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Orange-Senqu River Basin: Preparation of Climate Resilient Water Resources Investment Strategy &Plan and Multipurpose Project

PROJECT APPRAISAL REPORT

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Project Information Sheet

COUNTRY	**:**	Multi National (Botswana, Lesotho, Namibia, South Africa)
PROJECT NAME	**:**	Preparation of Climate Resilient Water Resources Investment Strategy and Multipurpose Project for the Orange-Senqu River Basin
LOCATION	:	Orange-Senque River Basin
RECIPIENT	:	The Orange Senqu River Basin Commission (ORASECOM) Secretariat, Pretoria, South Africa
EXECUTING AGENCY	:	The Orange Senqu River Basin Commission (ORASECOM) Secretariat, Pretoria, South Africa
TOTAL COST	**:**	€ **3,521,952**
AWF	**:**	€ **1,979,624** (net of taxes and duties)
NEPAD-IPPF	**:**	**US$ 1,261,214 (**€ 1,130,728)[1] (net of taxes and duties)
GWP-SA	**:**	€ 178,500
ORASECOM	**:**	€ **171,360**
Governments	**:**	€ **61,740**
Estimated start date	**:**	January 2017

Exchange Rate – June 2016

1 United States Dollars (USD) = .89654 European Euro (EUR)
1 European Euro (EUR) = 1.1154 United States Dollars (USD

[1] * NEPAD-IPPF only disburses in US Dollars

List of Acronyms and Abbreviations

AfDB	African Development Bank
AMCOW	African Ministers Council on Water
AU	African Union
AusAID	Australian Agency for International Development
AWF	African Water Facility
DFID	Department for International Development
ESIA	Environmental and Socio-Economic Impact Assessment
EU	European Union
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIS	Geographic Information System
GIZ	German Agency for International Cooperation
GPN	General Procurement Notice
GWP-SA	Global Water Partnership-Southern Africa
IWRM	Integrated Water Resources Management
JMP	Joint Monitoring Programme
M&E	Monitoring & Evaluation
NEPAD-IPPF	NEPAD Infrastructure Project Preparation Facility
NGO	Non-Governmental Organisation
ORASECOM	Orange Senqu River Commission
PAR	Project Appraisal Report
PCR	Project Completion Report
PIU	Project Implementation Unit
PPP	Public Private Partnership
PSC	Project Steering Committee
QCBS	Quality and Cost-Based Selection
SADC	Southern African Development Community
SL	Short Listing
SPN	Special Procurement Notice
TAP	Technical Advisory Panel
TL	Team Leader
TWRM	Transboundary Water Resources Management
UNDP	United Nations Development Programme
WRD	Water Resources Development
WRPM	Water Resources Planning Model
WRYM	Water Resources Yield Model
WSS	Water Supply and Sanitation

Logical Frame work

Country and project name: Multinational: Preparation of Climate Resilient Water Resources Investment Strategy and Multipurpose Project for the Orange-Senqu River Basin
Main Goal: promote sustainable socio-economic growth in the riparian countries through climate resilient water resources development in the framework of basin wide cooperation

	RESULTS CHAIN	PERFORMANCE INDICATORS			MEANS OF VERIFICATION	RISKS/MITIGATION MEASURES
		Indicators	**Baseline**	**Targets**		
IMPACT	Improved climate resilient socio-economic condition and poverty eradication in the basin	% of people leaving with less than USD 1.25 a day	7.4% (2011)	0% (2030)	• SDG reports	
OUTCOMES	Riparian countries approve the investment and financing strategy	Approval decision	Nil	Approval by 24 months after grant signing	Council of Ministers minutes	***Risk:*** No consensus on the investment plan or prefeasibility study ***Mitigation:*** A basin-wide stakeholders' consultation is implemented, based on a stakeholders mapping
	The feasibility study and ESIA of the transboundary project is validated by ORASECOM and the governments	Validation decision	Nil	Validation by 24 months after grant signing	ORASECOM's Council minutes	
	10 specific actions of the IWRM Plan implementation are prepared and financed	% of actions financed	0	80% by 26 months after grant signing	Minutes of the donors' conference	
OUTPUTS	**Component I: Prepare WRD Investment strategy and plan** • Investment strategy and plan for short, medium and long term period prepared • IWRM Plan implementation roadmap prepared • Financing strategy for resources mobilization developed	• Prepared investment strategy • Prepared road map ready for implementation • Resources mobilisation roundtable conducted	• Nil • Nil • Nil	• Strategy prepared by 14 months after grant signing • Road map prepared by 14 months after grant signing • Roundtable implemented by 24 months after grant signing	Quarterly Progress Reports	**Risk** ORASECOM technical and procurement capacity are insufficient to implement the project ***Mitigation:*** • ORASECOM secretariat is strengthened by: a project manager and a procurement expert • Tailored trainings • A Technical Advisory Panel
	Component II: Project Preparation • Feasibility study report of multipurpose project prepared • ESIA report prepared	• Feasibility study report prepared • ESIA report prepared	• Nil • Nil	• FS and ESIA prepared by 24 months after grant signing	Quarterly Progress Reports	

