



# Regional Water Infrastructure Investment Conference

Maseru Sun Cabanas Maseru, Lesotho. 23 September 2011





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## **FOREWORD**

The SADC Secretariat, through the Water Division within the Directorate of Infrastructure and Services, is pleased to have been able to facilitate the efforts of the Member States assisting to provide resources and direction for the outcomes to be presented at the Water Infrastructure Investment Opportunities Conference in Maseru in September 2011. This conference is planned to be an important additional milestone related to the SADC Regional Indicative Strategic Development Plan (RISDP). Its results should foster further cooperation among the Member States and the investment community. As such, it continues to further SADC's objective of supporting the regional and Member States priorities. We are confident, that this supporting document – the SADC WIIC 2011 - [Regional Portfolio of Water Infrastructure Priority Projects Report](#), highlights a representative selection of the key opportunities and scopes of work linked to water infrastructure activities. These have been defined as critical and of the highest priority to the region's Member States and thus overall to the region itself. The outcomes developed in consultation with the Member States highlight and clearly demonstrate that there are significant opportunities regionally, across borders and in each of the water infrastructure sectors. Many of them can be, with specific initiatives, developed in a highly integrated manner to support the commitment to IWRM which has been adopted by the region.

The opportunities identified extend, with some crosscutting, beyond the important individual sectors of water resources, hydropower, water supply, sanitation, agriculture and environmental and land planning. Each and all are critical to social and economic development throughout the SADC region. SADC looks forward to exploring this approach further with the investment community and to produce a set of final outcomes from the conference in Maseru that will illustrate the international, regional and local cooperation among Member States, international organizations and investment partners. This outcome can clearly illustrate the joint commitments being placed on these opportunities and they can, with appropriate human and financial resources, be taken forward to stimulate implementation of next steps to take full advantage of these water infrastructure investment opportunities.

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## List of Abbreviations



AfDB	African Development Bank
AMCOW	African Minister's Council On Water
AQUASTAT	UN Food and Agricultural Organization–Water Database
ASAP	Annotated Strategic Action Plan
AU	African Union
AWF	African Water Facility
BOO	Build, Own, Operate Project [PPP]
BOOT	Build, Own, Operate and Transfer Project [PPP]
CAADP	Comprehensive Africa Agriculture Development Programme
CSIR	Council for Scientific and Industrial Research – South Africa
DBSA	Development Bank of South Africa
DD	Detailed Design
DFID	Department For International Development-UK
DFRC	Development Finance Resource Centre
DRC	Democratic Republic of Congo
EIA	Environmental Impact Assessment
EIB	European Investment Bank
ESIA	Environmental and Social Impact Assessment
EUWI	European Union Water Initiative
FS	Feasibility Study
GWP	Global Water Partnership
HPI	Human Poverty Index
ICA	Infrastructure Consortium for Africa
ICP	International Cooperating Partners
IPPF	Infrastructure Project Preparation Facility
IWRM	Integrated Water Resources Management
LHDA	Lesotho Highlands Development Authority
LIMCOM	Limpopo Watercourse Commission
MDG	Millennium Development Goals
MFI	Multilateral Funding Institution
MTR	Mid Term Review
NEPAD	New Partnership for Africa's Development
NGO	Non Governmental Organisation
ORASECOM	Orange-Senqu River Basin Commission
PIDA	Programme for Infrastructure development in Africa
PMU	Programme Management Unit
PPDF	Project Preparation Development Fund
PPP	Public Private Partnership
PSPP	Public/social/private partnership
RBO	River Basin Organisation
REC	Regional Economic Community
RISDP	Regional Indicative Strategic Development Programme
RSAP	Regional Strategic Action Plan
RSWIDP	Regional Strategic Water Infrastructure Development Programme
RWSSI	Rural Water Supply and Sanitation Initiative
RWSSP	Regional Water Supply and Sanitation Programme
SADC	Southern African Development Community
SAPP	Southern Africa Power Pool
TA	Technical Assistance
UN	United Nations
WB	World Bank
WD	Water Division
WR	Water Resources
WRTC	Water Resources Technical Committee
WS	Water Supply
WSS	Water Supply and Sanitation
WSSD	World Summit on Sustainable Development
ZAMCOM	Zambezi Watercourse Commission

## 1 MOTIVATION - THE INVESTMENT CONFERENCE

### 1.1 Water Infrastructure Development in SADC

SADC has recognized the role infrastructure plays in the attainment of the SADC and its member states' goals for regional economic integration and poverty eradication. At their meeting held in Dar es Salaam, United Republic of Tanzania on 25 and 26 August 2003, SADC Summit of Heads of State and Government approved the Regional Indicative Strategic Development Plan (RISDP) as a regional development blue print. The RISDP sets out the minimum regional requirements and targets for each sub-sector of infrastructure which have now been prioritized for implementation. On August 16 and 17, 2007, SADC Summit of Heads of State and Government in Lusaka, Zambia, held a special session focusing on strategies to accelerate regional infrastructure development to support regional integration and development. At this Summit, SADC Heads of State and Government directed the SADC Secretariat to work out the details of a regional Master Plan for Infrastructure Development in close cooperation with Member States. The Plan shall provide a comprehensive and integrated framework for infrastructure development in the SADC region within the context of the RISDP. In August 2010, the SADC Council called for a speedy review of RISDP and this will assist in modernizing this region's blueprint for development

The water sector has responded to the infrastructure challenge through the Regional Strategic Action Plan on Integrated Water Resources Management (RSAP-2) by developing the Regional Strategic Infrastructure Development Programme (RSIDP). The primary goal of the RSWIDP is the promotion of the development of strategic water infrastructure projects including rehabilitation and expansion of existing facilities, creation of new facilities, regional programme for water supply and sanitation, pre-feasibility studies for strategic regional infrastructure projects.

The first phase (RSWIDP Phase 1) planned for the 10 year period 2005-2015 is in line with the time frame to achieve two priority interventions targets of RISDP namely;

- *Halve by 2015 the proportion of people without access to safe drinking water and sanitation services (poverty reduction)*
- and
- *Develop by 2015, water resources infrastructure needed to double land under irrigation (food security).*

Studies have shown that "the main constraint to the development of economic infrastructure was not the unavailability of investment capital in the region, but rather there was a lack of expertise with regard to the successful development of bankable or "ready to be taken forward" projects for market presentation" (SADC 2003). As a result SADC put in place the Infrastructure Project Preparation Facility (PPDF), hosted by the Development Bank of Southern Africa (DBSA) to provide funds for infrastructure project preparation. The SADC Secretariat aims to use PPDF to assist Member States to move their projects into a clearer state of readiness and seen as more "bankable" so that they can attract investment.

Therefore, while it is generally accepted that there are adequate water resources for the region's development needs, the principle barriers to effectively benefit the population with adequate water supply and sanitation and levels of food security and energy production supplying sufficient water are the lack of water infrastructure and the commensurate lower than needed institutional capacity to effectively manage infrastructures' ongoing operations and maintenance. The RSWIDP recognised this as one of the key challenges for the SADC region and this

project was put in place to help support the member states overcome these deficiencies.

### **1.2 Current situation**

The following data-related information quoted in this document is obtained from sources which are believed to be as accurate and up to date as possible, and these sources are referenced in all cases. It should be noted, however, that the information available is generally not that accurate, and should be used as indicative of in some cases the order of magnitude rather than exact quantities.

#### **Water resources**

There is significant variation in the distribution and availability of water throughout the SADC countries, as well as the extent to which water resources are used. Some countries in the region have an abundant supply of water and do not experience water stress, for example DRC, Lesotho, Mozambique, Seychelles and Zambia. At the other extreme, countries like Botswana and Namibia are extremely water scarce and experience high levels of water stress. Additionally, there is variation within countries where overall there may be sufficient water, but usually it is unevenly distributed, with deficits in some areas.

The variation in population numbers introduces a further dimension, as those countries with abundant water supply are not always those with the largest populations. Overall there is an estimated total of 2 300 km<sup>3</sup>/yr of renewable water resources available in the SADC region, supplying a population of 260 million people. This allows 8 900 m<sup>3</sup>/capita/a. Current levels of abstraction of water are very low compared to what is available, totalling 44 km<sup>3</sup>/yr, or 170 m<sup>3</sup>/capita/yr (Aquastat, 2008).

Although the overall abstraction of water is only 2% of the total renewable resources available, there is considerable variation with some countries consuming between 20-30% of their average annual renewable water resources (Mauritius, South Africa, Swaziland and Zimbabwe) and the remainder less than 6% of their renewable resources (AARWR – Aquastat, 2008 and below – Table 1) .

#### **Water use**

According to the Aquastat (2008) database and related statistics, the 44 km<sup>3</sup>/yr of water that is currently abstracted in the region is used mainly for the irrigation of crops (77%). The next largest use is for domestic purposes (18%), and only 5% is used for industry. Country statistics are available at Aquastat, realizing that that they are not adequate for the level of detailed planning that is and will be done in the IWRM planning and River Basin Organizational technical settings. (Below - Table 1). ([www.fao.org/nr/water/aquastat/dbase/index.stm](http://www.fao.org/nr/water/aquastat/dbase/index.stm) )

#### **Irrigation**

There is considerable potential to increase the amount of irrigated agriculture in the region, which ties in with the second RISDP goal of doubling the land under irrigation by 2015. It is estimated that there is about 50 million ha of irrigable land available in the SADC region. Of this, only 3.4 million ha (7%) is currently irrigated. (FAO, 2008)

#### **Hydropower**

There is also significant potential to increase the amount of hydroelectric power in the region. The estimated potential hydroelectric power available in the SADC region is 150 000 MW. Of this, only 12 000 MW (8%) is currently installed. (FAO,

2008). One of the goals put forward in the “Hydropower Resource Assessment of Africa” was to target the exploitation of Africa’s vast hydropower potential in order to address the socio-economic problems of the continent. FAO refers to the promise shown by small hydropower plants to provide electricity in a short time, with low cost and environmental impacts.

Member State	Population	Average Annual Renewable Water Resources (AARWR)	AARWR/capita	Dam capacity	Dam capacity	Total Freshwater Withdrawal	Total Freshwater Withdrawal	Total Freshwater withdrawal
		km <sup>3</sup> /year	m <sup>3</sup> /year	km <sup>3</sup>	% of AARWR	km <sup>3</sup>	m <sup>3</sup> /capita	% AARWR
		Aquastat long term	Aq-08 <sup>1</sup>	Aq-08 <sup>1</sup>	Calculation	Aq -00	Calculation	Aq-02
Angola	18 021 000	148	8213	9.4	6.4%	0.64	42	0.4
Botswana	1 921 000	12	6372	0.5	3.7%	0.19	110	1.6
DR Congo	64 257 000	1283	19967	0.1	0.0%	0.62	12	0.05
Lesotho	2 049 000	3	1475	2.8	93.3%	0.05	26	1.7
Malawi	14 846 000	17	1164	0.04	0.2%	0.97	77	5.6
Mauritius	1 280 000	3	2149	0.1	3.4%	0.73	570	26.4
Mozambique	22 383 000	217	9699	77.5	35.7%	0.74	39	0.3
Namibia	2 130 000	18	8319	0.7	4.0%	0.30	158	1.7
Seychelles <sup>2</sup>	84 000	-	-	0.001	-	7.87	94	-
South Africa	49 668 000	50	1007	30.5	61.1%	12.48	271	25.0
Swaziland	1 168 000	5	3861	0.6	13.0%	1.04	946	23.1
Tanzania	42 484 000	96	2266	104.2	108.2%	5.18	144	5.4
Zambia	12 620 000	105	8336	101.1	96.1%	1.74	159	1.7
Zimbabwe	7 818 000	20	2558	99.5	497.3%	4.21	514	21.0
<b>Totals</b>	<b>259 840 000</b>	<b>2314</b>	<b>8906</b>	<b>427.4</b>	<b>18.5%</b>	<b>51.45</b>	<b>198</b>	
Footnotes:	Data from Aquastat rounded where deemed appropriate.							
	Aq-08 <sup>1</sup> :	Reference is the Aquastat Database from the year 2008 or as otherwise noted.						
	SEY 2	Gibb [2011] cites water sales for domestic and agricultural withdrawals total of ~ 7.87 M m <sup>3</sup> /y						

### Water storage capacity

It is estimated that about 4% of the annual renewable flows in the SADC region are currently stored. This is extremely low when compared to percentages of 70-90% in many developed countries. (UN World Water Assessment Report no. 3, 2009, quoted in SADC Brochure; Regional Water Infrastructure Programme). This emphasises the point that there is very strong correlation between stored water per capita and level of economic development as well as the level of resilience against water related disasters mainly due to climate variability and the Climate Change phenomena. Since water storage is essential to ensure reliable sources of water for irrigation, water supply and hydropower and to provide a buffer for flood management, this is one of the contributing factors to the underdevelopment of the region, as well as its vulnerability to floods and droughts.

If one looks at the amount of water stored per capita, Zambia, Zimbabwe and Mozambique seem to be well provided for when comparing them with international standards. However, on closer examination it is evident that two major dams (Kariba and Cohara Bassa) that were developed for hydropower contribute the main storage volume. The picture changes when these volumes are excluded, as the region is then under-provided with water resource infrastructure. South Africa is the exception, as it has developed significant water resource infrastructure over the years, and now has over 500 large dams. (World Bank, 2004).

### Water Supply and Sanitation (WSS)

The number of people in the region who do not have access to adequate water and sanitation is substantial. This is a high priority concern for both Member Countries and SADC. The Regional Water Supply and Sanitation Programme forms one of the three main programmes of the SADC Water Infrastructure

Programme. The other two programmes are the Community Livelihood and IWRM Demonstration Programme and the Regional Strategic Water Infrastructure Development Programme (RSWIDP).

It is estimated that about 39% of the population of 260 million people in the region do not have adequate access to drinking water, and that about 61% do not have access to adequate sanitation services. The majority of the population (61%) lives in rural area and the proportion of those with inadequate services is higher than in the urban areas; 59% with inadequate drinking water; 70% with inadequate sanitation services. The corresponding figures for the urban population are 16% for inadequate drinking water and 53% for inadequate sanitation services (WHO, 2011).

As was discussed under the water resource section above, there is water available that could be supplied to those who require adequate drinking water supplies, but the barrier to implementation is accessing the resources [human resource capacity and finance] that are needed to build, operate and maintain the infrastructure required.

### **1.3 Infrastructure and Development**

In a recent study (World Bank, 2004. Strategic Role of Water in SADC Economies. Report by Palmer Development Group), it was pointed out that because water is required for most economic activities, investment in water infrastructure is a prerequisite to economic growth. It was also illustrated that sound management practices of the water resource systems are required to be developed and maintained in addition to the physical infrastructure itself. Otherwise, there will not be a sustainable setting kept in place which can derive the full and long term continuing benefits from that infrastructure.

The dependence of economic growth on water infrastructure and the sound management thereof is particularly applicable to those SADC countries that experience extreme variations in rainfall and are therefore vulnerable to floods and droughts.

Since the economies of most SADC countries depend on agriculture, and often dry-land crops, there is a strong reliance on rainfall. It was advised in the above report (World Bank, 2004) that economic policies need to encourage diversification of their economies away from such and only the water-intensive activities. They were also advised to increase the amount of irrigation to make more of the potential land use for crops, pastures and livestock rearing available. Regional integration, sharing of resources and trade were also recommended to reduce the impact of rainfall variations on the economies.

The conclusions reached in the abovementioned study (World Bank, 2004) are especially relevant to this conference and water infrastructure in particular and are summarised as follows:

- The mainland countries in the region with the lowest level of availability of water (Namibia, Botswana and South Africa) have the highest level of economic development. They have achieved this partly through appropriate investments in water resource infrastructure and sound water resource management practices.
- Lesotho has demonstrated the advantages of regional integration through the selling of water it is unable to use to South Africa.

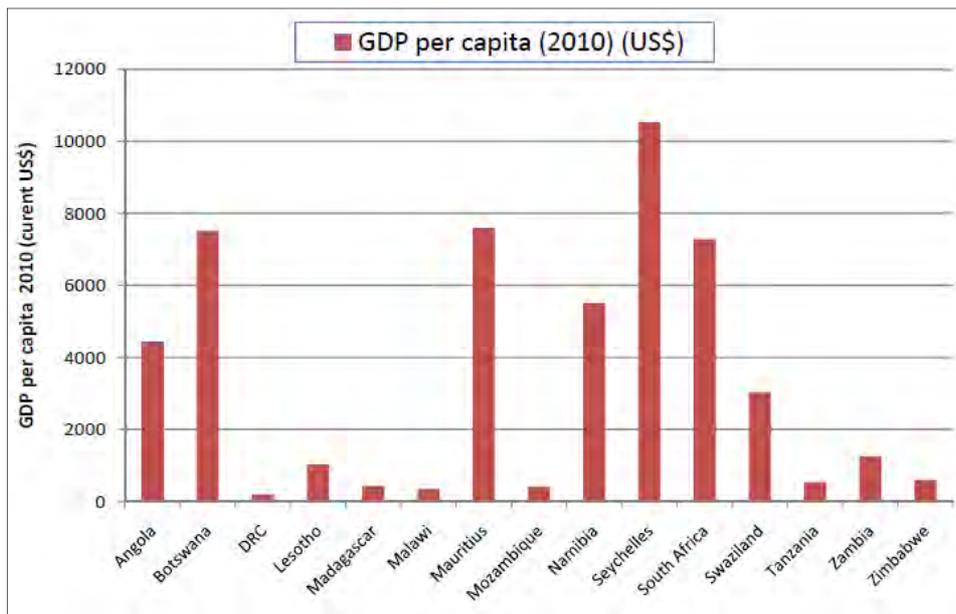
- In contrast, the DRC has not been able to use its very large scale water resources to sell water and electricity to other countries to any significant extent.
- The wetter, and also larger, northern countries of Zambia, Mozambique and Tanzania have great potential to use their resources to promote economic development for all sectors: agriculture, industry and hydropower. It is evident that their constraints are primarily related to institutional capacity.

### 1.4 Development Challenges

This section details the developmental challenges that face the SADC region. Much is being done to address these challenges as noted in Sections 1.5.

#### Availability of funds

Most countries in the SADC region have low levels of economic development characterised by low Gross Domestic Products (GDPs), as shown in the figure below. The notable exception is South Africa, which has the strongest economy in the region. The generally low levels of economic development mean that individual countries do not have the funds to finance the necessary water resource infrastructure required.



GDP per Capita: <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD> - last accessed September 2011

#### Project preparation and marketing to funders (bankability)

Despite individual countries not being able to finance water resource infrastructure projects themselves, investment capital is available in the SADC community for such projects. The barrier to obtaining this funding is the lack of expertise to conceive and develop projects in such a way that they can be successfully marketed to investors. This lack of “bankable” projects has been recognised by SADC for some time. Various initiatives have been implemented over the years to address this, culminating in this project which aims to present such bankable project opportunities to potential funders.

### **Human Resource Capacity**

The need for capacity building in the region has been recognised for some time, and has been referred to above with regard to bankability. SADC is in the process of developing a capacity building programme based on learning from good practices in the region and internationally. Training manuals on large water infrastructure development are being developed, and a number of these are currently available. The target users of the manuals are all levels of society in the hierarchy of policy makers, decision makers, professionals and civil society.

### **Shared watercourses and need for regional cooperation**

Many of the rivers in the SADC region flow through two or more countries, so the water does not stay in the country of origin. These include the Congo and the Zambezi Rivers, as well as numerous smaller watercourses. This means that water needs to be approached as a regional issue that requires extensive cooperation between countries that share river basins. This poses the challenge to develop and implement the necessary institutional structures to effectively carry this out and benefit from the economies of scale.

### **Regional and seasonal unevenness of water availability.**

The fact that water resources are unevenly distributed in the region (and within Member States) emphasises the need for regional cooperation and sharing of resources. The variability in rainfall and susceptibility of the region to floods and droughts means that large storage systems are required to provide reliable yields, which means higher costs.

### **Differing levels of economic development of member states**

The socio-economic conditions of the Member states also varies considerably, as shown in Figure 1.1 which gives the GDP and population for the Member states. The need to develop the regional water sector amongst countries with such variations in socio-economic conditions poses a serious challenge.

### **Lack of sector reforms to promote private sector development**

Water is often regarded as a free resource, and consumers usually do not pay the true cost for their water. Often tariffs are set too low to allow Private Sector participation in the water sector, and this needs to be addressed. Secondly, in certain countries, such as South Africa, as well as others in SADC, there are steps being taken to promote Independent Power Producers in the Hydropower environment.

### **Effect of climate change on water resources**

The effect of climate change on water resources is being considered by SADC. They are in the process of drafting of a SADC Water Sector Climate Change Adaptation Strategy, and also providing Climate Change Funds as a source of funding for water infrastructure.

### **Difficulties obtaining accurate and updated water information [SADC Region]**

This is a problem that is certainly not confined to the SADC region, but is the case throughout the world. There are many sources of data. However, they are inconsistent practices and many are conflicting and out of date. It is recommended that SADC undertake a "Water Assessment Study" to update and standardise collection, analysis and reporting of water information in the region.

Effective programs have been developed in many large national and international river basin settings and could be adopted when adequate funding and human resources are appropriately prioritized by the Member States and RBOs.

### **Lack of monitoring and evaluation mechanisms**

The lack of monitoring and evaluation mechanisms in the water sector is a disadvantage when competing for funding at both national and regional levels. One example is the lack of information as to how many people of which class are benefiting directly or indirectly from each water infrastructure initiative. Without such information it becomes difficult for the sector to demonstrate the progress being made, and highlight the remaining needs. It is important that this should be addressed by RISDP in general and the water sector specifically. The River Awareness Kits (RAKS – see Section 1.1.4) are a first but critical step in this direction.

## **1.5 Response to the Challenges**

The above challenges have been well known for many years and this knowledge has prompted a response from individual countries, SADC and the international community. A variety of solutions have been initiated, many of which are now bearing fruit. These include cooperative mechanisms in order to promote interaction between countries, and also to obtain funding and expertise from international organisations, and are discussed below.

### **SADC Regional Indicative Strategic Development Plan (RISDP) – Water Related Activities**

As noted in Section 1.1, SADC has developed the RISDP which is being implemented through the Regional Strategic Action Plan on Integrated Water Resources Management (RSAP-2) by developing the Regional Strategic Infrastructure Development Programme (RSIDP). RSIDP has the goals of reducing the number of people without adequate water and sanitation by half by 2015, and increasing the area of irrigated agriculture by 2015. This project forms part of the broader SADC initiative.

### **Development of River Basin Organisations (RBOs)**

Over the past few decades, many RBOs have been established through the SADC Water Division ([www.icp-confluence-sadc.org/rbosummary](http://www.icp-confluence-sadc.org/rbosummary)). These institutional bodies consist of representatives from the countries through which the river flows. The purpose of the RBOs differ, ranging from flow management, to promoting regional cooperation for socio-economic development and sustainable management of the natural resources in the catchment area. The need for the establishment of such institutional bodies is becoming more widely recognised and it is anticipated that their influence will continue grow in future, so that they will be in a position to initiate the development of regional water resources infrastructure.

Some examples of RBOs are as follows: Inco-Maputo Tripartite Permanent Technical Committee (TPTC), International Commission of Congo-Oubangui-Sangha (CICOS), Kunene Permanent Joint Technical Commission (PJTC), Lake Tanganyika Authority (LTA), Limpopo Water Course Commission (LIMCOM), Orange-Senqu River Commission (ORASECOM), Permanent Okavango River Basin Water Commission (OKACOM), the Ruvuma Joint Water Commission (Ruvuma JWC) and the Komati Basin River Authority (KOBWA). The most recent initiative is the Zambezi Watercourse Commission (ZAMCOM), where not all parties have

yet ratified the agreement, but an interim Secretariat has been established and a draft document has been prepared to guide the process of operation.

### **River Awareness Kits (RAKs)**

In an effort to make information about particular rivers readily available, River Awareness Kits have been created in the form of websites containing information about the river. So far, SADC has sponsored the development of three such websites, for the following rivers:

- o Kunene River ( [www.kunenerak.org](http://www.kunenerak.org) )
- o Orange-Senqu River ( [www.orangesenqurak.com](http://www.orangesenqurak.com) )
- o Limpopo River ( [www.okacom.org](http://www.okacom.org) )
- o Okavango River Basin ( [www.okacom.org](http://www.okacom.org) )

### **SADC Water Sector International Cooperative Partners (ICPs)**

Over 23 international organisations have become ICPs with the goal of eliminating poverty and promoting sustainable development ([www.icp-confluence-sadc.org/icpsummary](http://www.icp-confluence-sadc.org/icpsummary)). These organisations include banks and international aid organisations who provide funds, and expertise for suitable projects in the region. The water sector has a structure for the coordination of ICPs called the Water Strategy Reference Group (WSRG) lead by the German Government (GIZ).

### **Implementation of Integrated Water Resource Management (IWRM)**

At the Earth Summit held in Johannesburg in 2002, countries undertook to prepare IWRM plans for their countries by 2015. This initiative is slowly being implemented in the SADC region, with tenders for such studies for Malawi and Tanzania having recently been awarded.

Many studies have been undertaken in the SADC region, with the overall goal of promoting development. A study entitled the "Zambezi River Multi-Sector Investment Opportunity Analysis (MSIOA)" (World Bank, 2010) was recently undertaken. The overall objective was to illustrate the benefits of cooperation among the riparian countries in the Zambezi River Basin so as to contribute to development, environmental sustainability and poverty alleviation in the region. This study took into account previous studies such as the Zambezi Action Plan Project 6, Phase II (2008) and the Integrated Water Resources Management Strategy and Implementation Plan for the Zambezi River Basin (2008), which shows how the management of the basin has progressed in recent years.

### **Public-Private Partnerships**

The RISDP has prioritised discussions the private sector in order to promote regional infrastructure projects in partnership with the private sector, taking advantage of their expertise and financial means. Some examples of this being implemented are listed below. These are taking place as part of the Transboundary Water Management in SADC" Programme, which is being implemented by GIZ (H Vogel, Pers comm, 2011).

- o A development partnership has been set up between, SABMiller and the World Wide Fund for Nature (WWF) to safeguard water supply chains and improve water quality in the headwaters of the Limpopo River basin, specifically the Polokwane Local Municipality (R.S.A.) and the Sand River catchment. This partnership has been approved by LIMCOM, which is the relevant RBO, and has been integrated into the work of the RBO.
- o Another partnership that has been created is between Sasol New Energy and the Emfuleni Local Municipality (R.S.A) in the Orange-Senqu River Basin. This partnership focuses on water conservation and demand

management, specifically leak detection, and has been approved by ORASECOM, which is the relevant RBO.

### **Africa Infrastructure Country Diagnostics (AICD- [www.infrastructureafrica.org](http://www.infrastructureafrica.org))**

This study, lead by the World Bank, focuses on topics of strategic importance to infrastructure in Africa. There is a major data collection exercise to set a baseline against which renewed efforts to address the infrastructure challenge can be assessed in future. It will be undertaken in close collaboration with the African Union's New Partnership for Africa's Development (NEPAD) Medium to Long Term Strategic Framework( MTLSF) Study, with the following objectives:

- o Assist individual countries in benchmarking the relative performance of their infrastructure sector and formulating their own country-specific strategies in the light of regional experience.
- o Assist donors in designing appropriate support or infrastructure reform, finance, regulation and investment.
- o Allow an improved evaluation of the collective efforts to meet Africa's need by establishing a baseline of the current situation on the continent.
- o Act as a core reference document on all strategic issues relating to infrastructure and hence a vehicle for building consensus about the appropriate response to Africa's infrastructure problems.

Progress on the project to date is that a report on the infrastructure in the SADC region as well as country reports for six of the SADC Member States have been published on the website.

### **Sirte 2008 – National Investment Briefs – country reports**

A High-Level Conference on Water for Agriculture and Energy in Africa: the Challenges of Climate Change was held in Libya in December 2008. A short report on the state of water infrastructure in each country was prepared for each country and is available on the website (<http://www.sirtewaterandenergy.org/>)

### **Programme for Infrastructure development in Africa (PIDA)**

This initiative is coordinated by the African Development Bank. The overall goal is to promote socio-economic development and poverty reduction in Africa through improved access to integrated regional and continental infrastructure networks and services. (<http://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/programme-for-infrastructure-development-in-africa-pida/>)

### **SADC Infrastructure Master Plan process**

This initiative by the SADC secretariat will link in with the PIDA mentioned above to develop regional infrastructure. There are also plans to develop a new SADC fund to support the direct financing of infrastructure projects in the region.

### **Summary**

The programmes and initiatives above illustrate the extent of regional emerging activities that are bringing additional focus on the importance and benefits for water infrastructure to economic and social development in concert with and beyond the scope of SADC initiatives. It is within this context that the SADC Water Sector Initiative was developed and with the support of the key donors the project programme developed for the member states to produce the materials for the Water Sector Investment Conference to be held in Maseru in September 2011.

## 2 THE INVESTMENT CONFERENCE PREPARATION PROCESS

The purpose of this section is to describe the activities undertaken by the SADC Water Sector to support the process which is resulting in the Water Infrastructure Investment Conference being held in Maseru, Lesotho on 23 September, 2011.

### 2.1 SADC Water Sector Planning

The SADC Water Sector has been planning for this type of event for some time. This last year, SADC, with the support of its ICPs and other partners [Credits and Acknowledgements] assembled the resources needed hold this investment-oriented conference. This followed a set of similar water-related infrastructure identification activities that took place in 2005 and 2006 and which resulted in further inputs to the SADC Regional Strategic Water Infrastructure Development Programme (RSWIDP)<sup>1</sup>. Continuing in 2010 and 2011, SADC is again going to be able to direct link the conference outcomes to SADC's Regional Strategic Action Plan (RSAP) for the Water Sector [Section 1.1].

SADC's planning began with SADC staffs' engagement with each of Member State's Water Sector representative requested them each to begin an internal process of consultation to identify how to arrive at identifying the five highest priority projects that would be opportunities for investment in their water infrastructure. SADC also tasked each Member States to identify how that process could work best at this time.

### 2.2 Member State's Interface

SADC and the member states worked directly to assist the process over the duration of this process in 2010 and 2011. One of the initial responses from Member States was that they felt it most useful to use local experts in their countries to work within the Member State SADC representatives and in this manner they could develop and put forward the relevant opportunity information.

#### Identification of Candidates for Experts

According to their early feedback, SADC asked the member states to identify individuals or organizations who could be retained for this process and thus directly and logically assist develop the documentation needed to define and present details of each Member State's five priority water infrastructure projects. The Member States responded positively and identified candidates that they expected would have a relatively clear pathway to access this information and a single point of contact in-country for liaison and interface with this conference preparation process.

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<sup>1</sup> The outcome of this initial formative study [2005] resulted in the following RSWIDP programme contents:

- A ranked selection of ten potential Phase 1 RSWIDP Priority Projects (< US\$ 10 million implementation cost; < 3 years duration)by application of specific criteria.
- Compilation of a list of ten Macro Strategic Water Infrastructure projects (> US\$ 10 million implementation cost; long time frame).
- Compilation of a list of smaller Water Infrastructure/IWRM projects(< US\$ 2.5 million implementation cost; < 3 years duration).

### **2.3 Regional And Country-Based Expert Consultants**

SADC recognized that the investment conference's preparation and support would be contributed to by the diverse CBECs from each Member State and that it would be useful to have a facilitating Regional Consultant to support the CBECs and assist SADC manage the data the CBECs were collecting potentially for up to 70 opportunities to select from for presentation at the investment conference.

#### **Regional Consultant**

SADC, acting through GIZ, appointed a Regional Consultant to assist with the process of helping the CBECs if needed, providing guidance and a consistent approach and to assemble the incoming information from each Member State into the package of information to provide at and the proceedings summary arising from the investment conference.

#### **Member State Country Based Expert Consultants [CBECs]**

The Regional Consultant, in consultation with SADC Water Sector, reviewed the candidates identified by the Member States and retained a country-based expert consultant [CBEC] for each [14 participating] Member States. Over the duration of the process, the CBEC and Regional consultants worked hand-in-hand to prepare the information being provided that is within this document.

The CBEC's specific and focussed role was to at all times act in close cooperation with the SADC Water Sector's Member State representative and from that contact, explore other opportunity aspects in the countries. They were to contact and obtain relevant information from the appropriate water-related institutions within the Member States and establish, with the documentation available, the documents that would support the details of the water infrastructure opportunities being presented, to the degree possible.

The CBECs collected background information about the current situation in water resources and its management in each Member State. They communicated in writing, verbally and had face-to-face meetings with individuals besides the SADC Water Sector representative including persons knowledgeable and directly active in water infrastructure projects in the Member State. They compiled, refined, further verified and finally excerpted whatever pertinent background information was available to them for in most cases five priority projects.

They presented draft versions of their work product and after review and discussions with the Regional Consultant, portrayed their relevant and available data in the datasheet format specified. The datasheet format had been developed and modified by SADC as was put in place again in this process to set up a consistent report mechanism for the key project / investment opportunity information.

#### **Regional Consultant Activities [up to Pre-Conference Workshop]**

The regional consultant worked with and tracked the progress of the individual CBECs and assisted them, in consultation with SADC when needed, bring together the bulk of the information collected on their Member State's top five priorities during the period May through June 2011.

The Regional Consultant compiled the information submitted by all CBECs together and provided to SADC, a package for all the Member States to use and evaluate at the conference's designated Pre-conference workshop held in Mbabane on 27 June 2011.

## **2.4 Pre-Conference Workshop [27 June 2011]**

SADC, the Member States representatives and the Regional Consultant worked together at the Pre-Conference workshop to help identify the relative priorities of the projects that had been submitted to date by each Member State. There was also consultation and discussion regarding, in particular, which projects were potentially able to become regional and cross border opportunities for investment by having cooperation on them among various SADC Member States.

A plan was also put in place that would allow the CBECs in the following weeks, where warranted by the level of project documentation, to get more opportunity details that were suggested could enhance and provide more complete opportunity data on the datasheets.

## **2.5 Consolidation of CBEC Inputs and Final Preparation Steps**

A number of activities, some resulting from adapting to the Member State's feedback and discussions during and following the Pre-Conference Workshop and others that were directly part of the already planned process, were undertaken during the two months following the workshop to prepare this document – Regional Portfolio of Priority Projects with its 23 opportunities presented in detail in the datasheets [Annex 1].

### **Priority Projects Submitted**

SADC, the Member States through their CBECs and the Regional Consultant worked together during the last two months leading up to the Conference to assemble and evaluate all the inputs that had been provided by the CBECs. This information was substantive for 66 identified opportunities [Annex 2] most of which was able to be supplied in the supporting datasheets.

The results were agreed by SADC as representing what was precisely available from the Member States through their CBECs and that these data of the 66 Priority Projects would constitute the current project's water infrastructure opportunities database for the 14 participating Member States from which to select some to present at the conference.

SADC suggested that the number of projects be reduced for the conference as it would not be feasible to showcase 66 of them in just one day. Part of the process to reduce that number was related to being able to determine and define locally and reasonably, the project's next step and also which of the projects represented regional benefits from cooperating on regional and cross border opportunities.

Based principally on these criteria, plus providing for showcasing the top priority project per Member State, SADC made a preliminary selection of three Regional, four cross border and 14 Priority # 1 projects to review in more detail in terms of their ability to proceed to the logical next step towards implementation.

### **Identification of 'Project Preparation Next Step'**

SADC and the Regional Consultant had reviewed the outcomes of discussions and feedback of the Member State's representatives who were at the Pre-Conference Workshop. SADC suggested that a specific addition to the datasheets be made that could benefit investors' understanding, and Member State's portrayal, of

‘What Next?’ This would also focus on highlighting the “readiness” of the various project opportunities that had been submitted to date.

