevention.

Section 5 also outlines global experience in international river basin management and recommends that river basin management be based on a realistic view of the development and environmental context. In future endeavors, there needs to be a shift to integrated water resource management approaches that include: 1) taking into account environmental demand for water, 2) promoting water conservation and demand management, 3) recognizing linkages with downstream coastal zones, and 4) broadening the range of partners involved in the decision-making process. In addition, it is noted that the distinction between top-down and bottom-up approaches is an artificial one; successful policy change requires support and commitment at both grassroots and senior policy levels. In terms of the establishment and function of river basin commissions, this section also notes there are no fixed models for river basin commissions and the range of institutional examples and experiences should be reviewed in the process of establishing a framework for any new organization. It also stresses the fundamental importance of information and knowledge and concludes that progress on complex water systems may be slow, but dialogue needs to be sustained and trust needs to be established.

The strategy proposed below responds to many of the major issues and prioritized activities outlined above while filling in gaps in donor support. The strategy recommends targeted activities to increase human and institutional capacity in the region to address the management of international rivers. Second, it promotes broad-based participation, including the involvement of women in all aspects of water resources management. In addition, it outlines measures to conserve ecological services associated with aquatic ecosystems. Lastly, it recommends activities associated with water conservation and demand management. The strategy also builds on US comparative advantage in several areas, including experience in conflict management and legal analysis, stakeholder participation, demand management, determination of ecological demand in aquatic systems, and environmental impact assessment applied to aquatic ecosystems.

The strategy does not directly address the dramatic need for equitable access to safe water and sanitation in the region. Because these issues are largely national-level issues and the RCSA functions under a regional mandate, issues associated with access were considered better addressed by USAID bilateral missions than by the RCSA. In addition, this proposed strategy does not recommend that the RCSA support the construction of infrastructure projects. Given the costs associated with these structures, the RCSA does not have the financial resources to fund infrastructure projects. In addition, past donor experiences with these projects have been largely unsuccessful. In addition, the majority of the regional activities prioritized for attention by stakeholders in the region were related to capacity-building, legal analysis, and policy formulation, rather than infrastructure projects.

6.2 OVERALL APPROACH

One of the lessons learned in water resources management is that the distinction between top-down and bottom-up approaches is an artificial one and that successful water policy development and implementation rests on support and commitment at both grassroots and higher levels. In response to this insight, this proposed strategy is based on a two-track approach. One track is at a SADC region-wide level and the other is at a basin level. There is an important give-and-take between the two levels in that the basin level serves as ground-truthing for the information generated and distributed at a regional level. The basin-level also serves as fertile ground to develop new approaches, best practices or so-called “models” for sustainable water resources management. In turn, the regional-level track provides initial guidance through guidelines and draft frameworks for basin-level work. In addition, training and institutional capacity building activities are recommended to reinforce both tracks. In this way, the policy work is linked to the on-the-ground models. The on-the-ground models, in turn, refine the policy work, and the training and capacity-building supports both.

More specifically, there are 12 proposed activities of which four of them are designed to be implemented from a regional platform. The first of these activities involves the development of regional guidelines for the management of international river basins and articulating roles and responsibilities for the various organizations involved in management of shared rivers. This activity emerged as one of the highest-ranking activities with stakeholders in the region and the RCSA has already supported the WSCU in developing detailed TOR to implement it. The second activity is the promotion of ecological aspects of river basin management from a regional platform. The third also uses a regional platform to promote water conservation and demand management. Lastly, on a region-wide basis, this strategy recommends that the RCSA support activities associated with the development of guidelines for EIA processes associated with international rivers. All of these activities are priority activities in the region and respond to identified critical needs.

On a basin-level, this proposed strategy recommends five activities. The first two emerge from the regional activity focused on developing guidelines for the management of international rivers by refining and applying two areas that these guidelines will address (maintenance of ecological services and broad-based participation) on a basin scale. Three other activities (harmonizing national laws with international agreements, mapping and agreeing on boundaries, and application of natural resource accounts to shared rivers) are also proposed for implementation on a basin scale. These three activities are on-going RCSA activities. The RCSA has supported the WSCU in the development of detailed TOR for harmonizing national laws, policies and strategies with regional and international agreements, and to map and agree on the boundaries associated with international rivers. In addition, the RCSA is supporting an activity focused on the development of natural resource accounts in three countries in the region. Further work would involve expanding this activity to inform basin-level decision-making.

In addition to these two tracks, there are three proposed activities that involve capacity building and span both the regional and basin level work. These include mainstreaming gender, strengthening the capacity of NGOs, and supporting short-courses in selected topics in integrated water resources management. These activities serve to support both the basin level and regional level work and to integrate them across levels.

6.3 BASIN-LEVEL FOCUS

In early 2000, the RCSA supported a process to determine geographical areas of focus for their work in transboundary natural resource management.⁴⁷ The process used to select the transboundary management areas (both ecological areas and international river basins) was based upon ranking a set of criteria that describe the ecological, institutional, policy, community, and economic importance of each proposed area. The process included the provision to assign some criteria a greater importance than others in terms of achieving the objectives of the RCSA's strategic objectives. Lastly, the top ranking activities were conditioned by the likelihood of success in each ecological zone or watershed. A set of five factors or constraints affecting the likelihood of success were developed and applied to the sites (value added of TBNRM, maximize RCSA, bilateral mission support, stakeholder support, potential impact within planning timeframe). The outcome of this analysis was that the Okavango River Basin and the Limpopo River Basins emerged as the first and second priority basins for RCSA support.