	Component III: Capacity Building and Stakeholders' Consultation • Stakeholders platform established • ORASECOM's capacity to implement the project strengthened	• Stakeholders platform functioning • Number of trainings	• Existing platform of Council and Forum of Parties • 0	• Stakeholders platform functioning by 3 months after grant signing • 5	Quarterly Progress Reports	
	Component IV: Project Management • Project coordinated and implemented as per planning	**Component IV:** • Project completed within approved timeframe	• NA	• Project closed by 30 months after approval	• Project completion report	

ACTIVITIES	**Component I: Prepare WRD Investment strategy and plan** • Climate change impact assessment • Optimisation model development and analysis • Climate change and environmental scoping • Preparation of investment strategy to 2050 • Analysis of IWRM strategic actions • Preparation of concept notes and cost estimate for IWRM Plan implementation road map • Institutional analysis for implementation **Component II: Project Preparation -** • Feasibility investigation, study and analysis • ESIA • Resources mobilisation for implementation	**Component IIIV: Capacity Building and Stakeholders' Consultation** • Prepare CB requirement to support ORASECOM • Basin wide training seminars and workshops • Strengthening stakeholders' forum • Project implementation support **Component IV: Project Management** • Procurement and financial management • Monitoring and reporting • Steering and consultation	**Cost Estimate** • **Total Project cost ---------- € 3,521,952** • **Component I ---------- € 931,959** • **Component II ---------- € 1,967,343** • **Component III ---------- € 195,300** • **Component IV ----------€ 427,350** **Funding (net of taxes and duties)** • **AWF ---------- € 1,979,624** • **NEPAD-IPPF -----(USD 1,261,214) --€ 1,130,728** • **GWP (in cash and in-kind) ---------- --€178,500** • **ORASECOM (in cash and in-kind) -- -€171,360** • **Governments (in cash and in-kind) --- € 61,740**

Executive Summary

Background: The Orange-Senqu River Basin originates in the highlands of Lesotho and runs for over 2300 km to its mouth on the Atlantic Ocean in Namibia/South Africa. The river system is one of the largest river basins in Africa with a total catchment area of about 1.0 million km^2 and encompasses all of the Lesotho, a significant portion of South Africa, Botswana and Namibia. The basin is of major economic importance to South Africa contributing 26% to South Africa's GDP. It also supplies through a trans-basin transfer scheme most of the Gauteng province, which generates 33.9% of the national GDP. In Lesotho, all economic activities are conducted within the basin as the entire country is part of the basin. The basin contributes to the GDP of Botswana and Namibia, where mining and agriculture are the main areas of water usage. The Orange-Senqu River Basin Commission (ORASECOM) is the river basin organisation established in 2000 by the Governments of the four riparian states for managing the water resources of the basin. Over the past decade ORASECOM, with the support of key development partners, has been assessing the water resources management conditions in the basin. This has led to the development of a consolidated Integrated Water Resources Management Plan adopted in February 2015 by the ORASECOM Member States.

The IWRM plan provides a strategic transboundary water resources management framework and action areas and serves as guiding and planning tool for achieving the long-terms development goals in the basin. The IWRM Plan identifies the lack of integrated transboundary water resources investment strategy as key challenge for achieving the sustainable development of the basin water resources.

Rationale: The Orange-Senqu River Basin poses complex water management challenges for safeguarding future water security. The central theme of ensuring water security under increased hydrological variability compounded by climate change impact remains the key water resources management problem. There are multiple problems related to deteriorating environmental conditions and lack of inclusive water resources development in some parts of the basin in order to support economic growth and alleviate poverty. The solutions to these problems are to be addressed through optimisation of the water resources development based on balanced economic, social and environmental considerations.

Objectives: The objectives of the project are to prepare an optimised water resources development investment strategy and Plan with the IWRM implementation plan for the Orange-Senqu River Basin and preparation of multipurpose project for implementation in the short term time frame. Climate resilience will be integrated in the planning and development of water infrastructure. Investment financing and resources mobilisation strategies will be developed in both cases. The project promotes capacity building and institutional development as part of the stakeholders' consultation process.

Beneficiaries and impact: The beneficiaries of the investment strategy project are the 14 million people living in the riparian communities in the basin as well as 5 additional million inhabitants in South Africa located outside the basin but benefitting from its water resource through water transfer schemes. The basin water resources development will improve livelihoods and engender socio-economic growth. The project will support ORASECOM to put in long-term

investment programmes based on optimised planning. Implementation of multipurpose projects will address the immediate livelihood needs of the communities living in rural and urban centres of the project area.

Activities and Implementation: The project activities are structured under four components. Component I is concerned with the preparation of the water resources development investment strategy and plan while Component II is concerned with the preparation of a multipurpose project at feasibility level. Component III and IV address Capacity building and stakeholders' consultation and project implementation respectively. ORASECOM is the beneficiary of the grant and Executing Agency of the project. A consultancy firm will be required to undertake the technical studies. The project is planned to be implemented over a period of 32 months after grant effectiveness.