This ‘readiness’ approach focussed on more carefully evaluating and defining the “Project Preparation Next Step”. A guideline for this had been developed by the Infrastructure Consortium of Africa (ICA, 2006). Its guidance was found to be pertinent not to all cases, particularly those for agriculture, but was helpful and able to be applied to this evaluation of these opportunities that had been selected. For each of these opportunity datasheets, where pertinent and possible, the information was added to present what a) is the pertinent and logical next step, b) how much that next step is estimated to cost and c) when can it start and how long it will take to complete.

During this process and with further feedback from the CBECs, two other projects were added to the selection for presentation resulting in a total of 23 projects [Four Regional, 5 Cross Border and 14 Priority # 1 projects, ANNEX 1].

This assessment of the “readiness” was made within the context of the documentation provided by the CBECs regarding the progress to date and the details that they had provided. The assessment outcome was explained to and discussed specifically and in targeted consultations with the CBECs. Clarifications were made as needed regarding the “ICA process guide” and the outcomes of the project’s steps that had been identified. As further needed, the CBECs also re-engaged with their Member State SADC representative or the identified project’s lead agency or sponsors.

This ‘NEXT STEPS’ information, in some cases, supplements what was able to be collected from within the Member State’s databases related to their water planning and projects information. This and the website references are the only part of the 23 datasheets [Annex 1] which may not have come from what the CBEC collected. The rest of the datasheet’s information reflects what was provided for that opportunity by the CBEC.

### 3 OUTCOMES PRESENTED AT THE CONFERENCE

The results of the activities in terms of preparation for the SADC WIIC in Maseru is manifest in this document – the Regional Portfolio of Priority Projects Report. From a total of 66 Member States' priority projects submitted, 23 have been identified to bring forward for presentation at the conference. The locations of these projects are on the map on the following page and their details are summarized on Table 2 and in datasheet format in Annex 1.

The opportunities being presented in this report in 2011 consist of:

- Four Regional projects, relatively large scale actions which will have impact across several member states in the region.
- Five Cross Border opportunities reflecting cooperative actions between two or more Member States and
- The balance of the 14 of 23 opportunities presented as among the individual Member State's highest priority projects as they would greatly assist address the needs of that Member State's water infrastructure settings.

In terms of the sectors being addressed by these 23 opportunities, 8 are dedicated to water supply sector, 3 are for agriculture and 2 are for Hydropower generation and water resources. The other 8 are multipurpose opportunities which, as well as addressing one or more of the above mentioned sectors also involve water supply and sanitation infrastructure components.

The details of the projects are summarized in Table 2 and shown on MAP 1 on the following facing pages.

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MAP 1 – Locations of the 23 Regional Portfolio of Priority Projects.

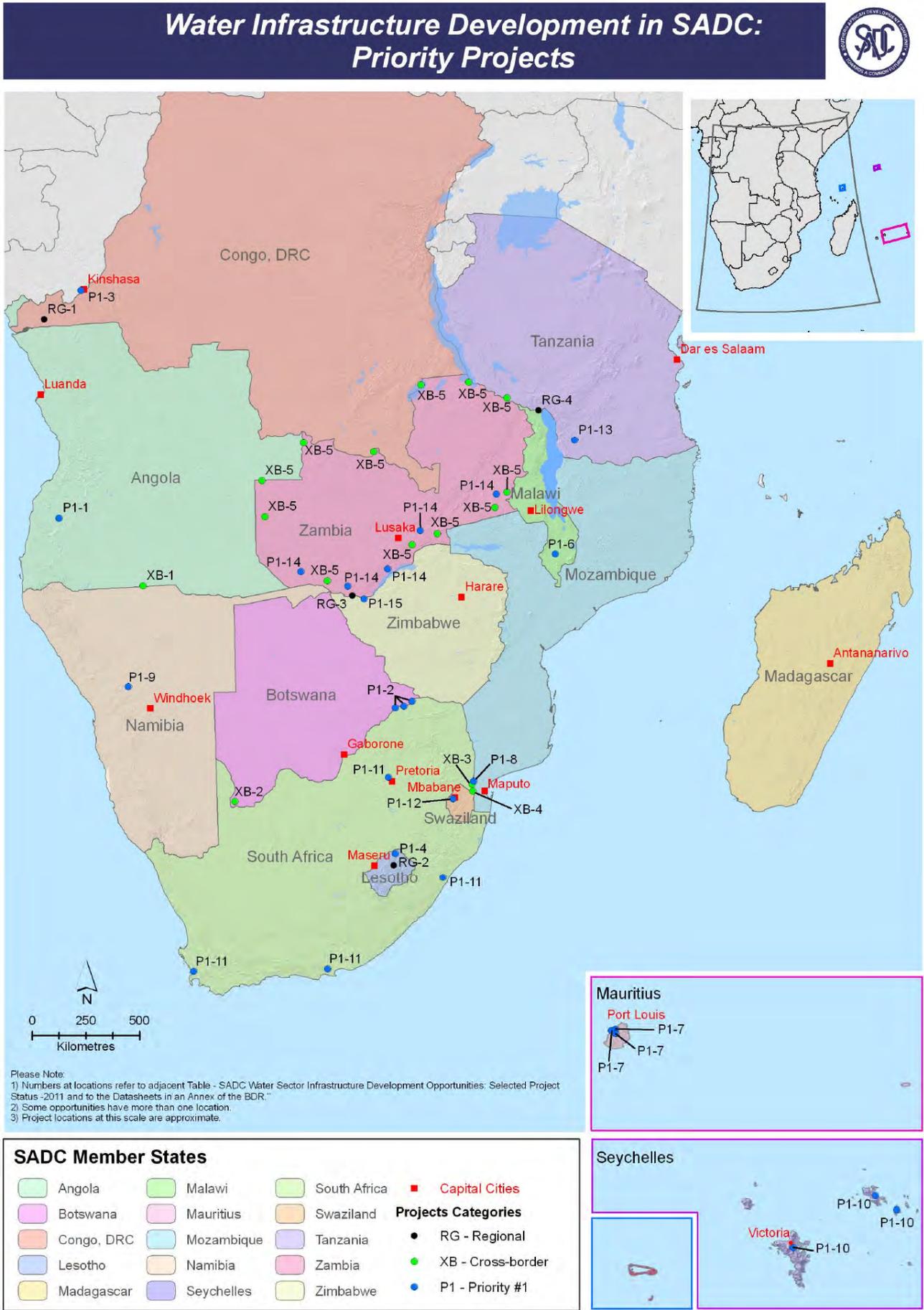


TABLE 2 – Summary of the 23 Regional Portfolio of Priority Project's Details

[Project numbers [P#] are keyed to the location on the adjacent page map]

 <b>SADC WATER SECTOR INFRASTRUCTURE DEVELOPMENT OPPORTUNITIES: SELECTED PROJECTS STATUS - 2011</b> [Opportunity locations are on the map on the adjacent page]								
P#	PROJECT TYPE AND NAME	COUNTRIES	KEY SECTOR	STATUS NOW	NEXT STEP			TOTAL [USD M]
					ACTION	Funds [USD M]	Time	
<b>RG REGIONAL PROJECTS</b>								
RG-1	Inga 3 Hydropower	DRC-shared Regional Electricity	HE	Pre-FS done	FS	15 M	24-36 mo	7 600 to 10 000
RG-2	Lesotho Highlands, Phase 2	Lesotho, South Africa	HE WS	Agreement reached between SOA and LES to commence Phase 2	To be decided after agreement	Under discussion	Under discussion	2 000
RG-3	Batoka Gorge Hydropower	Zambia, Zimbabwe	HE	EIS and FS done	Review prior documents; do Final Design and Tender	1.5% of budget	24 to 36 mo	3 500
RG-4	Songwe River Basin Development Programme	Malawi, Tanzania	HE WS AG	FS and DD being done 2013	Construct after Detailed Design [staged over 8 yr]	329 [to be revised in ongoing work]	8 yr	329
<b>XB CROSS BORDER PROJECTS</b>								
XB-1	Food Security - Upper Okavango	Angola, Namibia	AGRI	Pre-FS done	Pre-FS with financial analysis	1.5	12-18 Mo	66
XB-2	Vaal-Gamagara Water Supply	Botswana, South Africa	WS	Concept Note	Pre-FS	0.4	12 mo	Not specified
XB-3	Ressano Garcia Weir - Water Supply	Mozambique, South Africa	WR WS	Preliminary DD and EIA done	Revise DD and Tender work and Technical Assistance	0.3 - 0.5	6 to 12 mo	6
XB-4	Lomahasha>Namaacha Water Supply	Swaziland, Mozambique	WS	SWA - Pre-FS done	SWA - Design Components MOZ - FS	SWA - 0.5 MOZ - 0.5	12 mo	13 plus cost for MOZ side
XB-5	12 Border Locations - Water Supply & Sanitation	Zambia, Angola, Botswana, DRC, Malawi, Mozambique, Tanzania, Zimbabwe	WS S	Concept supported; some Pre-FS done.	Reconnaissance Evaluation 12 locations	0.6 [12 locations]	9 - 12 mo	30 plus costs for cross border infrastructure.
<b>P1 MEMBER STATE PRIORITY #1 PROJECTS</b>								
P1-1	Lubango - Phase 2: Water Supply & Sanitation	Angola	WS S	Phase 1 funded and work underway	Pre-FS -reticulation and possibly other work.	0.5 plus Pre-FS reticulation cost	12 to 18 mo	126
P1-2	Limpopo Basin Joint Water Monitoring	Botswana, Mozambique, South Africa, Zimbabwe	WR	Parties agreed on doing project	Finalize design and construct	0.7	6 to 12 mo	0.7
P1-3	Kinshasa - Water Supply & Sanitation	DRC	WS S	Pre-FS partially done	Update FS, financial analysis	unknown	unknown	220 [estimated]
P1-4	Lesotho Lowlands Water Supply Scheme Zone 1	Lesotho	WS	Tender to be prepared	Construction Phase	78	24 to 36 mo	78
P1-5 <sup>1</sup>	Pending	Madagascar						
P1-6	Mombezi Dam - Multipurpose	Malawi	WS AG	FS done; Pre-design underway	Complete Pre-Design, EIA [resettlement]	3.6 [Design] 0.75 [EIA] = 4.35	16 mo	209
P1-7	13 Housing Estates - Water Supply	Mauritius	WS	Complete through FS	Detailed Design then Tender and Construct	10	21 to 24 mo	10
P1-8	Movene Dam - Multipurpose	Mozambique	WS AG	Concept note done	Pre-FS	1	12 to 18 mo	10
P1-9	Windhoek - Managed Aquifer Recharge	Namibia	WS	ARL Recharge (AR) infrastructure & most wells in place	Consulting Services and Construction	5	18 mo	55
P1-10	Non Revenue Water and Use Efficiency	Seychelles	WS	Master Development Plan Done	Detailed Design[s]	1.5% of budget	18 mo	69
P1-11	Water Demand Management	South Africa	WR	Examples in place. Expansion of scope is needed.	Examples suggest continue with Demo Projects	Varies according to setting	24 to 36 mo	Varies according to setting
P1-12	Nondvo Dam - Multipurpose	Swaziland	HE WS	Pre FS done	FS	2	12 to 18 mo	143 [05]
P1-13	Ruhuhu Valley Irrigation	Tanzania	AGRI	Concept Note done	FS with investment analysis	0.5 to 0.6	12 mo	12.3
P1-14	Climate Change Adaptation AER 1	Zambia	AGRI	Project planned	Project Review to plan steps to get through	0.05 plus 4	24 to 48 mo	13 [2008]
P1-15	Bulawayo Water Supply from Zambezi River	Zimbabwe	WS	FS and EIS completed	Review documents and update FS with new Financial Analysis	1 to 2	12 to 18 mo	1 250
Note: <sup>1</sup> Projects for Madagascar are expected to be added in the future.								
<b>Project Types</b>		<b>KEY SECTORS</b>						
RG Regional		<b>WATER RESOURCES [WR]</b>						
XB Cross Border								
P#1 High Priority								
<b>NEXT PROJECT STEPS</b>								
FS Feasibility Study		AGRICULTURE [AGRI]		HYDROELECTRIC and WATER SUPPLY [HE WS]			HYDROELECTRIC [HE]	
ESIA Environ. & Social Impact Assmnt		WATER SUPPLY [WS]		WATER SUPPLY & SANITATION [WS S]			HYDROELECTRIC, WATER SUPPLY, AGRI [HE WS AG]	
DD Detailed Design								
FD Final Design								

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Southern African Development Community, 2006, Preparation of a Regional Strategic Water Infrastructure Development Programme, PART 2, RSWIDP Framework, Structure and Implementation Plan - FINAL REPORT, Presented by British Geological Survey and Wellfield Consulting Services. 109p.

World Bank, 2010. *The Zambezi River Basin. A Multi-Sector Investment Opportunities Analysis. Volume 1. Summary Report.* June 2010. Undertaken for the World Bank, Water Resources Management, Africa Region <http://water.worldbank.org/water/node/83707> - Last visited August 2011

World Health Organization, 2011, World Health Statistics 2011 (percentages as of 2008), Aquastat 2008 population figures.



# ANNEX 1 - DATASHEETS

## Regional Portfolio of Priority Projects

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RG-2 Lesotho Highlands Phase 2 – Lesotho and South Africa	A1- 7
RG-3 Batoka Gorge Hydropower – Zambia/Zimbabwe	A1-11
RG-4 Malawi Songwe River Basin Development Plan – Malawi	A1-15
<b>CROSS BORDER WATER INFRASTRUCTURE PROJECTS</b>	
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XB-2 Vaal-Gamagara Water Supply – Botswana and South Africa	A1-23
XB-3 Ressano Garcia Weir – Water Supply – Mozambique and South Africa	A1-27
XB-4 Lomahasha/Namaacha Water Supply – Swaziland and Mozambique	A1-31
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## Directorate of Infrastructure and Services

### Regional Water Infrastructure Project

#### Project Datasheet Inga 3 Hydropower

<b>Project Reference No:</b>	WIIC-2011-RG-1-DRC: Inga 3 Hydropower	<b>Date last updated:</b> <b>By :</b>	August 2011 CBEC - DRC
<b>Implemented in:</b>	Democratic Republic of Congo (DRC)		
<b>Project Sponsors:</b>	Ministère de l'Energie and SNEL		
<b>Sector/Subsector:</b>	Hydroelectric		
<b>Lead Agency:</b>	DRC Ministry of Water & Energy		
<b>Project Title:</b>	Inga 3 Hydropower		
<b>Project Objectives:</b>	<p><b>Résumé:</b> Au-delà des besoins internes en électricité de la RDC, ce projet devant alimenter la fonderie d'aluminium de BHP Billiton et sera exportée dans les pays tels que l'Angola, la Namibie et le Botswana.</p> <p><b>Summary:</b> Beyond meeting the internal needs of DRC for electricity, the project will supply the BHP Billiton aluminium smelter and power will be exported to countries such as Angola, Namibia and Botswana.</p>		
<b>Location Map:</b>	<p>[Source Website: <a href="http://upload.wikimedia.org/wikipedia/commons/thumb/c/c0/Inga_2006-projet.svg/2000px-Inga_2006-projet.svg.png">http://upload.wikimedia.org/wikipedia/commons/thumb/c/c0/Inga_2006-projet.svg/2000px-Inga_2006-projet.svg.png</a>]</p>		

<b>Project Description:</b>	<p><b>Caractéristiques Techniques :</b> Pas de barrage, mais d'énormes travaux d'excavation de rochers pour la construction des galeries et de la centrale électrique.</p> <p>La prise d'eau de la centrale électrique sera installée au niveau supérieur du fleuve dans le canal de Fwamolo et huit (8) galeries (tunnels) souterraines de 6,7 km de long et 13,3 m de diamètre chacune seront construites à partir de ce canal pour alimenter la centrale électrique située dans les Rapides de Kanza.</p> <p>La capacité nominale de production de la centrale électrique est de 4320 MW (16 groupes de 270 MW chacun).</p>		
	<p><b>Technical Features:</b> No dam, but very large rock excavations to construct tunnels and a power plant;</p> <p>The power plant intake [provisionally] to be installed at the upper level of the Fwamolo river channel with eight (8) 13.3 m diameter galleries (tunnels) running underground for a distance of about 6.7 km long to connect the channel to the power plant at the Kanza rapids;</p> <p>The nominal power plant production capacity is to be 4320 MW (16 times 270 MW at each station).</p>		
	<p><b>Economique et Social :</b> L'objectif principal est de fournir de l'électricité aux populations de la RDC, c.à.d. leur donner un certain bien-être et exporter l'énergie électrique pour engranger les devises.</p>		
	<p><b>Economic and Social:</b> The main objective is to provide electricity for the people of the DRC to give them increased wellbeing and to export electricity for increase the DRC' foreign revenue stream.</p>		
	<p><b>Résultats environnementaux :</b> La centrale électrique sera construite en fil de l'eau et cela va contribuer à réduire les impacts environnementaux du projet.</p>		
	<p><b>Environmental outcomes:</b> The power plant will be built along the water and this will help reduce the environmental impacts of the project.</p>		
<p><b>Analyse financière:</b> Le coût de construction indexé est estimé à USD 5596 millions et le coût du capital indexé correspondant (incluant la construction et le financement) à USD 7629 millions.</p> <p>L'analyse financière n'est pas possible à établir à cause de plusieurs incertitudes.</p>			
<p><b>Financial Analysis:</b> The construction cost [2005 index] is estimated at USD 5.596 billion with the a capital cost (including construction and financing) of about USD 7.629 billion.</p> <p>A financial analysis is not possible to establish at this time due to several uncertainties.</p>			
<b>Estimated Project Cost :</b>	Financement - études de faisabilité/Feasibility Study: US\$ 15 millions par la BAD.		
<b>Funding Status</b>	AfDB is reported to have financed the pre-feasibility status and that is just being completed. No funding has been sourced yet.		
<b>Status of Funding negotiations:</b>	Nothing definitive although although newspaper articles and mining trade journals have various reports.		
<b>Implementation Progress and Status :</b>	Waiting for the results of the feasibility study. See table of recent input notes from CBEC below.		
<b>Next Project Preparation Step:</b> [ICA Guidelines]	<b>Activity</b> Feasibility Study [Provisional info from CBEC]		
	<b>Estimated Cost</b> USD 15 Million		
	<b>Estimated Start Date and Timeframe</b> 2012 – up to 3 years following award		
<b>Project Risks:</b>	Not yet identified		
<b>Projected Start Date:</b>	Not yet identified.	<b>Projected Completion</b>	Not yet identified.

	Date :
<b>Reference reports and studies:</b>	<p>1. Rapport sur l'atelier de haut niveau du CME sur le financement des projets hydroélectrique Inga tenu à Londres, les 21-22 avril 2008. <a href="http://www.wordenergy.org/inga">www.wordenergy.org/inga</a> finance workshop</p> <p>2. Etude portant vision stratégie du projet développement du potentiel d'Inga (Mars 2008) None provided</p> <p>AfDB is reported to have funded a pre-feasibility study which has been completed in 2011 and is the basis for a new request to be provided by DRC for a feasibility study to cost USD 15 Million.</p>
<b>Project Contact</b>	<p><b>DRC:</b> Mr. SAILA Jean-Pierre, Chef de Projet, Tél. +243 81 367 95 79 Société Nationale d'Electricité (SNEL)</p> <p><b>SADC Secretariat:</b> SADC Directorate of Infrastructure and Service Private Bag 0095, Gaborone, Botswana</p> <p><u>Water Division</u> Mr. Phera Ramoeli Senior Program Officer Tel: +267 395 1863/ 364 1854 <a href="mailto:water@sadc.int">water@sadc.int</a></p> <p><u>Energy Division</u> Mr. Freddie Motlhatlhedi Senior Programme Officer Tel: +267 395 1863 <a href="mailto:energy@sadc.int">energy@sadc.int</a></p>
<b>Additional Web References:</b>	<p>INGA hydropower may cost more, 2011 <a href="http://www.bloomberg.com/news/2011-06-30/congo-s-inga-hydropower-project-may-cost-more-reuters-reports.html">http://www.bloomberg.com/news/2011-06-30/congo-s-inga-hydropower-project-may-cost-more-reuters-reports.html</a></p> <p>DRC sees Inga 3 generating power by 2017/18 , 2011 <a href="http://af.reuters.com/article/investingNews/idAFJJOE72E0F320110315">http://af.reuters.com/article/investingNews/idAFJJOE72E0F320110315</a></p> <p>Talks with BHP Billiton very advanced, 2010 <a href="http://londonminingnetwork.org/2010/11/congo-says-talks-with-bhp-billiton-on-inga-3-power-plant-are-very-advanced/">http://londonminingnetwork.org/2010/11/congo-says-talks-with-bhp-billiton-on-inga-3-power-plant-are-very-advanced/</a> <a href="http://www.bloomberg.com/news/2010-10-27/congo-says-talks-with-bhp-on-building-inga-3-very-advanced-.html">http://www.bloomberg.com/news/2010-10-27/congo-says-talks-with-bhp-on-building-inga-3-very-advanced-.html</a></p> <p>Run of River Bulk HEG from Congo River without Conventional Dam, 2010 Natural Resources, 2011, 2, 18-21 doi: 10.4236/nr.2011.21003 Published Online March 2011 (<a href="http://www.scirp.org/journal/nr">http://www.scirp.org/journal/nr</a>)</p>

- SNC-Lavalin has completed the pre-feasibility study for the Inga 3 project. Additional studies are needed to complete the Inga 3 feasibility study and these would include geological and hydraulic production and a feasibility study of the transmission system associated with it.

The search for financing with the AfDB was undertaken in April 2008 was obtained in August 2008. During the period of considering and selecting the Engineering Consultancy, the Congolese Government initiated a process to implement the Inga 3 project after there was a failure of Westcor with its proposed aluminum smelter at BHP Moanda.

There were two important motivating factors that have driven the Congolese Government to keep considering the importance of building Inga 3. The current study being done with AfDB financing will be used to:

  - analysis-how to find the best strategy for the development of the Inga site; and
  - determine how to proceed with the development of energy associated with the transmission lines.
- Where are we as of today?

The Congolese Government is not able by itself to undertake building the Inga 3 facilities which will have an estimated output of 3000 MW to 4500 MW in a Public Private Partnership (PPP).

The Government has launched a call for expressions of interest for international developers to join the Congolese Government to make this happen.

There were nine (9) expressions of interest and after analysis, six (6) satisfied the conditions of the expression of interest notice.

These six (6) respondents have received a more detailed project description from the Government so that the respondents developers can brief the government of their capacity prior to selecting the best project

<p>developer</p> <p>By August 19 2011, the DRC will receive offers from the developers and that will be followed by an analysis of different offers before moving on to the stage of negotiation.</p>
<p>3. In the interim, the information from the studies to date suggests already that the project will involve the construction of 8 (eight) tunnels of about 13 m in diameter and about 7 km in length. These tunnels will transfer from the Congo River to the site. This is the basis of the project that the developers will respond in their offers.</p>
<p>4. The French-Canadian Consortium RCW-EDF is considering a solution quite different from that of the EDF and LAMAYER which was to cross the river and all the water would be in a retention pond.</p> <p>For RCW-EDF, there would be an intake on the river to bring the water to the Valley of the Bund and then place a dam of 3,000 to 5,000 MW and this would be the First Phase. This variant has the advantage of not creating tunnels and using the Bundi valley as the intake channel.</p> <p>There is the possibility to also raise the dam elevation/height to produce as a Second Phase from 7000 MW and the as a Third Phase 12,000 MW of hydroelectric power. This would be possible, however, only by raising the level of the dam to such heights that it would make the attaining these power levels too expensive.</p> <p>Inga 3's improvements will be able to be achieved with an estimated investment of around 7 billion USD.</p>
<p>5. The DRC government is currently preparing a document with respect to offers of August 19.</p> <p>The Government will deliver to six (6) potential developers additional information that an option for their consideration is to have an open channel instead of 8 tunnels.</p> <p>The first results will be known in late September 2011 at which time a ranking of the potential developers and their offers will be made.</p> <p>The Congolese Government will suggest that then the government and the developers sit together around a table and proceed to negotiations.</p>
<p>6. The GRAND INGA project will be developed on the basis of its ability and value to supply future hydroelectric needs for both the Nigerian and Southern Africa (Angola, Namibia and Botswana) regions.</p> <p>It is worth noting that the total potential of the Inga site in the DRC is estimated at 40,000 MW. That leaves an additional 28,000 MW for future power development associated with the Grand Inga project.</p>
<p>Documented in Kinshasa, 10 August 2011 CBEC - DRC</p>



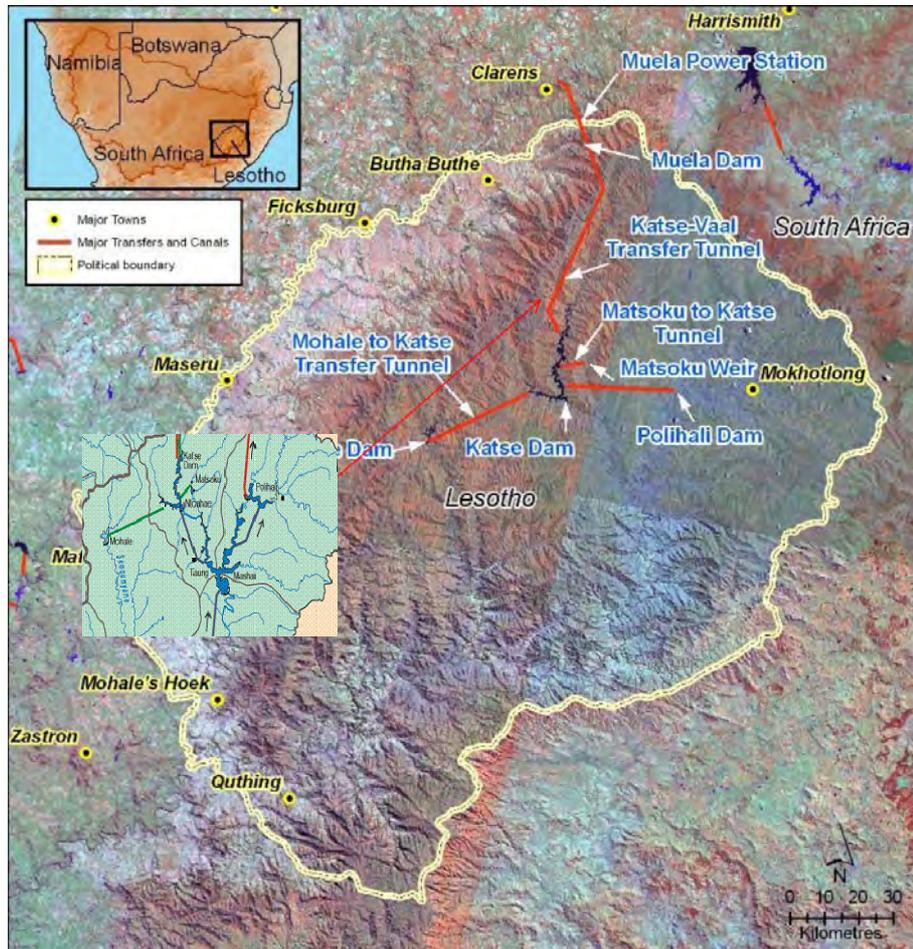
Directorate of Infrastructure and Services

Regional Water Infrastructure Project

Project Datasheet  
Lesotho Highlands Phase 2

<b>Project Reference No:</b>	WIIC-2011-RG2-LES/SOA: Lesotho Highlands Phase 2	<b>Date last updated by:</b>	August 2011 CBEC- South Africa
<b>Implemented in:</b>	Lesotho and South Africa		
<b>Project Sponsors:</b>	Governments of Lesotho and South Africa		
<b>Sector/Subsector:</b>	Water Resources, Hydropower, Water Supply		
<b>Lead Agency:</b>	The Lesotho Highlands Development Authority (LHDA) and Lesotho Highlands Water Commission (LHWC)		
<b>Project Title:</b>	Lesotho Highlands Phase 2		
<b>Project Objectives:</b>	Construct Polihali Multipurpose Dam to transfer water to the Katse Dam and then through the existing infrastructure and Muela Hydropower complex to augment water supply to Gauteng and the Vaal River supply system. The project will also provide advanced infrastructure, environmental and social development programs in Lesotho.		

Location Map:



<b>Project justification</b>	The Lesotho Highlands Water Project is one of the largest and most intricate construction projects currently underway in the world. The total project was originally envisaged to transfer 70 m <sup>3</sup> /s from the upper portions of the Lesotho Highlands into the Vaal River basin.
	<p><b>Project Summary</b></p> <p>The aim of the second phase is to deliver more water by gravity to the Vaal River system which is the most critical in SA because it drives the economic heart in Gauteng and supplies water as far as to electricity power stations in Mpumalanga. The SA government is banking on the LHWP Phase 2 to secure water for Gauteng and the rest of the Vaal River water supply area.</p> <p>Phase 2 is expected to increase the existing hydro power generation capacity in Lesotho to the benefit of both local and regional consumption. Hydro power capacity improvements to be considered by Lesotho as part of Phase 2 include erecting stations powered by downstream water releases at Polihali, Katse and Mohale. There is also planned a 1200 MW hydropower plant which will eventually produce more than 1000 MW of electricity allowing large power users to access this power from Lesotho [Deal still to be signed] after the viability of the power project is confirmed.</p> <p>In terms of infrastructure, Phase 2 involves construction of:</p> <ul style="list-style-type: none"> <li>• a 60km access road,</li> <li>• a 165 m high, 2.2 M m<sup>3</sup> capacity Polihali dam at Tlokoeng [~ 5km downstream of the confluence of the Orange-Senqu and Khubelu rivers, Mokhotlong district] in Lesotho,</li> <li>• a 38km long tunnel from Polihali discharging into the Katse reservoir and</li> <li>• Project sites and camps, power transmission lines and administration centres.</li> </ul> <p>From the social and environmental perspective, it is estimated that over 3300 families and up to about 17000 people from 72 villages will be affected and compensated accordingly. Economically, thousands of Basotho will be recruited during the construction period. Also noteworthy is that unskilled work will be reserved for locals, especially villagers within the project area, while semi-skilled and skilled work will be sourced locally first. Only if the skills are not available in the area would these be sourced from the rest of Lesotho and subsequently South Africa.</p>
<b>Estimated Project Cost:</b>	USD 1 000 Million (South Africa's estimated contribution). USD 0.7 to 0.9 Million for Hydropower support in Lesotho.
<b>Funding Status:</b>	The building of the dam and tunnel is scheduled to begin in January 2016 and is expected to run until March 2020. Discussions will continue to be active related to various funding options for these particularly large investment requirements from 2011.
<b>Status of Funding negotiations;</b>	The Development Bank of Southern Africa [DBSA] has provided about R1-billion to the earlier aspects of the project since it started in the late 1980s.
<b>Implementation Progress and Status:</b>	<p>The LHWP project has been implemented in a number of phases and phase 1A and 1B, which included building the Katse and Mohale dams and their tunnel systems, have been completed.</p> <p>The agreement to proceed with implementation of Phase 2 was announced by Lesotho and South Africa in December 2008 and finally signed in August 2011.</p>
<b>Next Project Preparation Steps:</b>	Given the recent agreements in August 2011 between the Governments of Lesotho and South Africa, the final details of the next step are being addressed. Additional details may be available at the time of the WIIC in Maseru in September 2011.
<b>Project Risks:</b>	None identified at the moment.
<b>Projected Start Date</b>	Construction of supporting other infrastructure components is planned to start in 2012.

<b>Reference reports and studies</b>	Various reports and documents on file at TCTA, DWA and LHDA as well as recent media reports on the recent [August 2011] agreements between South Africa and Lesotho about the next steps to continue with Phase 2 of the already in-place and successful Phase 1.
<b>Project Contact:</b>	<p><b>SADC Secretariat:</b>  Mr. Phera Ramoeli  Senior Program Officer  SADC Directorate of Infrastructure and Service - Water Division  Private Bag 0095, Gaborone, Botswana  Tel: +267 395 1863/ 364 1854  <a href="mailto:water@sadc.int">water@sadc.int</a></p>
<b>Additional Website References:</b>	<p>Water project to create jobs for construction workers : Lesotho Times (2010)  <a href="http://www.lesotimes.com/?p=4314">http://www.lesotimes.com/?p=4314</a> – Accessed 18 Aug 2011</p> <p>International Water Power and Dam Construction. An African success story (June 2010).  <a href="http://www.waterpowermagazine.com/story.asp?storyCode=2056820">http://www.waterpowermagazine.com/story.asp?storyCode=2056820</a> - Accessed 18 Aug 2011</p>

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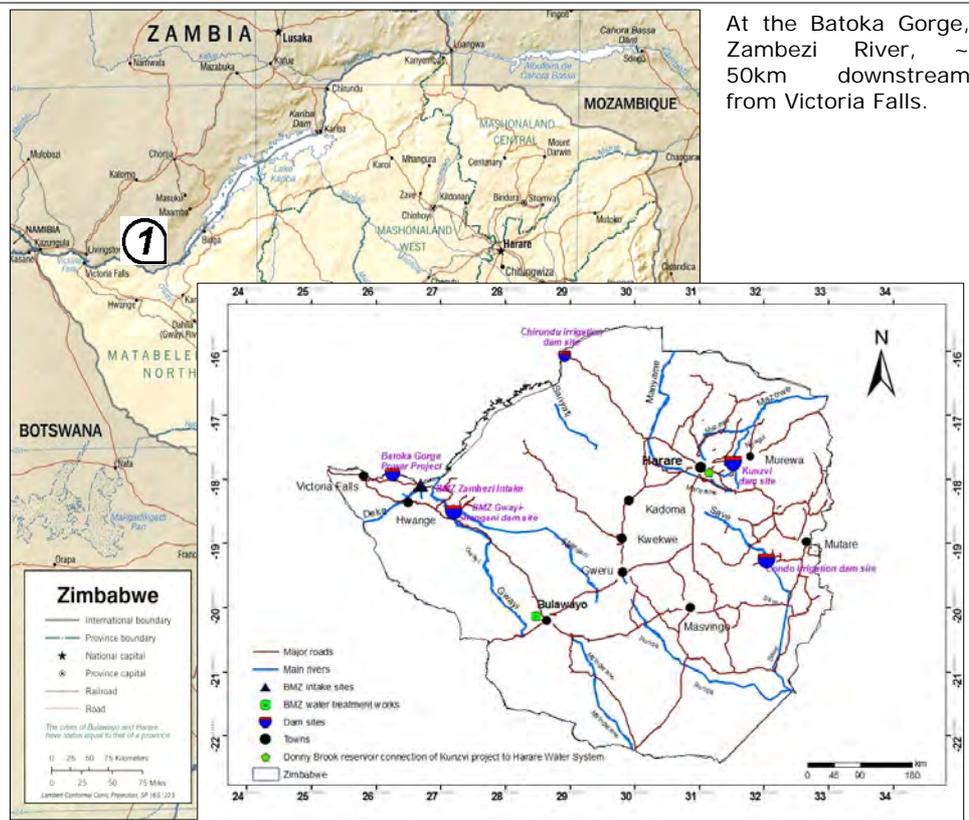
Directorate of Infrastructure and Services

**Regional Water Infrastructure Project**

**Project Datasheet  
Batoka Gorge Hydropower**

<b>Project Reference No:</b>	WIIC-2011-RG-03-ZIM/ZAM: Batoka Gorge Hydropower	<b>Date last updated: By:</b>	August 2011 CBEC - Zimbabwe
<b>Implemented in:</b>	Zimbabwe & Zambia		
<b>Project Sponsors:</b>	Zimbabwean and Zambian Government		
<b>Sector/Subsector:</b>	Hydroelectricity		
<b>Lead Agency:</b>	Zambezi River Authority (Overall) & ZESA Holdings (Pvt) Ltd for hydropower generation equipment		
<b>Project Title:</b>	Batoka Gorge Hydropower		
<b>River Basin</b>	Zambezi		
<b>Project Objectives:</b>	The objective of the above project is to increase power generation capacity and reduce reliance on coal fired powers stations (which are expensive and associated with greenhouse gases) and also reduce electricity imports. The project also has the potential to make Zimbabwe a power exporter after meeting local needs.		