Some of the reasoning behind choosing the Okavango River Basin as one of the basins for focused support include: 1) it remains a high priority from the priority-setting exercises in the region, 2) it is one of the smaller basins in terms of number of riparian countries and may prove more manageable and thus provide valuable experience for determining methods that can be duplicated on a larger scale and elsewhere, 3) the Okavango Delta is a world-class ecosystem, 4) USAID has worked in communities in Botswana and Namibia and these experiences and relationship could prove helpful for basin-level work, 5) it is the only basin in the region with a functioning river basin commission (OKACOM) and is on the verge of undertaking a major planning process, and 6) although there is significant donor interest from GEF in working in the basin, there is need for multi-donor support for a range of activities. Appendix E provides a more in-depth description of the Okavango Basin with information on its importance to the region and an update on existing planning efforts.

6.4 RECOMMENDED ACTIVITIES

Table 3 below briefly describes twelve proposed activities for RCSA support over the next four years. Those activities that are asterisked (*) are ones that the RCSA is already involved with or committed to pursuing. Of the twelve proposed activities, the RCSA is already involved with half of the activities. The remaining six new activities are designed to compliment the existing activities or

⁴⁷ See RCSA report entitled: "Methodology for choosing focal water basin and TBNRM areas," for a full description of this process.

test regional activities on a basin scale. More detailed descriptions of these activities are provided in the following section.

TABLE 3: RECOMMENDED ACTIVITIES

BASIN MANAGEMENT

*** 1. Develop Guidelines for International River Basins Management for the Region** - The WSCU with RCSA support has developed detailed TOR for this activity that involves defining terms in the Protocol to help move it towards implementation and articulating the roles and responsibilities of the river basin organizations discussed in the Protocol. The next step would be to determine appropriate partners and to implement these TOR on a regional basis.

*** 2. Harmonize National Laws with the Protocol and OKACOM for Okavango Basin Riparian Countries** - the WSCU with RCSA support has developed detailed TOR for this activity on a regional basis. This strategy recommends that implementation be first focused on a basin level as a case study. Implementation would involve: 1) studying the existing legislation, policies, and strategies, 2) determining how they need to be altered to harmonize with international agreements, 3) developing appropriate draft legislation, 4) supporting the adoption of this new language in the basin, and 5) disseminated this experience throughout the region.

*** 3. Map Boundaries for the Okavango Basin** - the WSCU with RCSA support has developed TOR for mapping and agreement on the boundaries of international river basins in the region. This strategy recommends that implementation be first focused on a basin level as a case study. Implementation would involve: 1) reviewing existing maps and information systems, 2) developing GIS reference maps, 3) working with OKACOM to elicit agreement among the riparian countries on the basin boundaries, and 4) disseminated this experience throughout the region. Follow-up work would involve using the baseline maps and associated GIS referenced information to aid the planning processes.

ECOLOGICAL SERVICES

4. Refine and Apply Ecological Demand Guidelines to the Okavango Basin - This activity would take the guidelines associated with ecological management of river basins developed in Activity 1 and further articulate them within the context of water resource planning in the Okavango Basin and use this experience as a case study.

5. Promote Ecological Aspects of River Basin Management in the Region - This activity would support the development and regional dissemination of information related to ecological aspects of international rivers.

BROAD-BASED PARTICIPATION

6. Refine and Apply Participation Guidelines in the Okavango Basin - This activity would take the guidelines associated with participation developed in Activity 1 and further articulate them within the context of water resource planning in the Okavango Basin and use this experience as a case study.

7. Mainstreaming Gender - This activity involves training RCSA and all project staff in gender analysis and sensitivity and developing systems to integrate this knowledge into all aspects of water projects that the RCSA supports.

ANALYTICAL AND MONITORING CAPACITY

8. Develop Guidelines for EIA Process - This activity would involve the development of regional guidelines for the use of EIAs on international rivers and building capacity to use this process.

HUMAN AND INSTITUTIONAL CAPACITY-BUILDING

*** 9. Support Short-courses in Selected Topics in Integrated Water Resources Management** - The RCSA is in the process of supporting the development of short courses to be given to policy makers and water resource practitioners through a regional institution(s).

*** 10. Strengthen NGO Capacity** - Through STRENGTH, the RCSA would fund NGOs involved in international river basin management. Follow-on work would include supporting a network of these NGOs to share experiences, information, and to promote collaboration between them.

WATER CONSERVATION AND DEMAND MANAGEMENT

11. Support Water Conservation and Demand Management - This activity would involve promoting best practices associated with water conservation and demand management including water pricing and water efficient irrigation systems

*** 12. Support Natural Resource Accounts with an Emphasis on Water Resource Management** - The RCSA is supporting this activity in Namibia, Botswana, and South Africa. Follow-on work would involve expanding this information to inform decision-making processes on international river basins, particularly the Okavango Basin.

Below is a draft proposed timeline and estimated funding levels for the activities outlined in the proposed strategy. In addition to the activities describe above, it is recommended that the RCSA build some flexibility into their water resources strategy and set aside **funding for opportunistic**

activities. This item is included in the proposed timeline below. Although many activities can be designed to address recognized needs, there inevitably will be several proposals that emerge over the life of this strategy that will be offered by institutions ready to proceed in important directions in the water sector. These proposals should be seriously considered and if appropriate to the strategic direction of the mission, funded.

TABLE 4: PROPOSED TIMELINE AND LEVEL OF EFFORT

ACTIVITY	FY1999	FY2000	FY2001	FY2002	FY2003
1. Develop Guidelines for International River Basin Management for the Region	Draft TOR Finalize TOR Begin to Implement \$250,000	Implement TOR \$750,000	Implement TOR \$750,000	Draft Guidelines Adopted \$750,000	
2. Harmonize National Laws with Protocol and OKACOM Agreement for Riparian Countries in the Okavango Basin	Include in MAARD Carry Out Analysis \$100,000	Implement \$200,000	Communicate Results \$50,000	Determine Impact	
3. Map Boundaries for the Okavango Basin	Include in MAARD Begin Study \$100,000	Develop Maps \$300,000	Agree on Boundaries \$100,000	Transfer Tech. \$100,000	
4. Apply Ecological Guidelines to the Okavango Basin	Develop partnerships and mechanisms	Begin to Implement \$200,000	Implement \$300,000	Implement \$300,000	Disseminate Information \$100,000
5. Promote Ecological Aspects of River Basin Management in the Region		Develop partnerships and mechanisms	Begin to Implement \$200,000	Implement \$200,000	Implement \$200,000
6. Refine and Apply Participation Guidelines in the Okavango Basin	Develop partnerships and mechanisms	Begin to Implement \$200,000	Implement \$300,000	Implement \$300,000	Disseminate Information \$100,000