Cost and Financing: The total cost of the project is estimated at Euro **3,521,952.** The proposed funding from the AWF is Euro **1,979,624** or 56% of the total project cost; the NEPAD-IPPF will provide an amount not exceeding US$ **1,261,214** (equivalent to Euro **1,130,728)** or 32% of the total cost. GWP will make in cash and in-kind contribution of Euro **178,500** or 5%. ORASECOM and Government will make in cash and in-kind contribution of Euro **171,360 and Euro 61,740 respectively or** 7% of the total cost.

Recommendation: In view of the anticipated benefits that will accrue from the implementation of the project, it is recommended that approval be given for a grant funding **Euro 1,979,624** from **AWF** and **USD 1,261,214** from the **NEPAD-IPPF** to enable ORASECOM execute the project.

1 BACKGROUND

1.1 Origin of the Project

1.1.1 The Orange-Senqu River Basin originates in the highlands of Lesotho and runs for over 2300 km to its mouth on the Atlantic Ocean in Namibia/South Africa. The river system is one of the largest river basins in Africa with a total catchment area of about 1.0 million km^2 and encompasses all of the Lesotho, a significant portion of South Africa, Botswana and Namibia. In terms of spatial coverage, about 64.2% basin lies in South Africa, 24.5% in Namibia, 7.9% in Botswana and 3.4% in Lesotho. The mean annual runoff is estimated as 11.5 billion m3 of which 53% is from South Africa, 41.5% from Lesotho, 5.2% from Namibia and 0.3% from Botswana. The map in **Annex 1** provides the location and boundary of the Basin.

1.1.2 The Basin is of major economic importance to South Africa contributing 26% to South Africa's GDP from the Vaal and Orange rivers development for agriculture, mining, energy production and manufacturing. It also supplies through a trans-basin transfer scheme most of the Gauteng province, which generates 33.9% of the national GDP. In Lesotho, all economic activity (agriculture, livestock and manufacturing) lies within the Orange-Senqu as the entire country is in the basin. The basin also contributes to the GDP of Botswana and Namibia, where mining and agriculture are the main areas of water usage.

1.1.3 The Orange-Senqu River Basin Commission (ORASECOM) is the river basin organisation established in 2000 by the Governments of the four riparian states for managing the transboundary water resources of the Orange-Senqu River basin and promoting its beneficial development for socio-economic wellbeing and environmental safeguarding of the basin. Over the past decade ORASECOM, with the support of development partners, has been assessing the water resources management conditions in the basin and commissioning specific studies to understand the challenges and design appropriate responses to ensure sustainable management of the basin water resources. This has led to the development of a consolidated Integrated Water Resources Management Plan adopted in February 2015 by the ORASECOM Member States. A brief description of the IWRM Plan is provided in **Annex 2**.

1.1.4 The IWRM plan provides a strategic transboundary water resources management framework and action areas and serves as planning tool for achieving the long-terms development goals in the basin. It defines strategic actions that will ensure and enhance water security considering the long term socio-economic and environmental demand on the water resources of the basin. The Plan promotes building climate resilient development taking cognisance of the impact of high variability in rainfall and hydrological flow patterns. It also prioritises a ten-year planning horizon that focus on the implementation of key actions to respond to these challenges.

1.1.5 The IWRM Plan is an agreed framework for transboundary cooperation that enhances the role of ORASECOM and strengthen its position as a river basin organisation concerned with the development of the Orange-Senqu basin. The Plan identifies the lack of integrated transboundary water resources investment strategy as key challenge for achieving the sustainable development of the basin water resources. A key aspect of the transformative approach for strengthening cooperation has been identified as the need for joint project implementation that provides a mutually inclusive transboundary benefit. The long term investment strategy is considered as a critical factor for transforming water resources development in the basin.

1.1.6 The project is constructed based on a key strategic objective of the IWRM plan concerning

efficient utilization and management of the water resources of the basin. This appraisal report contains the elements of the proposed project and the implementation arrangements based on the findings of the field appraisal and consultation with ORASECOM Secretariat, Member States and key development partners.

1.2 Previous Assessment and Studies

1.2.1 The project is a result of a comprehensive IWRM process undertaken by ORASECOM over the past decade under the cooperative environment created by the SADC Protocol on Shared Watercourses and the 2000 Agreement that established ORASECOM. ORASECOM has conducted a number of thematic, planning and strategic studies that has deepened the understanding of the developmental challenges, created common understanding of the issues and facilitated the planning of joint development approaches between the riparian countries. The IWRM Plan adopted in February 2015 is the result of the consolidation of the various assessments and studies undertaken at the national and basin level over the past 10 years.

1.2.2 There are also national IWRM planning studies for the four riparian countries that provide the national perspectives for the investment analysis. The climate change study has focused on the downscaling methodology from the global model and defining the methodology to conduct downscaling exercise for the Orange-Senqu River Basin in order to reveal the nature, extent and spatial coherence of climate change in the basin. The list of some of main documents with brief content overview and **priority projects** in the IWRM Plan are provided in **Annex 3** and **Annex 4** respectively. The project will build upon all these available studies to assist ORASECOM and its Member States in preparing projects and programmes for implementation.