Location Map:



<p><b>Project justification:</b></p>	<p>Zimbabwe has been facing serious power supply problems and has been relying heavily on fossil power sources and power imports. The power shortages have resulted in the national power utility (ZESA) adopting load shading strategies which have affected the economy in a number of ways including restricted industrial performance and also the malfunctioning of other downstream sectors including water and sanitation systems especially where the need for energy to drive key processes and pumping is intensive. This in turn has affected the social wellbeing of the population and to some extent the customer's willingness to pay for power and other services whose performance has been negatively affected by the limited power supply.</p>
<p><b>Project Description:</b></p>	<p><b><u>Summary:</u></b>  The Batoka Gorge Hydro Electric Scheme is a 1600 MW Hydro Power Station to be developed on the Zambezi River jointly by Zambia and Zimbabwe. This will include the installation of equipment to generate 800 MW on the Zimbabwe side and 800 MW on the Zambian side. The project also entails the construction of a roller compacted concrete gravity arch dam. The dam is still to be constructed. A feasibility study was prepared and presented in September 1993 by Lahmeyer International, Knight Piesold Consulting Engineers &amp; EWI Engineers &amp; Consultants. However there is need to update the feasibility study.</p> <p><b><u>Technical Features:</u></b>  The technical details include Construction of:  - a roller compacted concrete gravity arch dam of capacity of 1680 x10<sup>6</sup> m<sup>3</sup>  4 x 200 MW power generation units on the Zimbabwe side.</p> <p><b><u>Economic and Social.</u></b>  Power is the major driver of key activities of the economy. Power affects industrial development and performance. Zimbabwe's low economic recovery has been linked to poor industrial performance and low capacity utilization especially in the manufacturing industries of which inadequate power supply has been one of the major contributing factors. Recent appraisals of water and sanitation services in most urban centres in the country point to the fact that power supply has been the major driver of drinking water availability with some cases reporting as low as 4 hours per day of power supply. Most of the wastewater systems especially in major urban centres are energy dependent. As such the power outages due to load shading have resulted in raw sewage spilling into the environment thus causing damage to the aquatic ecosystems, creating public health risks and reducing water quality leading to increased drinking water treatment costs. The low service level of drinking water supply and poor sanitation has been the major cause of the cholera outbreak of 2008/9 which claimed about 4300 lives.</p> <p>The implementation of the project therefore will improve power availability in Zimbabwe and reduce load shading, and therefore enhance chances of improved industrial development and performance. Improvement in power supply will also create opportunities for improved water and sanitation service delivery thus giving rise to better social wellbeing as well as better investment climate. The project will also stimulate other downstream economic activities. Power exports to the region will boost inflows of the much needed foreign currency.</p> <p>Other spin offs from the project include the development of residential areas, infrastructure and social amenities on both the South and North Banks of the Zambezi River.</p> <p><b><u>Environmental Issues.</u></b>  A first environmental impact assessment was carried out in 1993 based on World Bank Guidelines. This study recommended further environmental studies which were then carried out in 1998. Like most dam projects the project will result in inundation of land and possible reduction in natural habitat as well as displacement of people. The low population density in the area will minimise the need to resettle people. A proper resettlement action plan and environmental management plan will be required to mitigate the negative social and environmental impacts of the project. However there are no potential impacts of significant magnitude to warrant the abandonment of the project.</p> <p>One major positive impact of the project compared to other alternative strategies of expanding power generation in Zimbabwe is that the project does not depend on renewable sources of fuel (e.g. coal) whose extraction is associated with serious environmental degradation. Furthermore the coal fired power stations are associated with production of a lot of greenhouse gases.</p>

	<p><b><u>Financial Analysis.</u></b>  Exploratory works were funded by the Zimbabwe Government while the feasibility studies were funded by the African Development Bank. Based on Tumbare (2011) the financial internal rate of return of the project is around 17%.</p>
<b>Estimated Project Cost:</b>	Estimated USD 3.5 billion.
<b>Funding Status:</b>	No funding is available. Financing mechanisms that have been considered as feasible are <ul style="list-style-type: none"> <li>• Joint Venture with ZESA</li> <li>• Credit loan</li> <li>• Private Partnership Participation (PPP)</li> </ul>
<b>Status of Funding negotiations;</b>	Pre feasibility (1993) and Feasibility studies (1996) have been funded by the African Development Bank.
<b>Implementation Progress and Status:</b>	Much of the preliminary work has been on the dam and the breakdown is as follows: <ul style="list-style-type: none"> <li>• The exploratory drilling and foundation work for the dam was completed in 1991-funded by the Zimbabwean Government</li> <li>• The feasibility study for the scheme was completed in 1993 which included an EIA-funded by the Africa Development Bank</li> <li>• Another EIA was done and was completed in 1998.</li> <li>• Project Development Plan updated 2005</li> <li>• Final Designs not yet done.</li> </ul>
<b>Next Preparation Step :</b>	<p><b>Activity:</b>  The Design Development Stage. Develop the approved concept to finalise the design, outline specifications, cost plan, financial viability and programme for the project involves:  (1) Review documentation programme with principal consultant and other consultants involved.  (2) Attend design and consultants' meetings.  (3) Incorporate client's and authorities' detailed requirements into the design.  (4) Incorporate other consultant's designs and requirements into the design.  (5) Prepare design development drawings including draft technical details and specifications.  (6) Review and evaluate design and outline specification and exercise cost control.  (7) Prepare detailed estimates of construction cost.  (8) Liaise, co-operate and provide necessary information to the principal consultant and other consultants involved.  (9) Submit the necessary design documentation to local and other authorities for approval.</p> <p><b>Estimated Cost:</b>  1.5 % of budget</p> <p><b>Estimate Start and Timeframe:</b>  12 months</p>
<b>Project Risks:</b>	Risks associated with the project may hinge on the stability of the currency of which this is minimal if the use of the USD is to be continued. Another risk could come from cost recovery particularly linked to tariff levels. The Government of Zimbabwe has recently approved the concept of full cost reflective tariff and hence the tariff is expected to go up. The Zambezi River is a transboundary river and as such there is need to seek consent from riparian states. Zimbabwe has recently ratified the treaty on ZAMCOM and it is generally expected that there will be limited complications in getting approval from riparian states to construct the dam and scheme on the Zambezi River given that the scheme will benefit two countries i.e. Zambia and Zimbabwe.
<b>Projected Commencement Date:</b>	The start and finish dates will be known once funding is available. However the project is expected to take some 10-13 years to complete
<b>Reference reports and studies:</b>	Batoka Joint Venture Consultants (BJVC), 1993. Batoka Gorge Hydro Electric Scheme Feasibility Study Final Report, Zambezi River Authority, Lusaka, Zambia. Dept of Water Resources, 1996. Batoka Dam Project. Study of a double-curvature arch solution. Tumbare M.J., 2010. The Management of the Zambezi River Basin and the Kariba Dam. Bookworld Publishers. Lusaka, Zambia. [Do we have this information]

<p><b>Project Contact:</b></p>	<p><b>SADC Secretariat:</b>  Mr. Phera Ramoeli  Senior Program Officer  SADC Directorate of Infrastructure and Service - Water Division  Private Bag 0095, Gaborone, Botswana  Tel: +267 395 1863/ 364 1854  <a href="mailto:water@sadc.int">water@sadc.int</a></p>
<p><b>Additional Website References:</b></p>	<p>M. J. Tumbare. SAPP Investment Conference. <a href="#">Bakota Gorge Hydro-Electric Scheme Project</a>, 2005 – last visited Aug 2011</p> <p>K. Sikuka (2009). <a href="#">Batoka hydro power station to light up southern Africa</a>, South African News Features – last visited Aug 2011</p> <p>The Zambezi River Basin - A Multi-Sector Investment Opportunities Analysis, <a href="http://siteresources.worldbank.org/INTAFRICA/Resources/Zambezi_MSIOA_-_Vol_1_-_Summary_Report.pdf">http://siteresources.worldbank.org/INTAFRICA/Resources/Zambezi_MSIOA - Vol 1 - Summary_Report.pdf</a> 2010 – last visited Aug 2011</p>



## Directorate of Infrastructure and Services

### Regional Water Infrastructure Projects

#### Project Datasheet Songwe River Basin Development Programme

<b>Project Reference No:</b>	WIIC-2011-RG-4-MAL_TAN: SongweRBDP	<b>Date last updated: By:</b>	August 2011 CBEC – Malawi
<b>Implemented in:</b>	Malawi and Tanzania		
<b>Project Sponsor:</b>	The Ministry of Irrigation and Water Development		
<b>Sector/Subsector:</b>	Irrigation, Water and Sanitation, Energy		
<b>Lead Agencies:</b>	Ministry of Irrigation and Water development (Malawi) and Ministry of Water and Livestock development (Tanzania).		
<b>Project Title:</b>	Songwe River Basin Development Programme (SRBDP)		
<b>Project Objective/s:</b>	<p>Overall goal is to contribute to improved living conditions of the basin population and the socio-economic development in the two countries.</p> <p>The specific objective is to prepare designs and joint investment projects for implementation and to create an effective enabling environment for Transboundary Water Resources Management in the Songwe Basin.</p>		
<b>Water Basin</b>	Songwe		
<b>Location Map:</b>			

<b>Project Description:</b>	<p><b><u>Summary:</u></b> The project is structured in five components:</p> <ul style="list-style-type: none"> <li>(i) Preparation of a shared vision towards 2050 and a 10- year Songwe River Basin Development Programme (SRBDP);</li> <li>(ii) Detailed design and preparation of priority investment as a major task;</li> <li>(iii) Environmental and Social safeguarding of the SRBDP by means of a Strategic Environmental and Social Assessment and Environmental and Social Impact Assessment for the Programme;</li> <li>(iv) Development of a Joint River Basin Authority and associated IWRM capacity building at local level; and</li> <li>(v) Support to project management and resource mobilization for the implementation of capital investments under the programme.</li> </ul>
	<p><b><u>Technical Features:</u></b></p> <p><b>Component I:</b></p> <ul style="list-style-type: none"> <li>• A Shared Vision 2050 prepared and adopted;</li> <li>• SRBDP updated, developed and approved, including: (a) Natural Resources and Land Use Management Programme, (b) Community Development Programme (c) Economic Development Programme and Financial Mobilisation, (d) Strategic Capital Investment Plan.</li> </ul> <p><b>Component II:</b></p> <ul style="list-style-type: none"> <li>• Updated Feasibility Study;</li> <li>• Designs and investment preparation for major capital investments in the Lower Dam and associated hydropower plants, irrigation schemes, river course stabilization works, flood control, water supply, fisheries and fish farming and roads and river crossing;</li> <li>• Designs and Development plans prepared for social infrastructure investments in rural electrification, roads and river crossing, fisheries and fish farming, water supply and promotion of tourism.</li> </ul> <p><b>Component III:</b></p> <ul style="list-style-type: none"> <li>• A Strategic Environmental and Social Assessment (SESA) of the programme;</li> <li>• Environmental, and Social Impact Assessment (ESIA) and associated mitigation plans, relocation arrangements, and compensation schemes for each programme intervention finalized.</li> </ul> <p><b>Component IV:</b></p> <ul style="list-style-type: none"> <li>• River Basin Authority (RBA) convention approved and ratified by the two countries;</li> <li>• Instruments for IWRM capacity building prepared including (a) "Business Plan" for the RBA; (b) Training and capacity building programmes prepared; (c) communication and stakeholder participation functioning;</li> <li>• On the job-training of counterpart staff.</li> </ul> <p><b>Component V:</b></p> <ul style="list-style-type: none"> <li>• Project management successfully completed;</li> <li>• TM assigned, counterpart staff seconded, facilities, equipment, and operational resources provided;</li> <li>• Resource mobilization activities carried out;</li> <li>• Project timely and cost efficiently implemented.</li> </ul>
	<p><b><u>Economic and Social:</u></b> The economic viability of the project and its contribution to economic development including revenue generation and creation of local employment opportunities are fundamental factors that have received special attention. 80% of the proposed investment costs of the programme related to the multipurpose dams and hydropower development, and sales of electricity will be the main source of income. In addition, the dams will generate several multipurpose benefits connected to flood control, irrigation, water supply, tourism and fisheries as well as sustainable water development.</p>
	<p><b><u>Environmental Issues:</u></b> The whole project is based on environmental sustainability.</p> <p><b><u>Financial Analysis:</u></b> No details of a financial analysis are available. In terms of costing, the project is estimated to be USD 328,650,000 including a 5% contingency. Details are as follows:</p>

	Lower dam: USD 64.6 Million Hydropower development(153MW): USD 195 Million Irrigation and Drainage: USD 14.7 Million River training and flood mitigation: USD 27.3 Million Land use management: USD 8 Million Water Supply: USD 2.9 Million Fisheries: USD 0.2 Million
<b>Estimated Project Cost:</b>	USD 328 Million
<b>Funding Status:</b>	For detailed design – funding is assured from AfDB.  Construction phase: Estimated cost as outlined under financial analysis above the whole amount USD 328,650,000 is not assured. Construction phase means the period during which all activities under financial analysis would be undertaken.
<b>Status of Funding negotiations;</b>	Funding for detailed design assured from AfDB
<b>Implementation Progress and Status:</b>	Memorandum of Understanding for Detailed Design and investment preparation signed between Malawi and Tanzania.
<b>Next Preparation Step:</b>	<b>Activity</b> Construction phase is expected to start in 2014 and may be completed in 2019.
	<b>Estimated cost</b> USD 328 Million
	<b>Estimated start and Timeframe</b> Start in 2014 and finish in 2019
<b>Project Risks:</b>	<p>The risks threatening the achievement of the objectives of the Project are summarized in the LFA matrix<sup>1</sup>:</p> <ul style="list-style-type: none"> <li>• Political risks can affect the joint management of shared transboundary waters. However, in the case of the Songwe River there is a strong commitment in the spirit of cooperation between Malawi and Tanzania, since the feasibility study. Thus, the political risks are considered low. The SADC Water Protocol also offers a regional framework for mitigation of political conflicts. The establishment of a joint basin authority will contribute to the consolidation of the good cooperation between the two countries.</li> <li>• Inadequate mobilization of funding for capital investments is one of the major risks facing capital investment programmes like the SRBDP. As a mitigation measure, a Forum for Financial Partners will be established under the project, to promote the programme, with the view of mobilizing financial resources for the implementation of capital investment. The Bank's country offices in Malawi and Tanzania and the AfDB Regional Departments will participate in the functioning of the forum and raising financial resources for the capital investments.</li> <li>• The success of the project depends on favourable stakeholder acceptance and engagement. In order to minimize the risk of low stakeholder response to the Project, considerable attention has been paid to the environmental and social safeguarding including mitigation, resettlement, compensation schemes, land tenure security, gender equality, active communication policy, and stakeholder involvement throughout the project. The project's focus on economic development and poverty reduction should also encourage positive stakeholder response.</li> <li>• The project will rely on the availability of relevant and reliable data and information needed for detailed design, planning of capital investments, estimation of project cost, etc. The risks and the project's sensitivity to inadequate data will be analysed and the updating of the feasibility study will include an assessment of data adequacy and generation of necessary supplementary data.</li> <li>• The feasibility study demonstrated a sound economic viability of the proposed SRBDP capital investments. The satisfactory economic viability shown by the feasibility study will also be confirmed and reinforced by the economic optimization during detailed design.</li> <li>• Changed hydrological conditions due to climate change and variability is a potential threat to the economic viability of the investments. The project includes an analysis of hydrological sensitivity to clarify the risks and advise on possible mitigation measures to</li> </ul>

<sup>1</sup> Logical Framework Approach (LFA) - a management tool.

	be taken by the River Basin Authority. Unforeseen extreme weather situations, such as extreme rains or flooding, may hamper the field investigations of the Project. The preparation of the work schedule will take into account the seasonal weather variations.		
<b>Projected Timing and Dates:</b>	Detailed Design Phase start: 2011 , Finish: 2013	Construction Phase to start: 2014, to be finished in 2019.	Entire project to be completed in 2021
<b>Reference reports and studies</b>	Songwe River Basin Development Programme Detailed Design and Investment Preparation Project, Appraisal Report, October, 2009. Funded by African Development Bank.		
<b>Project Contact</b>	<b>SADC Secretariat:</b> Mr. Phera Ramoeli Senior Program Officer SADC Directorate of Infrastructure and Service - Water Division Private Bag 0095, Gaborone, Botswana Tel: +267 395 1863/ 364 1854 <a href="mailto:water@sadc.int">water@sadc.int</a>		
<b>Additional Website References:</b>	<a href="#">Songwe River Basin Development Programme (SRBDP) – Detailed design and investment preparation project</a> [Appraisal Report, 2010]		



## Directorate of Infrastructure and Services

### Cross Border Water Infrastructure Project

#### Angola / Namibia Project Datasheet Food Security - Upper Okavango

<b>Project Reference No:</b>	WIIC-2011-XB-1-ANG/NAM: Food Security-Upper Okavango	<b>Date last updated: By:</b>	August 2011 CBEC - Angola
<b>Implemented in:</b>	Angola and Namibia		
<b>Project Sponsors:</b>	Ministry of Agriculture – ANGOLA Ministry of Agriculture, Water and Forestry – NAMIBIA		
<b>Sector/Subsector:</b>	Agriculture / Irrigation		
<b>Lead Agency:</b>	SADC Secretariat (FANR – Food Security Unit)		
<b>Project Title:</b>	Agriculture Water Management & Food Security - Upper Okavango Basin		
<b>River Basin</b>	Okavango		
<b>Project Objectives <sup>1</sup>:</b>	<p>(i) improve water efficiency/utilisation, e.g. stabilisation and intensification of production among target populations;</p> <p>(ii) strengthened linkage of area farmers and herders into regional marketing systems and expanding intraregional trade;</p> <p>(iii) expansion of support infrastructure within programme areas;</p> <p>(iv) strengthening local institutional capacities to promote and support the improvements on a sustainable basis; and</p> <p>(v) developing region-wide capacities to identify, evaluate and implement approaches to increased food security through improved water management and related activities.</p>		
<b>Location Map:</b>			

<sup>1</sup> From [www.afdb.org/](http://www.afdb.org/) SADC Agriculture Water Management & Food Security - Upper Okavango Basin

<b>Project Description:</b>	<p><b><u>Summary</u></b></p> <p>The principal purpose of this project is to identify and disseminate technical knowledge of improved approaches to water management, agriculture production including livestock and aquaculture, and market access for smallholder farmers within the project area.</p> <p>The second purpose of this project will focus on ensuring sustainable management of natural resources within the project area, with particular attention to efficient water resource utilization.</p> <p>The third component of this project will focus on creating and strengthening local capacity and social capital for sustainable economic development and increasing food security.</p> <p>The fourth component of this project will focus on infrastructure development and rehabilitation within the project area. The project will cover only the most urgent agriculture-related needs but can also identify and prepare proposals for further infrastructure investment particularly for roads and bridges.</p> <p>The last component of the project entails regional coordination and management. A project implementation unit will be established in each country with the ministry of agriculture in each country leading such implementation. A coordination committee will be hosted by OKACOM and which would have a representative from AfDB, FAO, Angola, Namibia and Botswana.</p>
	<p><b><u>Technical Features</u></b></p> <p>The Project details in the principal reference [#3] cited below indicate that it involves a variety of components and subcomponents. This includes</p> <ul style="list-style-type: none"> <li>- field testing and demonstration of new small-scale production approaches including utilization of water conservation techniques, expanded use of inputs,</li> <li>- improved crop varieties and diversification. demonstration of small scale agriculture mechanization and animal traction techniques with technical support for expanded irrigated crop production,</li> <li>- support for fishing cooperatives in Cuito Cuanavale, Nacova, Cuchi and Cuelel in Angola, including tanks for restocking and provision of fishing kits and stimulating fish production by private sector fish farmers,</li> <li>- technical assistance to improve post harvest, storage, processing and marketing skills and</li> <li>- for livestock, expanded veterinary capacity and pasture management and livestock health training for cattle herders.</li> </ul>
	<p><b><u>Economic and Social</u></b></p> <p>The benefit from the programme implementation would be a significant long-term reduction in regional food security, both chronic and acute. This reduction would be achieved through increased numbers of producers having access to technologies and practices that enable them to increase the production.</p> <p>Adopted production technology would draw primarily on an Integrated Water Resources Management (IWRM) approach that improved sustainable access to water during deficit periods from stored or permanent resources.</p> <p>The agricultural support services and water resources management will benefit from both improved knowledge of appropriate resource utilisation methodology and from an increased ability to respond to changing conditions facing institutions and producers, as a result of impact of HIV/AIDS, global trade expansion and other factors.</p> <p>The principal groups of beneficiaries' targeted within the program will be:</p> <ul style="list-style-type: none"> <li>- resource-poor rain fed farmers and livestock herders who are vulnerable to food insecurity.</li> <li>- smallholder farmers in irrigation schemes with poor efficiency, especially emergent farmers and</li> <li>- markets agent and traders, and</li> <li>- female-headed HIV/AIDS affected and other most vulnerable households.</li> </ul>
	<p><b><u>Environmental Issues.</u></b></p> <p>This project has not been evaluated with a detailed EIA process until this time.</p> <p>The project is not generally believed to result in any negative impact on the environment. It will be restorative to the existing setting in that it will assist communities to implement an integrated approach to water resources management and strive to achieve higher water use efficiency practices as well as improving the best use practices of the soils to retain their value and reduce their erosion.</p>

	<b>Financial Analysis.</b> No analysis of financial viability has been done to date and would be expected to be done as an important part of the Pre-Feasibility study.		
<b>Estimated Project Cost:</b>	USD 66 Million provisionally [AfDB Web page reference – split level of funding needs: USD 37.5 million – Angola; USD 28.5 million - Namibia].		
<b>Funding Status:</b>	Funding Agency to date has been noted as the AfDB. There is a planned board presentation to the AfDB on 25/10/2011.		
<b>Status of Funding negotiations:</b>	The governments of Angola and Namibia still have to negotiate with AfDB for funds and it may not be able to be fully funded by AfDB so that this project's investment opportunity is being noted via this means.		
<b>Implementation Progress and Status:</b>	Not yet started		
<b>Next Project Preparation Step [ICA Guidelines]:</b>	<b>Activity</b> <u>Pre-Feasibility study:</u> conducted with the key outcome a financial analysis. This would demonstrate the project's ability to be sustainable and illustrate investment scenarios for the variety of project components being considered.		
	<b>Estimated Cost</b> \$ 1.5 Million due to complexity/variety of project aspects being considered.		
	<b>Estimated Start Date and Timeframe</b> 2011 start –12 to 18 months to complete due to two countries involved		
<b>Project Risks:</b>	The region of Kuando Kubango is vulnerable to food insecurity. If the development of the region is to be postponed, and the landmines situation in Angola side will continue to be a problem, also the communication by road.		
<b>Projected Start Date:</b>	The first plan was to begin in 2010. Now it will be started when there is funding approved.	<b>Projected Completion Date:</b>	Initially -April 2015. This will continue for 5 years after starting.
<b>Reference reports and studies:</b>	<ol style="list-style-type: none"> <li>1. Project portfolio ref : P-Z1-AAC-006,</li> <li>2. Ministry of Agriculture, Okavango Project</li> <li>3. <a href="http://www.afdb.org/">www.afdb.org/</a> SADC Agriculture Water Management &amp; Food Security - Upper Okavango Basin</li> </ol>		
<b>Project Contact:</b>	<b>SADC Secretariat:</b> Mr. Phera Ramoeli Senior Program Officer SADC Directorate of Infrastructure and Service - Water Division Private Bag 0095, Gaborone, Botswana Tel: +267 395 1863/ 364 1854 <a href="mailto:water@sadc.int">water@sadc.int</a>		
<b>Additional Website References:</b>	<b>National Investment Brief- ANGOLA - 2008</b> <a href="http://www.sirtewaterandenergy.org/docs/reports/Angola-Draft2.pdf">www.sirtewaterandenergy.org/docs/reports/Angola-Draft2.pdf</a> - Last Visited August 2011  <b>Water - the engine for economic growth - 2008</b> <a href="http://www.southernafricatrust.org/changemakers_newsletter/02/">http://www.southernafricatrust.org/changemakers_newsletter/02/</a> - Last Visited August 2011		

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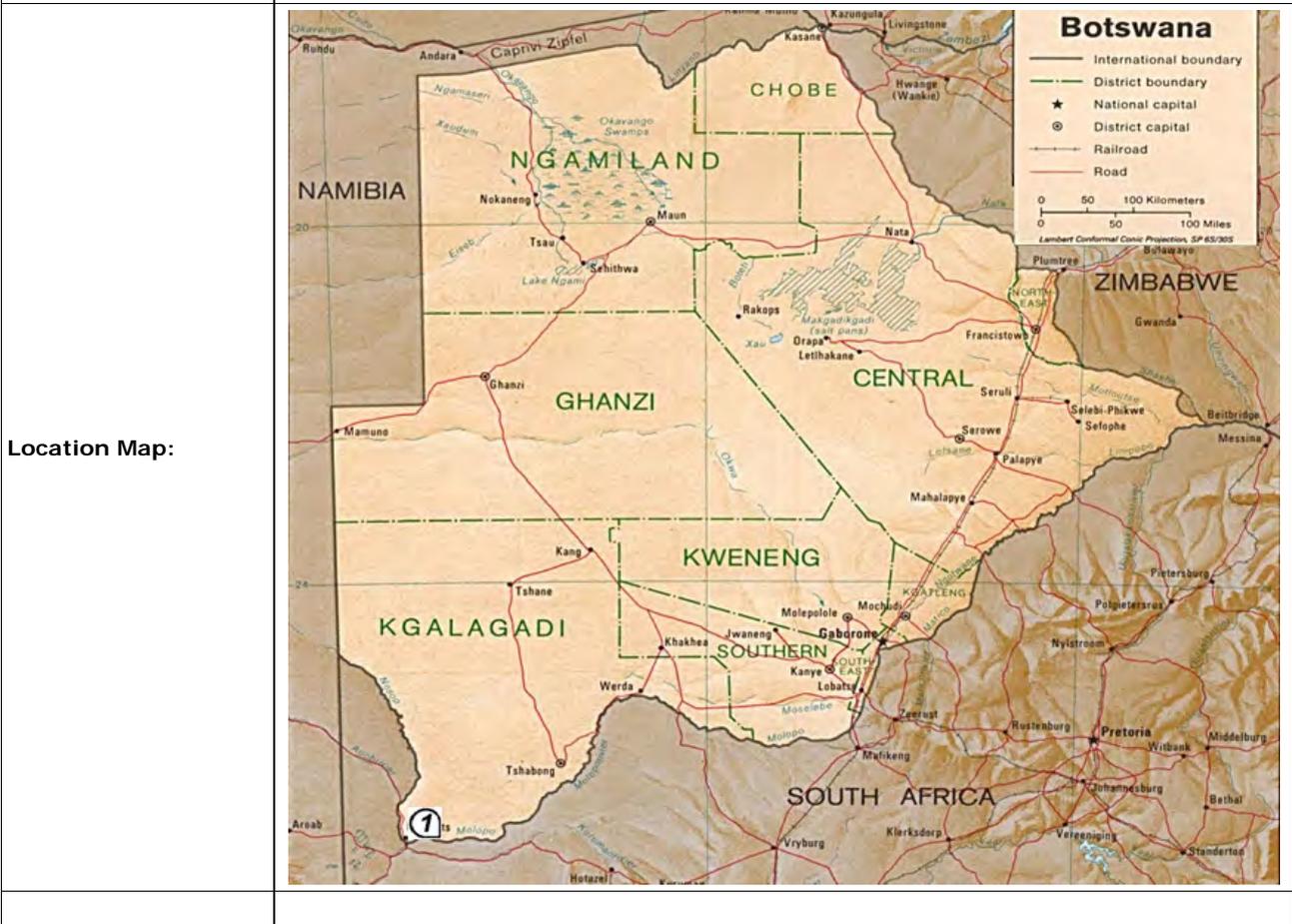


**Directorate of Infrastructure and Services**

**Cross Border Water Infrastructure Project**

**Botswana Project Datasheet  
Vaal-Gamagara Water Supply**

<b>Project Reference No:</b>	WIIC-2011-XB-2-BOT/SOA: Vaal Gamagara Water Supply	<b>Date last updated: By:</b>	August 2011 CBEC - Botswana
<b>Implemented in:</b>	Botswana and South Africa (Orange Senqu River Basin)		
<b>Project Sponsors:</b>	Governments of Botswana and South Africa		
<b>Sector/Subsector:</b>	Regional Water and Sanitation		
<b>Lead Agency:</b>	Department of Water Affairs, Botswana		
<b>River Basin:</b>	Limpopo		
<b>Project Title:</b>	Vaal-Gamagara Cross Border Water Supply to Botswana		
<b>Project Objective:</b>	Supply of Portable Water to the Villages in South West Botswana		



<b>Project Description:</b>	<b>Summary</b> Water availability and quality in Botswana decreases from east to west with the south western corner of the country experiencing the least reliable supply. The villages in this area therefore suffer constant water supply constraints which compromise the quality of life of the residents. As most of the country's water sources are in the north east of the country, Botswana has proposed that water supplies to these villages be sourced from the Vaal River in South Africa which is part of the Orange-Senqu River Basin. Botswana is a member of the Orange Senqu River Basin Commission and therefore has rights to the waters of the basin in terms of the agreement that establishes the commission. Botswana's proposal is to draw a minimum of seven (7) litres per second of water from the Vaal and to deliver this to the villages in the extreme south west of the country through the Vaal-Gamagara Water Transfer Scheme. The scheme will involve the construction of cross border water transfer infrastructure over an estimated distance of 400 kilometres.		
	<b>Technical Features:</b> The project involves the construction of water supply infrastructure from the Vaal River in South Africa to the villages in south west Botswana which experience chronic water shortages due to limited water supplies in the area. The delivery systems will be supplemented by water treatment works.		
	<b>Economic and Social.</b> South west Botswana is extremely dry landing itself to extensive livestock farming. Water shortages currently limit the extent to which this economic activity can be practiced. The proposed project will therefore improve opportunities for improving on this economic activity. Limited water resources in this region also limit the availability of portable water for the communities in the region. Improved portable water supplies from this project will have direct implications for the sanitation status of the population and thus impact on their health status.		
	<b>Environmental Issues.</b> The environmental implications of this proposed project have been considered under the scope of the Orange-Senqu basin initiative.		
	<b>Financial Analysis.</b> No financing has been sourced for this proposed project.		
<b>Estimated Project Cost:</b>	To be determined.		
<b>Funding Status:</b>	Funding is requested from international sources as this project is developed outside the framework of the Botswana National Development Plan 10.		
<b>Status of Funding negotiations:</b>	None initiated		
<b>Next Project Preparation Step:</b>	<b>Activity</b> Pre-feasibility study to be completed.		
	<b>Estimated cost</b> 0.4 Million USD		
	<b>Estimated Start and Timeframe</b> 2011 for 6-12 months		
<b>Implementation Progress and Status:</b>	No progress as project is at initiation stage.		
<b>Project Risks:</b>	Failure of Botswana to access the Orange-Senqu waters due to lack of agreement with other riparian states.		
<b>Projected Commencement Date:</b>	2011 or 2012	<b>Projected Completion Date:</b>	2016
<b>Reference reports and studies:</b>	None available at this time.		
<b>Project Contact:</b>			

	<p><b>SADC Secretariat:</b>  Mr. Phera Ramoeli  Senior Program Officer  SADC Directorate of Infrastructure and Service - Water Division  Private Bag 0095, Gaborone, Botswana  Tel: +267 395 1863/ 364 1854  <a href="mailto:water@sadc.int">water@sadc.int</a></p>
<p><b>Additional Website References:</b></p>	<p><b>Vaal_Gamagara_Water_Scheme</b>  <a href="http://www.ewisa.co.za/eWISA%20Waterworks/misc/MunicipalDocuments/NCDIsKgalagadi/LMGamagara/vaal_gamagara_water_scheme.pdf">http://www.ewisa.co.za/eWISA Waterworks/misc/MunicipalDocuments/NCDIsKgalagadi/LMGamagara /vaal_gamagara_water_scheme.pdf</a> -Last visited 31 Aug 2011</p> <p><b>Orange-Senqu-IWRM Plan-Phase2</b>  <a href="http://orangesenqu-iwrmpplan-phase2.org/wrp_documents/reports/wp3/Development%20of%20WQ%20Monitoring%20Programme%20and%20Data%20Management%20Framework-Rep-WP3-007-2011.pdf">http://orangesenqu-iwrmpplan-phase2.org/wrp_documents/reports/wp3/Development%20of%20WQ%20Monitoring%20Programme%20and%20Data%20Management%20Framework-Rep-WP3-007-2011.pdf</a> –Last visited 17 Aug 2011</p>

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**Directorate of Infrastructure and Services**  
**Cross Border Water Infrastructure Project**

**Project Datasheet**  
**Ressano Garcia Weir – Water Supply**

<b>Project Reference No:</b>	WIIC-2011-XB-3-MOZ/SOA: Ressano Garcia Weir	<b>Date last updated: By:</b>	August, 2011 CBEC - Mozambique
<b>Implemented in:</b>	The project will be implemented in Mozambique right after the border with RSA. This will be done in consultation with RSA and Swaziland.		
<b>Project Sponsor (s)</b>	The Direcção Nacional de Águas (DNA) in Maputo will be responsible for project planning and monitoring progress while ARA Sul will be the implementing agency.		
<b>Sector/Subsector:</b>	Water Supply and Hydrologic Monitoring		
<b>Lead Agency:</b>	Mozambique Government		
<b>Project Title:</b>	Ressano Garcia Weir – Water Supply		
<b>River Basin</b>	Incomati		
<b>Project Objectives:</b>	To ensure monitoring of cross-border flow in the Incomati River [provision of IncoMaputo Agreement between Governments of Mozambique, South Africa and Swaziland]. Storage from weir to provide water supply to Ressano Garcia Village.		