7. Mainstream Gender Issues in all RCSA Water Activities		Develop Gender Integration Plan \$100,000	Implement \$100,000	Implement \$100,000	Implement \$100,000
8. Develop Guidelines for EIA Process		Develop partnerships and mechanisms	Begin to Implement \$200,000	Implement \$200,000	Implement \$200,000
9. Offer Short Courses in IWRM	Draft TOR Finalize TOR Determine Partners Design Courses \$750,000	Teach 4 short courses Evaluate, Redesign Start Network of Graduates \$750,000	Teach 4 short courses Evaluate, Redesign Finalize Network \$750,000	Insure Sustainability Determine Impact \$200,000	Follow Graduates Determine Impact \$100,000
10. Strengthen NGO Capacity	Determine needs for NGO strengthening, develop plan Support 2 NGOs \$600,000	Support 2 NGOs Determine Impact \$600,000	Support 2 NGOs Determine Impact \$600,000	Support 2 NGOs Determine Impact \$600,000	Support 2 NGOs Articulate Lessons Learned \$600,000
11. Support Water Conservation and Demand Management		Develop partnerships and mechanisms	Begin to Implement \$200,000	Implement \$200,000	Implement \$200,000
12. NRA with a Water Emphasis	Design of Activity	Implement \$150,000	Implement \$150,000	Implement \$150,000	Disseminate Information \$50,000
<u>Opportunistic Support</u>	\$300,000	\$300,000	\$300,000	\$500,000	\$500,000
<u>Total</u>	\$2,100,000	\$3,550,000	\$4,000,000	\$3,600,000	\$2,150,000

6.5 RELATION TO RCSA'S RESULTS FRAMEWORK

The Initiative for Southern Africa (ISA) is a regional development program implemented by USAID's Regional Center for Southern Africa. The ISA reflects the USG's commitment to support cooperation within the southern Africa region as a means of promoting sustainable economic growth and contributing to a stable democratic environment.⁴⁸

The RCSA completed a **Strategic Plan** to implement the ISA in August 1997, which includes the following broad areas of focus: democracy and governance, regional markets, agriculture, transboundary natural resources, and evaluation and monitoring. The Strategic Plan is designed through the year 2003 with funding levels at US\$300 million (subject to funding availability) over the life of the strategy. Unlike USAID's bilateral missions that focus on national level support, the ISA through the Regional Center for Southern Africa is mandated to focus on issues that are inherently *regional* or could be significantly advanced by a regional approach.

In 1992, surging US budget deficits demanded a re-examination of the role of the US government in a number of sectors, including foreign aid. In response, a process to revamp government agencies called "re-engineering" was launched. There are several key principles associated with re-engineering at USAID. For starters, USAID now focuses on "achieving results" instead of "implementation". Another intent of reengineered USAID is to develop a system that is flexible and can respond to changes, new information, and learning. Further, this new system is designed to be collaborative, involving stakeholders and partners at every opportunity. Lastly, reengineering involves the development of a Strategic Plan replete with Strategic Objectives.

Strategic objectives are results in a particular program area to which the USAID Mission can affect and can be held accountable. The aim of managing development aid through strategic objectives is to relate this aid to significant results. In addition to strategic objectives, USAID also manages programs under what are "Special Objectives". A Special Objective is one that has limited development impact, and therefore does not qualify as a full-fledged objective. Special Objectives can include objectives that involve phasing out of a major development effort, involve research that contributes to USAID's objectives, or is exploratory or experimental. USAID's Regional Center for Southern Africa established Special Objective A in 1997 as part of the Strategic Plan.

The intent of RCSA's Special Objective A was to increase regional capacity to manage transboundary natural resources. Transboundary natural resources are defined as water, wildlife, and transboundary parks and associated ecosystems. The RCSA entered into the area of transboundary resource management in response to the overwhelming interest and concern of stakeholders consulted in the region. These stakeholders indicated that important transboundary resource issues,

⁴⁸ The RCSA operates independently of, but in consultation with, the bilateral missions which are present in Southern Africa. Bilateral missions are present in all of the countries under the ISA with the exception of Botswana, Lesotho, and Swaziland.

especially management of shared water courses, are not being adequately addressed, and have the potential to lead to regional tension or even conflict.

In 1996, the RCSA embarked upon activities under a *special objective* to highlight the fact that transboundary resource management is a new area of involvement for the RCSA. The first two years (1997 - 1999) under this special objective were largely exploratory with the intent to refine areas of focus. Now at the end of this two year period, the RCSA has a clearer understanding of the role that the mission can play in these complex sectors, replete with: 1) knowledge of other donor activities; 2) definition of USAID's role based on comparative advantage and expertise; 3) articulation of global lessons learned about the management of transboundary natural resources; 4) identification of appropriate regional partners; and 5) selection of geographical areas of focus. With this acquired understanding, the RCSA developed this special objective into a full-fledged strategic objective in November of 1999 in recognition of the importance of transboundary resources to the region and acknowledging that the RCSA could play a significant role in promoting sustainable and cooperative management from a regional platform. This report is part of the exploratory aspect of this special objective and is aimed at addressing some of the questions outlined above.

As mentioned above strategic objectives are results in a particular program area to which the USAID Mission can affect and can be held accountable. The aim of managing development aid through strategic objectives is to relate this aid to significant results. These results in USAID terminology are called "Intermediate Results" (IR) and are linked in a causal framework to achieving the strategic objective. Under the draft environmental SO for the RCSA, there are four intermediate results. Below, I describe how the proposed water activities fit under these intermediate results.