1.3 Sector Priorities

1.3.1 The project is conceived under the overarching continental framework of the AU Heads of State Sharma el Sheikh Commitments on water which promotes integrated management and development of shared water resources and building water security to improve resilience to climate change. The Orange-Senqu River Basin is one of the major transboundary water system within the SADC region. The SADC Protocol on Shared Watercourses is a legal instrument for fostering cooperation on transboundary water resources management. The SADC Regional Water Policy, Regional Water Strategy and Climate Change Adaptation Strategy set the operational context for transboundary water resources management. The proposed project which aims to enhance investment on transboundary water security and building resilience to climate change contributes directly to the implementation of these strategic regional instruments.

1.3.2 The project is the result of the cooperative framework that created ORASECOM to advise Member States on the development, utilisation and conservation of the water resources of the Orange-Senqu River Basin. The project is anchored in the IWRM Plan which presents the consolidated water resources development strategy for the basin. The project will provide an investment framework that extends to 2050 and in this context allows for concrete actions in planning and investment resources mobilisation to address the priority challenges related to water use while laying the foundation for meeting the long term development needs for socio-economic growth, poverty reduction and regional integration.

1.3.3 The project is well aligned and harmonised with national IWRM based policies, strategies and action plans of the Member States. The common themes of the national plans are

ensuring water security, addressing environmental issues, mobilising investment and main streaming climate change adaption in water resources management and building resilience to climate change risks. The national policies and strategies recognise that transboundary cooperation is 'sine qua non' for water resources development in the region. The project has the support of the four riparian member states which underpins the cooperation commitments on the priority developments in the basin as well as the strengthening the implementation capacity of ORASECOM. The scanned copies of the letters of endorsement from the four riparian member states is attached as **Annex 5**.

1.4 Problem Definition

1.4.1 The Orange-Senqu River Basin poses complex water management challenges for safeguarding future water security. Much of the basin is semi-arid to arid and in the lower reaches of the river the tributaries are ephemeral and contribute little runoff to the main river. A decrease in precipitation due to climate change will have a huge impact on agriculture in the lower Orange. There is a high level of inter and intra-annual variability making development challenging and costly. The impact of climate change on water will translate directly into risk for various sectors of the economy that are dependent on water resource, such as agriculture, mining, industry, energy production, urban environment, biodiversity and rural livelihoods. The central theme of ensuring water security under increased hydrological variability compounded by climate change impact remains the key water resources management problem.

1.4.2 Economic considerations of water use will be a key part of in planning the optimum use of what will become an increasingly scarce and expensive resource. Projections of future water demand and associated infrastructure development should be based on balanced consideration of economic, social, and environmental factors. The integration of the water resources yields analysis and water resources development planning with and economic optimisation will ensure the development of long term solutions to address basin water resources development challenges.

1.4.3 The Transboundary Diagnostic Analysis of the basin reveals profound environmental problems as a result of unsustainable water resources development. These include changes in the hydrological regime, loss of ecosystem services, land degradation, increased sediment loads, deteriorating water resources quality, increased presence of alien invasive plants and loss of biodiversity. A critical dimension of the actions required for sustainable environmental management is the need for a link of the results of analysis of existing situation and proposed solution into a coherent and consolidated basin wide long term environmental management strategic framework linked to the optimum future water resources development scenario for the basin.

1.4.4 The solution for addressing the water security challenges is increasing the efficient use of existing infrastructure and developing additional water resources management systems by expanding the reconciliation studies for South Africa undertaken as part of the IWRM Plan preparation to cover Botswana, Lesotho and Namibia. The basin wide reconciliation analysis will be strengthened by covering all part of the basin at equal level and integrating this with economic analysis to determine the optimised and most efficient system as part of setting the long term development strategies for the basin. The starting point for the reconciliation analysis is the consideration of core project proposals identified in the IWRM Plan attached as **Annex 4** herewith. Other possible projects will be identified and screened, in particular for Lesotho, Botswana and

Namibia as the initial list of projects identified for the IWRM plan are not considered to be comprehensive. This exercise will inform the selection of priority transboundary projects through a multi-criteria analysis which will be prepared at prefeasibility or feasibility level.

1.4.5 The implementation of the comprehensive Integrated Water Resources Management Plan requires the development of a roadmap aimed at operationalising priority projects. This roadmap will help preparing investment ready projects so as to mobilise financial resources for their implementation.

1.4.6 Addressing these multiple challenges and issues requires strong basin wide cooperation and capacity to undertake the planning, resources mobilisation and implementation of water resources management activities over a long-term time horizon. A core transboundary framework has been created in the establishment of ORASECOM. The institutional strengthening and capacity building of ORASECOM and the stakeholders' platform envisaged under the project is designed to address the future capacity development need in the basin. The project will lead to the preparation of the investment strategy and plan, the road map for IWRM Plan operationalisation and priority project. This will constitute the framework for a comprehensive resources mobilisation donors conference that will be organised at the end of project implementation.