**Location Map:**



<p><b>Project Description:</b></p>	<p><b>Summary</b>  The construction of Ressano Garcia Weir is also part of the National Water Resources Development Program (NWRDP) of Mozambique which intends to implement water-related infrastructure as well as some “soft” component such as strengthening water resources planning, regional administration authority and the international water components. The ultimate goal of the NWRDP is to implement the National Water Resources Management Strategy. Within the current preparatory phase of the NWRDP, detailed design and comprehensive Environmental and Social Impact Assessment will be undertaken to ensure bankability of this project.</p> <p>Under the IncoMaputo Agreement between Mozambique, South Africa and Swaziland a minimum cross-border flow was agreed to be complied with by the two upstream countries of 2.6 cumes average over 3-day period. The gauging methods used at both sides of the border do provide data that is not consistent with each other resulting in dispute over monitoring of the compliance of IIMA Agreement. This issue has been discussed several times at the TPTC and JWC meetings between the three riparian countries and there is a broad agreement that a measuring weir would assist member states in monitoring and enforcing the agreed flow. On the other hand, the town of Ressano Garcia with a population of 20,000 inhabitants is currently facing serious water supply problems and urgently requires an assured water source and system for water supply and sanitation. The Ressano Garcia Village will also benefit from the Joint Crossing Border Office point to be constructed on the Mozambican side of the border which will put additional pressure to the existing water supply system.</p>
	<p><b>Technical Features:</b></p> <p><b>Hydrograph</b>  The Incomati River flows from South Africa into Mozambique through a gorge at Ressano Garcia. This creates natural conditions for development of a village. The hydrographic basin of Incomati River at the selected location has an area of 22 000 km<sup>2</sup>. The total area of the river basin is 48 426 km<sup>2</sup>, being 62% in South Africa, 6% in Swaziland and 32% in Mozambique. The principal tributary is the Crocodile River with an area of the sub-basin of about 10 400 km<sup>2</sup>. The weir is located approximately 2 km downstream of the border to the Republic of South Africa</p> <p><b>Reservoir</b>  The reservoir size and capacity is determined by the full supply level which was selected at 105.5 m due to economic and hydraulic considerations. The net storage capacity of the reservoir at this level is about 200 000 m<sup>3</sup>, corresponding to the average water consumption of Ressano Garcia Village during three days. The reservoir area is approximately 12.3 hectares entirely located in the territory of Mozambique.</p> <p><b>Weir Design</b>  The most suited measuring structure shape was identified to be a crump section to ensure stability under flood conditions and the lowest possible profile to maintain accuracy of flow measurement.  The weir will be built in reinforced concrete.  The main technical features of the weir are the following:</p> <ul style="list-style-type: none"> <li>- Upstream slope - 2V: 1V</li> <li>- Downstream slope - 5V: 1H</li> <li>- Minimum dimension required upstream of the crest at the lowest crest level – 2m</li> <li>- Minimum dimension required downstream of the crest at the lowest crest level – 4m</li> <li>- The weir includes also a fish ladder to allow the fish migration from the downstream to upstream and two gates for bottom flushing.</li> </ul> <p><b>Foundation</b>  The rock at the weir section is sound, very hard rhyolite constituting the ideal foundation for these kinds of structures.</p> <p><b>Gauging Station</b>  The gauging station at Ressano Garcia presently does not allow the measurement of very small flows that are of highest importance during periods of drought or low run-off. With the new weir, this becomes possible. For the recording of instant flows between 100 l/s and the 1: 100 yr flood an automatic gauging station will be installed inside the concrete lower at downstream of the weir designed to house of the equipment for flow measurement and eventually pumping for water supply.</p>

	<p><b><u>Economic and Social:</u></b>  The improvement of compliance of the cross-border flow would allow watering of livestock and riparian farming for the communities living along the river. During dry season, these communities drink water from unreliable and insecure sources with associated water-borne diseases. The existing groundwater along this region is normally brackish or not enough to site a hand pump borehole.</p> <p>Ressano Garcia Village is a key point of Maputo-Witbank Corridor and the construction of the weir and the improving water availability would significantly reduce immigration as most areas along the corridor would improve their standards of living.</p> <p>The construction of a weir will create employment opportunities for the local community over the period of construction and during operations. Ressano Garcia has abundant unskilled labour and will benefit from this opportunity. Depending on the length of construction and the number of jobs, the construction of the weir may temporarily reduce emigration. The operation phase is also expected to open up some employment opportunities but less than the construction phase. Thus, the income of the village will significantly increase during construction and decline at the end of construction.</p> <p>With higher income the demand for goods and services will increase and will partly be met by imports and domestic production. As most of the employees are unskilled and low income, we expect the proportion of imported goods and services to be limited. Thus, local domestic economy may expand with further repercussions in the system.</p> <p><b><u>Environmental Issues.</u></b>  The weir is not to be considered as a storage and flow modification structure, and neither is it a new water abstraction point. These points are made as it must be realised that the structure will have only very minor and localised effects on the flow regime of the river.</p> <p>The presence of the proposed gauging weir will have very little impact on any of habitats (swamp forests, riverine forests, ravine thickets in Lebombo hills, wetlands swamps and floodplains, estuarine and mangrove, and coastal dunes). Therefore particular attention was given to the fauna and flora which would be affected by the weir. However, because the weir will have only negligible impacts on the flow patterns and quantity of water in the river, attention returned primarily to the impacts on the lotic fauna. No consideration was given to impacts on the estuary as it was considered that the weir is too small and remote to have any effect on that part of the system</p> <p><b><u>Financial Analysis.</u></b>  The capital cost for the project has been estimated at a total capital cost of some <b>USD 6,035,000</b>, which includes: (a) construction of concrete weir (b), installation of telemetry equipment for hydrological data acquisition and real time information, (c) Planning, design and implementation of the small water supply system for the Ressano Garcia village.</p>
<b>Estimated Project Cost:</b>	The total capital cost is about <b>USD 6,035,000</b> .
<b>Funding Status:</b>	Project design and Environmental and Social Impact Assessment (ESIA) funded by World Bank.
<b>Status of Funding negotiations;</b>	No funds have been secured for the project, but under the National Water Resources Development Programme (NWRDP), to be funded by the World Bank, detailed design and comprehensive Environmental and Social Impact Assessment will be made and the WB will assist the Government of Mozambique in sourcing funds for the construction.
<b>Implementation Progress and Status:</b>	<p>Project design and environmental impact assessment study were carried out, in 2002.</p> <p>In 2011 DNA is undertaking further refinement of the detailed study and the ESIA and updating of the costing.</p>

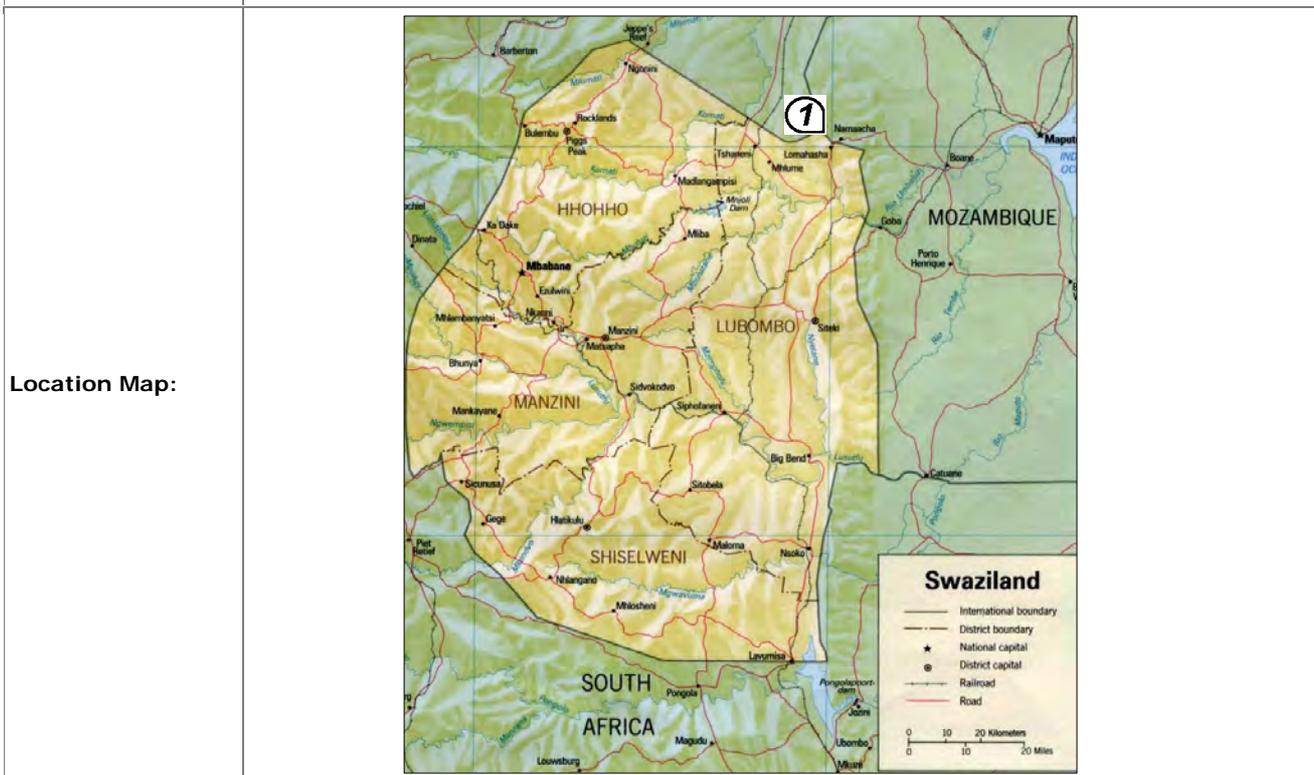
<b>Next Project Preparation Step:</b>	<b>Activity</b> Revision of the project detail design and preparation of the tender documentation for the works and the Technical Assistance		
	<b>Estimated cost</b> 0.5 M USD		
	<b>Estimated start and timeframe</b> 6 to 12 Months		
<b>Project Risks:</b>	The risk may be associated with availability of both local and donor funding.		
<b>Project Start Date:</b>	Not defined.	<b>Projected Completion Date</b>	Not defined.
<b>Reference reports and studies</b>	<ol style="list-style-type: none"> <li>1. Ressano Garcia Weir on the Incomati River, Final Report, National Directorate of Water, by Tecnica in Association with Coba, 2002</li> <li>2. Ressano Garcia Weir on the Incomati River – Assessment of Ecological Impacts, Final Report, National Directorate of Water, by Tecnica in Association with Coba, 2002</li> </ol>		
<b>Project Contact</b>	<b>SADC Secretariat:</b> Mr. Phera Ramoeli Senior Program Officer SADC Directorate of Infrastructure and Service - Water Division Private Bag 0095, Gaborone, Botswana Tel: +267 395 1863/ 364 1854 <a href="mailto:water@sadc.int">water@sadc.int</a>		
<b>Additional Website References:</b>	National Investment Brief Mozambique (Sirte 2008) <a href="http://www.sirtewaterandenergy.org/docs/reports/Mozambique-Draft2.pdf">http://www.sirtewaterandenergy.org/docs/reports/Mozambique-Draft2.pdf</a> –Last visited 13 Aug 2011		



**Directorate of Infrastructure and Services**  
**Cross Border Water Infrastructure Project**

**Swaziland & Mozambique Priority Project Datasheet**  
**Lomahasha /Namaacha Water Supply**

<b>Project Reference No:</b>	WIIC-2011-XB-4-SWA/MOZ: Lomahasha/Namaacha WS	<b>Date last updated: By:</b>	August, 2011 CBEC - Swaziland
<b>Implemented in:</b>	Swaziland & Mozambique		
<b>Project Sponsor</b>	Gov. of Swaziland (DWA) and Gov. of Mozambique (DNA) <sup>1</sup>		
<b>Sector/Subsector:</b>	Water Supply and Sanitation		
<b>Lead Agency:</b>	SADC Secretariat, Infrastructure and Services – Water		
<b>Project Title:</b>	Lomahasha/Namaacha Water Supply <sup>2</sup>		
<b>River Basin:</b>	Mbuluzi / Umbeluzi		
<b>Project Objective:</b>	To provide a reliable and adequate supply of water to Lomahasha in Swaziland and across the border serving the Namaacha area of Mozambique.		



<sup>1</sup> The project began as the Siteki Lomahasha water supply project, funded under the Government of Swaziland capital projects budget. With the Government's financial constraints, the Corporation concentrated on the Siteki component which is now almost complete. The current financial challenges experienced by Government have prompted the suspension of the Lomahasha component pending further identification of infrastructure funding possibilities.

<sup>2</sup> The Ministry has a signed agreement about the water sharing arrangement. The project was discussed in the last meeting of the Tripartite Permanent Technical Water Commission (July 28<sup>th</sup>, 2011) in Maputo.

<b>Project Description:</b>	<p><b>Summary</b> Preparation of preliminary/detailed designs and engineering cost estimates for the construction of Phase II of the Lomahasha and Siteki Water Supply Project.</p> <p>This phase will ensure the supply of water to the Lomahasha area in Swaziland and has the planning beginning now to extend the water supply to the Namaacha town in Mozambique through the Memorandum of Understanding for the supply of water to communities residing along common borders of the two countries.</p> <p><b>Technical Features:</b></p> <ul style="list-style-type: none"> <li>• Construction of 20km pipeline (pumping main)</li> <li>• Interim Booster pump stations</li> <li>• Storage Reservoirs</li> <li>• Additional features as needed for the Namaacha area</li> </ul> <p><b>Economic and Social</b> The project will help to provide adequate sustainable clean water to the Lomahasha area and across the border to the area in Mozambique near. This project will also help in:</p> <ul style="list-style-type: none"> <li>• Improve health through the reduction of waterborne diseases.</li> <li>• Promotion of economic activity.</li> <li>• Creation of employment opportunities.</li> <li>• Increasing food security and reduction of poverty.</li> <li>• Additional revenue for the corporation.</li> </ul> <p><b>Environmental Issues.</b> This project will improve environmental and health standards as the prevalent use of contaminated borehole water would be discontinued.</p>																																			
<b>Estimated Project Cost:</b>	<p><b>Financial Analysis</b> Estimated Capital Cost of the Project for the Lomahasha components is determined and is summarized below in constant prices (USD 000)<sup>3</sup></p> <table border="1" data-bbox="459 1057 1369 1249"> <thead> <tr> <th>Cost Component</th> <th>Year 1</th> <th>Year 2</th> <th>Year 3</th> <th>Year 4</th> <th>Year 5</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Design/ Supervision</td> <td>540</td> <td>167</td> <td>167</td> <td>167</td> <td>167</td> <td><b>1208</b></td> </tr> <tr> <td>Construction</td> <td></td> <td>2700</td> <td>2700</td> <td>2700</td> <td>2700</td> <td><b>10800</b></td> </tr> <tr> <td>Retention</td> <td></td> <td>270</td> <td>270</td> <td>270</td> <td>270</td> <td><b>1080</b></td> </tr> <tr> <td><b>Total</b></td> <td><b>540</b></td> <td><b>3137</b></td> <td><b>3137</b></td> <td><b>3137</b></td> <td><b>3137</b></td> <td><b>13088</b></td> </tr> </tbody> </table> <p style="text-align: right;"><b>Total Project cost = USD 13.1 M</b></p> <p>Project costs are for <b>only</b> the Lomahasha components of the project as this refers to the 2004 Inception Report document.</p>	Cost Component	Year 1	Year 2	Year 3	Year 4	Year 5	Total	Design/ Supervision	540	167	167	167	167	<b>1208</b>	Construction		2700	2700	2700	2700	<b>10800</b>	Retention		270	270	270	270	<b>1080</b>	<b>Total</b>	<b>540</b>	<b>3137</b>	<b>3137</b>	<b>3137</b>	<b>3137</b>	<b>13088</b>
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<b>Funding Status:</b>	Funds not secured																																			
<b>Status of Funding negotiations:</b>	Suggested approach is to look for a donor in cooperation with co-funded contributions from both governments <sup>4</sup> .																																			
<b>Implementation Progress and Status:</b>	Project work in the Siteka area is almost completed now. The Lomahasha area [Phase 2 of the original project] that was planned as the follow on activity to Siteki has not yet started due to limited funding.																																			
<b>Next Project Preparation Step</b> [ICA Guidelines]	<p><b>Activity</b> SWA – Complete the Preliminary and Detailed Design including capital costs and as well the Operations and Maintenance technical and financial aspects [not referred to in the 2004 Inception Report] and noting that this may change if the project is to be larger than originally planned.</p> <p>MOZ – Carry out a Feasibility Study for the extension across the border to the Namaacha area taking into consideration any needed modifications to the Lomahasha component of the design due to the larger area of distribution now being planned.</p>																																			

<sup>3</sup> Inception Report referenced above

<sup>4</sup> A grant would be ideal. The communities targeted under financially challenged and services would be highly subsidized considering the distance and hydraulic head to be overcome.

	<p><b>Estimated Cost</b>  SWA - Design components - ~ USD 0.5 Million  MOZ – Feasibility USD 0.5 million taking into consideration the new area to be serviced.</p>		
	<p><b>Estimated Start Date and Timeframe</b>  Both components could start in 2012 and should be able to be completed in 12 months.</p>		
<b>Project Risks:</b>	None		
<b>Projected Start Date:</b>	Not determined. As soon as funding available and potentially as early as 2012.	<b>Projected Completion Date:</b>	12 months post funding, tender and award
<b>Reference reports and studies:</b>	Inception Report, E. D. Simelane and Associates (June, 2004), Lomahasha and Siteki Water Supply.		
<b>Project Contact:</b>	<p><b>SADC Secretariat:</b>  Mr. Phera Ramoeli  Senior Program Officer  SADC Directorate of Infrastructure and Service - Water Division  Private Bag 0095, Gaborone, Botswana  Tel: +267 395 1863/ 364 1854  <a href="mailto:water@sadc.int">water@sadc.int</a></p>		
<b>Additional Website References:</b>	Lomahasha-Siteki water supply project forms the backbone of the Sikhuphe water supply development, 2009. <a href="http://www.swsc.co.sz/index.php?option=com_content&amp;task=view&amp;id=38&amp;Itemid=44">http://www.swsc.co.sz/index.php?option=com_content&amp;task=view&amp;id=38&amp;Itemid=44</a> - Last visited August 2011		

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## Directorate of Infrastructure and Services

### Cross Border Water Infrastructure Project

#### PROJECT DATASHEET

#### 12 BORDER TOWNS AND DISTRICTS - WATER SUPPLY & SANITATION:

<b>Project Reference No:</b>	WIIC-2011-XB-5-ZAM/Other MSs: 12 Border Towns/Districts - WSS	<b>Date last updated:</b> <b>By:</b>	September 2011 CBEC – Zambia
<b>Implemented in:</b>	<b>Twelve Border Districts:</b> Kazungula, Siavonga, Luangwa, Nyimba, Chipata, Nakonde, Mpulungu, Nchelenge, Kasumbalesa, Mwinilunga, Zambezi, and Kalabo.		
<b>Project Sponsors:</b>	Ministry of Local Government and Housing (MLGH) / Cooperating Partners		
<b>Sector/Subsector:</b>	Water supply and sanitation		
<b>Lead Agency:</b>	Ministry of Local Government and Housing (MLGH)		
<b>Project Title:</b>	<b>12 Border Towns and Districts – Water Supply &amp; Sanitation</b>		
<b>River Basin/Sub-basin</b>	Zambezi, Luangwa, Chambeshi-Luapula, Lake Tanganyika		
<b>Project Objectives:</b>	<p><b>Overall:</b> “to provide sustainable and equitable access to safe water supply and proper sanitation to meet basic needs for improved health and poverty alleviation for Zambia’s rural population and contribute to achievement of Millennium Development Goal for WSS.” (GRZ/MLGH, 2007: xvi).</p> <p>Two relevant specific objectives:</p> <p>1) <u>Water Supply:</u> increase and improve number of functioning WS facilities in rural areas through systematic investments in new facilities and rehabilitating existing facilities;</p> <p>2) <u>Sanitation:</u> increase and improve the number of proper sanitation facilities in rural areas through promotion of household latrine construction, health and hygiene education and strategic demonstration facilities.</p>		
<b>Location Map:</b>			

**Project Description:**

**Summary**

The project is designed to achieve the above objectives and to contribute towards achieving the overall NRWSSP objective. The project will achieve the objectives through relevant components of the Programme, namely: 1) Water Supply, 2) Sanitation, 4) Operation and Maintenance of Water Points. Component 1 will support Objective 1, Components 2 and 4 will support Objective 2.

**Technical Features:**

**Sixth National Development Plan (SNDP) (MFNP, 2011)**

This programme is expected to construct 6,000 boreholes and re-habilitate 3,445 boreholes and wells by the year 2015. Under sanitation, 305, 274 latrines will be constructed. Under the project, these targets will be prioritized for the 12 border towns earmarked for investment support. The towns and their border locations are:

Kazungula (Zambia-Botswana)	Siavonga (Zambia-Zimbabwe border)
Luangwa (Zambia-Mozambique-Zimbabwe border)	Nyimba (Zambia-Mozambique)
Chipata (Zambia-Malawi)	Nakonde (Zambia-Tanzania)
Mpulungu (Zambia-Tanzania-RD Congo)	Nchelenge (Zambia-DR Congo)
Kalabo (Zambia-Angola: western border)	Kasumbalesa (Zambia-DR Congo)
Mwinilunga and Zambezi (Zambia-Angola: northwestern border),	

The project will undertake new investments as well as rehabilitation of water supply and sanitation facilities in the country. New hand dug wells, boreholes and pit latrines will be constructed during the project period. Facilities that are not functioning will be rehabilitated. This will ultimately increase access to safe water and sanitation which is currently low in the border towns of Zambia (GRZ, 2009: 145). The project will also serve regional tourism, transport and mitigate against cross border water borne diseases in border towns and surrounding areas.

**Component Elements Of The Cross Border Opportunities – 12 Towns/Districts**

Proposed for the cross border aspects at these locations is carrying out a Reconnaissance Evaluation at each of the 12 locations with an assessment in that study of the extent of activities needed to move ahead to providing water and sanitation services to both sides of the border. This would be the initial step that could be imagined for a program through the completion of Feasibility Studies over the next 30 months as shown in the following table.

The program would be carried out with the critical elements of sustainable motivation, operations and maintenance and would include the important participation of each local community in the process from the outset. This is suggested as an essential and key element of the success of the programme.

Step	Key Activity	Cost per Site [USD '000]	Sites [#]	Total Cost [USD '000]	Duration [mo]
1	Reconnaissance Evaluation	50k	12	600k	6-12
2	Pre-Feasibility Study	200k	10	2 000k	12
3	Financial and Investment Analysis	100k	8	800k	12
All				3 400k	30-36

**Economic and Social.**

To accelerate access to clean and safe water and improved sanitation facilities in bid to attain the MDG for water supply and sanitation.

**Environmental Issues.**

Adequate sanitation facilities will minimise pollution of surface and groundwater.

**Financial Analysis.**

Cost to carry out the works have been done but no details are available as to where those costs have come from. There is no updated financial analysis that has been available in the records observed or found to date related to these specific locations but that would be started with the next reconnaissance phase.

Some funding details were obtained in the National Rural Water Supply and Sanitation Programme document of 2007 prepared by GRZ/MLGH (2007: 80-81) for ongoing projects listed largely by province and sector. As such, it was difficult to get detailed financial information by district for various projects to be carried out as part of a general plan.

<b>Estimated Project Cost:</b>	ZMK 923 Billion [~ USD 184 M]  For the prioritized 12 cross border towns and districts funding, the Zambian components were estimated simply as 12/72 of ZMK923 Billion to arrive at ZMK153 Billion or USD 30 Million as the project's total cost. Additional costs could occur for the other member state's component contributions.		
<b>Funding Status:</b>	GRZ - 23% of the total funding Cooperating Partners – 61% of the total funding (UNICEF as Lead) Local Authorities – 6% of the total funding Community – 9% of the total funding Because funding is not provided once as a lump sum, it is reasonable to expect that this pledged funding will be provided during the total project period for all components. There is however, no current planned funding for the further next steps suggested above and described in Next Project Preparation Step below.		
<b>Status of Funding negotiations:</b>	Project is ongoing in different provinces with funding from GRZ/MLGH and Cooperating partners, (GRZ/MLGH, 2007: 80-81)		
<b>Implementation Progress and Status:</b>	UNICEF – construct and rehabilitate water facilities – USD 18 M. KFW – boreholes, hand dug wells, Eastern/Western provinces – USD 11.2 M and USD 7.2 M Water Aid – Luapula Province WSS programme – UK £ 3.0 M DANIDA – Implement RWSS in 12 districts in Western/Southern Provinces DKK – 121 M  How these funds have been applied to the national programme, however, is not clear with respect to the purposes of this opportunity and would be discussed with the pertinent ministries when the next step is undertaken.		
<b>Next Project Preparation Step:</b> [ICA Guidelines]	<b>Activity</b> Reconnaissance Site Evaluations [12] to verify the concept with the outcome being a list of the likely essential elements of each site's follow up pre-feasibility study.		
	<b>Estimated Cost</b> Range of USD 40k to 60k per site with an Average of 50k per site so a total for all sites of ~ USD 0.6 M.		
	<b>Estimated Start Date and Timeframe</b> 2012 – 9 to 12 months to complete.		
<b>Project Risks:</b>	<b>Financial risks include:</b> <ul style="list-style-type: none"> <li>It was an assumption that Government and CPs will be able to raise the funds necessary to implement the Programme.</li> <li>It is a risk that some District Councils do not have sufficient financial capacity to manage Programme funds and to procure services. The risk is assessed low to medium and the capacity development component is designed to minimise this risk.</li> <li>Corruption at all levels is a risk. This risk is assessed to be medium to high and it will be mitigated by use of the Government and CP procedures for anti-corruption.</li> </ul>		
<b>Projected Start Date:</b>	2006	<b>Projected Completion Date:</b> [all components of Zambian National Plan]	2015
<b>Reference reports and studies:</b>	1) GRZ/MLGH, 2007: National Rural Water Supply and Sanitation Programme, Lusaka, 112 pp. 2) MFNP, 2011: Sixth National Development Plan -2011-2015. 3) National Rural Water Supply and Sanitation Program. Appraisal Report 2006 ZM-2006-114-EN-ADF-ZAMBIA-AR-NATIONAL-RURAL-WSS-PROGRAM.PDF (Major aspects of project prior to publication of 2007 programme ['06-'15]. Hard copy document available).		
<b>Project Contact:</b>	<b>SADC Secretariat:</b> Mr. Phera Ramoeli Senior Program Officer SADC Directorate of Infrastructure and Service - Water Division Private Bag 0095, Gaborone, Botswana Tel: +267 395 1863/ 364 1854 <a href="mailto:water@sadc.int">water@sadc.int</a>		
<b>Additional Website References:</b>	None specific to this project.		

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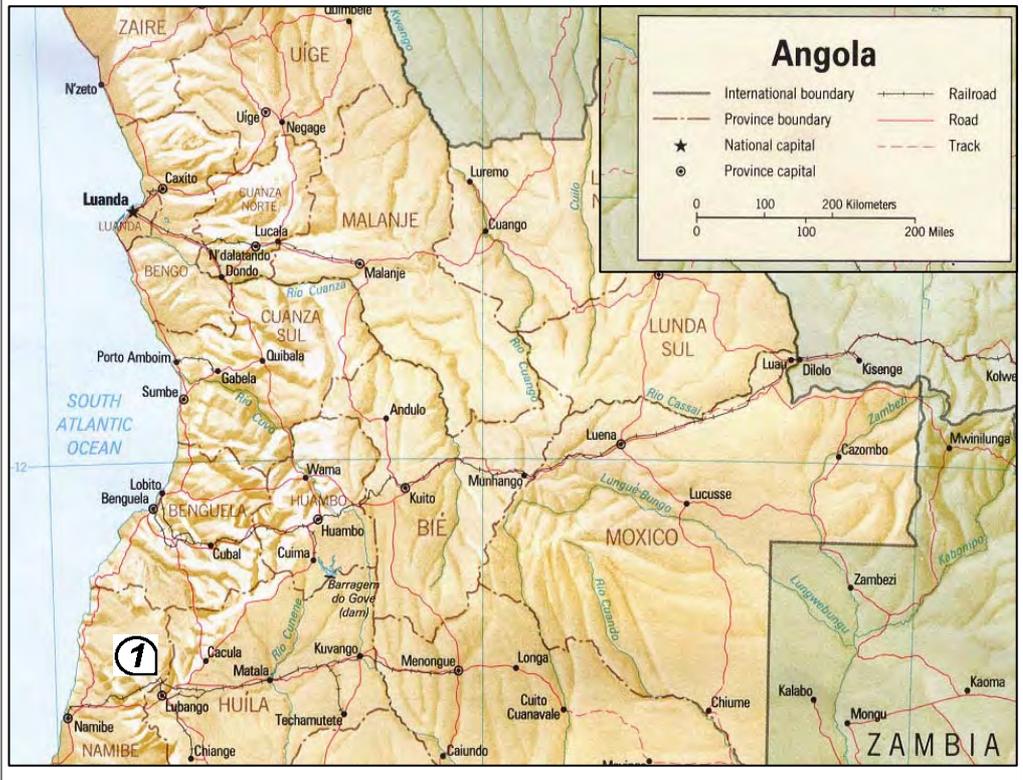
**Directorate of Infrastructure and Services**

**Angola Water Infrastructure Project**

**Angola Priority # 1 Project Datasheet  
Lubango – Phase 2: Water Supply and Sanitation**

<b>Project Reference No:</b>	WIIC-2011-P1-1-ANG: Lubango Phase 2 – Water Supply & Sanitation	<b>Date last updated: By:</b>	August 2011 CBEC - Angola
<b>Implemented in:</b>	Provincial Directorate of Energy and Water		
<b>Project Sponsor:</b>	Ministry of Energy and Water (MINEA)		
<b>Sector/Subsector:</b>	Water supply and Sanitation		
<b>Lead Agency:</b>	MINEA		
<b>Project Title:</b>	<b>Lubango – Phase 2: Water Supply and Sanitation</b>		
<b>River Basin:</b>	Kunene		
<b>Project Objectives:</b>	Water supply and Sanitation Lubango, Huila province		

Location Map:



<b>Project Description:</b>	<p><b>Summary</b> The principal purpose of this project is to rehabilitate and extend the water system for city of Lubango, considered the second large city in Angola.</p> <p>The urgent reconstruction works for water supply and sanitation are needed as basic requirement for the development of the city and region.</p> <p>The details of the project feasibility are in the water supply and sanitation Master Plan for Lubango. The project has phase 1 and phase 2.</p> <p>This project was selected by SADC to be RSWIDP priority project number 8 in 2006.</p>
	<p><b>Technical Features:</b> The project construction activities include :</p> <ul style="list-style-type: none"> <li>➤ Rehabilitation of all components of water supply,</li> <li>➤ Drilling of an additional borehole at “Nossa Senhora do Monte” Wellfield,</li> <li>➤ Construction of a water reservoir at “Esplanada da Capela” and</li> <li>➤ For the sanitation network, installation of 15 Km of sewer interceptors.</li> </ul> <p>The project will be complemented by a monitoring project for the development of groundwater in the Tundavala mountains.</p>
	<p><b>Economic and Social.</b> The benefit from the implementation would be a significant the population in general. Improvement of the system will bring industrial growth and increase wealth to the population, particularly with to the growth of agro-food and others industries with associated increase in employment opportunities. The tourism industry is growing rapidly.</p>
	<p><b>Environmental Issues.</b> This project will have very little impact on the environment since it will help the the city to implement the integrated water resources management (IWRM).</p>
	<p><b>Financial Analysis.</b> The actual estimated investment of this project is Euro 90 million instead of 78 million USD that was presented in 2006.</p>
<b>Estimated Project Cost:</b>	<p>Discussions with Ministry staff in Sept. 2011 have indicated that it is currently expected that for Phase 2, which is still to be tendered, the budget is ~ USD 70 M [EUR 50 M] of which ~USD 47 M [EUR 35 M] are for further measures in the water supply system and ~USD 21 M [EUR 15 M] are for basic sanitation / waste water treatment stations.</p> <p>Phase 2 is expected to be carried out through until 2015/16 and to be proceeded by appropriate updates to the existing planning and the Final Design prior to preparation of the tender documents and the bid request. Additional details of this project may emerge at the Angola Infrastructure Dialogue that is being held in Luanda in mid-Sept. 2011.</p>
<b>Funding Status:</b>	<p>The Angola Government negotiated with German credit Agency Ausfirkreditgeschaft for funding Phase 1. The status of funding for Phase 2 is not defined.</p>
<b>Status of Funding negotiations:</b>	<p>Government of Angola to negotiate with other international agencies for Phase 2.</p>
<b>Implementation Progress and Status:</b>	<p>The Phase 1 project was launched in March 2011; the Germany company Gauff Engineering is doing the management of the project, that will make all management plans.</p> <p>Gauff has details of the current project on their website [Reference at end of document].</p>
<b>Next Project Preparation Step [ICA Guidelines]:</b>	<p><b>Activity</b> Not defined for Phase 2 as no next step details were able to be obtained by the CBEC.</p>
	<p><b>Estimated Cost</b> No estimated cost is provided as next step cannot be determined at this time.</p>
	<p><b>Estimated Start Date and Timeframe</b> Next step not defined in terms of start or duration.</p>

<b>Project Risks:</b>	The risk to not implement the project in the period proposed will increase the quantity of people without clean water and water related diseases, there will not be conditions suitable to establish new industry as water is essential for their use and in manufacturing and agricultural [peri-urban] production.		
<b>Projected Start Date:</b>	Phase 1 – March 2011; To be determined for Phase 2	<b>Projected Completion Date:</b>	Phase 2 is expected to extend to 2015-2016
<b>Reference reports and studies</b>	<ol style="list-style-type: none"> <li>1) Investment program for ministry of Energy and water until 2016, projecto Reabilitação e Reforço do sistema de Abastecimento de Água da cidade do Lubango (Phase 1) page 13 [Phase 1 details only].</li> <li>2) Angola newspaper “Jornal de Angola” of 28 February 2011 article title” Novo sistema de distribuição garante mais água ao Lubango” [Phase 1 only]</li> <li>3) SADC RSWIDP part 2 final report June 2006. [Historical perspective]</li> </ol>		
<b>Project Contact:</b>	Eng.Lucrecio Costa, National Director of Water supply and Sanitation of Ministry of Energy and Water. E-mail : <a href="mailto:lucreciocosta@gmail.com">lucreciocosta@gmail.com</a> , Cellphone : +244 923320065		
<b>Other pertinent references:</b>	<ol style="list-style-type: none"> <li>1. CBEC Conversation with Mr.Lucrecio da Costa National Director of Water supply and Sanitation was by phone in May 2011</li> <li>2. CBEC Conversation with Eng. Manuel Quintino, National Director of water Resources was by phone and meeting in his office in May, June and July 2011.</li> </ol>		
<b>Additional Web References:</b>	<p><b>Council of ministers approves GAUFF-project in Lubango - 2011</b>  <a href="http://www.gauff.net/en/news/articles/article/ministerrat-von-angola-genehmigt-gauff-projekt-in-lubango.html">http://www.gauff.net/en/news/articles/article/ministerrat-von-angola-genehmigt-gauff-projekt-in-lubango.html</a> Last Visited August 2011</p> <p><b><u>Wastewater Infrastructure in Angola – Kunene River Awareness Kit</u></b>  - Last Visited August 2011</p> <p><b><u>Lubango Peri-urban Social Mobilization and Hygiene Education Project Phase III – LUBAGUA, 2001.</u></b> [guest/guest access – Last visited August 2011]</p> <p><b>National Investment Brief ANGOLA, 2008</b>  <a href="http://www.sirtewaterandenergy.org/docs/reports/Angola-Draft2.pdf">www.sirtewaterandenergy.org/docs/reports/Angola-Draft2.pdf</a> - Last Visited August 2011</p> <p><b>Lubango's Water Supply System Reform Launched - 2011</b>  <a href="http://allafrica.com/stories/201103180903.html">http://allafrica.com/stories/201103180903.html</a> - Last Visited August 2011</p> <p><b>Angola business and investment climate overview - 2011</b>  <a href="http://www.google.co.za/search?q=angola+investment+brief&amp;ie=utf-8&amp;oe=utf-8&amp;aq=t&amp;rls=org.mozilla:en-US:official&amp;client=firefox-a">http://www.google.co.za/search?q=angola+investment+brief&amp;ie=utf-8&amp;oe=utf-8&amp;aq=t&amp;rls=org.mozilla:en-US:official&amp;client=firefox-a</a> - Last Visited August 2011</p>		

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## Directorate of Infrastructure and Services

### Botswana Water Infrastructure Project

#### Botswana Priority #1 Project Datasheet Limpopo Basin Joint Water Monitoring

<b>Project Reference No:</b>	WIIC-2011-P1-2-BOT: Limpopo Basin Joint Monitoring	<b>Date last updated:</b> <b>By:</b>	August 2011 CBEC - Botswana
<b>Implemented in:</b>	Botswana, South Africa, Mozambique and Zimbabwe		
<b>Project Sponsors:</b>	Limpopo River Basin Commission- Governments of Botswana, Mozambique, South Africa and Zimbabwe.		
<b>Sector/Subsector:</b>	Water Resources Monitoring		
<b>Lead Agency:</b>	The LIMCOM Interim Secretariat		
<b>River Basin:</b>	Limpopo		
<b>Project Title:</b>	Limpopo Basin Joint Water Monitoring		
<b>Project Objectives:</b>	<ul style="list-style-type: none"> <li>To promote sustainable water resources management and allocation in the Middle Upper and Limpopo Basin</li> <li>To institute continuous a water quality monitoring programme in the Upper and Middle Limpopo Basin</li> </ul>		
<b>Location Map:</b>			

<b>Project Description:</b>	<p><b><u>Summary</u></b>  The Upper and Middle Limpopo River Basin has witnessed increased development with numerous large scale irrigation developments having been implemented in the region in recent years. This has occurred with little or no coordination among stakeholders in Botswana, Mozambique, South Africa and Zimbabwe in the planning and implementation of these projects resulting in uncoordinated draw-downs on the water resources in the basin. The concomitant environmental impacts characterised by increasing levels of water pollution have also never been addressed jointly by the four countries.</p> <p>Increasing concern over the state of the river basin has recently resulted in the farming community in South Africa approaching their counterparts in Botswana with a suggestion that they jointly approach their respective governments to institute water quality and water allocation monitoring along these stretches of the river system. Initial government level contacts have been made in response to this call by the stakeholders. The two governments have agreed in principle to initiate a river monitoring exercise in the middle reaches of the Limpopo Basin aimed at advising relevant authorities on the potential social, economic and environmental consequences of current practices. An initial meeting between the two countries has already handled with another one scheduled for July 2011.</p> <p>Botswana and South Africa also tabled this matter at the recent Limpopo River Basin Commission (LIMCOM) meeting in Maputo resulting in the mobilization of both Mozambique and Zimbabwe to participate in the program. Under the auspices of LIMCOM a program aimed at harmonizing water quality standards and monitoring processes will be instituted as will the development of a data sharing protocol among all four riparian states.</p> <p>In addition to data sharing and water quality monitoring, the four countries have also agreed to develop and implement a stakeholder engagement strategy to facilitate the sharing of best practices across the whole basin.</p> <p>The total cost of these initiatives is estimated at 713, 000 USD. Resource mobilization for this initiative will be coordinated through the Limpopo Basin Commission.</p>
	<p><b><u>Technical Features:</u></b>  While this proposed project is not an infrastructure development project in its own right, it is an initiative that will inform the extent to which the social, economic and environmental implications the development and utilization of water resources linked infrastructure can have on an area. The data collected on water resources management and pollution will also be of great importance in the debates on equitable water allocation across all user sectors in the basin. The stakeholders in the basin consider this to be an important initiative given the paucity of water resources in the region. Critical aspects to be monitored and reported upon include, water pollution, soil loss and sustainable development. Data sharing across all four countries will be imperative if sustainable water resources management is to be achieved in the Limpopo River Basin.</p>
	<p><b><u>Economic and Social.</u></b>  The water of the Limpopo River has been exploited for irrigated farming in the Limpopo Province of South Africa for many years with limited similar development on the Botswana side. If pollution levels are allowed to increase unabated there will be serious social and economic impacts on the residents of the basin. Increased pollution will result in reduced availability of potable water and general despoilment of the upper and Middle sections of the river. Uncontrolled pollution will also compromise the development promise brought about by the river which if realised would contribute to poverty alleviation, the attainment of the two countries' development objectives and the Millennium Development Goals.</p>
	<p><b><u>Environmental Issues.</u></b>  Developments in the Middle and Upper reaches of the Limpopo Basin include settlements, agriculture, mining and investments in the power sector. Continuous monitoring of the state of river systems is a necessary and important aspect of river basin management. The joint monitoring programme proposed under this initiative will promote the sustainable management of the water resources in the Limpopo River basin.</p>
	<p><b><u>Financial Analysis.</u></b>  The total cost of this proposed project is estimated at 713,000.00 USD. Representatives from the four countries recently met in Maputo Mozambique and deliberated on the various aspects of the project. The record of the minutes of the Commission will provide a comprehensive outline of what will need to be put in place to realise the project objectives.</p>
<b>Estimated Project Cost:</b>	USD 713, 000.