INTERMEDIATE RESULT 1: POLICIES, PROTOCOLS AND AGREEMENTS ADOPTED

In general, the aim of this intermediate result is to provide the policy framework for the management of shared resources in the region. This policy framework might be at a regional level such as a Protocol or at a sub-regional level such as a river basin management agreement. There are several activities under this proposed water initiative that would help achieve this intermediate result.

As stated several other times in this report, the drafting and ratification of the Protocol on Shared Watercourse Systems is a significant regional achievement which expresses a clear political commitment to managing the 15 shared river basins in the region. Ratification of this Protocol is not only an achievement for the SADC region, but represents a global model for regional cooperation over shared watercourse systems; there are few such models worldwide. Ratification of the Protocol is a major first step in terms of clearing political obstacles. As they say, "the devil is in the details," and the next step will involve turning this political commitment into action and implementing the principles and intent of the Protocol. The activities described below are aimed at

moving from political commitment to actual shared management and are a combination of legal, economic and policy work.

The RCSA has supported (through USAID's Global Bureau/Center for Environment Policy IQC with International Resources Group) the WSCU in the development of a detailed TOR associated with implementing the Protocol. This TOR involves **articulating roles and formulating guidelines for the management of shared watercourse systems** (Activity 1). This activity will encompass many of the suggestions made repeatedly as part of prioritization exercises in the region. Although the Protocol sets the stage for the joint management of international river basins, how specifically countries enter into agreements, set up commissions, share data, involve stakeholders, resolve disputes, etc, is largely undefined. This activity will review global lessons learned in international river basins and then set up a process whereby this information is "regionalized" with the result being that regional guidelines are established. As river basin commissions formalize and begin to develop management plans, these guidelines will then inform their decisions on how to structure themselves and how to proceed in a planning process. In addition, there is not a clear understanding of the relationship between River Basin Commissions, River Basin Authorities, and the SADC Monitoring Unit. This confusion is evident as questions arise again and again at regional meetings about the specific roles of these existing and planned institutions. The activity proposed above will address this confusion by defining the roles and responsibilities of these various institutions associated with the management of international river basins. It is expected that this definitional work will pave the way for these institutions to develop clear mandates and begin implementing them.

Although countries in the region have signed the Water Protocol (and other river basin agreements), in many cases, their policies, legislation, and strategies are not in harmony with these commitments. Thus, as countries move ahead with trying to implement the Protocol (or other agreements), their progress is blocked by national level legislation. It is expected that the proposed activity, **harmonizing national laws with the Protocol** (Activity 2), could help to remove these blocks to regional cooperation. This activity has been seen as a priority activity in the region for at least the last 5 years. Several countries are beginning to make progress toward harmonizing their national laws, strategies, and policies so that they support the Protocol, but the majority of the countries have not taken this important step. The RCSA supported the WSCU in developing a finalized TOR for this activity. It is recommended that implementation of the TOR be narrowed from the entire region to a specific focal basin (the Okavango). Implementation would involve a legal study to determine the state of national laws and policies in the basin in relation to the Protocol and other regional water sharing agreements such as OKACOM, and then developing draft language for national level water legislation, policies and strategies so that these national level planning and operational tools support the sharing of international waters.

The RCSA also supported the development of TOR associated with **mapping the boundaries of the international river basins** (Activity 3) and working toward regional agreement on these

boundaries. This activity is also an important step toward implementing the Protocol. Without agreement on the area of management, it is difficult for countries to move forward on basin management and easy to focus on issues of boundaries, instead of the more important issues of management. It is expected that these maps and the mapping exercise itself will provide an agreed upon base map that will be the foundation for all further planning efforts including adding additional GIS referenced information regarding land and water. As with the TOR described above, it is recommended that this activity proceed on a basin scale as well.

In addition to these activities that will promote implementation of the Water Protocol, this proposed water strategy recommends that the RCSA continue the work that it is now supporting in the development of **natural resource accounts** (Activity 12) with an emphasis on expanding this work to inform water resource policy in one or several international river basins. At present, the RCSA is supporting this activity in Namibia, Botswana, and South Africa at a national level. Follow-on work would involve scaling this type of economic analysis up to a river basin to make cross-country comparisons and to inform regional decision-making bodies such as OKACOM.

INTERMEDIATE RESULT 2: SUSTAINABLE APPROACHES PROMOTED

This intermediate result is designed to complement, inform and reinforce the policy level activities described above. This type of reinforcement can be done in several ways, one of which is to focus on developing specific on-the-ground models for “best practices” in shared natural resource management. Another way involves disseminating information about already developed and understood approaches.

Within the focal basin(s), it is recommended that two aspects of the guidelines developed at a regional level under IR1 (Activity 1) be applied at the basin level. The first proposed activity involves **refining and applying the ecological guidelines** (Activity 4). This activity would involve taking the ecological guidelines developed on a regional level and ground-truthing them through application on a basin level. One output of this activity could be defining ecological demand or instream flow regimes in the focal basin(s). The second area involves **promoting broad-based participation** (Activity 6). These two areas of focus are high on the list in regional priority-setting exercises as areas in need of attention and are aspects of river basin planning with which most countries have little experience. Refining and applying the guidelines associated with ecological demand and participation through application to a basin level will not only ground-truth the guidelines, but will also provide a model of how the region can move from use of words such as “sustainable” and “participation” at a policy level, through development of more specific guidelines, and finally ending with application on the ground. This type of movement from the policy level to regional consensus to on-the-ground examples is an essential element in moving the region forward in terms of regional cooperation and the management of international river basins.