1.5 Beneficiaries

1.5.1 The beneficiaries of the project are the 14,3 million people living in the riparian communities in the basin as well as 5 additional million inhabitants in South Africa located outside the basin but benefitting from its water resource through water transfer schemes. Inside the basin, South-Africa encompasses 11.7 million inhabitants (81.7%), Lesotho 2.2 (15,4%), Namibia 0.37 (2.6%) and Botswana 0.04 (0.3%). The basin water resources development will improve livelihoods and engender socio-economic growth. The project will support ORASECOM to put in long-term investment programmes based on optimised planning which enhanced and sustain the economic and social development benefits for the people of the four Member States.

1.5.2 The multipurpose water resources development project will address the immediate livelihood needs of the communities living in rural and urban centres in the river basin countries and project area. Development based on proper water resources management system and optimisation of existing uses will result in minimum flows restoration and availability of water through the river system thus enhancing environmental use and benefit from ecological services. The project will strengthen the collaborative relationship between Orange Senqu River Basin Member States and will result in a strong ORASECOM capable of implementing development and managing water resources of the basin.

1.6 Justification for AWF and IPPF Support

1.6.1 The project is the result of the AWF launched call for proposals for the preparation of Climate Resilient Water Resources Development Programmes and Projects. ORASECOM submitted a project proposal for enhancing climate resilient water resources investments in line with the basin wide IWRM Plan. The project was considered eligible and responsive in meeting the objective of the call for proposal and selected for the AWF work programme. Project development objectives and design are coherent with the criteria and relevant to the purpose of the call for proposals.

1.6.2 The project will result in the preparation of an optimized investment strategy and plan for long term development in the basin. Preparation for priority project for meeting urgent and basic livelihood water needs will be undertaken. A resources mobilization road map to leverage public and private sector investment will be prepared. These tasks are consistent with the AWF 2012-2016 Strategic Plan of supporting project preparation for mobilizing investment for water resources development. Capacity building and strengthening of the ORAECOM stakeholders' platform will enhance water governance and create the conducive environment for effective and sustainable investments. The water resources modeling and optimization excises which will developed available models so as to better encompass Lesotho, Namibia and Botswana, will enhance the water knowledge and provided a basis for informed governance and decision taking leading to effective and sustainable investments all of which are on line with the AWF Strategic Plan.

1.6.3 This project is aligned to the new NEPAD-IPPF Strategic Business Plan 2016-2020 whose focus is to support regional member countries to identify and prepare transboundary projects which have the potential to attract financing for implementation. In particular, the preparation of WRD Investment Strategy and Feasibility Assessments will enable identification of projects for potential downstream financing and this responds directly to Strategic Objectives 1 and 2.

1.6.4 The project is also well aligned with the pillar II of the country strategy paper (CSP) 2013-2017 for South Africa which promotes regional integration and is listed in the programme for the second half of the CSP.

1.6.5 Finally the project is in line with the African Development Bank's 10-year strategy and in particular to three of the 'high fives' objectives which are: 'Feed Africa', 'Integrate Africa', and 'Improve the Quality of Lives of Africans'.

2 THE PROJECT

2.1 Goal and Impact

2.1.1 **Purpose of the** Project**:** The developmental goal of the project is to promote sustainable socio-economic growth in four riparian countries through climate resilient water resources development in the framework of basin wide cooperation. The project will enable ORASECOM to operationalise the IWRM Plan for the Orange-Senqu river basin. The strategic investment plan will focus on developments that have transboundary benefits over the planning horizon spanning to 2050 implemented in three phases covering the short term (2020-2025), medium term (2026-2035) and long term (2036-2050). Project preparation will address the short term priority issues.

2.1.2 **Impact**: The long term impact of the project will be improved climate resilient socio-economic development and poverty eradication in the basin. The development of multipurpose water resources projects and programme will result in improved standard of living, inclusive growth, enhanced preparedness and adaptation to deal with vulnerability to climate change impact thus ensuring long term water security in the basin.

2.1.3 The development of the multipurpose water project will ensure sustainable livelihood and economic development around urban and rural settlements in the river basin and the project area. The project will address the social and environmental issues through the implementation of the

environmental and social management programmes as an integral part of the project. Gender and social equity considerations shall be mainstreamed in the basin planning and multipurpose project preparation to ensure equal participation and benefit from water resources development. The multi-stakeholders' platform ensures the participation of women in the project decision making processes as well as follow-up implementation.

2.2 Objectives and Outcomes

2.2.1 Objectives: The objectives of the project are to prepare an optimised water resources development investment strategy and plan with the IWRM implementation roadmap for the Orange-Senqu River Basin and preparation of multipurpose project for implementation in the short term time frame. Climate resilience will be integrated in the planning and development of water infrastructure. Investment financing and resources mobilisation strategies will be developed in both cases. The project promotes capacity building and institutional development as part of the stakeholders' consultation process.

2.2.2 **Outcomes:** The main outcomes of the project will be (i) Riparian countries approve the investment and financing strategy, (ii) the feasibility study and Environmental and Social Impact Assessment (ESIA) of the transboundary project is validated by ORASECOM and the governments and (iii) ten specific actions of the Integrated Water Resources Management Plan are prepared and financed.

2.3 Outputs

2.3.1 The project activities are structured under four components. Activities under **Component** I will result in **the preparation of the water resources development investment strategy** and plan while **Component II** is concerned with the **preparation of multipurpose project at feasibility level**. **Component III** and **IV** are for **Capacity building and stakeholders' consultation** and **project implementation** respectively. The main outputs, tasks and activities under each component are described in the following sections.