<b>Funding Status:</b>	Funding has been provided on an ad hoc basis by the Governments of Botswana and South Africa for meetings and reconnaissance visits to the project area. No funding has been secured for the comprehensive basin wide monitoring and stakeholder engagement initiative. Botswana has already committed its resources to the internal and other initiatives covered under the national Development Plan 10. It is therefore proposed that this proposed project be submitted for support from international sources especially given the fact that it is located in a transboundary context. While it is initiated by Botswana and South Africa the project will have implications for the state of the river in the downstream and riparian countries of Zimbabwe and Mozambique.		
<b>Status of Funding negotiations:</b>	No funding negotiations initiated as yet.		
<b>Implementation Progress and Status:</b>	Initial meetings have been held between officials from the two countries with another meeting and site visit scheduled for early July 2011. The monitoring initiative still has to be scoped out. The project has been discussed at the LIMCOM meetings.		
<b>Next Preparation Step:</b>	<b>Activity</b> Finalize design, procure equipment and instrumentation and construct monitoring stations.		
	<b>Estimated cost</b> USD 0.7 M		
	<b>Estimated Start and Timeframe</b> 2011. From 12-18 months		
<b>Project Risks:</b>	The major risk that could affect the project is that the two countries fail to agree on joint monitoring actions and water users resort to unilateral actions. This would compromise the integrity of the river systems.		
<b>Projected Start Date:</b>	2011	<b>Projected Completion Date:</b>	2016
<b>Reference reports and studies:</b>	No studies have been conducted as yet but a report by the Botswana Department of Water Affairs Water Pollution expert is available for dissemination.		
<b>Project Contact:</b>	<p>Director of Water Affairs P.O Box 0029 Gaborone Botswana. +267-3952241 Att: Mrs Bogadi Mathangwane</p> <p><b>SADC Secretariat:</b> Mr. Phera Ramoeli Senior Program Officer SADC Directorate of Infrastructure and Service - Water Division Private Bag 0095, Gaborone, Botswana Tel: +267 395 1863/ 364 1854 <a href="mailto:water@sadc.int">water@sadc.int</a></p>		
<b>Additional Website References:</b>	<p>Boroto, R.A.J. July 2000. <i>Limpopo River: Steps Towards Sustainable and Integrated Water Resources Management</i>, Department of Water Affairs and Forestry South Africa, Pretoria</p> <p>Mhizha A, Musariri M, Madamombe E and Tererai. Preliminary Water Resources Assessment for the Limpopo River Basin <a href="http://www.waternetonline.ihe.nl/challengeprogram/IR29%20Mhizha%20prelim%20water%20res.pdf">http://www.waternetonline.ihe.nl/challengeprogram/IR29%20Mhizha%20prelim%20water%20res.pdf</a> last visited – 18 Aug 2011</p> <p>M. Murovh and Moloko Matlala. Pros and cons of managing shared river basins <a href="http://www.inweb.gr/twm4/abs/MUROVHI%20Mashudu.pdf">www.inweb.gr/twm4/abs/MUROVHI%20Mashudu.pdf</a> last visited – 18 Aug 2011</p>		

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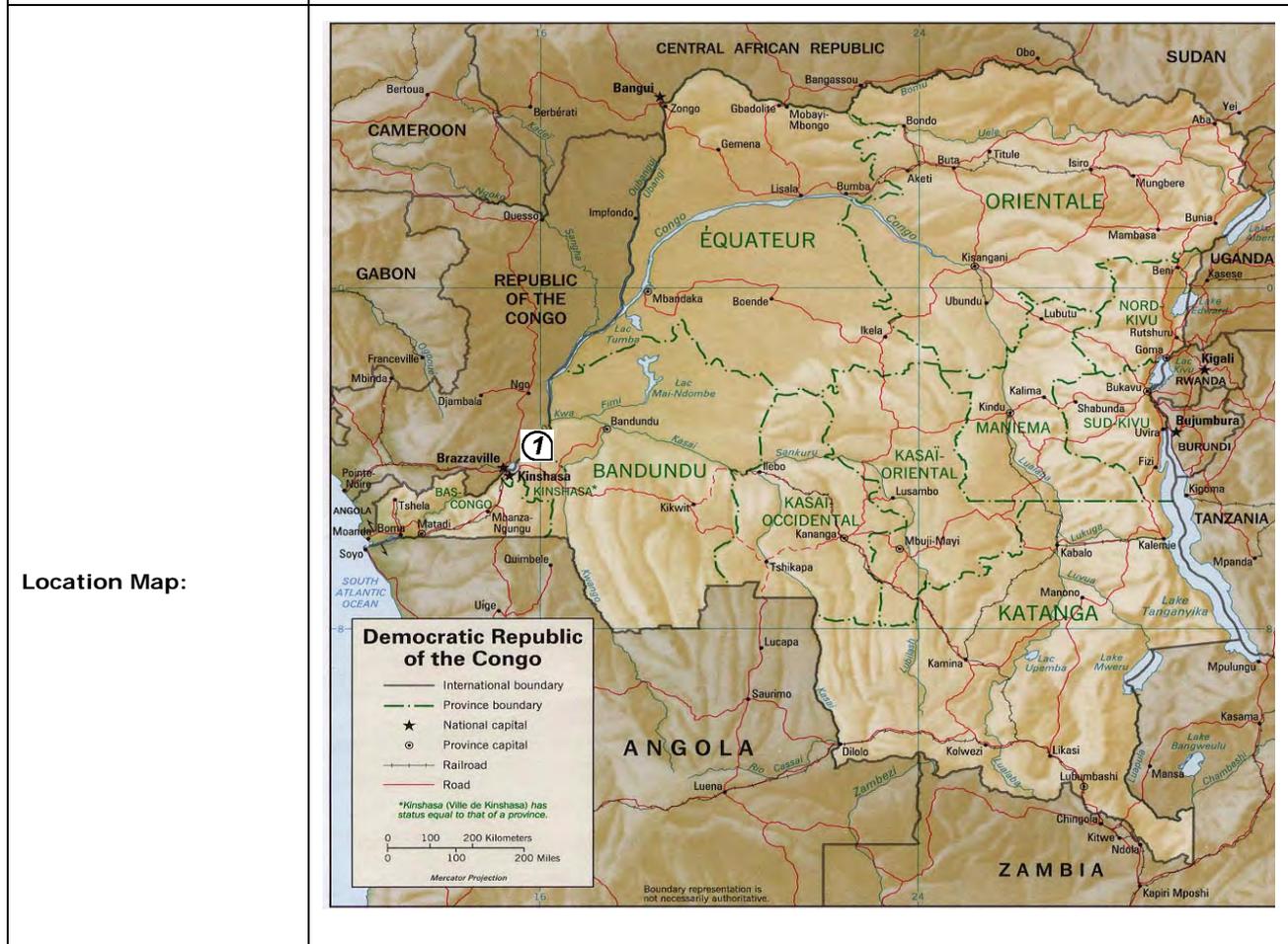


**Directorate of Infrastructure and Services**

**DRC Water Infrastructure Project**

**DRC Priority #1 Project Datasheet  
Kinshasa and Surrounding Region Water Supply & Sanitation**

<b>Project Reference No:</b>	WIIC-2011-P1-3-DRC : Kinshasa - WSS	<b>Date last updated: By:</b>	August 2011 CBEC - DRC
<b>Implemented in:</b>	Democratic Republic of Congo (DRC)		
<b>Project Sponsors:</b>	Ministère de l'Énergie and REGIDESO		
<b>Sector/Subsector:</b>	Water Supply & Sanitation		
<b>Lead Agency:</b>	Regie De Distribution D'eau De La Republique Democratique Du Congo -REGIDESO		
<b>River Basin:</b>	Congo		
<b>Project Title:</b>	Kinshasa - Water Supply & Sanitation		
<b>Project Objective:</b>	To supply water supply and sanitation services for municipalities of Kinshasa.		





<b>Next Project Preparation Step:</b> [ICA Guidelines]	<b>Activity</b> There is little specific activity able to be noted regarding the projects next steps according to the IC guidelines. What has been noted is that there needs to be an update of the financial analysis.		
	<b>Estimated Cost</b> Various estimates from the two figures mentioned above to about USD 220 Million.		
	<b>Estimated Start Date and Timeframe</b> Not yet determined		
<b>Project Risks :</b>	None have been identified.		
<b>Projected Start Date:</b>	Not yet identified	<b>Projected Completion Date:</b>	Not yet identified
<b>Reference reports and studies:</b>	<ol style="list-style-type: none"> <li>1. Réhabilitation et renforcement du réseau de distribution d'eau potable de Kinshasa REGIDESO/DG. Novembre 2004. Requête de financement pour le réseau de la ville de Kinshasa.</li> <li>2. Etude ICEA MAZRS (juillet 2007).</li> <li>3. Etude régionale du Plan de Développement du secteur de l'eau potable et de l'assainissement (1991-2010). Alimentation en eau potable de Kinshasa (OTUI Octobre 1991).</li> </ol>		
<b>Project Contacts:</b>	REGIDESO/DG - Mr. MUNDUKU Tél. +243 9999 0238 - Mr. MUNENDA Tél. +243 884 5125		
<b>Additional Website References:</b>	<p>None specific to this project reference; others related to the subject in the area are provided for information purposes only.</p> <p>La REGIDESO augmente sa capacité de distribution d'eau, 2009  <a href="http://www.berger-media.info/articleView.php?category_id=22&amp;article_id=717">http://www.berger-media.info/articleView.php?category_id=22&amp;article_id=717</a> – last visited – Aug 2011</p> <p>OPPORTUNITES D'INVESTISSEMENTS EN RDC Fiches de Projets, 2010  <a href="http://www.anapi.org/PDF/fiches_projets_2010.pdf">http://www.anapi.org/PDF/fiches_projets_2010.pdf</a> - Last visited Aug 2011</p> <p>Eau, assainissement et hygiène dans les quartiers périphériques de Kinshasa, 2008  <a href="http://www.afd.fr/home/pays-d-intervention-afd/afrique-sub-saharienne/pays-afrique/republique-democratique-du-congo/projets-rdc/eau-assainissement-hygiene">http://www.afd.fr/home/pays-d-intervention-afd/afrique-sub-saharienne/pays-afrique/republique-democratique-du-congo/projets-rdc/eau-assainissement-hygiene</a> – last visited – Aug 2011</p> <p>Le Secteur de l'EAU en RDC, 2008  <a href="http://www.beltrade-congo.be/documents/PMPTR_eau.pdf">http://www.beltrade-congo.be/documents/PMPTR_eau.pdf</a> – last visited – Aug 2011</p> <p>Table ronde en eau et assainissement dans la ville de Kinshasa: l'objectif est de porter le taux de desserte à 100 % à l'horizon 2030, 2010  <a href="http://www.beltrade-congo.be/index2.php?page=6088">http://www.beltrade-congo.be/index2.php?page=6088</a> – last visited – Aug 2011</p> <p>La RDC invite les investisseurs à développer le secteur de l'eau et de l'assainissement, 2010  <a href="http://www.beltrade-congo.be/index2.php?page=5847">http://www.beltrade-congo.be/index2.php?page=5847</a> – last visited – Aug 2011</p> <p>Lancement des travaux de réhabilitation du réseau de distribution d'eau dans la commune de Kinshasa, 2009  <a href="http://www.beltrade-congo.be/index2.php?page=4975">http://www.beltrade-congo.be/index2.php?page=4975</a> – last visited – Aug 2011</p>		

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**Directorate of Infrastructure and Services**

**Lesotho Water Infrastructure Project**

**Lesotho Priority #1 Project Datasheet  
Lesotho Lowlands Water Supply Scheme - Zone 1 <sup>1</sup>**

<b>Project Reference No:</b>	WIIC-2011-P1-4-LES: Lesotho Lowlands WS	<b>Date last updated By:</b>	August 2011 CBEC - Lesotho																				
<b>Implemented in:</b>	Lesotho																						
<b>Project Sponsor:</b>	Lesotho Water Commission																						
<b>Sector/Subsector:</b>	Water Supply and Sanitation																						
<b>Lead Agency:</b>	Lesotho Water Commission																						
<b>Project Title:</b>	Lesotho Lowlands Water Supply Scheme – Zone 1																						
<b>River Basin/Sub-basin and or Aquifer:</b>	Hololo River – Caledon River – Orange-Senqu Basin																						
<b>Project Objective/s:</b>	Water Supply services for the Botha-Bothe Town and adjacent villages in the North of Lesotho; The main source of water will be the Hololo River but additional sources will be needed during the severe droughts.																						
<b>Location Map</b>	<p><b>LOWLANDS WATER SCHEME TARGETTED POPULATIONS</b></p> <p><b>YEAR 2020 TOTAL: 1,264,065</b></p> <table border="1"> <thead> <tr> <th>Zone</th> <th>Population (Year 2020)</th> </tr> </thead> <tbody> <tr> <td>Zone 1</td> <td>106,831</td> </tr> <tr> <td>Zone 2</td> <td>193,251</td> </tr> <tr> <td>Zone 3</td> <td>95,357</td> </tr> <tr> <td>Zone 4</td> <td>613,678</td> </tr> <tr> <td>Zone 5</td> <td>75,659</td> </tr> <tr> <td>Zone 6</td> <td>82,820</td> </tr> <tr> <td>Zone 7</td> <td>52,216</td> </tr> <tr> <td>Zone 8</td> <td>44,253</td> </tr> <tr> <td><b>Total</b></td> <td><b>1,264,065</b></td> </tr> </tbody> </table>			Zone	Population (Year 2020)	Zone 1	106,831	Zone 2	193,251	Zone 3	95,357	Zone 4	613,678	Zone 5	75,659	Zone 6	82,820	Zone 7	52,216	Zone 8	44,253	<b>Total</b>	<b>1,264,065</b>
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<sup>1</sup> Documentation supporting this Priority Project was obtained and reviewed by the Lesotho Country Based Expert Consultant in May and June 2011. The reference[s] associated with the project as reported are on file at the Lesotho Water Commission, are [not] electronically available at this time and is [are] as in the reference reports and studies as identified at the end of the datasheet: *Additional data related to the project was obtained from interviews and other reports during May and June 2011 including: The Lesotho Water and Sanitation Sector Programme: The Lowlands Water Supply Scheme – A Proposal for International Donor Funding Assistance*

<b>Project Description:</b>	<p><b><u>Summary</u></b>  The project will supply the Botha Bothe town and adjacent villages with water. The project is designed in such a way that treated water will be delivered to bulk storage reservoirs from where the settlements will be supplied. The strategic storage will provide reliability during system repairs and power outages. Future expansions are provided for in the design of the project. Where possible, the expansion will be through modular design e.g. twining storage, modular treatment works and pumping stations. In essence, the facilities can be easily upgraded by adding more components. The existing infrastructure will be integrated where appropriate or possible but where the systems are very small or old/unreliable, these will be superseded by the project infrastructure.</p>
	<p><b><u>Technical Features:</u></b>  The Project is designed around five standardised components:</p> <ul style="list-style-type: none"> <li>• River intakes to abstract raw water from the Hololo River</li> <li>• Water treatment plant to convert the raw water into potable water</li> <li>• Pipeline to transport the potable water to the demand centres</li> <li>• Pumping station to lift the potable water to the demand centres</li> <li>• Bulk reservoir to balance the fluctuations of the demand with the production schedule and located for gravity distribution to the town and adjacent villages</li> </ul>
	<p><b><u>Economic and Social.</u></b>  The infrastructure to be developed will provide water for drinking and sanitation to the Botha-Bothe town and adjacent villages. This is planned to benefit a total of 106,800 people to the year 2020. Accruing from the project will also be socio-economic and health benefits to the target population in the area. The project will also ease the demand pressures from the industrial firms in town too, with the employment benefits further accruing to the town population.</p>
	<p><b><u>Environmental Issues.</u></b>  The full environmental impact assessment showed that the project will have very little impact on the environment.</p>
	<p><b><u>Financial Analysis.</u></b>  The comprehensive economic and financial evaluation of the zone showed that the project is financially viable and sustainable based upon certain funding assumptions. While the project cost of this zone is estimated at M578 million, funding has not been secured. The type and terms of funding that will be obtained will determine the actual tariffs required from the sustainability point of view.</p>
<b>Estimated Project Cost:</b>	The construction cost is estimated at M578 million (USD 78 M). This includes contingencies; preliminary and general items; planning design and supervision; power supply, and any further EIA requirements.
<b>Funding Status:</b>	Funding has not been secured for this Zone as yet.
<b>Status of Funding negotiations:</b>	The project documents are complete awaiting funding that is still being sourced.
<b>Implementation Progress and Status:</b>	<ul style="list-style-type: none"> <li>• The Feasibility Study and the Preliminary Designs of the whole Low Lands Water Scheme were completed in September 2004.</li> <li>• The institutional and policy framework were completed in February 2007 with finalisation of The Lesotho Water and Sanitation Policy.</li> <li>• The legal and regulatory frameworks were finalised in 2008 with the passing of the Lesotho Water Act of 2008, the Lesotho Electricity and Water Authority of 2008, and the Water and Sewerage Authority Vesting Bill of 2008.</li> <li>• Detailed design drawings and the tender dossiers of all the eight zones of the Low Lands Bulk Water Supply Project have been approved by the relevant government departments</li> <li>• While Zones 4 &amp; 5 of the Low Lands Water Scheme is under way, the other zones are complete from the proposal view and awaiting funding.</li> </ul>
<b>Next Project Preparation Step [ICA Guidelines]</b>	<p><b>Activity</b>  ICA phase 4 components are mostly completed through Detailed Design. Construction phase is the next step after Bid Documents have been prepared and a tender process carried out.</p> <p>An update to the financial analysis may be needed as the status of that from 2004 was not able to be determined.</p>

	<b>Estimated Cost - Construction</b> USD 78 Million		
	<b>Estimated Start Date and Timeframe</b> As soon as possible. 36 to 48 months following award.		
<b>Project Risks:</b>	There are currently no risks envisaged except for administrative delays.		
<b>Projected Start Date:</b>	To be determined after conclusion of funding arrangements	<b>Projected Completion Date:</b>	Conditional on Secured Funding
<b>Reference reports and studies:</b>	The Lesotho Water and Sanitation Sector Programme: The Lowlands Water Supply Scheme – A Proposal for International Donor Funding Assistance. Available from the Lesotho Water Commission.		
<b>Project Contact:</b>	<b><u>Lesotho Water Commission:</u></b> Mr E. Lesoma Tel (w): +266 22 320127 Cell: +266 58 883060 email: <a href="mailto:emmanuel.lesoma@gmail.com">emmanuel.lesoma@gmail.com</a> ; <a href="mailto:lwsip.lesoma@yahoo.com">lwsip.lesoma@yahoo.com</a>		
<b>Additional Website References:</b>	<b>The Lesotho Lowlands Water Supply Scheme</b> <a href="http://www.gov.ls/articles/2004/LLW_Supply_Scheme.htm">http://www.gov.ls/articles/2004/LLW_Supply_Scheme.htm</a> - last visited August 2011		

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**Directorate of Infrastructure and Services**

**Malawi Water Infrastructure Projects**

**Malawi Priority #1 Datasheet  
Mombezi Dam - Multipurpose**

<b>Project Reference No:</b>	WIIC-2011-P1-6-MAL: Mombezi Dam	<b>Date last updated: By:</b>	August 2011 CBEC - Malawi
<b>Implemented in:</b>	Malawi		
<b>Project Sponsor:</b>	The Ministry for Irrigation and Water Development.		
<b>Sector/Subsector:</b>	Water Supply, Irrigation and Fisheries		
<b>Lead Agency:</b>	Blantyre Water Board under the Ministry for Irrigation Water and Sanitation		
<b>Project Title:</b>	Mombezi Multipurpose Dam [Consultancy services / construction]		
<b>River Basin:</b>	Mombezi River in Shire Basin		
<b>Project Objectives:</b>	To construct a Blantyre water sources from the Mombezi dam; supply the city with adequate raw water and also use the water for irrigation and fisheries development.		

**Location Map:**



<b>Project Description:</b>	<p><b>Summary:</b> The Blantyre Water Board (BWB) is responsible for water supply to in Blantyre city and surrounding areas. Currently the city is experiencing a mayor water shortage, which will be mitigated by building the Mombezi Multipurpose Dam in the Shire Basin. The dam would be able to store 69.5 Mm<sup>3</sup> of water to supply water for drinking purposes, irrigation and for the development of fisheries. Mombezi Dam is phase 1 in the development of Blantyre's New Raw Water Resource Scheme.</p>																		
	<p><b>Technical Features:</b> The main technical characteristics Mombezi Multipurpose Dam are as follows:</p> <table> <tr> <td>Average Annual Run-off</td> <td>:</td> <td>28.51 M m<sup>3</sup></td> </tr> <tr> <td>T20 Average Run-off</td> <td>:</td> <td>11.26 M m<sup>3</sup></td> </tr> <tr> <td>Maximum Available Reservoir Storage</td> <td>:</td> <td>69.51 M m<sup>3</sup></td> </tr> <tr> <td>Height of dam</td> <td>:</td> <td>31 m</td> </tr> <tr> <td>Surface area of reservoir</td> <td>:</td> <td>303.10 ha</td> </tr> <tr> <td>Reservoir area per million Cubic meter water storage:</td> <td>:</td> <td>4 m<sup>2</sup>/10<sup>6</sup> m<sup>3</sup></td> </tr> </table>	Average Annual Run-off	:	28.51 M m <sup>3</sup>	T20 Average Run-off	:	11.26 M m <sup>3</sup>	Maximum Available Reservoir Storage	:	69.51 M m <sup>3</sup>	Height of dam	:	31 m	Surface area of reservoir	:	303.10 ha	Reservoir area per million Cubic meter water storage:	:	4 m <sup>2</sup> /10 <sup>6</sup> m <sup>3</sup>
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Reservoir area per million Cubic meter water storage:	:	4 m <sup>2</sup> /10 <sup>6</sup> m <sup>3</sup>																	
<p><b>Economic and Social:</b> Many agricultural activities provide subsistence to families living on the banks of Mombezi River. These farming activities include the growing of maize, cassava, peas, beans, pigeon peas, vegetables, sugarcane, banana and tobacco seedlings. Fruit trees such as mangoes, oranges, guavas and avocado pears are community grown and common domestic animals include chicken goats and cattle. The social economic benefits to these communities have been considered in the water demand estimation and economic analysis and were the driving force in establishing the Blantyre water Scheme with a multipurpose dam to further sustain these families.</p> <p>Economic analysis of the proposed water scheme was conducted and based on the economic internal rate of return (EIRRR) calculations; the multipurpose dam can expect an EIRR of between 3.9% and 4.8% from recovered revenues.</p>																			
<p><b>Environmental Issues:</b> The area surrounding the site has little vegetation as most of the land has been used for agriculture. Soil erosion, due to the cutting down of trees, has led to siltation of rivers.</p> <p>Fish, frogs and snakes are the animals commonly found on site. A graveyard is located within the inundation area. According to some reports, 60 buildings and 30 houses including a school would also be inundated if a dam is constructed at the site. Sections of the road between Kadewere, Ndunde and Nakhule, north-west of the proposed Mombezi dam, may have to be re-routed above the high water level.</p>																			
<p><b>Financial Analysis:</b> The detailed design study will cost USD 3.6 Million and environmental and social assessment will cost USD 750,000. These funds have been provided by the World Bank.</p> <p>Work on detailed design and environmental and social assessment has started in 2012 and will finish in 2013 covering a period of 16 months.</p> <p>The construction of the dam is estimated to cost (now) USD 209 Million and is likely to start 2014 and finish in 2019. The preliminary design currently underway (7 months from August, 2011 to February, 2012) will refine the financial analysis for this project.</p>																			
<b>Estimated Project Cost:</b>	209 Million USD																		
<b>Funding Status:</b>	None																		
<b>Status of Funding negotiations:</b>	Funding of USD 3.6 Million for detailed design and USD 750,000 for environmental and social assessment is funded by World Bank.  Funding for actual construction of Mombezi dam [USD 209 Million] is not yet secured.																		
<b>Implementation Progress and Status:</b>	Feasibility has already been done and Preliminary project design is currently underway (August, 2011 to February, 2012) with both receiving funding from the World Bank.																		

<b>Next Project Preparation Step:</b>	<b>Activity</b> Construction Phase		
	<b>Estimated cost</b> USD 209 Million		
	<b>Estimated Start and Timeframe</b> Start: 2014 and complete 2019		
<b>Project Risks:</b>	Lack of funds for actual construction of Mombezi dam.		
<b>Projected Start Date:</b>	2010	<b>Projected Completion Date:</b>	Completion date of Mombezi dam is 2019.
<b>Reference reports and studies:</b>	Consultancy services for feasibility studies and preliminary design for Blantyre's New Raw Water Source and other purposes, Feasibility Study Report, Executive Summary, Malawi Government, July 2010. Funded by World Bank. [Sogreah, French Consultant].		
<b>Project Contact:</b>	Mr S.C.Y Maweru The Secretary for Irrigation and Water Development P/Bag 390 Lilongwe 3 Malawi. E-mail: <a href="mailto:smaweru@gmail.com">smaweru@gmail.com</a> Contact number: +265 99 992 2015/+265 99 996 2015.		
<b>Additional Website References:</b>	None relevant to the specific project.		

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**Directorate of Infrastructure and Services**

**Mauritius Water Infrastructure Project**

**Mauritius Priority # 1 Project Datasheet  
13 Housing Estates - Water Supply**

<b>Project Reference No:</b>	WIIC-2011-P1-7-MAU: 13 Housing Estates WS	<b>Date last updated: By:</b>	August 2011 CBEC - Mauritius
<b>Implemented in:</b>	The Republic of Mauritius		
<b>Project Sponsor:</b>	Central Water Authority		
<b>Sector/Subsector:</b>	Water Supply & Sanitation		
<b>Lead Agency:</b>	Central Water Authority		
<b>Project Title:</b>	13 Housing Estates – Water Supply		
<b>River Basin/Sub-basin:</b>	Various.		
<b>Project Objectives:</b>	Upgrading /replacing existing water infrastructure to 13 of 164 Housing Estates.		
<b>Location Map:</b>			
<b>Project Description:</b>	<b>Summary</b>		

	<p>In the wake of two severe hurricanes which hit the Island in 1960 and 1975, the Government of Mauritius received grant assistance from the US Aid Agency and the European Development fund for the construction of some 164 Housing Estates comprising of some 75,000 housing units to provide shelter to the cyclone victims.</p> <p>The Housing Estates were established wherever land was available regardless of amenities. A roof to the desperate household was what mattered at the moment.</p> <p>To eliminate health standards, stand pipes were gradually provided to each housing estate. Ultimately each housing unit has been provided with individual connections.</p> <p><b><u>Technical Features:</u></b> The project involves the replacement of some 50 km of heavily leaking asbestos cement type pipelines with HDPE/Ductile Iron types pipelines of sizes varying from 75 mm to 150 mm ND. This will be done in cooperation with the ongoing maintenance of the existing in place sanitation system installed in the areas where the water supply is being improved.</p> <p><b><u>Economic and Social.</u></b> Presently, around 10% of the population is living below the line of poverty. Most of these people reside in the housing estates. The Project aims at upgrading the potable water supply infrastructure at some 13 housing estates numbering 3,550 housing units. The resident population of these housing units is estimated at around 15,000. A reliable water supply and sanitation would, no doubt, improve their standard of living.</p> <p><b><u>Environmental Issues.</u></b> The project will have a positive impact on the environment as it ensures continuity and reliability of water supply.</p> <p><b><u>Financial Analysis.</u></b> The total estimated cost of the project is ~ USD 10.2 million [cost Euro 7.3 million] of which 20% will be provided for from the funds of the Central Water Authority to provide detail design, preparation of tender documents, bid evaluation, implementation and supervision.</p>		
<b>Estimated Project Cost:</b>	USD 10.2 Million [based on the estimate of Eur 7.3 million].		
<b>Funding Status:</b>	None at the moment beyond the co-funding of 20 percent to be provided by the Central Water Authority.		
<b>Status of Funding negotiations:</b>	None at the moment		
<b>Implementation Progress and Status:</b>	Pre-feasibility Study [water]	- Completed	
	Estimated times from Island Agency		
	Detailed Design	- 2 months	
	Preparation of Tender Documents	- 1 month	
	Tender Evaluation	- 3 Months	
	Project implementation	- 15 Months	
<b>Next Project Preparation Step [ICA Guidelines]:</b>	<b>Activity</b> Detailed design to be done and funded by Central Water Authority. Tender preparation, bids, evaluation and award subject to funding followed by the actual construction itself.		
	<b>Estimated Cost</b> The total cost including construction is estimated at US 10.2 M.		
	<b>Estimated Start Date and Timeframe</b> 2012 start possible; 6 months to award and 15 to 18 months to complete project for a total of 21 to 24 months		
<b>Project Risks:</b>	There are currently no risks except delays in project implementation due to bad weather.		
<b>Projected Start Date:</b>	March 2012	<b>Projected Completion Date:</b>	December 2013 to March 2014
<b>Reference reports and</b>			

<b>studies:</b>	The reports that have been mentioned above including an assessment of the reticulation works carried out by the CWA are on file at the CWA and can be consulted there.
<b>Project Contact:</b>	<p>Mr. D. Aukle, Ag. General Manager  Central Water Authority  St. Paul, Mauritius  Tel.: 230 601 5000  Fax: 230 686 6264  Email: <a href="mailto:cwa@bow.intnet.mu">cwa@bow.intnet.mu</a></p> <p>Mr. N. Dookhony, Planning Co-ordinator  Central Water Authority  St. Paul, Mauritius  Email: <a href="mailto:dookhony_n@cws.intnet.mu">dookhony_n@cws.intnet.mu</a></p>
<b>Additional Website References:</b>	<p>None located specific to this project.</p> <p><a href="http://cwa.gov.mu">http://cwa.gov.mu</a> – Central Water Authority - Mauritius</p>

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**Directorate of Infrastructure and Services**  
**Mozambique Water Infrastructure Projects**

**Mozambique Priority #1 Project Datasheet**  
**Movene Dam – Multipurpose**

<b>Project Reference No:</b>	WIIC-2011-P1-8-MOZ: Movene Dam	<b>Date last updated:</b>	August 2011
<b>Implemented in:</b>	Republic of Mozambique		
<b>Project Sponsors:</b>	The Direcção Nacional de Águas (DNA) in Maputo will be responsible for project planning and monitoring progress while ARA Sul will be the implementing agency.		
<b>Sector/Subsector:</b>	Water Supply; Agriculture - Irrigation		
<b>Lead Agency:</b>	DNA in Maputo		
<b>Project Title:</b>	Movene Dam - Multipurpose		
<b>River Basin:</b>	Umbeluzi		
<b>Project Objectives:</b>	To store water for human consumption, irrigation and livestock, contributing to social-economic development, poverty alleviation and food security. The dam would supplement the Pequenos Limbobos Dam storing water from a tributary within Mozambican territory.		
<b>Location Map:</b>			