The RCSA is particularly well placed as a donor to support activities that promote the sustainable management of international river basins from a regional platform. In addition to these two basin level activities, this strategy recommends that the RCSA focus attention on two sustainable approaches associated with the water sector. The first approach that this is recommended is **water conservation and demand management** (Activity 11). Given that water supplies are limited, already half the population does not have access to safe and reliable water, the population is growing and is predicted to double by 2025, it makes sense to develop mechanisms to stretch the existing supplies, than to proceed as if the supplies are unlimited. Despite the fact that this activity is largely focused on national level action, it is recommended as part of this strategy because it is extremely important that it takes hold in the region. In addition, the US has a significant comparative advantage given experience in reducing water demand and promoting conservation in the arid and semi-arid areas of the US. This activity will serve to translate a growing understanding of the need to judiciously manage water resources into commitment to take specific steps in that direction. The information and consensus-building associated with this proposed activity will help regional decision makers chart a course forward in this area.

The second approach involves the **promotion of ecological aspects of river basin management** (Activity 5) through the development and dissemination of information. This activity responds to a recognized need in the region to broaden the view of water resources to include the protection of the ecological services that river systems provide. These services can easily be overlooked particularly in multi-jurisdiction planning until they are degraded. Restoration of riverine ecosystems once they are degraded is costly, even prohibitive in some cases.

INTERMEDIATE RESULTS 3: ECOLOGICAL MONITORING SYSTEMS IMPROVED

This IR is aimed at improving ecological monitoring systems for two important reasons. The first is to promote the monitoring of regional ecological trends. This information is essential for the region to know the state of its resource base and to have an understanding of where and how resources are been degraded or conserved and at what rates. The second aim of this IR is to put this specific information into the hands of decision-makers so that decisions are informed by regional trends and analysis. This IR will investigate where there are weak links along the continuum from data collection, analysis, and dissemination, and provide targeted assistance to strengthen the process associated with turning data collection into knowledge that informs decision-making.

One activity recommended under this IR involves **developing guidelines for an Environmental Impact Assessment (EIA) process** (Activity 8) with a specific focus on development in international river basins. The World Commission on Dams (WCD) is currently reviewing past and present experience with building large dams around the world. One output of the WCD is to develop such guidelines. The aim of this activity will be to provide a forum for a regional review of these guidelines and a process whereby the guidelines or some regional version

thereof are adopted. Subsequent work would involve training in implementing these guidelines.

INTERMEDIATE RESULT 4: KEY NRM INSTITUTIONS STRENGTHENED

This IR is aimed at addressing the critical issue of strengthening human and institutional capacity to manage shared natural resources. There is emerging capacity in the region to respond to national level natural resource issues, but when it comes to scaling up to regional or transboundary issues, there are few people or institutions in the region with the capacity to do so. Under this water initiative, there are several on-going and proposed activities associated with this IR. First, the RCSA has been in a year-long process to define training needs in the region associated with regional water issues and to identify appropriate regional partners. Through lengthy consultation, four priority areas have emerged: 1) water conservation and demand management, 2) conflict management applied to water resources management, 3) ecological aspects of river basin management, and 4) international water law. Two-week **short courses** (Activity 9) taught in conjunction with a regional institution are in the process of being designed to address these issues. In addition, a very successful overview course on integrated water resources management was taught to 30 water resources policy makers from around the region in August 1999. One expected result of these courses is to build on the engineering skills in the region and to broaden the skills of managers so that they have an integrated approach to water resources management and can evaluate short and long-term decisions. Another expected result is to increase capacity in the region to understand the legal aspects of international river basin management and to design sharing arrangements that reflect this understanding. Lastly, this training is aimed at preparing water resource managers and policy makers in the art of negotiation and conflict management with the hope that this training will help deflect the inevitable tensions that will arise over the management of this scarce and shared resource towards reasoned discussion instead of towards escalating conflict.

This water strategy also recommends **strengthening NGO capacity** (Activity 10) to be involved in aspects of international river basin management as an activity for RCSA support under this IR. Through the RCSA STRENGTH mechanism, the RCSA would fund NGOs involved in this area. Follow-on work would include developing a network of these NGOs to share experiences, information, and to promote collaboration between them.

In addition to the training and NGO strengthening activities described above, the proposed water strategy outlines an activity associated with promoting involvement of women in the water sector (Activity 7). This activity responds to a loud and unanimous endorsement in all national, regional, and international policies and documents for increased involvement of women at all levels in the management of water resources management. The activity described as, "**Mainstreaming Gender**" would involve developing a protocol (and associated training) for the involvement of women in all RCSA funded water sector activities with the goal of fully integrated women and

women's needs into activity design and implementation.

6.6 CRITICAL ASSUMPTIONS

There are several critical assumptions associated with the proposed water strategy. The first assumption is that bilateral donors and the World Bank will continue to support national-level policy and legislation reform in the water sector. These reforms are essential "building blocks" for stepping-up to regional level water dialogue and planning. Given recent global attention to water resource issues, the funding for these activities at a national-level do not seem to be diminishing, however, the magnitude of the problem is increasing at a rate perhaps unmatched by funding levels.

This proposal also assumes that river basin commissions in the region (in addition to OKACOM) will be established in the next several years and that that their members will be prepared to absorb the information and training associated with the development of guidelines and the other proposed policy-level activities. Although these Commissions are struggling to get established on the Zambezi, the Orange, and the Limpopo Basins, there is significant political will in the region to endorse these institutions and increasing water scarcity is likely to underscore the reasons for cooperation.

On a basin level, in order for the proposed activities associated with the Okavango Basin to proceed in a timely manner, the three riparian countries need to sign the GEF Project Brief so that it can be processed and funded. GEF has been active in moving the OKACOM process forward for almost 5 years. If the GEF- funded Strategic Action Plan does not begin in the near future, working in this basin would be high risk for any donor. Another critical assumption associated with working in the Okavango Basin is that the OKACOM Commissioners continue to play a leadership role in moving the planning process forward and that they are supported at high levels in their respective governments. In addition, it is critical that the situation in the Caprivi is contained and that the ongoing Angolan civil war does not spill over into Botswana and Namibia.