2.3.2 The main outputs under **Component I** are (i) a strategic investment plan for the Orange – Senqu river basin with climate change mainstreamed, (ii) road map for the implementation plan of the IWRM Plan, and (iii) financing strategy for implementing the strategic investment plan. Other associated output includes development of an economic optimisation model and updating and integration of the existing water resources planning models as part of the optimisation exercises

2.3.3 The output under **Component II** is the preparation of a multipurpose water resources development project at feasibility level including ESIA.

2.3.4 **Component III** will result in (i) an inclusive stakeholders' consultation platform with respect to the basin wide plan and the multipurpose project and (ii) capacity building of ORASECOM's Secretariat to enable it to implement the basin wide investment strategy and priority project.

2.3.5 The output from project management functions under **Component IV** is the implementation of the project in accordance with the proposed schedule and budget.

2.4 Activities

2.4.1 The activities under **Component I** are conducted in two parts. The first part consists of activities required to prepare the water resources development investment strategy and plan while the second part is for preparing the road map for operationalising the IWRM Plan. Component I will be prepared in a highly participative way through a close involvement of ORASECOM 's Task Teams and the consultation of with basin stakeholders. The details of the consultation arrangements are presented in chapter 3.2. The main tasks and activities under Competent I are presented below with the detailed activities described in the Terms of References attached herewith as Annex 9.

2.4.2 **Preparation of the water resources development investment strategy and plan**: The main tasks and activities under the development of this strategy and plan are provided as follows:

i. Review and undertake situation assessment to compile the data and information base and establish an overview of the existing situation. The situation assessment will establish water availability and use; existing infrastructures and overall cooperation and management architecture; and main environmental challenges.
ii. Review existing studies, discuss with relevant stakeholders and undertake complementary surveys in order to update the list of potential infrastructure to be considered in the elaboration of the strategic investment plan. The Lesotho, Botswana and Namibia part of the river basin will in particular be looked at carefully for its potential as this has not been fully assessed in previous studies.
iii. Undertake further development of analytics tools and models based on available models, particularly in Lesotho, Namibia and Botswana, and determine and set-up the hydrological and optimisation modelling requirements to prepare the strategic investment analysis covering the whole basin. The existing models developed in the previous studies will be made available to the consultant by ORASECOM free of charge.
iv. Undertake thematic analysis and sectoral studies, and the examination of development options under different sets of assumptions and the synthesis of existing and planned water demand management measures and infrastructure development over the plan period to 2050 with cost estimate. Future development needs will be aggregated in short term (2025), medium term (2035) and long-term (2050) time frame.
v. Mainstreaming climate change impact based on review and updating of the downscaling of the Climate Global Circulation Model to the basin level using the existing models. Climate resilience factors should be built into the optimisation modelling analysis in formulating the investment strategy and plan.
vi. Formulate and develop options and scenarios to meet the long-term water security objectives under the impending climate change impact. The analysis will take into consideration the existing reconciliation study and provide scenarios and options for the optimisation analysis. There is a need to undertake high level reconciliation studies on the Botswana, Lesotho and Namibian parts of the Basin to better inform the basin wide water resources reconciliation. Scenarios will include water demand management measures, in particular in the irrigation sector.

vii. Develop environmental and social management framework based on review and examination of the main environmental and social concerns and consideration of existing Transboundary Diagnostic Analysis and basin wide and national Environmental Sustainability Strategic Action Programme. The framework will provide the main environmental and social challenges with proposals for specific actions and terms of reference for full Strategic Environmental and Social Impact Assessment.

viii. Undertake an assessment of gender and social equity conditions will be undertaken to identify the existing challenges and issues. An overall framework for addressing the gender and social equity issues will be prepared and mainstreamed into the investment strategy with specific indicators for monitoring.

ix. Prepare basin wide investment strategy based on the hydrological and optimisation modelling analysis. This will result from the multi-criteria comparison of the efficiency of the scenarios in terms of water security and resilience to climate change, benefits and cost in economic terms, and environmental impacts.

x. Formulate a development plan including prioritisation of projects and programmes for water supply, hydropower, irrigation, industry, mining, flood management, enhancement of ecological services, livestock and fisheries etc. Three multipurpose priority projects will be identified and screened for consideration and decision to proceed with the feasibility study of a selected project.

xi. Undertake governance and institutional assessment for implementing the investment strategy and plan and develop a framework for strengthening of ORASECOM.

2.4.3 **Preparation of roadmap for operationalising the IWRM Plan:** The implementation of IWRM Plan is centred on 11 core strategic objectives for achieving the water resources development goals of the basin. The IWRM Plan has identified 43 sets of main activity areas with 136 specific actions and 346 sets of activities for implementing the strategic objectives. The study will identify the specific areas that fall within the mandate of ORASECOM and prepare a road map with a prioritised list of actions to enable ORASECOM to rollout implementation over the coming years. The main activities are described as follows with details given in Annex 9.