<b>Project Description:</b>	<p><b>Summary</b></p> <p>The most interesting potential water storage project in the Umbeluzi basin would be located in the Movene tributary. The proposed dam site would be located in a gorge between the Mafufule and Manguane Mountains, some 2 km to the west off the road from Moamba to Boane, which crosses the Movene River 28 km South of Moamba and 25km North of Boane. The dam site would be located in a relatively narrow gorge section of the river. The upstream area, in which a future water storage reservoir would be created, is a relatively flat plain. The catchment area has been estimated at 668 km<sup>2</sup> at the dam site.</p> <p><b>Features of the Movene Dam and Reservoir</b></p> <p>The results of the mapping was very good and enabled assess to various locations of the dam as well as estimation of the reservoir capacity and inundation areas for a range of reservoir water levels up to an elevation of +90 masl. The elevation of the riverbed at the dam site is around +60 masl. The characteristics of the Movene reservoir based on the topographic mapping are in summary shown below.</p> <p style="text-align: center;"><b>Characteristics of the Movene Reservoir</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Elevation (masl)</th> <th>Volume (Mm<sup>3</sup>)</th> <th>Area (Km<sup>2</sup>)</th> </tr> </thead> <tbody> <tr> <td>64</td> <td>0.048</td> <td>0.051</td> </tr> <tr> <td>70</td> <td>0.926</td> <td>0.36</td> </tr> <tr> <td>75</td> <td>4.661</td> <td>1.375</td> </tr> <tr> <td>80</td> <td>21.141</td> <td>5.797</td> </tr> <tr> <td>85</td> <td>66.156</td> <td>12.586</td> </tr> </tbody> </table> <p>Based on the topographic maps together with site inspections the most suitable site for the dam was identified. The river valley at the chosen dam site is rather narrow with a steep slope on the right bank, and with a more gently sloping left bank. The site appears suitable for a concrete dam. The selection of a concrete dam is also motivated by the occurrence of flash floods in the area, and the dam is proposed to be constructed as an overflow weir without gates. Based on the reservoir area-capacity, the minimum operating level is proposed at elevation +75 masl. The active storage volume would be about 50 Mm<sup>3</sup>.</p>	Elevation (masl)	Volume (Mm <sup>3</sup> )	Area (Km <sup>2</sup> )	64	0.048	0.051	70	0.926	0.36	75	4.661	1.375	80	21.141	5.797	85	66.156	12.586
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85	66.156	12.586																	
<p><b>Economic and Social.</b></p> <p>In general, the direct beneficiaries of this project are all the communities living in the areas targeted in this project, which firstly will see their basic water human needs satisfied, and be less impacted by recurrent droughts. Other benefits include water available for irrigation (as the largest water consumer) and livestock. Furthermore, the presently unemployed population will benefit from the expansion of job opportunities created by the project. The Maputo Metropolitan area also will be one of the beneficiaries by means of increased assurance of domestic water supply.</p> <p>This project aims at construction of the Movene Dam, which will have great impacts on the socio-economic development of surrounding project area, namely:</p> <ul style="list-style-type: none"> <li>• increase the water availability for human consumption and livestock;</li> <li>• promote the irrigated agriculture, increasing the agricultural production and productivity, thereby, contributing to food security;</li> <li>• increase in rural household income due to the high crop yields;</li> <li>• reduce the vulnerability to droughts in area of the project;</li> <li>• contributing to maintenance of ecological flows</li> </ul> <p>The dam will be instrumental in poverty alleviation as the water supply from the dam will assist small-holder farmers in Mozambique as well as provide much needed water for mainly for the peri-urban population with poor water supply and sanitation</p>																			
<p><b>Environmental Issues.</b></p> <p>A detailed environmental impact study has not yet been undertaken. However the dam construction will inundate a basalt quarry with its crushing and sieving plant. The number of families to be re-located has not been evaluated in the study.</p>																			
<p><b>Financial Analysis.</b></p> <p>No Financial Analysis has been done. The cost estimate for the Movene Dam for the full supply level +84 masl is estimated at USD 10.2 million, including detail studies, drawings and dam construction.</p>																			
<p><b>Estimated Project Cost:</b></p>	<p>Total Capital Cost Estimate – USD 10.2 Million.</p>																		
<p><b>Funding Status:</b></p>	<p>Nothing reported.</p>																		

<b>Status of Funding negotiations;</b>	No funds have been secured for the project.		
<b>Implementation Progress and Status:</b>	No studies or project design/environmental impact assessment were carried out.		
<b>Next Preparation Step:</b>	<b>Activity:</b> Pre-feasibility Study		
	<b>Estimated cost:</b> USD 0.3 Million		
	<b>Estimated start and Time frame:</b> 12 to 18 months		
<b>Project Risks:</b>	The risk may be associated with availability of both local and donor funding.		
<b>Projected Start Date:</b>	Not defined.	<b>Projected Completion Date</b>	Not defined.
<b>Reference reports and studies</b>	National Water Resources Development Plan for the Umbeluzi River Basin, by Sweco in association with Consultec/Impacto/BKS Acrees, 2003.		
<b>Project Contact:</b>	Ms Suzana Saranga Loforte National Directorate for Water Rua da Imprensa, Rua 162, Maputo Mozambique E-mail address <a href="mailto:ssaranga@dnaguas.gov.mz">ssaranga@dnaguas.gov.mz</a> Contact number: , +258 823115430		
<b>Additional Website References:</b>	Guale. September 2000. "Potencial da bacia do rio movene para construação da barragem." Published report referenced in Tembe and Baloi, 2001. Water access, policies and Irrigation Schemes Management in Mozambique, A case study of the Umbeluzi. <a href="http://pdf.usaid.gov/pdf_docs/PDABT396.pdf">pdf.usaid.gov/pdf_docs/PDABT396.pdf</a> – last visited August 2011		

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**Directorate of Infrastructure and Services**

**Namibia Water Infrastructure Project**

**Namibia Priority #1 Project Datasheet  
Windhoek – Managed Aquifer Recharge**

<b>Project Reference No:</b>	WIIC-2011-P1-9-NAM: Windhoek - MAR	<b>Date last updated: By:</b>	August 2011 CBEC-Namibia
<b>Implemented in:</b>	Namibia		
<b>Project Sponsor:</b>	Ministry of Agriculture, Water and Forestry, Namibia		
<b>Sector/Subsector:</b>	Water Supply and Sanitation		
<b>Lead Agency:</b>	Department of Water Affairs and Forestry		
<b>River Basin:</b>	Swakop-Omaruru Basin		
<b>Project Title:</b>	Windhoek -Managed Aquifer Recharge [MAR]		
<b>Project Objectives:</b>	Artificial recharge of the Windhoek Aquifer as best option for the supply augmentation to the Central area of Namibia.		

**Location Map:**



<b>Project Description:</b>	<p><b><u>Summary</u></b>  The Windhoek Aquifer is an important source of water for the Windhoek City, especially during periods of drought when the levels of surface dams are very low and when the supply from these sources is reduced. Over a period of 55 years the regular abstraction of water from the aquifer has resulted in the lowering of the groundwater table by an average of 50 to 60 m. After heavy abstraction during a drought approximately 5 years of natural recharge are required before water levels return to pre-drought conditions.</p> <p>Managed Aquifer recharge (MAR) ("water banking") will again "fill up" the aquifer thereby increasing the security of supply. At the same time the recharge water (being treated surface water blended with reclaimed water from the reclamation plant) will not be subjected to evaporation. Evaporation in the central areas of Namibia is approximately 3400mm per year compared with Windhoek's average annual rainfall of 366mm.</p> <p>MAR will take place when excess water is available in the surface dams. The projects will:</p> <ol style="list-style-type: none"> <li>1. Secure water supply to Windhoek during periods of drought.</li> <li>2. Secure water supply to Windhoek during emergencies (ie interruption of supply from main supplier 70km from Windhoek).</li> <li>3. Reduce evaporation losses in the surface dams by storing the water underground.</li> </ol> <p>By fast tracking the implementation of the Windhoek MAR scheme, the increasing water demand in the central areas of Namibia could be met during the long interim period required to plan and implement large water supply augmentation schemes such as water supply from the Okavango River.</p>
	<p><b><u>Technical Features:</u></b></p> <p>The ultimate recharge capacity required will amount to 8.0 million cubic metres per year. The project comprises the following components:</p> <p><u>Component 1:</u> Strategic Planning and Policy</p> <p><u>Component 2:</u> Bulk Water Supply from surface water sources</p> <p><u>Component 3:</u> Managed Aquifer Recharge</p> <p>The following activities are included under Component 3 (Managed Aquifer Recharge):</p> <ol style="list-style-type: none"> <li>1. Phase 1 - Construction of Artificial Recharge (AR) infrastructure for 5 existing boreholes – completed in 2003.</li> <li>2. Phase 2A - Drilling and Test Pumping of 10 large diameter deep production boreholes / recharge wells – completed.  Phase 2B - Drilling and Test Pumping of an additional 8 large diameter deep production boreholes +8 recharge wells. This phase includes an EIA for Managed Aquifer recharge.</li> <li>3. Phase 3 - Construction of Infrastructure for new boreholes (provision of pump stations, pipelines, recharge and abstraction installations)</li> </ol>
	<p><b><u>Economic and Social</u></b></p> <p>The project will have the following economic benefits:</p> <ol style="list-style-type: none"> <li>1. Compared to the other augmentation options the Windhoek MAR Scheme is the most economical project.</li> <li>2. The security of water supply benefits Windhoek economically.</li> <li>3. This scheme directly benefits the central area of Namibia as the other towns supplied from the same surface dams as Windhoek will have more water available during periods of drought.</li> </ol> <p>This project will benefit all residents of Windhoek as it will improve the security of water supply to the City. This in turn ensures that businesses and industries will be less affected by water rationing during periods of drought, as in the past that will have huge negative economic consequences. The security of supply should attract new investments, which again contribute to "poverty alleviation and improved livelihoods".</p>
	<p><b><u>Environmental Issues.</u></b></p> <p>Environmental studies were carried out as part of the feasibility studies and indicated the following benefits:</p> <ol style="list-style-type: none"> <li>1. Rising groundwater table due to water "banking".</li> <li>2. Improving groundwater quality in the northern parts of the aquifer by injecting good quality water. (The quality of the existing groundwater gradually decreases from south</li> </ol>

	<p>to north due to the increasing direct contact with initially micaceous quartzites, and then mica schists).</p> <p><b><u>Financial Analysis.</u></b> The City of Windhoek carried out a financial analysis as part of the feasibility study.</p> <p>The World bank also carried out a financial analysis for the projects. Both studies showed that the project is financially viable with a Financial Profitability Index of 0.48 at *[8?] % discount rate (2004 prices). The economic Profitability Index is 1.95</p> <p>The total cost of the project is estimated at USD 91.6 million. The apportionment between the various components is as follows:</p> <p><u>Component 1:</u> Strategic Planning and Policy USD 4.2 million</p> <p><u>Component 2:</u> Bulk Water Supply from surface water sources USD 28 million</p> <p><u>Component 3:</u> Managed Aquifer Recharge USD 59.4 million</p>												
<b>Estimated Project Cost:</b>	<p>For the Managed Aquifer Recharge component of the project:</p> <p>Phase 2B: USD 7 million</p> <p>Phase 3 : USD 52.4 million</p> <p>Total = USD 59.4 million</p>												
<b>Funding Status:</b>	<p><u>Component 3: Managed Aquifer Recharge Infrastructure</u></p> <p>Total expenditure to date is N\$ 35 million (funded by City of Windhoek). This was mainly for Phase 2A and other infrastructure.</p> <table border="1"> <thead> <tr> <th><u>Phase</u></th> <th><u>Funds Available 11/12</u></th> <th><u>Investment Sought -Future</u></th> </tr> </thead> <tbody> <tr> <td>1 EIA (MWF)</td> <td>USD 0.42 million</td> <td>none specified</td> </tr> <tr> <td>2B: Consulting Services and the first portion of the drilling and test pumping of deep boreholes (City of Windhoek).</td> <td>USD 2.1 million</td> <td>USD 4.9 million</td> </tr> <tr> <td>3: detailed investigations (Consulting Services), construction of the first 3 AR stations and upgrading part of the pipeline infrastructure (City of Windhoek).</td> <td>USD 3.35 million</td> <td>USD 49.1 million</td> </tr> </tbody> </table>	<u>Phase</u>	<u>Funds Available 11/12</u>	<u>Investment Sought -Future</u>	1 EIA (MWF)	USD 0.42 million	none specified	2B: Consulting Services and the first portion of the drilling and test pumping of deep boreholes (City of Windhoek).	USD 2.1 million	USD 4.9 million	3: detailed investigations (Consulting Services), construction of the first 3 AR stations and upgrading part of the pipeline infrastructure (City of Windhoek).	USD 3.35 million	USD 49.1 million
<u>Phase</u>	<u>Funds Available 11/12</u>	<u>Investment Sought -Future</u>											
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3: detailed investigations (Consulting Services), construction of the first 3 AR stations and upgrading part of the pipeline infrastructure (City of Windhoek).	USD 3.35 million	USD 49.1 million											
<b>Status of Funding negotiations:</b>	<p>City of Windhoek, MWF, NamWater, World Bank, Africa Development Bank (who have both expressed keen interest to fund the project).</p>												
<b>Implementation Progress and Status:</b>	<ul style="list-style-type: none"> <li>• The first feasibility study on Artificial Recharge (AR) was completed in 2002.</li> <li>• Phase 1 of the project, construction of Artificial Recharge (AR) infrastructure at 5 existing boreholes, was completed in 2003.</li> <li>• The City of Windhoek appointed consultants in 2004 to submit a detailed assessment of groundwater and artificial recharge water quality. The consultancy services included the design and supervision of the Phase 2A drilling and test pumping of large diameter deep boreholes.</li> <li>• Drilling started in November 2005 and 10 boreholes have now been completed to conclude Phase 2A of the Artificial Recharge (AR) project.</li> <li>• In 2007 a tri-lateral memorandum of understanding was signed between the City of Windhoek, MWF and NamWater.</li> <li>• Aquifer recharge management studies were carried out in 2009.</li> </ul>												

<b>Next Project Preparation steps:</b>	<b>Activity 1</b> <u>Component 3: Managed Aquifer Recharge Infrastructure</u> <ul style="list-style-type: none"> <li>• Project construction phase</li> <li>• The EIA for Managed Aquifer recharge will commence in November 2011.</li> <li>• Consulting Services for Phase 2B (siting, evaluation of test pumping results and supervision of the deep abstraction and recharge wells) is anticipated to start in 2012.</li> <li>• Tendering for Phase 2B, to drill and test pump a further 8 deep production boreholes and 8 recharge wells, is expected to commence in the third quarter of 2012. Phase 2B is expected be completed by 2014.</li> <li>• Estimated cost: USD 4.9 Million</li> </ul>		
	<b>Activity 2</b> <ul style="list-style-type: none"> <li>• The first stage of the Phase 3 construction project, involving the provision of pump stations, pipelines, recharge and abstraction installations, is expected to start in 2012.</li> <li>• The project is estimated to be completed by 2020.</li> </ul> <p>The project duration is influenced by the availability of funds. (External funding could shorten the implementation period by an estimated 2 years).</p> <ul style="list-style-type: none"> <li>• Estimated cost: USD 49.1 Million</li> </ul>		
	<b>Estimated cost</b> Activity 1: USD 4.9 Million; Activity 2: USD 49.1 Million		
	<b>Estimated timeframe</b> Activity 1: 2012 -2014; Activity 2: 2012-2020.		
<b>Project Risks:</b>	Financial Risk and Water Pollution Risk were identified and will require mitigation.		
<b>Projected Start Date:</b>	2004	<b>Projected Completion Date:</b>	2020
<b>Reference reports and studies:</b>	<ol style="list-style-type: none"> <li>1. Artificial recharge of the Windhoek Aquifer as best option for the supply augmentation to the Central area of Namibia prepared by Environmental Engineering Services for the Department of Water Affairs and Forestry, February 2009.</li> <li>2. Executive Summaries of the "Economic Feasibility Study on the Artificial Recharge of the Windhoek Aquifer" and the "Artificial Recharge of the Windhoek Aquifer as best option for Supply Augmentation to the Central Area of Namibia".</li> <li>3. Project Concept Note - Africa - Namibia Managed Aquifer Recharge Project</li> <li>4. Financial Analysis carried out by World Bank</li> </ol>		
<b>Project Contact:</b>	Ministry of Agriculture, Water and Forestry, Namibia Mr A Nehemia, Under Secretary: Department of Water and Forestry +264 61 2087696		
<b>Additional Website References:</b>	Artificial recharge of the Windhoek aquifer, Namibia: Water quality considerations Boletín Geológico y Minero, 120 (2): 269-278 ISSN: 0366-0176 WISA 2004 Biennial conference Proceedings (ISBN: 1-920-01728-3)  I Gale, 2005, Strategies for MAR in semi-arid areas, <a href="http://unesdoc.unesco.org/images/0014/001438/143819e.pdf">unesdoc.unesco.org/images/0014/001438/143819e.pdf</a> – last visited August 2011		



**Directorate of Infrastructure and Services**  
**Seychelles Water Infrastructure Project**

**Seychelles Priority # 1 Project Datasheet <sup>1</sup>**  
**Reducing Non-Revenue Water and Increasing Use Efficiency**

<b>Project Reference No:</b>	WIIC-2001-P1-10-SEY: Non Revenue Water and Use Efficiency	<b>Date last updated:</b> <b>By:</b>	August 2011 CBEC - Seychelles
<b>Implemented in:</b>	The Republic of Seychelles		
<b>Project Sponsor:</b>	Public Utilities Corporation		
<b>Sector/Subsector:</b>	Water Resources / Water Supply & Sanitation		
<b>Lead Agency:</b>	Public Utilities Corporation		
<b>Project Title:</b>	Reducing Non Revenue Water and Increasing Use Efficiency		
<b>River Basin/Sub-basin:</b>	Various [Three islands of Mahé, Praslin and La Digue]		
<b>Project Objectives:</b>	Reduce leakage and increase efficiency in distribution and usage.		
<b>Location Map:</b>			
<b>Project Description:</b>	<b>Summary</b>		

<sup>1</sup> All information supplied is from Reference 1 as noted in "Reference Reports and Studies" section.

The water supply situation in Seychelles needs rapid improvement. Water shortages occur mainly during annual dry periods. Water restrictions are common on the three main islands [Mahé, Praslin and La Digue]. Demand for potable water is continuously rising from population growth, tourism and other commercial development. The islands' topography precludes sufficient storage capacity at reasonable costs and the traditional source of fresh water, streams and reservoirs.

The Public Utilities Corporation (PUC) recently commissioned a comprehensive Development Plan that would enable optimum utilisation of the existing infrastructure and ensure the sustainable and cost effective development of the future infrastructure. The Study was funded by the African Water Facility (AWF) and the Government of Seychelles. The information herein is taken from that study's Final Report <sup>Ref1</sup>, Executive Summary as provided to SADC and is supplemented with input from discussions with the PUC team members including the CEO, Mr Robert Stravens, and his water management team members. The nation's other priority water projects all are being aligned to be done in concert with this Development Plan <sup>2</sup>. The overall opportunities projects' value is USD 88M [SCR 1,050 M] and will result in increased efficiency of the Seychelles water supply network and will bridge the current water deficit by decreasing demand, increasing supply and improving organizational capacity.

The infrastructure opportunity in this Datasheet arises from combining 2 of the 14 elements in the Development Plan. They were selected as a top priority as the increase in the level of Unaccounted for Water (UFW) has been turned around and its successful extent to date needs further funding to address the entire distribution system. The replacement of ageing pipes and fixing meter errors has been a concerted effort of PUC in the last two years. The improvements in the network's ability to deliver and increased efficiency warrants continued rollout of the program throughout the islands as a top priority. The old reticulation system pipes date back more than 50 years and have exceeded their economic lives and reducing the frequent bursts, instituting pressure regulation and putting appropriate gaging/meters in place has immediately increased availability and reduced distribution system losses.

**Overview:**

The integrated development of the water resource development and distribution as a service of the PUC in the Seychelles comprises the following 14 elements.

1. Reduction in Existing Pumping Stations
2. New La Gogue Network
3. Pumping Stations Rehabilitation
4. New Pumping Stations
5. New Water Tanks
- 6. Non-Revenue Water Reduction Programme** [this datasheet]
- 7. Instrumentation** [this datasheet]
8. Additional Desalination Plants [Timing options being considered]
9. Lower Grand Anse to La Gogue Transfer Scheme
10. Raising of La Gogue Dam (6 m) (2 650 m3/day)
11. Raising of Grand Anse Weir
12. Upgrade Salazie Pumping Scheme
13. *Plaine Hollandaise Dam (750 m3/day) [post 2015]*
14. *Plaine Hollandaise Treatment Works [post 2015]*

All but the last two are planned, subject to available resources including funding, to have specific components of each element implemented during the next five years. This datasheet addresses specifically the activities associated with elements 6 and 7.

Unaccounted For Water [UFW] and Use Efficiency [Eff]		2009	2010	2015	2020-2030
<b>Mahé</b>	<b>UFW %</b>	43.5	43.6	27.1	24.9
	<b>Eff %</b>	56.5	56.4	72.9	75.1
<b>Praslin</b>	<b>UFW %</b>	32.7	33.7	19.9	17.2
	<b>Eff %</b>	67.3	66.3	80.1	82.8
<b>La Digue</b>	<b>UFW %</b>	26.9	29.7	16.1	13.2
	<b>Eff%</b>	73.1	70.3	83.9	86.8

**Technical Features:**

The current status of unaccounted for water and efficiency is given above for the three main islands in terms of today's estimates and projections after actions taken on the islands related to this project scope through 2015 and 2030. The reduction in losses would reduce from today's 30 to 40 percent to about 15 to 30 percent by 2015 and from 13 to 25 percent by 2020.

<sup>2</sup> Most of the scope of the other infrastructure elements are described separately on Seychelles Water Infrastructure Opportunity 2011 datasheets done in cooperation with the member state and are available from them or SADC.

	<p>The project opportunity presented here links the proposed scopes of work to be undertaken on the three islands in the next five years related to reducing the amount of non revenue water and putting effective instrumentation in place. These actions would allow greater efficiency in distribution and increased availability for use as well as collecting the logical volumetric monitoring data using telemetrics to more accurately determine the quantities of water being distributed and where and how much of it is being used. It involves:</p> <ol style="list-style-type: none"> <li>replacement of non-performing pipelines,</li> <li>installation of new pipelines</li> <li>development and implementation of leak detection systems</li> <li>repair and replacement of connections,</li> <li>installation of meters,</li> <li>adding pressure reduction [principally for night loss reduction]</li> <li>putting other control valves in at strategic locations and</li> <li>adding flow meters and measuring at structures with an appropriate telemetry system.</li> </ol> <p>A summary of the proposed work is given in Table 12.5 of the Seychelles Water Development Plan [2008-2030] which is available from the Public Utilities Corporation.</p>												
	<p><b><u>Economic and Social.</u></b></p> <p>Demographics analysis has shown that the population of islands Mahé, La Digue and Praslin will grow from the present 86 000 to 111 000 in 2030.</p> <p>The total annual water sales for Seychelles (Mahé, Praslin and La Digue) was about 7.4 million cubic metres [2009] averaging ~ 20 400 m<sup>3</sup>/d. The percentage use of water for the islands in question has been estimated as:</p> <table border="0"> <tr> <td>Domestic</td> <td>52.5%</td> <td>Tourism</td> <td>17.8 %</td> </tr> <tr> <td>Commercial</td> <td>12.4 %</td> <td>Governmental</td> <td>9.7 %</td> </tr> <tr> <td>Industrial</td> <td>6.8 %</td> <td>Other</td> <td>0.8 %</td> </tr> </table> <p>Additionally, the two recorded agricultural abstractions amount to a total of about 0.44 million cubic meters per year, representing about 6 % of the water sales for other purposes. Total water sales/abstractions recorded [2009] were about 7.8 million m<sup>3</sup>.</p> <p>Implementing the overall water development projects will have a beneficial impact on the socio economics of the Seychelles. The most significant impacts being a safe continuous water supply to satisfy the growing domestic and commercial demand and increased environmental protection in these main important areas of the islands</p>	Domestic	52.5%	Tourism	17.8 %	Commercial	12.4 %	Governmental	9.7 %	Industrial	6.8 %	Other	0.8 %
Domestic	52.5%	Tourism	17.8 %										
Commercial	12.4 %	Governmental	9.7 %										
Industrial	6.8 %	Other	0.8 %										
	<p><b><u>Environmental Issues.</u></b></p> <p>While the development plan did not specifically address environmental issues, it is expected that the project would have a positive impact on the environment on the islands as it will reduce inefficiency and increase the reliability of water supply.</p>												
	<p><b><u>Financial Analysis.</u></b></p> <p>The study results indicate that the proposed 2020 leakage targets are within the estimated economic level of leakage range and should enable PUC to operate at a profit according to the plan.</p>												
<p><b>Estimated Project Cost:</b></p>	<p><u>TOTAL for the two components:</u> USD 26 Million [through 2015 – Gibb, 2011, p 70, Items 6 and 7, Table 2.5].</p>												
<p><b>Funding Status:</b></p>	<p>An infrastructure investment conference is planned for Sept. 2011 in the Seychelles.</p> <p>The current key funding gaps include for the various parts of this Development Plan which has a total cost estimated at about USD 87.5 M [SCR 1 050]:</p> <p><b>Non- Revenue Water Reduction:</b> Pipeline replacement USD 12.5 M [SCR 150 M]  <b>La Gogue:</b> Treatment Plant and Network: USD 17 M [SCR 204 M]  <b>Water Treatment Plant Rehabilitation:</b> USD 12.5 M [SCR 150 M]  <b>Demand management programme:</b> USD 1 M [SCR 12 M]</p>												
<p><b>Status of Funding negotiations:</b></p>	<p>The PUC is currently working with EIB and AFD to secure funding for a significant part of the entire integrative project.</p>												
<p><b>Implementation Progress and Status:</b></p>	<p>The completion of the Water Development Plan is a significant step forward that provides the basis for an integrated approach to the various elements of provisioning and recovering the costs of the water supplied to the islands by the Public Utilities Corporation.</p>												

	<p>The plan also noted that the water industry is now very active internationally with private sector participation and that the PUC can benefit from this by obtaining commercial funds more easily for capital and improvement works, gaining specialist technical and management skills that do not exist within the PUC and achieving improved efficiencies by setting appropriate targets within contracts with private companies.</p>		
<b>Next Project Preparation Step [ICA Guidelines]:</b>	<p><b>Activity</b> Detailed design to be done followed by Environmental Impact Assessment activities, tender preparation, soliciting and evaluation of bids for construction with the award, subject to funding, followed by the actual construction itself.</p> <p>The PUC plans to carry out detailed design using a mixture of in-house procured consultants (to transfer knowledge and build capacity of PUC) and external consultancy firms. , tender preparation, EIA, followed by construction.</p>		
	<p><b>Estimated Cost</b> The Detailed design is estimated to be at a cost of about 1.5 % of the total cost. Some of the Detailed Design is expected to be funded by new investments.</p> <p>The total estimated cost for project construction components to 2015 is US 26.2 M [SR 317.5]. [Gibb, 2011, Page 70, Table 2.5]</p>		
	<p><b>Estimated Start Date and Timeframe</b> 2012 start is possible;</p> <p>An estimated 6 months to complete the detailed design if needed followed by 12 to 18 to 24 months to install and deliver the systems to complete the project; total 24 to 30 months.</p>		
<b>Project Risks:</b>	There are currently no risks except delays in project implementation.		
<b>Projected Start Date:</b>	Not yet defined.	<b>Projected Completion Date:</b>	Not yet defined.
<b>Reference reports and studies:</b>	1. Gibb (Mauritius), 2011, The Seychelles Water Development Plan 2008-2030, Final Report – Executive Summary. 87 p.		
<b>Project Contact:</b>	Mr, Ravin Sunassee Project Director, Public Utilities Corporation (PUC) PO Box 174, Victoria, Seychelles <a href="mailto:rsunassee@puc.sc">rsunassee@puc.sc</a>		
<b>Additional Website References:</b>	<p>Water Supply and Sewerage, 2011 [Virtual Seychelles] <a href="http://www.virtualseychelles.sc/index.php/business/infrastructure/137-water-supply-and-sewerage">http://www.virtualseychelles.sc/index.php/business/infrastructure/137-water-supply-and-sewerage</a> - Last visited August 2011</p> <p>Seychelles Water Supply Development Plan, 2008 <a href="http://www.afdb.org/en/projects-and-operations/project-portfolio/project/p-sc-eao-002/">http://www.afdb.org/en/projects-and-operations/project-portfolio/project/p-sc-eao-002/</a> - Last visited August 2011</p> <p>Public Utilities Corporation – Water &amp; Sewerage Division - Water, 2011 <a href="http://www.puc.sc/?sid=&amp;p=water_info">http://www.puc.sc/?sid=&amp;p=water_info</a> – Last visited August 2011</p>		



**Directorate of Infrastructure and Services**  
**South Africa Water Infrastructure Project**

**South Africa Priority # 1 Project Datasheet**  
**Water Demand Management [Various Components]**

<b>Project Reference No:</b>	WIIC-2011-P1-11-SOA: Water Demand Management	<b>Date last updated:</b> <b>By:</b>	September 2011 CBEC – South Africa
<b>Implemented in:</b>	South Africa		
<b>Project Sponsor:</b>	Department of Water Affairs and Major South African Metros and Municipalities		
<b>Sector/Subsector:</b>	Water Resources		
<b>Lead Agency:</b>	Department of Water Affairs		
<b>Project Title:</b>	Water Demand Management [Various Components]		
<b>River Basin/Sub-basin:</b>	Various [Throughout the nation]		
<b>Project Objectives:</b>	To reduce the water demand of water users by reducing water losses and non revenue water [NRW], achieve greater water use efficiency, increased water reuse and use of appropriate metering, monitoring and data analysis methods to document volumes delivered/provided and used <sup>1</sup> .		



<sup>1</sup> These efforts are part of the DWA's strategic planning and implementation by municipalities and district partners to improve the management and effectiveness with which South Africa's water resources are used to enhance the delivery of water supply services to all communities.

<p><b>Project Description:</b></p>	<p><b>Summary</b></p> <p>The management of the water situation in South Africa can be improved by applying water demand management [WDM] principles in major metros and municipalities. This project outlines selected examples of ongoing activities at locations in South Africa. Activities such as pipe leakage repair, pressure reduction, reuse of water and metering with commensurate data analysis which have been introduced with good results and resultant benefits to the communities being serviced. Some programmes have earned international acclaim and are considered as trend setting.</p> <p>The demand for water is continuously rising as a result of growth in population, industry, commerce, agriculture and in some areas tourism activities. These increased uses along with the requirement to protect the environmental are an integral part of the ongoing social and economic development scenarios occurring throughout South Africa.</p> <p>Despite past actions and ongoing programs, it is difficult to continuously create sufficient water storage capacity at reasonable costs. The traditional sources of fresh water which have been rivers, streams, to a limited extent ground water and reservoirs, are not going to be adequate in the future to satisfy growing demands. WCWDM has been identified as the priority action to cater for the continued growth in water demand.</p> <p>As throughout the world, there has been a nationwide increase in the level of Non Revenue Water (NRW) partly due to water losses due the ageing infrastructure such as municipal water reticulation networks, apparent losses such as illegal connections, meter errors and unbilled consumption by the non metering and billing of legitimate consumers. There has been a concerted effort in several of the major South African metros that has led to an improvement of the water reticulation networks and an increase in delivery efficiency. The reticulation networks in South Africa dates back to more than 50 years and most urban network pipes have exceeded their planned economic life. This unfortunately results in frequent water leaks due to burst pipes.</p> <p>A study by the South African Water Research Commission some years ago estimated the total physical water losses for some 62 urban systems analysed by the study to be in the order of 31 percent of the total water supplied. Adding unbilled consumption, the study estimated non-revenue water for the 62 systems at around 36 percent of the water supplied. The results from the study have been quoted extensively and are considered one of the most reliable sources of quantifying water losses in South Africa. South Africa's 36 percent is similar to the world average, however South Africa is classified as a water stressed area and can not afford to have such high levels of water losses and non revenue water. Globally, non revenue water ranges considerably with Albania and Ecuador having more than 70% compared to Australia, New Zealand, Cambodia and Singapore each attaining less than 10 percent NRW.</p> <p>Numerous studies have shown that Water Conservation and Water Demand Management measures provide cost effective means of reducing water demands in the long run, by minimising losses and wastage and by so doing, delay the need to construct additional infrastructure, usually at higher capital cost<sup>2</sup>. Legislatively, there is a Presidential directive in South Africa to reduce water losses by half by 2014.</p> <p>Typical actions that are being put in place in Metros and some municipalities and impacted smaller urban centres include:</p> <ul style="list-style-type: none"> <li>o Installing pressure reduction devices and developing pressure management programs in settlements,</li> <li>o Auditing consumer water meters with an automated Meter-reading Pilot Project,</li> <li>o Fitting consumer systems with automated meter-reading devices,</li> <li>o Replacing dysfunctional consumer water meters, relocating consumer meters and repair water pipe and connection leaks.</li> <li>o Supply of treated effluent in large quantities for the re-use thereof.</li> <li>o Providing technical staff and caretakers with training and further technical skills development,</li> <li>o Visits to Schools and demonstrating repairs of their leaks,</li> <li>o Holding public workshops with thousands of participants,</li> <li>o Water conservation awareness raising campaigns were done at workshops, using shopping mall promotions, and with specific large wet industry and commerce,</li> <li>o Visiting thousands of households in an integrated leaks repair project, and</li> </ul>
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<sup>2</sup> Aurecon, 2010, Nelson Mandela Bay Emergency Action Plan, p11.

- o Monitoring and removal and sealing of illegal abstractions from pipes and reservoirs.

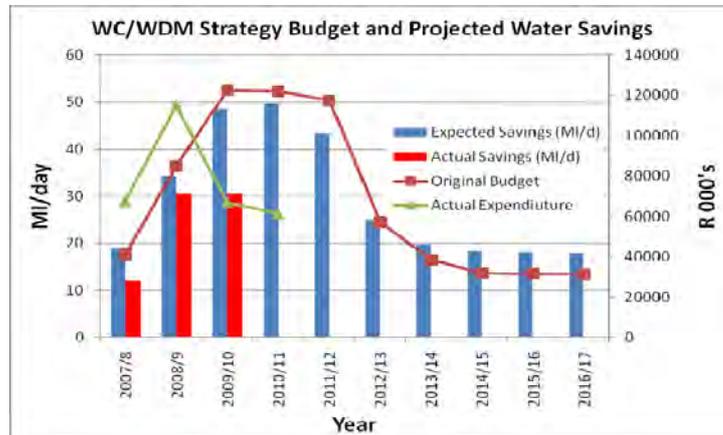
The opportunities outlined in this datasheet represents contextual settings where water infrastructure performance can be improved with additional investment. The situations described are intended to portray representative examples of WDM approaches that could be taken further throughout the nation with additional financial and capacitated resources. It is one of several components of the nation's continually evolving and dynamic National Water Resource Strategy [2004 currently being revised in 2011] and the Water for Growth and Development Framework [2008].

The information herein is from several sources from the national and specific metro and municipality settings and from work being done by various entities in the public sector throughout South Africa, some in cooperation with the private sector.

**Technical Features:**

The current status of Non Revenue Water within metros, municipalities and municipal districts is not known with a high degree of accuracy. The infrastructural elements that are needed to be put in place to document and determine the NRW have not received a high degree of prioritization by municipalities in the past. However, loss reduction by leak repair, pipe replacement, pressure reduction and enforcement of municipal bylaws, stopping unauthorized connections, as well as the reuse of treated wastewater are notable achievements that have been successful in certain locations to date. WCWDM measures such as these are working to extend existing available resources. Should these practices be applied in all municipalities it could have significant long term positive impacts by reducing the demand for water and in doing so making water available for society and economic growth and development in South Africa. Individual WCWDM programs have resulted in specific communities' conditions having been improved as for example, the following:

- One metro saved 26 million m<sup>3</sup>/year over three years [2007/08-2009/10] with a total targeted savings of approximately 90 million m<sup>3</sup> per year attainable with a re-aligned, actively supported [and fully funded] WC/WDM programme. The costs to achieve the savings were also lower than expected [figure below].