In relation to activities associated with increasing analytical and monitoring capacity, this strategy assumes that the region can target key indicators to monitor ecosystem health, and that the collection, analysis and dissemination of this data is a sustainable activity. Further, this proposed strategy assumes that decision-makers are interested in being informed about regional ecological trends and that this information is a key variable in their decision-making processes. In design of these activities, it is important to target indicators that are essential for decision-making purposes or that clearly indicate important trends. In addition, project design will need to emphasize sustainable approaches.

A critical assumption associated with capacity-building in general, is the notion that training and capacity building will be translated into on-the-ground impact. One way of promoting this translation is to support performance-based training, whereby participants are selected on the basis

of their commitment (and the stated committed of their home institution) to implementing the results of the training. In addition, the training is specifically targeted to teach skills that are of immediate need and the courses involve a follow-on evaluation with participants to promote skills implementation.

It is clear that from this brief outline of critical assumptions associated with the proposed water strategy for the RCSA, that working in the area of transboundary international river basin management is not without significant risks. Some of these risks, however, can be managed through step-wise funding for specific activities, and through taking into consideration when implementing activities, the lessons-learned outlined in the previous section of this report. In addition, the consequences of taking no action, which include the possibility of increased regional tension over shared water resources, outweigh the costs of addressing these risks in program implementation. The commitment of regional implementing partners to cooperatively manage shared watercourse systems discussed below also help reduce some of these risks.

6.7 COMMITMENT AND CAPACITY OF IMPLEMENTING PARTNERS

One of the main partners with whom the RCSA would work to implement the activities described above would be SADC – both the Secretariat and the WSCU. The RCSA has developed good working relationships with both the SADC Secretariat and the WSCU over the last three years. The Secretariat has demonstrated that it is committed to promoting cooperation among member states regarding the management of transboundary water resources; the Deputy Director and the technical staff have been significantly involved with the water resource initiatives that are unfolding at a regional level, including the SADC/UNDP Round Table process. Both the Secretariat and the WSCU have been able to move the SADC Water Protocol from draft form to being signed by almost all of the SADC countries (with the exception of Angola) to ratification (by more than two-thirds of the countries) to it now being in effect. In addition, the WSCU has held numerous meetings to draft amendments to the Protocol so that issues of all member states were addressed.

The Government of Lesotho, including the Minister of Water Affairs, has also demonstrated that they are committed to continuing to fund and to increase the capacity of the WSCU so that it can fulfill its broad mandate. The WSCU will receive a secondment from the Government of Mozambique to help augment the staff. Positions for additional staff, including a specialist in international water law are planned. In addition, the entire WSCU staff (with the exception of the Coordinator) attended the RCSA funded water training in Zimbabwe in July 1999. The WSCU Coordinator is now stepping down and will soon be replaced; the caliber of the person chosen for this position will be critical to the ability of the WSCU to assume the leadership and coordination role that is needed in this sector in the region. The WSCU has also shown a keen interest in working with the RCSA and has been an active member of RCSA's "expanded team" for several years.⁴⁹ The WSCU is a coordination unit, and therefore the RCSA will be looking to this unit for a

⁴⁹ An expanded team includes RCSA staff, as well as advisors from the region, from the bilateral missions and from USAID/Washington.

coordination and organizational role more than as an implementor. The WSCU is fully equipped to play that role and has done so with the RCSA over the last several years as we have worked with them to draft and finalize several TORs.

National level governments involved in water resources management have also shown a high level of commitment to working on regional water issues. Various level government players, from Ministers to the technical level have been involved in the SADC process. As part of the SADC annual cycle, there is significant dialogue on a regular basis across countries about water resources management. At a technical level, there is a particular openness about water resource issues, constraints, data collection, and data sharing. Most of the people who work at a government level in water resources management, not only know their counterparts in other countries, but have a working and friendly relationship with them and significant knowledge about the water management situation in other countries in the region. This regular communication and contact that has been fostered by SADC sets the groundwork for future and potentially more complex discussion and negotiations among countries in the region.

If the RCSA decides to fund activities related to increasing regional capacity to develop and implement comprehensive EIAs for large projects proposed for international rivers, then SADC-ELMS will be involved. The RCSA has not worked recently with this unit and thus, their commitment and capacity would have to be addressed before undertaking such an initiative. Further, some of the activities proposed might involve coordination and input from several SADC units (tourism, energy, water, environment, wildlife, etc). It is only recently that the SADC units have begun to explore the possibility of coordinating work amongst sectors and such coordination could prove difficult.

Although the OKACOM process has been closed in the past to the general public and to other donors (with the exception of GEF), the RCSA has had several meetings recently with members of OKACOM and the Okavango Basin Steering Committee indicating that all those directly involved with the process are eager to have the RCSA become involved. GEF has also welcomed RCSA's initial steps in this direction. At this time, it is unclear what resources the governments of the riparian countries will commit to the OKACOM process. The Government of Namibia funded the EIA for the proposed pipeline to Central Namibia and Windhoek and extended this assessment to include the Okavango Delta. The Government of Botswana (with assistance from the Ramsar Secretariat) has initiated a planning process for the Okavango Delta under the Ramsar Convention. At present, OKACOM does not have a Secretariat and thus has limited ability to carry out its planning mandate.