(i) Review of the IWRM Plan and background documents to understand the process and underlying assumption of the actions development. This will be followed by an analysis of the strategies and activities listed in the IWRM Plan to consolidated the actions and differentiate the in house and outsourced activities.

(ii) Selection of 10 specific actions (or consolidated set of specific actions in certain cases) through a participatory screening process.

(iii) For each of the selected actions, concept notes that provide background, rationale, specific tasks, activities, timeline, implementation arrangements and cost estimate and possible financing sources will be developed. Terms of references will be prepared particularly for actions that need to be outsourced.

(iv) An implementation road map that incorporate concept notes, outline TORs and cost estimate for will be prepared for operationalisation of selected specific actions.

(v) Institutional arrangement required for operationalisation and monitoring of implementation under ORASECOM Secretariat will be elaborated. The financing arrangement and resources mobilisation approaches will be developed as part of the institutional framework.

(vi) A consolidated operationalisation action plan will be prepared to serve as guideline for the implementation of the IWRM Plan strategies.

(vii) Assessment of donors' support for financing the selected options will be undertaken and preparation of requests for 10 priority actions will be prepared for consideration on the donors' conference.

2.4.4 **Component II – Multipurpose Project Preparation:** The project preparation activities are concerned with the feasibility level study and analysis of the priority project selected through component I in order to determine the technical soundness, financial and economic viability and related environmental and social sustainability issues and challenges. The result of this analysis will provide the basis for mobilising financing.

Feasibility study:

The preparation of the feasibility study will be based on a sound local stakeholders' consultation process. The main tasks and activities under this Component are outlined as follows with details given in Annex 9.

(i) **Hydrological analysis:** Undertake the hydrological analysis in the catchment of the prosed project area to determine the resulting characteristics of the yield and river discharge, long term flow pattern and flood estimate to establish the available water resources and the hydrological parameters for selection and design of hydraulic infrastructures and management; risk assessment and environmental flow conditions and provisions for ensuring long-term water security and investment sustainability under the impending climate change scenario.

(ii) **Water resources assessment:** The study will establish the available water resources and use under planned water resources development scenario in the catchment and other requirement within the catchment and linked basin. The study will determine the volume of available water for the project preferably under multipurpose use conditions such as for agriculture, energy, flood control, human and livestock, industry and urban development and ecological services as well as sustainable water security by factoring climate change considerations. The analysis will include flood risk assessment and mapping; sediment and morphology; minimum flow requirement and water quality; water storage requirement and yield; economic and environmental optimization of hydraulic structures such as dams and reservoirs; and operational and maintenance requirement of water resources management facilities.

(iii) **Topographical surveys and mapping:** Undertake survey and mapping at appropriate scale and contour interval for storage areas and dam site; irrigated areas; main hydraulic infrastructure routes, access roads; river sections, construction material sites etc. Use satellite imagery to augment the field survey and mapping works.

(iv) **Geological and geotechnical investigations:** Undertake geological and geotechnical investigations including drilling, field testing and laboratory analysis for major hydraulic infrastructure such as dam sites, reservoir areas, diversion sites, irrigated areas, water conveyance and drainage lines etc. Geological and geotechnical maps will be prepared at the required scale for feasibility analysis. The analysis, investigation and mapping will be conducted to scale and details that will enable to determine the type and configuration of all types of water resources management infrastructures and provide parameters for conducting outline design.

(v) **Thematic studies and analysis:** Thematic studies for the proposed project area includes soil survey and mapping for irrigation scheme; land use and suitability; vegetation and land cover, demographic assessment and mapping; gender analysis, social-economic survey etc. The survey, investigation and mapping and associated data will be conducted at the feasibility study level and will provided adequate and quality information for project design analysis and implementation.

(vi) **Watershed management and ecological services**: A baseline survey of the watershed conditions and accrued ecological services will be conducted to take stock of the existing conditions and determine the interventions required to improve, protect and maintain the watershed and enhance the ecological services as part of an integrated project package.

(vii) **Engineering design of water and associated infrastructure:** Preliminary design of hydraulic and other associated infrastructures required for the project development will be undertaken. The design will be based on thorough technical analysis and will consider the construction, operation and maintenance requirement and sustainability of the selected infrastructures. The design will firmly establish the type and dimensions of the infrastructures and provide sufficient details for estimating quantities and cost. The design will include dam and appurtenant structures; hydropower systems; flood protection and river training; water diversion, conveyance and distribution systems; irrigation and drainage systems; water supply and treatment; roads and other productive infrastructure etc.

(viii) **Mainstreaming climate change impact:** Project specific assessment and evaluation of climate change risks and adaptation measures will be undertaken based on the results of general basin wide and prefeasibility analysis. A comprehensive risk management strategy and adaptation measures will be developed and integrated into the project design and implementation plans.

(ix) **Project implementation planning:** Construction plans and implementation schedule for infrastructure development will be prepared. This will identify the main construction components with the methodology, material, technology, workflow and schedule required to develop the project.

(x) **Institutional analysis:** Assess and develop the institutional arrangements required for project implementation and operation in the framework of the national and river basin institutional set-ups. Development of institutional arrangement will include elaboration of the legal and regulatory framework, stakeholders' engagement, coordination and monitoring with the organizational structure, the broad human resources and budget requirement necessary for the project implementation, operation and production on sustainable manner.