- In another metro, non revenue water volume was reduced from about 40 percent to about 33 percent between 2008/9 to 2010/11 and the target for 2018 is 25 percent <sup>Ref2</sup>. In this metro's CBD, about 13 500 registered connections with a demand of about 38 ML/day had 10 ML/day losses from leaks, illegal consumption and through other factors with an annual revenue loss of R10M/yr. Implementing pressure management alone recouped about 9 ML/day with significant financial savings <sup>Ref3</sup>.
- In one smaller municipality, which recently experienced severe drought conditions, interventions to repair plumbing in low income dwellings resulted in 650 locations using 67% less water with a projected total water savings of 36.5 MI/d able to be achieved if all similar dwellings' connections in the community were repaired.
- Pressure management has had special benefits in for example Khayelitsha [Cape Town], Sebokeng [Gauteng] and the new Mitchell's Plain area [Cape Town] each have had pressure reduction installations applied to each of their systems which supply over 500 000 residents. Over 20 million m<sup>3</sup> of water per year [~ 55 Mega litres [ML] per day] and more than \$6 million per annum have been saved <sup>3</sup>. In Durban, the 2011 announced program will spend USD 3 M [R 22 M] to reduce

<sup>3</sup> Mckenzie and Weglin, 2010, [Pressure Management in South Africa.](#)

	<p>water leaks in their reticulation system as the first phase of a 3 year WDM programme<sup>4</sup>.</p> <ul style="list-style-type: none"> <li>In Durban, the re-use of water from the wastewater treatment works has provided industries with up to 8 ML per day resulting in reduced demand on the higher value potable water supply<sup>5</sup> which has freed up the equivalent amount of water which now provide potable water to a community of 300,000 people<sup>6</sup>. It involved a PPP with initial construction costs of about USD 10 M [R 74 M] and it has been operating as a 20 year BOT project since 2001.</li> </ul>
	<p><b><u>Economic and Social.</u></b></p> <p>A demographical analysis has shown that populations, commerce and industry in urban areas can suffer greatly due to water shortages and under-realize the significant benefits of WCWDM when there are water shortages and lack of supplies especially for those living in peri-urban and informal settlements. In these areas in particular, the water losses can go unnoticed due to a lack of metering, monitoring and the management of assets and the operation and maintenance thereof.</p> <p>Implementing the overall WDM programmes throughout a greater part of South Africa's communities could have an important impact on the socio economics of South Africa. Significant impacts would be the ability to increase the safety and continuity of water supply and reduce the risks of meeting the growing domestic and commercial demand. At the same time, such programs would assist in increasing the Reserve needed for environmental protection.</p>
	<p><b><u>Environmental Issues.</u></b></p> <p>Reducing losses and demand in urban and rural settings are expected to have a positive impact on the water environment as they will reduce water wastage or inefficiencies, increase the reliability of water supplied and provide more water to sustain the environmental requirements.</p>
	<p><b><u>Financial Analysis.</u></b></p> <p>The results with various components of WDM have illustrated that the reduction in non-revenue water can be achieved and figures from the various programs canvassed for this project description indicate payback times for return on investments generally less than two years [Tswane/Gauteng, Cape Town, eThekweni/Durban]. Having combined its energy cost savings in two recent studies, the payback period was three<sup>7</sup> and six months<sup>3</sup>, respectively.</p>
<b>Estimated Project Cost:</b>	Variable according to location and scope of remaining work to be done.
<b>Funding Status:</b>	Most of the major metros and many of the municipal and municipal district areas all have funding gaps that do not allow them to undertake the various WCWDM activities with existing resources. The opportunities, while they will vary in these settings, are considerable.
<b>Status of Funding negotiations:</b>	Not defined. They will vary according to location and need.
<b>Implementation Progress and Status:</b>	<p>The completion of the various steps noted above represent an important series of events in WCWDM being taken within South Africa.</p> <p>It is hoped that additional financial capital and related resources can be leveraged through the successful cases demonstrated to date. WCWDM opportunities should be systematically evaluated as to their applicability in the respective urban centres. Based on that evaluation, plans with various stakeholders can be developed to improve the efficient use of water and defer further water supply infrastructure, reduced related energy usage water and wastewater treatment cost savings. These opportunities exist</p>

<sup>4</sup> [KZN municipality investing heavily to reduce water losses from leaks](#), 2011.

<sup>5</sup> [Re-Use Of Treated Effluent From Sewage Treatment Works](#), Durban Wastewater management Dept., undated.

<sup>6</sup> [The Durban Water Recycling Project - South Africa's first private water recycling plant](#), 2011.

<sup>7</sup> ESMAP, 2010, Emfuleni Municipality ,South Africa - Water Leak Management Project: *"The water supply project in South Africa's Emfuleni Municipality resulted in lower costs for water--including lower energy costs associated with water supply--and also improvements in the municipality's financial status through a new pressure management system on the bulk water supply. An innovative pressure management technology was applied to the water supply system of two low-income residential areas. ...The payback period was only 3 months and financial savings, from both reduced energy use and water losses was estimated at US\$3.8 million per year for a lifetime of 20 years. Under the performance contracting arrangement employed to finance and implement the project, the municipality retains 80% of the water and energy cost savings during the first five years and 100% of the savings thereafter."* [http://www.esmap.org/esmap/sites/esmap.org/files/CS\\_Emfuleni\\_021110.pdf](http://www.esmap.org/esmap/sites/esmap.org/files/CS_Emfuleni_021110.pdf) - Last visited Sep. 2011.

	<p>nationwide. The components of water infrastructure-related WCWDM extend to a number of services, industries and cooperative ventures which are becoming more active globally and whose increased participation in South Africa is obviously encouraged.</p> <p>Private sector participation in these solutions will likely be of benefit to local municipalities as well as to national programs. Structured appropriately, cooperative partnerships in many areas can:</p> <ul style="list-style-type: none"> <li>- obtain commercial funding more easily for capital and improvement of water infrastructure,</li> <li>- provide specialist technical and management skills that do not exist within many of the municipalities where WCWDM measures are indeed needed, and</li> <li>- achieve higher efficiency by setting appropriate targets within the contracts.</li> </ul> <p>The ESMAP??? case cited is such an example and according to SADC and DWA representatives, others are also emerging in the region.</p> <p>A 2008 study by the Development Bank of South Africa investigated the reasons and rationale for successes of WC/WDM activities in South Africa. Their assessment provides insight as to some of the key steps that were needed to successfully implement and to reap the considerable and quick benefits from WCWDM practices in certain areas in South Africa<sup>8</sup>.</p>		
<p><b>Next Project Preparation Step [ICA Guidelines]:</b></p>	<p><b>Activity</b> The opportunities for WCWDM can be evaluated with each urban entity on a case by case basis and also in concert with regional and provincial programs that are commonly coordinated and spearheaded by DWA and each of its regional offices.</p>		
	<p><b>Estimated Cost</b> As expected, the costs will be variable according to the location, scope of the WCWDM measures and the degree of intervention needed and should be structured taking into account the technical requirements as well as the local municipal technical and institutional capacity. Community involvement should also be considered for technical projects to be sustainable</p> <p>The costs will clearly be local area dependent with likely infrastructure-related investment requirements ranging from USD 0.5 to USD 100 Million over five year periods according to the type of applicable intervention, size and complexity of the urban centre's distribution/reticulation system and its stakeholders' current and future water demands.</p>		
	<p><b>Estimated Start Date and Timeframe</b> Opportunities exist today and are not expected to diminish in the next two decades.</p>		
<p><b>Project Risks:</b></p>	<p>Not identified.</p>		
<p><b>Projected Commencement Date:</b></p>	<p>Unspecified</p>	<p><b>Projected Completion Date:</b></p>	<p>Unspecified</p>
<p><b>Reference reports and studies:</b></p>	<ol style="list-style-type: none"> <li>1. City of Cape Town, 2010. Progress with Implementation of the Long Term Water Conservation and Water Demand Management Strategy, Assessment, Summary Report, September 2010.</li> <li>2. Personal Communication, S Scruton, Non Revenue Water Manager, eThekweni Water and Sanitation, South Africa, August 2011.</li> <li>3. M A Shepherd and V A Poona, undated, <a href="#">Reducing Non-Revenue Water In The Durban Central Business District.</a></li> </ol>		
<p><b>For more information:</b></p>	<p>Mr Paul Herbst Director – Water Use Efficiency, South African Department of Water Affairs, Pretoria South Africa Tel: +27 12 336 7043 EM: <a href="mailto:herbstp@dwa.gov.za">herbstp@dwa.gov.za</a></p>		

<sup>8</sup> G. Mwiinga et al. [DBSA], 2008, [Water Conservation and Water Demand Management in Practice – South Africa Case Studies](#)

<p><b>Additional website references:</b></p>	<p>The following website-derived references were last visited in Sep. 2011</p> <p>Pressure Management, 2004, Case Study – Johannesburg.  <a href="http://www.accessengineeringlibrary.com/mghpdf/0071450599_ar012.pdf">www.accessengineeringlibrary.com/mghpdf/0071450599_ar012.pdf</a></p> <p>SA Dept. Water Affairs, 2004, <a href="#">Volume 3 - Implementation of Water Conservation and Water Demand Management Measures within the Water Services, Summary</a>.</p> <p>R. Mckenzie, 2006, Improved Service Delivery Through Small Scale Risk Reward Contracts. <a href="http://www.ewisa.co.za/literature/files/325%20Mckenzie.pdf">www.ewisa.co.za/literature/files/325%20Mckenzie.pdf</a></p> <p><a href="#">eThikwini Municipality Installing Advanced Water Pressure Management</a>, 2011;  <a href="#">eThikwini [pressure management] saving three million litres of water per day</a>, 2011.</p>
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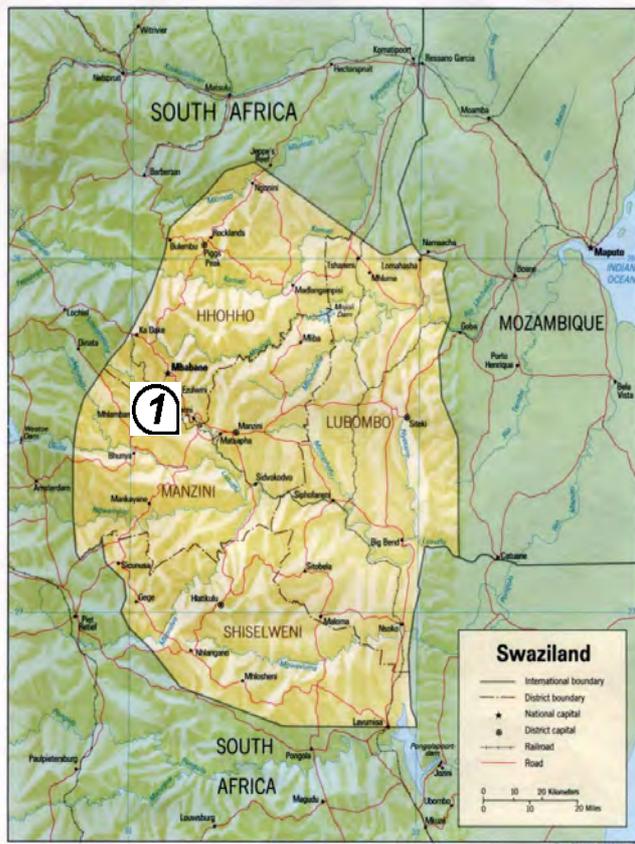
**Directorate of Infrastructure and Services**

**Swaziland Water Infrastructure Project**

**Swaziland Priority # 1 Project Datasheet  
Nondvo Dam – Multipurpose**

<b>Project Reference No:</b>	WIIC-2011-P1-12-SWA: Nondvo Dam	<b>Date last updated: By:</b>	August 2011 CBEC - Swaziland
<b>Implemented in:</b>	Swaziland		
<b>Project Sponsors:</b>	The Governments of the Kingdom of Swaziland Government, the Republic of South Africa and Cooperating Partners		
<b>Sector/Subsector:</b>	Water Supply & Sanitation		
<b>Lead Agency:</b>	The Swaziland Government's Department of Water Affairs		
<b>Project Title:</b>	Nondvo Dam – Multipurpose		
<b>River Basin Sub-Basin:</b>	Lusushwana River in Maputo Basin		
<b>Project Objectives:</b>	To provide potable water to the people residing in the two cities of Mbabane and Manzini.		

Location Map:



<b>Project Description:</b>	<p><b><u>Summary</u></b>  The Nondvo Dam is a dam identified through the Joint Maputo Basin Study undertaken by the Tripartite Technical Committee (TPTC) formed between the three countries of Swaziland, South Africa and Mozambique. This study was aimed at identifying further water resources developments which could still be undertaken in the three countries on the Maputo Basin shared by the three countries.</p> <p>The Nondvo Dam, identified on the Lusushwana River, has a potential to improve the water resources situation in the two cities of Mbabane and Manzini which are both currently operating at full supply capacity.</p>
	<p><b><u>Technical Features:</u></b>  The Maputo Basin Study has indicated that the Nondvo Dam would be optimised at 150 million cubic metres, a figure that is still to be confirmed through the feasibility study once undertaken.</p> <p>Due to the need for multiple uses of dams, this dam has a potential to generate electricity and will also have tertiary structures to distribute water to the demand areas.</p> <p>At full supply the dam, which is located on 26° 25' 30" South and 31° 07' 00" East, wall would be at 975 masl and the dam wall height would be 75 metres, while its crest would be at 600 metres</p>
	<p><b><u>Economic and Social.</u></b>  The Nondvo Dam will improve potable water supply to people residing within the two cities of Mbabane and Manzini.</p> <p>An increased supply of water to these two cities will improve economic activities within these areas especially around the Matsapha industrial area which in the industrial hub of Swaziland currently under serious water stress.</p>
	<p><b><u>Environmental Issues.</u></b>  All environmental effects associated with the construction of this dam will be revealed by the feasibility study which will also provide mitigation measures.</p>
<b>Estimated Project Cost:</b>	<p><b><u>Financial Analysis</u></b>  The Swaziland government has just completed a feasibility study for the Ethemba Dam on the Mkhondvo sub-basin and it is estimated that a feasibility study for the Nondvo Dam could cost about US\$ 2, 000,000 under international tender.</p> <p>Actual dam construction costs normally are dictated by the feasibility study however the Department of Water Affairs estimates about US\$ 143 Million (2005 values used from Maputo Basin Study) for the actual construction but as indicated this cost will be confirmed by the feasibility study.</p>
<b>Funding Status:</b>	None
<b>Status of Funding negotiations:</b>	None ongoing at the moment
<b>Implementation Progress and Status:</b>	None
<b>Next Project Preparation Step [ICA Guidelines]:</b>	<p><b><u>Activity</u></b>  Nondvo Dam Feasibility Study to complete the bulk of ICA phase 3 activities</p>
	<p><b><u>Estimated Cost</u></b>  USD 2 million</p>
	<p><b><u>Estimated Start Date and Timeframe</u></b>  2012 - 12 to 18 months following Tenders being evaluated and an award. The range in the length of time is longer than normal and will depend on specific issues associated with the site and the ability to rely upon the past work at Ethemba for certain aspects of the study.</p>
<b>Project Risks:</b>	None perceived

<b>Projected Start Date:</b>	Dependant on availability of funds	<b>Projected Completion Date:</b>	Dependant on availability of funds
<b>Reference reports and studies:</b>	Joint Maputo Basin Study. Water Resources Management and Development Options. Final Report 2008 (Potential Water Resource Developments)		
<b>Project Contact:</b>	<p>Mr. Trevor Shongwe - Chief Water Engineer  Department of Water Affairs  Tel: + 268 404 1622/4049866,  Email: shongwetr@gov.sz/wrb-wcon@realnet.co.sz</p> <p>Mr. Emelda Dlamini Senior Water Engineer  Department of Water Affairs  Tel.: +268 404 1622  Email: <a href="mailto:dlaminimapule@gov.sz">dlaminimapule@gov.sz</a>)</p>		
<b>Additional Website References:</b>	<p><b>Appendix A, Joint Maputo River Basin Water Study - Final Recommendations</b>, 2009  <a href="http://www.dwaf.gov.za/Docs/Other/IncoMaputo/Synopsis.pdf">www.dwaf.gov.za/Docs/Other/IncoMaputo/Synopsis.pdf</a> - Last visited August 2011</p> <p><b>The Nondvo site on the Lusushwana River is the likely site to be investigated</b>, in Ministry hires consultant for Ethemba Dam project, 2009;  <a href="http://www.observer.org.sz/index.php?news=6506">http://www.observer.org.sz/index.php?news=6506</a> - Last visited August 2011</p>		

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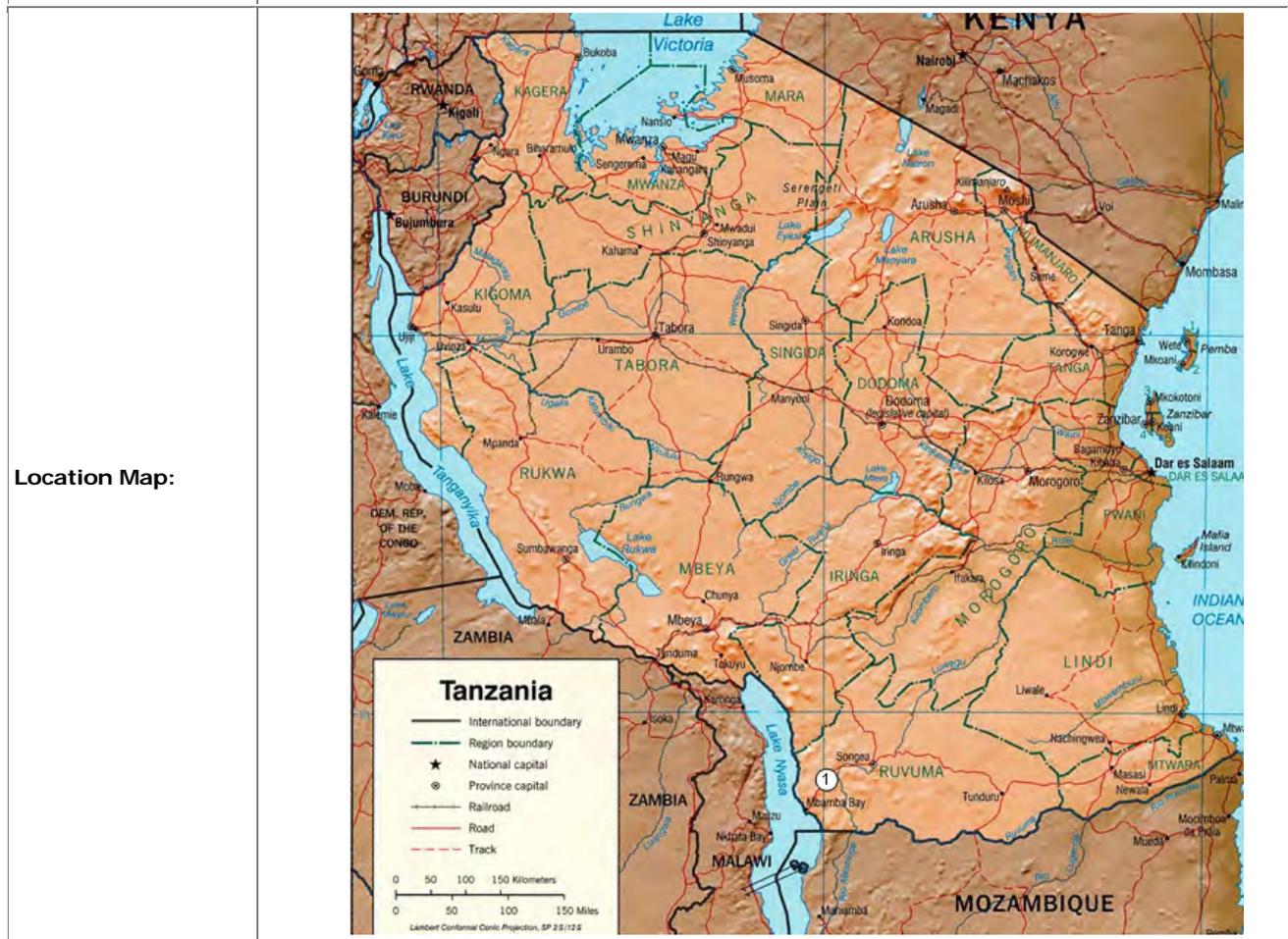


## Directorate of Infrastructure and Services

### Tanzania Water Infrastructure Project

#### Tanzania Priority #1 Project Datasheet Ruhuhu Valley Irrigation

<b>Project Reference No:</b>	WIIC-2011-P1-13-TAN: Ruhuhu Valley	<b>Date last updated:</b>	August 2011
<b>Implemented in:</b>	Tanzania		
<b>Project Sponsors:</b>	Permanent Secretary, Ministry of Agriculture Food Security And Cooperatives		
<b>Sector/Subsector:</b>	Irrigation		
<b>Lead Agency:</b>	Tanzanian Ministry of Agriculture, food Security and Cooperatives		
<b>River Basin:</b>	Lake Nyasa		
<b>Project Title:</b>	Ruhuhu Valley Irrigation		
<b>Project Objectives:</b>	To reduce floods and provide an opportunity for an increased income and improved food security within and outside the project area.		



<b>Project Description:</b>	<p><b>Summary</b> The proposed irrigation development along the Ruhuhu Valley will provide a more secure basis for the production of household food subsistence requirements. The irrigation development will also improve the income of farmers, as they will be able to grow high value crops, and improve the family cash flow.</p>																			
	<p><b>Technical Features:</b> The Ruhuhu Valley project (3100ha) covers the proposed Lituhi and Manda Irrigation Schemes on left and right of the river, respectively. Lituhi covers 2,400 ha while an area of 700 ha is under Manda.</p> <p>The project components are</p> <ul style="list-style-type: none"> <li>(i) construction of a dam, spillway, bridge and road at Kipingu which will serve both sides of the river,</li> <li>(ii) construction of irrigation scheme to include canal and drains earthworks, lining of main canal, irrigation structures, service roads and bridges,</li> <li>(iii) environmental protection and management, and</li> <li>(iv) farmers training.</li> </ul>																			
	<p><b>Economic and Social.</b> This irrigation project will have qualitative benefits in terms of social goods and services. The outcome of the increased agricultural produce will be to increase food security, alleviate poverty, reduce rural – urban migration and generally improve standard of living of the people in and around the project area. Farm activities in the developed area are also going to attract hired labour hence providing employment to a number of the otherwise jobless people. The following are likely wealth indicators in the villages that surround the Ruhuhu Valley irrigation schemes.</p> <ul style="list-style-type: none"> <li>• Possession of herds of livestock;</li> <li>• Owning a good house or houses;</li> <li>• Owning a shop;</li> <li>• Possession of fishnets, pressure lamps and canoes;</li> <li>• Ability to educate children; and</li> <li>• Ability to cultivate and own agricultural land/irrigated land.</li> </ul> <p>These indicators will be used to determine the baseline economic status of the community and later to assess the project impact.</p>																			
	<p><b>Environmental Issues.</b> Findings from the rapid environmental and social assessment indicate that the construction of a dam across Ruhuhu River will have some negative impacts on the physical, natural and socio-economic environments in the project area. These include farms submergence, water borne diseases and soil and water pollution. However, the proposed mitigation measures will improve environmental conditions in the study area and allow for sustainable utilization of land and water resources. Some of the mitigation measures proposed are:</p> <ul style="list-style-type: none"> <li>(a) Land re-allocation and Resettlement:</li> <li>(b) Environmental awareness campaign</li> <li>(c) Catchment management</li> <li>(d) Appropriate Design</li> <li>(e) Water management</li> <li>(f) Safe use, handling and storage of agrochemicals</li> </ul>																			
	<p><b>Financial Analysis.</b> A preliminary financial analysis has been done. The total area of irrigation is about 3100 ha (2400 ha on Lituhi side and 700ha on Manda side). The development being capable to facilitate increase of the crop yield per unit area from 1.5 to 5.0t/ha, about 15,500 tons of paddy can be produced annually, giving a gross income of <b>US\$ 4.1</b> million at a gate farm price of <b>US\$ 266.7</b> per ton. With the average production cost of <b>US\$ 570</b> per ha, the overall production cost per annum will be <b>US\$ 1.83</b> thus giving a net income of US \$ 2.3 million.</p>																			
<b>Estimated Project Cost:</b>	<p>The estimated cost of the project is <b>US\$ 12,384,168</b> which will be possible to develop an area of 3,100 ha in the Ruhuhu valley.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Component</th> <th style="text-align: center;">Cost (USD)</th> </tr> </thead> <tbody> <tr> <td><b>DAM, SPILLWAY AND BRIDGE AND ROAD ABOVE</b></td> <td style="text-align: right;">4,179,195</td> </tr> <tr> <td><b>LITUHI IRRIGATION SCHEME (2400HA)</b></td> <td></td> </tr> <tr> <td>Canals and drains earthworks</td> <td style="text-align: right;">1,054,420</td> </tr> <tr> <td>Lining of main canal (8.544km)</td> <td style="text-align: right;">880,159</td> </tr> <tr> <td>Structures</td> <td style="text-align: right;">323,605</td> </tr> <tr> <td>Service roads</td> <td style="text-align: right;">486,120</td> </tr> <tr> <td>Bridges</td> <td style="text-align: right;">681,600</td> </tr> <tr> <td><b>Sub Total</b></td> <td style="text-align: right;"><b>3,425,905</b></td> </tr> </tbody> </table>		Component	Cost (USD)	<b>DAM, SPILLWAY AND BRIDGE AND ROAD ABOVE</b>	4,179,195	<b>LITUHI IRRIGATION SCHEME (2400HA)</b>		Canals and drains earthworks	1,054,420	Lining of main canal (8.544km)	880,159	Structures	323,605	Service roads	486,120	Bridges	681,600	<b>Sub Total</b>	<b>3,425,905</b>
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	<table border="1"> <tr> <th colspan="2">MANDA IRRIGATION SCHEME (700HA)</th> </tr> <tr> <td>Canals and drains earthworks</td> <td>1,900,268</td> </tr> <tr> <td>Lining of main canal</td> <td>478,382</td> </tr> <tr> <td>Structures</td> <td>176,301</td> </tr> <tr> <td>Service roads</td> <td>28,800</td> </tr> <tr> <td>Bridges</td> <td>53,333</td> </tr> <tr> <td><b>Sub Total</b></td> <td><b>2,637,085</b></td> </tr> <tr> <td>Preliminaries and General</td> <td>800,000</td> </tr> <tr> <td>Preparatory works and Supervision</td> <td>855,791</td> </tr> <tr> <td>Environmental Protection and Management</td> <td>347,281</td> </tr> <tr> <td>Farmers Training</td> <td>138,912</td> </tr> <tr> <td><b>Sub Total</b></td> <td><b>2,141,984</b></td> </tr> <tr> <td><b>Total Cost</b></td> <td><b>USD 12,384,168</b></td> </tr> </table>		MANDA IRRIGATION SCHEME (700HA)		Canals and drains earthworks	1,900,268	Lining of main canal	478,382	Structures	176,301	Service roads	28,800	Bridges	53,333	<b>Sub Total</b>	<b>2,637,085</b>	Preliminaries and General	800,000	Preparatory works and Supervision	855,791	Environmental Protection and Management	347,281	Farmers Training	138,912	<b>Sub Total</b>	<b>2,141,984</b>	<b>Total Cost</b>	<b>USD 12,384,168</b>																
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<b>Funding Status:</b>	No data																																											
<b>Status of Funding negotiations;</b>	None																																											
<b>Implementation Progress and Status:</b>	A Task Force involving the Districts of Mbinga and Rudewa (which shares the River as the boarder), and the Ministry has been established to oversee the implementation of the project Feasibility Study in accordance with the Agricultural Sector Development Programme (ASDP). The Government is fast tracking this project which will also put in place a bridge linking these two districts which are highly agricultural potential. Status report of what has been done to date is shown in a separate brief.																																											
<b>Next Preparation Step:</b>	<p><b>Activity:</b> Feasibility studies with an updated investment analysis.</p> <p><b>Estimated Cost:</b> 0.5 to 0.6 M USD</p> <p><b>Estimated start and Timeframe:</b> 12 months</p>																																											
<b>Project Timeframe:</b>	<table border="1"> <thead> <tr> <th>Activity</th> <th>Year 1</th> <th>Year 2</th> <th>Year 3</th> <th>Year 4</th> <th>Year 5</th> </tr> </thead> <tbody> <tr> <td>Pre Investment studies</td> <td>■</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Tendering and Contracting</td> <td></td> <td>■</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Construction of dam and Irrigation infrastructure</td> <td></td> <td>■</td> <td>■</td> <td>■</td> <td>■</td> </tr> <tr> <td>Environmental protection and management</td> <td></td> <td></td> <td>■</td> <td>■</td> <td>■</td> </tr> <tr> <td>Farmers' training</td> <td>■</td> <td>■</td> <td>■</td> <td>■</td> <td>■</td> </tr> <tr> <td>Maintenance period and commissioning</td> <td></td> <td></td> <td></td> <td></td> <td>■</td> </tr> </tbody> </table>	Activity	Year 1	Year 2	Year 3	Year 4	Year 5	Pre Investment studies	■					Tendering and Contracting		■				Construction of dam and Irrigation infrastructure		■	■	■	■	Environmental protection and management			■	■	■	Farmers' training	■	■	■	■	■	Maintenance period and commissioning					■	The whole process is expected to take about five years.
Activity	Year 1	Year 2	Year 3	Year 4	Year 5																																							
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Farmers' training	■	■	■	■	■																																							
Maintenance period and commissioning					■																																							
<b>Project Risks:</b>	<ul style="list-style-type: none"> <li>Non implementation of identified mitigation measures to the situation acceptable by the stakeholders,</li> <li>Unavailability of credit facilities to the farmers.</li> </ul>																																											
<b>Projected Start Date:</b>	As soon as funding is secured.	<b>Projected Completion Date:</b>	As per the project timeframe indicated above.																																									
<b>Reference reports and studies:</b>	<ol style="list-style-type: none"> <li>Agricultural Sector Development Programme</li> <li>National Irrigation Master Plan</li> <li>Kilimo Kwanza Resolution (Tanzania Business Council, 2009 Tanzania Business Council, 2009. Kilimo Kwanza Pillars. Available: <a href="http://www.tnbctz.com/index.php/KILIMO-KWANZA/View-category.html">http://www.tnbctz.com/index.php/KILIMO-KWANZA/View-category.html</a> (Accessed: September, 2011)).</li> </ol>																																											

<b>Project Contact:</b>	<p>Eng. Raphael Daluti  Director Irrigation and Technical Services  P.O Box 9153  Dar es Salaam  Tel: +255 784 328319  Email: dalutir@yahoo.com</p>
<b>Additional Website References:</b>	<p>World Bank. Zambezi River Basin. Sustainable Agriculture Water Development. (2008) <a href="http://bscw-app1.let.ethz.ch/pub/bscw.cgi/d11577706/Zambezi-%20Irrigation%20Study.pdf">http://bscw-app1.let.ethz.ch/pub/bscw.cgi/d11577706/Zambezi-%20Irrigation%20Study.pdf</a> –last visited 5 September 2011</p> <p>World Bank, Tanzania Agricultural Sector Development Support Program, undated. <a href="http://www.worldbank.org/afr/padi/TZ_ASDP_PCN%20.pdf">http://www.worldbank.org/afr/padi/TZ_ASDP_PCN%20.pdf</a>.- last visited August 2011</p> <p>MCC, summary of all projects submmited for mcc consideration, undated <a href="http://www.mca-t.go.tz/documents/doc_download/22-summary-of-allprojects.html">www.mca-t.go.tz/documents/doc_download/22-summary-of-allprojects.html</a>. - last visited August 2011</p>



**Directorate of Infrastructure and Services**  
**Zambia Water Infrastructure Project**

**ZAMBIA PRIORITY #1 PROJECT DATASHEET**  
**CLIMATE CHANGE ADAPTATION-DROUGHT-AGRO-ECOLOGICAL REGION I – ZAMBIA**

<b>Project Reference No:</b>	WIIC-2011-P1-14-ZAM: CC Adaptation AER1	<b>Date last updated:</b> <b>By:</b>	August 2011 CBEC - Zambia
<b>Implemented in:</b>	Agro-ecological region I of Southern Zambia		
<b>Project Sponsor:</b>	Government of the Republic of Zambia (GRZ)		
<b>Sector/Subsector:</b>	Environment / Agriculture		
<b>Lead Agencies:</b>	Ministry of Agriculture and Cooperatives (MACO) and Ministry of Tourism, Environment and Natural Resources (MTENR)		
<b>Project Title:</b>	Climate Change Adaptation to drought - Zambia Agro-Ecological Region I		
<b>River Basin/Sub-basin and or Aquifer</b>	Zambezi, Luangwa		
<b>Project Objectives:</b>	<p>The overall objective is to reduce the vulnerability of those depending on rainfed agriculture practices to anticipate rainfall shortages in the face of climate change including variability.</p> <p><u>Primary outcomes:</u>            Adaptation to climate change in the agricultural sector.            Reduce poverty and increase food security so that food secure households increase from 35% to 75%.</p> <p><u>Specific Objectives:</u>            Strengthen capacity to mainstream climate change adaptation policies into national development plans.            Create MDG-based national development strategies to promote growth and employment and reduce economic, gender and social inequalities.</p>		

Location Map:



<b>Project Description:</b>	<p><b><u>Summary</u></b>          Agro-ecological Region [AER] I covers the western and southern part of Zambia and receives less than 800 mm of rain annually. It was once considered the bread basket of the nation but it has experienced low, unpredictable and poorly distributed rainfall over the last 20 years. The observed meteorological data indicates that it is currently the driest region in Zambia. In addition, the region is particularly drought-prone and has limited potential for crop production. AER I has a growing season spanning between 80 and 120 days. The soils are highly erodible and agricultural production is concentrated on bulrush millet (<i>Pennisetum glaucum</i>), sorghum and livestock. Report on adaptation to climate change in AER-I (GRZ and UNDP, 2009: 9).</p> <p>According to GRZ/UNDP (2009: 1) report, the project is designed to reduce the vulnerability of communities in Agro-ecological Region I and to climate change impacts. The project will adopt a two pronged-approach: i) mainstream adaptation into agricultural planning at national, district and community levels to make the case for increased investment in adaptation in the agricultural sector; and ii) test and evaluate the adaptation value of interventions that protect and improve agricultural incomes from the effects of climate change. Capacity and systems to anticipate assess and prepare for climate change risks will be developed at community, regional and national levels.</p> <p>Adaptation learning generated from the pilot projects will be used to guide mainstreaming of adaptation in national fiscal, regulatory and development policies, to support adaptive practices on a wider scale.</p> <p>The Project will focus on the introduction of irrigation and water management systems, training, capacity building of farmers on water management practices, support to marketing, and provision of credit. It will also cover support to introduction of drought resistant crops such as cassava, beans, sorghum, millet, potatoes, vegetables and fruit trees. The proportion of households to be food secure by end of project is 75% (GRZ and MACO, 2010: 50).</p> <p>The project's expected outcomes as outlined by GRZ and UNDP (2010:24) are:</p> <ol style="list-style-type: none"> <li>Climate change risks integrated into critical decision-making processes for agricultural management at the local, sub-national and national levels.</li> <li>Agricultural productivity in the pilot sites made resilient to the anticipated impacts of climate change.</li> <li>National fiscal, regulatory and development policy revised to promote adaptation responses in the agricultural sector.</li> <li>Lessons learned and knowledge management component established.</li> </ol>
	<p><b><u>Technical Features:</u></b></p> <p><b>At institutional levels:</b> in the Department of Agriculture at provincial, district and extension service catchment levels capacity building will occur in adaptation technologies and strategies as well as methods of educating communities.</p> <p><b>At farming community levels:</b> Introduction of new seed varieties and how to apply them on the farm and manage the cropping system to maximise yields. This will be complemented by construction of small earth dams, contour ridges and rainwater harvesting methods to reduce water loss and store moisture for crop production.</p> <p><b>The Project will address:</b> Negative impacts of floods and droughts due to climate variability leading to reduction of farm lands and productivity and the poverty increase rate and food insecurity of the region. Beneficiaries will be all categories of farmers in Zambia through adoption of best agricultural practices. The project will be supported by awareness campaigns and demonstrations of best farming practices in irrigation and provision of extension services.</p>
	<p><b><u>Economic and Social:</u></b>          Adaptive capacities for reduction of poverty and food insecurity at community levels will be enhanced.</p> <p><b><u>Beneficiaries:</u></b>          An estimated total number of 7,629 people covering all categories of farmers and the community within Agro-Ecological Region will benefit from these investments (GRZ and UNDP, 2009: 31). All categories of farmers and the community.</p>
	<p><b><u>Environmental Issues:</u></b>          This project addresses how to combat desertification through developing a more green and sustainable approach to the region's economy and livelihoods.</p>

	<p><b><u>Financial Analysis.</u></b> Total budgets for this work were outlined by the Zambian Government, UNDP and other cooperating partners. They attempted to carefully apportion the funding to increase efficiency in the use of the funds (GRZ and UNDP, 2009: 75-79)</p>
<b>Estimated Project Cost:</b>	USD 13.6 million (GRZ and UNDP 2009: p79)
<b>Funding Status:</b>	<p>GRZ (MACO): - USD 1.53 million UNDP: USD 0.175 million (cash) FAO (CASPP): USD 5.0 million (In-kind) CCFU: USD 2.6 million <u>ZDM: USD 0.5 million (In-kind)</u> Total: USD 9.8 million</p> <p>To complement funding of project activities in year 2012, the Government of the Republic of Zambia is expected to provide USD 255,000 for the Irrigation Development Support Programme as technical support to construction of dams.</p>
<b>Status of Funding negotiations:</b>	Funding agreements have been signed by cooperating partners, GRZ/UNDP (2009:1).
<b>Implementation Progress and Status:</b>	<p>Commenced soon after signing of funding agreement in 2009. Activities undertaken from each of the Outcome Objectives include:</p> <p><u>Outcome 1: Key outputs</u> i) Sensitisation of 4 provincial development coordinating committees and 8 district development coordinating committees on (i.e. government planners, communities and extension staff) – on climate change; and ii) Staff training in Early Warning System (EWS), soil and water conservation (19 district and provincial staff).</p> <p><u>Outcome 2: Key Outputs</u> i) Assessment of suitability of intervention measures in all pilot sites leading to the initiation of the process of formation of 7 farmer groups and 22 management committees. Measures include:</p> <ul style="list-style-type: none"> <li>• Bee keeping</li> <li>• Acquaculture</li> <li>• Integrated fish/rice farming</li> <li>• Dam construction</li> </ul> <p><u>Outcome 3: Key outputs</u> Twelve (12) Climate change sensitization meetings held at district and provincial levels.</p>
<b>Next Project Preparation Step:</b> [ICA Guidelines]	<p><b>Activity</b> The next step as a logical means of continuing to maintain the project on track would be a "To date Project Review and Update" of the key aspects that are seeming to prevent the project from being carried out more quickly and with that information, establish realistic timelines for the work to be carried out and additional funding allocated from not only the government but the co-funding and in-kind contributing donors and IGOs<sup>1</sup>. There is apparently no publically distributed report since the start of the project in 2009 on the cooperation of donors and IGOs that have come together to help Zambian entities carry out this work.</p> <p>Most of the planning has already been complete and the concepts and ideas about how to use the funds has been established as the basis for the development of this water infrastructure project so far. In terms of the ICA guidelines, the project however seems to be in Phase 2 as there is no evidence that any pre- or full feasibility study was carried out at the specific locations where the infrastructure is planned. However, the areas of need are real and the types of projects that are likely to succeed have been clearly identified and funding has been put towards their development. Therefore the relevance of the ICA guidelines to this project is not considered particularly high in terms of a next project preparation steps.</p> <p>The agreements have been established have resulted in, to date, funding of USD 2,786,900 and the activities itemized above have been undertaken. However, there has only been a current expenditure of about USD 400,000 according to the latest project information. The other funds not yet secured will be used to construct 5 dams, 8 fish ponds at one site and on specific irrigation schemes, construct 5 canals at 5 separate locations.</p> <p>The balance of the funds once sourced will be used to cover activities similar to ones highlighted above within the remaining Agro-Ecological Region I in the Zambezi and</p>

<sup>1</sup> It is not clear, however, if the funding spent includes the amounts of in-kind support that have been allocated by the various donors and IGOs as about USD 5.5 million of the total of USD 13.6 million is in-kind, mostly coming from FAO.