In relation to NGO's in the region, as mentioned previously in this document there are few NGOs that have experience working on a regional level in water resources management, and there are none outside of South Africa, Zimbabwe, Namibia, and Botswana. In Zimbabwe, the Drought Monitoring Center, IUCN/ROSA, IMERCSA, ZERO, and WWF have had some involvement with

regional water issues with IUCN/ROSA being the most experienced. IUCN/ROSA is the Secretariat for GWP SATAC and has also been promoting water demand management in the region, as well as working in the Zambezi Basin. In Namibia, the Desert Research Foundation (DRFN) has published a book called "Sharing Water in Southern Africa". In South Africa, the Group for Environmental Monitoring (GEM) has worked on the Lesotho Highlands Development Project, while the Environmental Monitoring Group (EMG) is following the World Commission on Dams work in the SADC region. Both organizations with International Rivers Network are involved in spearheading a Southern African Rivers and Water Network. In Botswana and Namibia, the Okavango Liaison Group (a coalition of NGOs including, International Rivers Network, Kalahari Conservation Society, IUCN/Botswana, DRFN, Earth Life Africa/Namibia, Namibia Nature Foundation, Somarelang Tikologo) is about to launch a 2-year project called "Every River Has Its People" aimed at increasing community participation in the management of the Okavango Basin. In order to implement the activities involving NGOs, these groups will probably need assistance in several areas including, project management across countries and with multi-organizational implementation, networking, negotiation, etc. Many of these constraints to NGOs could be addressed through the STRENGTH program.

In addition, this proposed strategy recommends a significant amount of training through regional institutions, most likely universities. There are several universities in the region that are well placed to offer short courses in water resources management and to incorporate these courses into their curriculum, and thus, ensure sustainability, however, they are all in South Africa. The training element of this strategy will need to thoroughly access the non-South African universities to determine what assistance would be needed to help them deliver these courses and then sustain the teaching over time. Perhaps, a partnering arrangement with a South African university would be most effective.

6.8 SYNERGY WITH OTHER RCSA ACTIVITIES

Within the draft strategic objective, there are several areas of clear overlap between the work proposed here and other activities that are planned. For example, USAID has been involved with supporting Community-Based Natural Resource Management (CBNRM) initiatives throughout the region for the last 15 years. There have been many successes associated with this work and the RCSA plans on continuing to promote these efforts from a regional platform. CBNRM, however, has not been tested within a transboundary context despite the fact that many communities in southern Africa are situated in a shared resource area. These communities are well aware that political and administrative boundaries are often not contiguous with local culture, ecological or trade systems.⁵⁰ The on-the-ground models that this proposed water strategy recommends will promote community involvement in regional discourse and resource planning, and recognizes that community participation in this process is essential for any planning effort to be effective. In this way, these proposed activities will recognize traditional "voices" and the customary rules of access to

⁵⁰ Biodiversity Support Project. 1999. Study on the Development and Management of Transboundary Conservation Areas in Southern Africa. Funded by USAID, p. 62.

land and natural resources. In addition, USAID has had significant experience working with communities on CBNRM in the Okavango Basin through the Botswana's Natural Resources Management Project (NRMP) and through Namibia's Living in a Finite Environment (LIFE) Project. The Basin level work is intended to build on these many years of experience.

In addition, RCSA's SO3 plans on funding activities that relate to transboundary conservation areas (TBCAs). In the site selection process described above, one of the priority TBCAs that was identified is the Okavango-Chobe-Caprivi-Hwange transboundary area. This TBCA area overlaps with the Okavango as a focal basin. In addition, both the Kruger/Zinave/Binhane/Gonarezhou complex and the Tuli block area (both priority TBCAs for the RCSA) occur within the Limpopo Basin which was the second basin of focus. Given this overlap, there would be considerable reinforcement between these two approaches. If for example, the Okavango-Caprivi Greater Ecosystem were chosen as at focal TBCA, then the proposed work focusing on the Okavango Basin would support the work become done on an ecosystem level. Further, many of the methodologies, such as participatory planning, that emerge on a basin scale are transferable to an ecosystem scale.

In addition, the proposed SO3 also plans on promoting initiatives associated with regional tourism. Tourism is an important source of growth for the regional economy and much of this tourism is water-based and virtually all of it is water-dependent. Thus, many of the proposed efforts are aimed at helping to develop policies, guidelines, and methodologies to conserve the water resource base so that it can continue to provide essential ecological services that form the foundation of the tourism industry. In addition, basin-level work will promote the involvement of the private sector, particularly the tourism industry, in the decision-making process.

The work proposed here also has a nexus with the agriculture activities under Strategic Objective 4 (SO4). If the RCSA decides to move ahead with the full strategy, then there are several activities that are aimed at addressing water resources in the context of irrigated agriculture, namely the activities associated with water demand management. SO4 has a long history with working with agricultural research groups and agricultural interests. This experience would be essential in transferring water conservation strategies to the agricultural sector.

6.9 RELATION WITH OTHER USAID MISSIONS

On a national level, the US largely supports projects aimed at improving water supply. In South Africa, USAID supports an activity entitled "Capacity-building for Water Service Delivery" the purpose of which is to build capacity of local government authorities to assume their newly defined responsibilities for water service provision as stipulated in the South Africa's Water Services Act of 1997.⁵¹ Also, in South Africa, the US has supported the "Working for Water" Project -- an activity

⁵¹ Objectives of the program include: 1) to assist the Department of Water Affairs and Forestry in the transfer process of water service delivery to local governments, 2) to support the creation of a local Water Board to manage bulk water supply for the Sabe River Catchment, and 3) to support the establishment and institutional development of local water authorities that will assume responsibility for water service to local water authorities.

aimed at eliminating invasive tree species that threaten the natural vegetation and decrease water yields in the Western Cape. In Malawi, USAID is funding small well projects under the Community Health Partnership. In Zambia, USAID is promoting clean water treatment under an activity called "Family Health Product."

In South Africa, the USG has also provided assistance to *Critical Flows*- a five-year project implemented by World Resources Institute, local institutions in South Africa, and other organizations worldwide. *Critical Flows* project team will develop, field-test, and promote the use of analytical tools and guides for ecosystem approaches to water resource management and planning.⁵² In addition, The US National Oceanic and Atmospheric Administration is working through the Gore-Mbeki U.S./South Africa Bi-national Commission to implement a state-of-the-art National Weather Service River Forecast System for the Vaal River Basin.⁵³ Also as part of the Bi-National Commission, USAID and the U.S. Department of Interior provided senior policy, legal and economic specialists to facilitate the development of a water sector policy by the Department of Water Affairs and Forestry.⁵⁴

The activities supported in the region by the USG on a bilateral level are mostly related to national-level water supply management and thus, will most likely not be applicable to activities that the RCSA would support on a regional level, unless the management situations being supported turn into "models" or "best-practices". In this case, the RCSA could play a role in disseminating this information. The activity called "Critical Flows" which is described above, might be such an example. The progress of this activity and others like it should be followed by the RCSA and more formal communication links established between USAID in South Africa and the RCSA. In relation to the USAID bilaterals in the region, the RCSA work in regional water resources management would fill an obvious gap in USAID involvement in the region.

There are several activities under the **Greater Horn of Africa Initiative (GHAI)** managed from the REDSO office that might be of potential links with the RCSA. First, the GHAI is involved with problems associated with water hyacinth. Water hyacinth is one of the biggest ecological problems facing East and Southern Africa (part of the SADC WSCU Program of Action - control of aquatic weeds). In spite of the input of considerable resources for the implementation of a Lake Victoria Environmental Management Program, little progress has been made towards the control of the aquatic weed. One important reason for this performance has been the lack of effective collaboration between the four riparian countries: Tanzania, Kenya, Rwanda, and Uganda. Thus, the

⁵² Outreach and training activities under Phase One aim to build capacity for water resource management agencies to incorporate economic and ecological goals in water resource planning. Phase Two will link partners from Phase One with institutions working in other key watersheds; the goal is to transfer tools, methods, and institutional experiences gained in Phase One to policy makers and natural resource managers around the world.

⁵³ The forecast system will eventually be operated by the Department of Water Affairs and Forestry in cooperation with the South African Weather Bureau and the National Water Commission.

⁵⁴ As part of this program, South African staff have visited the U.S. to attend workshops and work with U.S. technical counterparts. In addition, a "best management practices for water conservation" workshop was held in South Africa with 12 African nations in attendance.

purpose of this activity is to develop a regional water hyacinth control plan to which the four nations subscribe and support.

Second, under the GHAI, REDSO will support a Serengeti-Mara ecosystem joint spatial-dynamic analysis and joint planning activity. The long-term purpose of this activity is the endorsement by Kenya and Tanzania of an ecologically, socially, and economically sound joint management plan for the Serengeti-Mara ecosystem. In the short-term, this activity will develop a GIS-based social, economic and ecological model of the Mara Serengeti ecosystem that will be used to inform and guide dialogue between Tanzania and Kenyan stakeholders. This spatial-dynamic model will allow stakeholders to analyze the consequences of current trends and explore alternative scenarios. The GHAI is ahead of the RCSA in these types of regional programming. The RCSA should build on this experience through dialogue with the GHAI to determine what they have learned about working with multiple stakeholders across borders. Further, the RCSA should discuss the possibility of replicating some of the GHAI activities in the southern Africa region related to water hyacinth and the GIS-based decision-making model.

6.10 MANAGEMENT ISSUES

Several management issues emerge in relation to this proposed strategy, staffing being the first. Water issues are complex in southern Africa for many reasons, the most obvious being that they require intervention across countries. In addition, water management is changing rapidly; there are numerous policy and legal changes, there are multiple donors involved in the sector, and there is an increasing number of USG agencies including the State Department, CIA, Bureau of Land Management, EPA, and the USGS who are becoming interested in these issues in the SADC region. In addition, there is an on-going SADC/UNDP Round Table process underway in which the RCSA has played a lead role. In order to address these complex issues and to launch a significant initiative in the water sector, the RCSA needs at minimum a full-time staff person devoted to this sector with a reliable and knowledgeable backstop. The staff person at RCSA must have both technical and diplomatic skills and be able to work across sectors and be comfortable engaging on a regular basis with SADC, with national level governments at a ministerial level, with USAID bilateral missions, State Department, USAID/Washington, the US Embassies in the region, and the range of other stakeholders including NGOs, both regional and international. The region not only needs donor support for targeted areas of intervention, it also needs donors to help manage and coordinate the complex interactions associated with regional water resource management. The RCSA is particularly well-situated to provide this additional assistance because it is a regionally-based organization, unlike many of the other donors who make multiple trips to the region but who are not based here and thus have difficulty making many of the meetings and keeping up with the changes in the sector.

Not only is it important to have at least one staff member devoted full time to this sector, but it is important to have someone who can make a commitment to the life of the strategy. It takes at least three years to understand basic information about this resource across 14 countries, let alone

grasp the important political and social nuances. The normal turnover pattern amongst U.S. direct hire staff which is based on working at a bilateral level is not conducive to the type of long-term involvement needed to move a significant regional initiative forward. In the event that a five-year commitment cannot be made by direct hire staff, their comings and goings could be mitigated by the longer term presence of contractors or regional professional staff.

In addition to staffing, the mechanisms for implementing this proposed work is another management issue that needs consideration. It is important that the proposed policy activities on a regional level (Activity 1) be linked to the training, and thus, they should be implemented through the same mechanism or by the same organization. I recommend that they be implemented through the Water IQC managed by the Global Bureau, Center for Environment because the RCSA does not have the contracting capability to elicit regional responses to a request for proposals and then manage them out of the RCSA. The threat to having these activities be implemented through a Washington-based organization is that they will not be implemented in accordance with the ISA's directive that RCSA activities be African-driven and African-led. In order to ensure that only the management of the process be Washington-based and that implementation be through regional organizations to the extent possible, there must be specific directives to the organizations who are part of the IQC and who will be implementing this work towards this end. RCSA-based mechanisms such as STRENGTH and RAPID can be used as mechanism to implement most of the remaining work including responding to unsolicited proposals. Other Washington-based initiatives such as BASIS and EPIC might also be useful as these activities evolve toward implementation phase.