	<p>Luangwa river valleys. These are water deficient areas where evapo-transpiration exceeds received amounts of rainfall. As such, they are the most vulnerable to effects of climate change.</p>		
	<p><b>Estimated Cost</b> The cost to carry out the project review is estimated to be less than USD 50,000 and could be completed in no more than three months.</p> <p>The gap in funding is currently about USD 4 .00 Million.</p>		
	<p><b>Estimated Start Date and Timeframe</b> 2012</p> <p>The time to complete the rest of the infrastructure referred to above is estimated to be from 24 to 48 months [according to the original project schedule] once funding and appropriate capacity is in place. According to final inputs from the CBEC – there is a project manager being hired and that could precipitate some further action and review.</p>		
<b>Project Risks:</b>	<ul style="list-style-type: none"> <li>- Limited capacity for GRZ to implement strategies of the National Irrigation Plan in Agro-Ecological Region I.</li> <li>- There is lack of political will and financial resources to invest in the identified areas.</li> <li>- Level of collaboration with cooperating partners, NGOs and CBOs GRZ (MACO, 2010: 50) rather limited.</li> </ul>		
<b>Projected Start Date:</b>	2009 (Ongoing)	<b>Projected Completion Date</b>	2016
<b>Reference reports and studies</b>	<ol style="list-style-type: none"> <li>1. GRZ/UNDP, 2009. Adaptation to the effects of drought and climate change in Agro-ecological regions I and II. (Project IDS: 0085205/00072197 (ZMB10)) / Zambia_11-9-09_Adaptation_Effects_Drought_CC_Zone1-2.pdf (with GEF assessment of protect potential and technical merit for support, p.1-31).</li> <li>2. GRZ/MTENR, 2010. National Climate Change Response Strategy (NCCRS), Ministry of Tourism, Environment and Natural Resources (MTENR), Lusaka, p.20-21. / NCCRS FIRST DRAFT 15TH SEPTEMBER 2010.pdf</li> <li>3. GRZ/MACO, 2010. Water for Agriculture and Energy: National Investment Profile of Zambia. Ministry of Agriculture, Lusaka, p.50. / ZWP_Consolidated_Report_August_2010_ver_5[2].doc</li> <li>4. Signature page: GRZ/UNDP, 2009. Adaptation to the effects of drought and climate change in Agro-ecological regions I and II.</li> </ol>		
<b>Project Contact:</b>	<p>Mr. Rasford Kalamatila, Principal Agricultural Specialist, mapping and Remote Sensing, Ministry of Agriculture and Cooperatives, P. O. Box 50291, Lusaka, ZAMBIA. Tel (O): +260 211 255346 Mobile: +260 977606600 Email: raskalamati@gmail.com</p> <p>UNDP Project Contact Person Jessica Troni Regional Technical Advisor UNDP/GEF +27 (012) 354 8056 jessica.troni@undp.org</p>		
<b>Additional Website References:</b>	<p>National Investment Brief - ZAMBIA, 2008 <a href="http://www.sirtewaterandenergy.org/docs/reports/Zambia-Draft2.pdf">www.sirtewaterandenergy.org/docs/reports/Zambia-Draft2.pdf</a> - last visited August 2011</p> <p>The economic impacts of climate change on agriculture in Zambia, 2006 <a href="http://www.ceepa.co.za/docs/POLICY%20NOTE%2027.pdf">http://www.ceepa.co.za/docs/POLICY%20NOTE%2027.pdf</a> - last visited August 2011</p>		



## Directorate of Infrastructure and Services

### Zimbabwe Water Infrastructure Project

#### Zimbabwe Priority #1 Project Datasheet Bulawayo Water Supply from Zambezi River

<b>Project Reference No:</b>	WIIC-2011-P1-15-ZIM: Bulawayo from Zambezi - WS	<b>Date last updated: By:</b>	August 2011 CBEC - Zimbabwe
<b>Implemented in:</b>	Zimbabwe		
<b>Project Sponsors:</b>	Zimbabwe Government		
<b>Sector/Subsector:</b>	Water Supply and Sanitation		
<b>Lead Agency:</b>	Ministry of Water Resources Development and Management (Zimbabwe)		
<b>River Basin</b>	Zambezi		
<b>Project Title:</b>	Bulawayo Water Supply from Zambezi River		
<b>Project Objectives:</b>	To augment drinking water supply to the City of Bulawayo, Zimbabwe.		

Location Map:



<p><b>Project justification:</b></p>	<p>Bulawayo is the second largest city in Zimbabwe and has a population estimated at 1 million people. It is regarded as Zimbabwe's industrial hub and is strategically located in a position with easy access to Botswana (through Plumtree Border Post) and South Africa (through Beitbridge Border Post).</p> <p>Bulawayo is located in a semi-arid region which is prone to droughts and, as such, water resources are limited. The city has been facing serious water shortages for a long period. Many initiatives have been undertaken including a water conservation study and strategy sometime in the mid 1990s. Water rationing is a common measure applied by the city to minimize the effects of the limited water supply.</p> <p>As a long term strategy to solve the water supply problems of Bulawayo and Matebeleland North, the Bulawayo-Zambezi Matebeleland Project was proposed of which initial works were carried out in the mid 1990s.</p>
<p><b>Project Description:</b></p>	<p><b><u>Summary</u></b>  This project aims to augment the water supply of Bulawayo in two approaches. This involves the construction of a dam (Gwayi-Shangani) and pipeline from the dam to a site in Bulawayo (Cowdray Park) where a water treatment plant and a reclamation plant will be constructed. The other component involves the construction of a pipeline from the Zambezi River at Deka to Bulawayo by linking this line to the one from Gwayi-Shangani Dam at Kennedy Railway Siding.</p> <p><b><u>Technical Features:</u></b>  The project incorporates the following components:</p> <ul style="list-style-type: none"> <li>• A dam at the confluence of the Gwayi and Shangani Rivers (Gwayi-Shangani Dam)</li> <li>• A low lift intake pump station at the Gwayi-Shangani Dam outlet</li> <li>• High pressure pumping station located at Gwayi-Shangani Dam</li> <li>• 5 intermediate high pressure pumping stations located along the route</li> <li>• A twin pipeline with diameters varying from 900mm to 1200mm from Gwayi Shangani Dam to Bulawayo's Cowdray park-245 km long for each pipeline.</li> <li>• Receiving reservoir at Cowdray Park</li> <li>• A water treatment plant in Bulawayo near Cowdray park</li> <li>• Advanced water reclamation plant at Cowdray Park</li> <li>• Intake low lift pumping station in the Zambezi River at Deka Mouth</li> <li>• A connecting pipeline (800 mm diameter) from Zambezi to Kennedy Railway siding where it joins the Gwayi-Shangani Dam to Bulawayo lines</li> <li>• Two intermediate pump stations along the Zambezi to Kennedy pipeline</li> <li>• Related ancillary works such as power supply</li> </ul> <p><b><u>Economic and Social.</u></b>  Because of water shortage in the region, water rationing programmes have been implemented since 1983. The water shortage has affected industry and commerce in the city, and many industries have either reduced operations or relocated elsewhere thus affecting employment. This has had serious implications as the economy of the city depends on industrial activities.</p> <p>Like many other areas in Zimbabwe, Bulawayo was affected by the 2008/9 cholera outbreak which impacted over 4300 people countrywide. Thus the improvement in water supply in Bulawayo will reduce the risk of another potential cholera outbreak and also create an environment conducive to investment and optimum industrial performance. The improvement in industrial activity in Bulawayo will contribute significantly to the national economy.</p> <p><b><u>Environmental Issues.</u></b>  An environmental impact assessment together with the Environmental Management Plan was prepared in 1996. Like most dam projects the dam component of the project will result in inundation of land and possible reduction in natural habitat as well as displacement of people. A proper resettlement action plan and environmental management plan will be required to mitigate the negative social and environmental impacts of the project.</p>

	<p><b>Financial Analysis.</b> The financial analysis was mainly carried out during the era of the Zimbabwean dollar. However preliminary indicative costs are around USD 600 million. Other aspects of finance including tariffs were also covered as part of the feasibility report. However key parts of the relevant report may need updating.</p>
<b>Estimated Project Cost:</b>	The estimated project cost is estimated at USD 1.25 Billion, of which the dam is estimated at USD 54 Million while the pipelines are estimated to cost USD 1.2 Million.
<b>Funding Status:</b>	Several attempts have been made through a BOOT arrangement. The Government of Zimbabwe funded the construction of the Gwayi-Shangani Dam which started in 2003 and was stopped in 2007 due to funding problems. As such, no substantial progress was made owing to funding problems, progress stands at 5% currently. Some USD 4 Million has been allocated for the construction of the dam in the current financial year but this is very small compared to the amount required for the project. Thus the project requires more funding.
<b>Status of Funding negotiations:</b>	None.
<b>Implementation Progress and Status:</b>	<ul style="list-style-type: none"> <li>• A feasibility study was initiated and completed in 1996 by SWECO of Sweden in association with hydro utilities of Zimbabwe. This was funded by the Zimbabwean Government and the Swedish Government.</li> <li>• An environmental impact assessment was carried out together with the feasibility study by the same consulting engineering firms.</li> <li>• The design of the Gwayi-Shangani Dam has since been completed and was carried out by the Department of Water Development of the Government of Zimbabwe.</li> <li>• Construction of the dam started in 2003 and funded by the Government of Zimbabwe. There has been very little progress owing to limited funds. Progress stands at 5% for the dam component.</li> </ul>
<b>Next Project Preparation Step:</b> [ICA guidelines]	<b>Activity</b> Update Financial Analysis and Feasibility Study.
	<b>Estimate Cost</b> USD 1 to 2 Million
	<b>Estimated start and Timeframe:</b> 12 to 18 months
<b>Project Risks:</b>	<p>Risks associated with the project hinge on the stability of the currency of which this is minimal if the use of the USD is to be continued.</p> <p>Another risk could come from cost recovery particularly linked to tariff levels. Currently there are no set guidelines for tariff setting. However, the Ministry of Water Resources Development and Management is working with the World Bank on a tariff study whose main objective is to rationalize the tariff setting procedures and also guidelines and methodology for urban water tariffs.</p> <p>In the short-term, government may need to devise a strategy to fund the gap caused by low tariffs. Due to the heavy reliance of the project on pumping the availability of power as well as energy costs are major threats to the efficient operation of the system thus affecting the overall impact of the project as well as cost recovery.</p> <p>Strategies to reduce this impact may include complementary investment in power supply as well as installation of energy efficient components such as pump staging systems and smooth pipelines.</p>
<b>Projected Start and End Dates:</b>	The start and finish dates will be known once funding is available. However the project is expected to take some 5-10 years to complete
<b>Reference reports and studies:</b>	Bulawayo-Matebeleland-Zambezi : Water supply feasibility Study: Phase 2. Feasibility report –Main Report-1996

<b>Project Contact:</b>	Eng. V. Choga. Director, Ministry of Water resources Development and Management Tel +263 712 884 317
<b>Additional Web References:</b>	Wikipedia, the free online dictionary. Last updated January 2011. <a href="http://en.wikipedia.org/wiki/Matabeleland_Zambezi_Water_Project">http://en.wikipedia.org/wiki/Matabeleland_Zambezi_Water_Project</a> -Last visited 18 Aug 2011 Eric Bloch. Zimbabwe: Matabeleland-Zambezi Water Project Urgent. Zimbabwean Independent (Jan 2011). <a href="http://allafrica.com/stories/201101100399.html">http://allafrica.com/stories/201101100399.html</a> - Last visited 11 Aug 2011



# **ANNEX 2**

## **PRIORITY PROJECTS SUBMITTED BY MEMBER STATES**

**2011**

### **Regional Portfolio of Priority Projects Report**

NOTE: The next two [A3 size] pages contain summaries of information for the 66 projects that were taken from the information obtained by the CBECs during this project.

The projects highlighted in bold have further details submitted in the Datasheets in Annex 1

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# ANNEX 2 List of All Priority Water Infrastructure Projects Submitted by Member States

SADC Water Sector  
WATER INFRASTRUCTURE INVESTMENT CONFERENCE  
[Maseru Lesotho - 23 Sep 2011]

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MS # Aug-11	WIIC-2011 [Project #]	Where	Project name	River Basin	RG, XB, P#1, P	Description	Next Activity [if Specified]	Next Activity Cost [USD M]	Est'd Total Cost [USD M]	Project Sponsor	Period
ANG4	XB-1	ANG; NAM	Food Security - Upper Okavango	Okavango	XB	Upper Okavango water management & food security.	Preliminary and Detailed Design	1.5	66	Min. Agriculture	2010-2015
ANG1	P1-1	ANG	Lubango - Phase 2 WSS	Kunene	P1	Rehabilitate and extend the Lubango water supply and sanitation system	Pre-FS, reticulation systems, other tbd.	0.5 plus Pre-FS reticulation cost	124	Min. Energy & Water (MINEA)	2011-2016
ANG2	ANG2	ANG	Water supply and sanitation of City of Namibe [Phases 2 &3; Phase 1 funded]	Kunene	P	Rehabilitate Namibe water supply system and build a water treatment plant.			124	Min. Energy & Water (MINEA)	2011-2017
ANG3	ANG3	ANG	Irrigation Rehabilitation and Sustainable WRM	Kwanza, Kunene, Calumbela, Bengo	P	Increase crop yields with more efficient water use, land conservation, new infrastructure and increase farmers use of diversified irrigation systems.			315	NEPAD / CAADP and FAO / ICD	5 years post start
ANG5	ANG5	ANG	2nd Hydropower Plant – Kuanza River Basin (Cambambe II)	Kwanza	P	2nd power station [260 MW] FOR Kwanza-sul Province			772	Min. Energy & Water (MINEA)	2012-2015
BOT1	XB-2	BOT; RSA	Vaal-Gamagara Water Supply	Orange Senqu Basin	XB	Supply of Portable Water to the Villages in South West Botswana	Pre-FS	0.4	TBD	Government of Botswana	2011 - 2016
BOT2	P1-2	BOT; RSA	Limpopo Basin Water Monitoring Project	Limpopo	P1	Promote sustainable water resources management and to provide continuous water quality monitoring of Upper and Middle Limpopo Basin	Finalize design and construct monitoring stations	0.7	TBD	Gov. of Botswana and Gov. of South Africa	2011 - 2016
BOT3	BOT3	BOT;RSA	Borolong Water supply and Sanitation	Okavango	P	Transboundary water supply and sanitation for Villages					
BOT4	BOT4	BOT; NAM	Ngoma bridge		P	Redesign bridge to sluice gates to regulate flows to Lake Llambezi. Possible channel dredging to reduce annual Chobe West village flooding					
BOT5	BOT5	BOT; ZAM Cos	Zambezi Integrated Agro-Commercial Development Project (ZIACDP)	Chobe Zambezi	P	Pipeline from Chobe River to Kazungula and Pandamatenga for irrigation			780	Government of Botswana	2010 -2022 (Phase III)
DRC1	RG-1	DRC	Inga-3 Dam	Congo	RG	Serve the internal electricity needs of DRC and supply BHP's aluminum smelter and export power to e.g. Angola, Namibia and Botswana.	Feasibility Studies	15	5600 to 7629	Ministère de l'Energie and SNEL	
DRC2	P1-3	DRC	Kinshasa - Water Supply & Sanitation	Congo	P1	Increase supply [800,000 m3/d]; rehabilitate/extend lines & storage capacity. Refit distribution near Kinshasa. [05 Plan]	Update FS and financial analysis		10 [2004 Estimate]		
DRC3	DRC3	DRC	Rehabilitate Irrigation in Kinshasa, Bas-Congo, Katanga, Equateur Provinces.	Congo	P	Improve agricultural production and food security with improved seeds and more efficient irrigated water use.			1.3	PNR/Min. Agriculture; SENAHUP / Rural Development - BCECO	
DRC4	DRC4	DRC	Hydro-agricultural site of Mokali	Congo	P	Establish sustainable agriculture in the Mango and Mokali valleys			10	Ministère de l'Agriculture	
DRC5	DRC5	DRC, UGA?	Micro hydroelectric Dam on Kisalala	Nil	P	To assure the power supply to the towns of Butemo, Beni and surroundings			26 [1985 Estimate]		
LES1	P1-4	LES	ZONE 1 - Lesotho Lowlands Water Supply Scheme	Orange	P#1	Water Supply for Botha-Bothe Town and adjacent villages in northern Lesotho; Hololo River with additional sources during severe drought.	Construction	78	78	Lesotho Water Commission	
LES2	LES2	LES	ZONES 2 & 3 - Lesotho Lowlands Water Supply Scheme	Orange	P	Water Supply: Hlotse/Maputsoe and adjacent villages in NW Lesotho; Hlotse River; additional sources during severe drought.			101	Lesotho Water Commission	
LES3	LES3	LES	ZONES 6, 7 - Lesotho Lowlands Water Supply Scheme	Orange	P	Water supply for Mafeteng town and adjacent villages in Southwest Lesotho. Makhaleng River with additional sources during severe drought.			102	Lesotho Water Commission	
MAD		MAD	Projects expected to be forthcoming in future conferences for Madagascar								
MAL5	RG-4	MAL	Songwe River Basin Development Programme	Songwe	RG	To improve the living conditions of the basin population and the socio-economic development in Malawi and Tanzania.	Construction Phase	329	329	Malawi Government	2014-2019
MAL1	P1-6	MAL	Mombezi Dam - Multipurpose	Shire	P #1	To construct Blantyre – Mombezi-Makuwa dam to supply city could have adequate raw water source.	Construction phase	209	209	Malawi Government	2014-2019
MAL2	MAL2	MAL	IWRM Projects (Jenda, Chezi and Sayamika)	Dwangwa,Mwanza,Lingadzi/Nkotakota Salima (Shire)	P	Create wealth, promote sanitation/hygiene, physical/non-physical mgmnt to reduce erosion.Support rural livelihood prgrms. [Jenda (Mzimba), Chezi (Dowa), Goliati(Thyolo).			5.6	Malawi Government	2011 (2-3 years)
MAL3	MAL3	MAL	Green Belt Initiative	Lake Malawi Basin, Lake Malombe and Shire	P	Seven major components:- Infrastructure Dev. /Rehab'n; Land Admin.; Env. Mgmt; Tech. Dev./Dissem'n; Instit'l Dev./Cap. Bldg; Agro-Proc'n/Mrktg Dev.; Crops, Livestock/Fisheries			Ph1: 26.3	Malawi Government	2011 (5 years)
MAL4	MAL4	MAL	Lower Diamphwe Dam -Multipurpose	Linthipe	P	To construct the Diamphwe Lower multipurpose dam which would provide an additional water resource to supply Lilongwe City until 2035.			Ph1: 178 Ph2: 163	Malawi Government	Pending
MAU1	P1-7	MAU	13 Housing Estates Water Supply	Island	P#1	Upgrading /replacing the existing water infrastructure at 13 of 164 Housing Estates	Detailed Design followed by Tender and construction	10	10	Central Water Authority	2012-2014
MAU2	MAU2	MAU	Telemetry and Standalone Data Systems	Island	P	Real time/remote monitoring of control instruments for prod'n, trtmnt and dist'n of potable water. Improve data collection system within catchments to monitor/manage			2.24	Central Water Authority, Ministry of Energy and Public Utilities	2011-2013
MAU3	MAU3	MAU	Rehabilitation of irrigation projects	Island	P	Decrease op'n cost by transferring irrigation op'ns from Govt (Irr'n Authority) to beneficiaries (Water Users Cooperatives)			0.5	Min. Agro Industry and Food Security [clarified]	2012-2013
MAU4	MAU4	MAU	Enhancing crop productivity and income generation	Island	P	Improve income gen. of resource poor farmers through enhanced veg., fruit and flower crop prod'n under gravity-fed drip fertillgation tech. in open-field and protected conditions			0.3	Min. Agro Industry and Food Security [clarified]	2012-2015
MAU5	MAU5	MAU	Rodrigues Island Projects	Island	P	List of Projects include: Desalination plant (3000 m3/d); Port Mathurin WSS; Pave La Bonte Dam; Pistaches Multipurpose dam.			37	Ministry of Rodrigues & Fisheries Regional Assembly	18 -24 mo
MOZ1	XB-3	MOZ; RSA and SWA	Ressano Garcia Weir - Water Supply	Incomati	XB	Construct Ressano Garcia Weir to ensure monitoring of cross-border flow [Incomati River] with weir storage providing water supply.	Revise detail design; prepare tender for works/Tech. Assistance.	0.5	6.1	ARA-Centro under National Directorate for Irrigation (DNA).	
MOZ3	P1-8	MOZ	Movene Dam - Multipurpose	Umbeluzi	P #1	Construction of the Movene Dam and Reservoir to augment Water supply, for drinking, irrigation and livestock.	Pre-feasibility study	0.3	10.2	Direcção Nacional de Águas (DNA)	
MOZ2	MOZ2	MOZ	Metuchira and Gorongoza Dam	Pungwe	P	Construct two small dams in Sofala Prov.; augment water supply, small scale irrigation and cattle watering.			1.8 (2003 Estimate)	ARA-Centro under the guidance of (DNA).	
MOZ4	MOZ4	MOZ	Moambo Dam Multipurpose	Incomati	P	Provide secure municipal supply for Maputo /Matola cities, guarantee water for irrigation, energy production and flood control.			421	Direcção Nacional de Águas	
MOZ5	MOZ5	MOZ	Development of a Telemetric Network For Flood Control and Water Resources Monitoring in Inhambane Province	Coastal Basin in Inhambane Province	P	Telemetry Network [Water Level, Rainfall & Master stn. -Inhambane province river basins] Modernize to real time monitoring, flood forecasting and early warning systems			2	DNA and ARA Sul	

PROJECTS IN BOLD - Also refer to ANNEX 2 for Datasheets RG - Regional Project XB - Cross Border Project P1 - Member State Priority # 1 Project P-Other Member State Priority Project [Up to 5 per Member State]



# ANNEX 2 List of All Priority Water Infrastructure Projects Submitted by Member States

## SADC Water Sector WATER INFRASTRUCTURE INVESTMENT CONFERENCE [Maseru Lesotho - 23 Sep 2011]

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MS # Aug-11	WIIC-2011 [Project #]	Where	Project name	River Basin	RG, XB, P#1, P	Description	Next Activity [if Specified]	Next Activity Cost [USD M]	Est'd Total Cost [USD M]	Project Sponsor	Period
NAM1	P1-9	NAM	Windhoek Aquifer Artificial Recharge	Swakop-Omaruru Basin	P #1	Artificial recharge of the Windhoek Aquifer to augment the water supply to the city centre.	Consulting Services and Construction	5	55	Ministry of Agriculture, Water and Forestry	2004-2015
NAM2	NAM2	NAM	Cleaning of Fish River at Hardap irrigation scheme and Mariental Town	Orange-Senqu River basin	P	Area to be cleaned by drying out with a system of coffer dams. Aims to improve the flood absorption and therefore flood protection in the Hardap dam.			4.5	Ministry of Agriculture, Water and Forestry	
NAM3	NAM3	NAM	Raising of Hardap Dam	Orange-Senqu River basin	P	Increasing Hardap dam storage capacity and related measures for flood protection for Hardap irrigation scheme and Mariental Town			74	Ministry of Agriculture, Water and Forestry	
NAM4	NAM4	NAM	Ruacana South Area Rural Water Supply	Kunene	P	Supply of potable water in areas of the country where the groundwater is unsuitable for domestic			1.2	Ministry of Agriculture, Water and Forestry	2011-2014
SEY1	P1-10	SEY	<b>Non Revenue Water and Use Efficiency</b>	Island	P #1	Replace non-performing pipelines, add new pipelines, leak detection, connections, meters, valves and flowmeters, telemetry and measuring at structures	Detailed Designs	1.5 % of budget	26	Seychelles Public Utilities Corporation	2015 plan
SEY2	SEY2	SEY	Storage - New Water tanks	Island	P	New water storage tanks.			6		2015 plan
SEY3	SEY3	SEY	Pumping Stations - Refurbishment	Island	P	New and refurbished pumping stations			13		2015 plan
SEY4	SEY4	SEY	Desalination	Island	P	New desalination activities [T12.5 MP]			4.4		2015 plan
SEY5	SEY5	SEY	Water Treatment	Island	P	Hermitage-14000m3/d, Cascade-7000m3/d, Le Nioi-3500m3/d, Rochon-2200m3/d, Mare aux Cochons-2600m3/d			20		2015 plan
SAO1	RG-2	SOA; LES	<b>Lesotho Highlands Phase 2</b>	Orange-Senqu	RG	New multipurpose infrastructure for Water Supply and Electricity generation.	To be decided after agreement signed by SOA and LES		1000	DWA and LHDA	2012-2020
SAO2	P1-11	SOA	<b>Water Demand Management</b>	Various	P1	Increase deliverability by reducing non revenue water [NRW], increasing water conservation, achieving higher use efficiency/water reuse and obtain monitoring data for analysis.					
SAO2	SAO2	SOA	Desalination	Coastal	P	Develop additional new water supplies at coastal locations to supplement existing potable water supplies					
SAO3	SAO3	SOA	Water for Economic and Social Development	Various	P	National program to provide potable water to every person in South Africa without compromising the ecological sustainability of water resources.	Continuation of demonstrated projects	Varies with locations	Varies by location and how complex settings are.	DWA; Local Governments	Variable to 36 mo
SAO4	SAO4	SOA	Sanitation and Waste Treatment	Various	P	National program: assist install, operate/maintain adequate sanitation/wastewater treatment infrastructure/develop human capacity, pertinent technology; reduce Env. impacts from effluents.					
SWA1	XB-4	SWA; MOZ	<b>Lomahasha - Namaacha WS</b>	Mbuluzi / Umbeluzi	XB	To provide a reliable and adequate supply of water to Lomahasha.	SWA-Design components MOZ-FS	SWA - 0.5 MOZ - 0.5	13	Gov. of Swaziland (DWA) and Gov. of Mozambique (DNA)	
SWA2	P1-12	SWA; RSA	<b>Nondvo Dam</b>	Lusushwana	P1	To avail potable water to the people residing in the two cities of Mbabane and Manzini.	Feasibility study	2	143 e* [2005]	Governments: Swaziland, RSA and Cooperating Partners	
SWA3	SWA3	SWA	Ethemba Dam	Mkhonvo	P	Water resources for agricultural production for poverty alleviation in the Mkhondvo sub basin.			391		
SWA4	SWA4	SWA; RSA; MOZ	Mpakeni Dam	Ngwavuma	P	Water resource-potable water to Ngwavuma Basin/Communities and enhanced agricultural activities. Regulate cross-border flows [RSA]; mitigate floods [RSA Mozambique]			76 e*	Govts: Swaziland, RSA, Mozambique	
SWA5	SWA5	SWA	Lavumisa-Matsanjeni-Nsalitje Corridor WSS	Ngwavuma	P	To avail potable water and sanitation to the people residing in the Lavumisa- Matsanjeni-Nsalitje corridor.					
TAN1	P1-13	TAN	<b>Ruhuhu valley Irrigation Project</b>	Lake Nyasa	P1	Irrigation development along the Ruhuhu valley; dam, spillway, bridge and road at Kipingu, irrigation scheme, Environmental management, farmer training	Feasibility studies with an updated investment analysis.	0.5 -0.6	12.3	Gov of Tanzania	5 years
TAN2	TAN2	TAN	Mwamapuli Irrigation Project	Lake Rukwa	P	To construct a flood protection bund, drainage system and a sizable charco dam to harvest water.			54	Gov of Tanzania	5 years
TAN3	TAN3	TAN	Ruhudji Hydropower Project	Rufiji River	P	To construct the Zanzibari storage dam and the power plant 7- 15 km downstream.			515.4 (Estimated 1998)	Gov of Tanzania	6 years
TAN4	TAN4	TAN	Luiche Delta Irrigation Project	Lake Tanganyika	P	Construct dam, flood protection, irr'n and drainage system. Flow control/dist'n structures: farm roads to increase income/food security.			14.3	Gov of Tanzania	5 years
TAN5	TAN5	TAN	Water Supply and Sanitation Intervention in Rural Areas in Tabora, Singida and Lindi Regions	L. Tanganyika, Int. Drainage & Ruvuma R.	P	Improve health, alleviate poverty / provide water supply. Implement water supply/sanitation in rural areas [Tabora, Singida ,Lindi Regions].			42	Gov of Tanzania	approx 2.5-3 years
ZAM1	XB-5	ZAM	<b>12 Towns / Districts - Water Supply and Sanitation</b>	Zambezi, Luapula, Tanganyika	XB	Provide sustainable and equitable access to safe water supply and proper sanitation for Zambia's rural population and help achieve MDG [WSS]	Reconnaissance evaluation of 12 locations	0.6 (12 locations)	200	Min, Local Gvt & Hsng (MLGH) / Coop. Partners	2006- 2015
ZAM2	P1-14	ZAM	<b>Climate Change Adaptation to drought - Zambia Agro-region I</b>	Zambezi, Luapula, Tanganyika	P1	Reduce drought vulnerability of those depending on rainfed agriculture under climate change and variability.	Project review to plan steps to be completed	0.05 (plus 4 to complete phase)	13.6	Min. Agric. & Coop. (MACO); Min. Tour., Env. & Nat Res (MTENR)	2009-2016
ZAM1	ZAM1	ZAM; NAM	Zambia-Namibia Agricultural Production Joint Venture Project	Zambezi	P	To promote a well regulated and profitable irrigation sub sector attractive to both public and private sector. 2400 of 5000 HA developed to have sprinkler and drip irrigation			51	Min. Agric. & Coop. (MACO) / Dept. Water Affairs (DWA)	2011-2020
ZAM2	RG-3	ZAM; ZIM	Batoka Gorge Hydropower	Zambezi	RG	Batoka Gorge: Zambia/Zimbabwean border. Both govt plan to collaboratively develop potential with 1,600 MW equally shared. Zambezi River Authority coordinating the dam.	Review prior documents; Final Design & Tender	1.5 % of budget	3500	ZESCO	Five year lead. 2013-2018
ZAM5	ZAM5	ZAM	Nine Farming Blocks Agriculture Development Project context of climate change in Agro-region I of Zambia	Zambezi, Luapula, Tanganyika	P	Commercial agriculture attracting local and foreign investment to achieve greater yields, increase employment and reduce poverty.			457	Min. Agric.&Coop. (MACO)	2011-2020
ZIM4	RG-3	ZIM / ZAM	<b>Batoka Gorge Hydropower</b>	Zambezi	RG	To increase power generation capacity and reduce reliance on coal fired powers stations.	Review prior documents; Final Design & Tender	1.5 % of budget	3500	Zimbabwean and Zambian Government	
ZIM1	P1-15	ZIM	<b>Bulawayo Water Supply from Zambezi River</b>	Zambezi	P1	Drinking water supply to the City of Bulawayo	Update feasibility study / financial analysis	1 to 2	1250	Ministry of Water Resources Development and Management	
ZIM2	ZIM2	ZIM	Kunzwi Dam	Zambezi	P	Drinking water supply to the City of Harare.			600	Ministry of Water Resources Development and Management	
ZIM3	ZIM3	ZIM	Condo Dam -Multipurpose	Save	P	To supply water for irrigation land in Chisumbanje, Middle Sabi Valley in Manicaland and generate 100 MW of hydro-electric power.			500	Ministry of Water Resources Development and Management	

PROJECTS IN BOLD - Also refer to ANNEX 2 for Datasheets RG - Regional Project XB - Cross Border Project P1 - Member State Priority # 1 Project P-Other Member State Priority Project [Up to 5 per Member State]