(xi) **Cost benefit analysis:** Assessment and analysis of the cost and benefit for the without and with project will be made to establish the incremental net benefit arising project investment as well as the sustainability positive impact over a long-term time horizon. Economic cost estimate will be made for the various project component with schedule of expenditure for capital, replacement, operation and maintenance and management costs for all activities and

services. Estimates of project benefits and costs in economic terms include direct and indirect benefits and costs; tangible and intangible benefits and costs related to the project. Analysis should include sensitivity tests for different critical parameters including climate change impact.

(xii) **Financial analysis:** Financial analysis will be conducted using standard techniques to determine the finical rate of return for investment decision making.

(xiii) **Resources mobilization and investment framework :** A resources mobilization and investment framework will be prepared based on the results of the technical studies, cost benefit analysis and economic and financial analysis for the purpose of attracting investment resources from the public and private sector. This will include the assessment of the implementation of the project under a PPP scheme.

Environmental and Social Impact Assessment:

An environmental and social impact assessment will be undertaken to establish potential project environmental and social impacts and risks and propose the environmental and social management plan and relocation action plan for implementation. The main activities related to this component are:

(i) Assessment of existing environment and social conditions related to the bio-physical and socio-economic conditions; water resources management; climate change impact conditions prevailing in the project area.
(ii) Undertake a rapid appraisal process to engage key stakeholders and analyse main environmental and social concerns and issues and establish the environmental baseline conditions and socio-economic profile. Identify and assess the policy, strategy and institutional frameworks, regulatory standards and conventions relevant for safeguarding the environment and identify gaps with respect to environmental and social management plan.
(iii) Undertake comparative analysis of alternatives to the proposed project to identify and assess feasible alternatives for meeting the project developmental objectives
(iv) Assessment of potential project environmental and social impacts and risks will be undertaken based on review of existing information, site visits, field investigation and survey and stakeholders' consultations and analysis of the proposed project design. The assessment will identify the impact and risks associated with the intended project activities and interaction with the environmental and socio-cultural resources.
(v) Prepare the environmental and social management plan outlining the positive aspect and mitigation measures on the negative impacts.

2.4.5 **Component III: Capacity Building and Stakeholders' Consultation:** Global Water Partnership Southern Africa will support the ORASECOM Secretariat in the implementation of the activities under this component. The Global Water Partnership is an international non-governmental organization established to support the sustainable development and management of water resources within the framework of the IWRM approach. GWP Southern Africa (GWP-SA) is a regional arm established to mobilize multi-stakeholder platforms to facilitate the

mainstreaming of IWRM principles and approaches, support capacity building and promote IWRM knowledge. Component III includes the following activities.

(i) Review the ORASECOM capacity building programme and prepare consolidated capacity building requirement to support the implementation of Component I and II by ORASECOM.
(ii) Undertake national and basin wide training meetings and seminars to enhance awareness on transboundary cooperation and promote the implementation of the investment strategy and plan as well the priority project.
(iii) Carry out a stakeholders mapping and undertake a basin wide stakeholders' consultation for component I and facilitate national and local level consultation process for Component II based on the objectives of the IWRM Plan on promoting high level stakeholders' engagement.
(iv) Promote and support ORASECOM in the coordination and implementation of the project.

2.4.6 **Component IV - Project Management:** This consists of establishing a project implementation unit, Project Steering Committee and Technical Advisory Panel to guide implementation of the project and validate project output. Project management include the following activities:

(i) Establish the Project Management Unit by assigning professional and support staff and appointing the Project Manager.

(ii) Undertake project implementation task and follow-up of implementation according to schedule and budget including procurement, financial management and auditing

(iii) Facilitate the work of the consultancy firm and ensure provisions of the support specified in the consultancy agreement.

(iv) Identify the project communication and promotion needs based on the ORASECOM communication strategy and develop action plan and implement it. The PMU will also organise meetings and workshops including that of the Steering Committee and Technical Advisory Panel. It will prepare reports on progress and performance as per the reporting schedule in this PAR.

(v) Organise the basin wide stakeholders' consultation process, and support the government in preparing the national and local consultation process.

(vi) Organise, prepare and conduct a donors' conference to promote and mobilise investment commitments for the implementation of the strategic plan, priority project and the IRWM Plan priority actions.

(vii) Prepare the project completion report on project completion.

2.5 Risks

2.5.1 The risk associated with the achievement of the project outcomes is related to the need for achieving consensus on determining priority projects for the prefeasibility analysis and the resultant investment plan. A basin wide stakeholders' consultation process will be implemented to build confidence and engage stakeholders early in selection the project selection process. Government and key stakeholder consultation will be conducted at key stages of project

development.

2.5.2 The project encompasses an integrated approach for enhancing the overall implementation capacity ORASECOM and the strengthening of stakeholders' ownership and participation in the long term water resources development and management in the basin.

2.5.3 The lack of technical and procurement capacity in ORASECOM has been identified as determining factor for implementing the project and a critical risk for achieving the project output. The project provides for a recruitment of qualified project manager and procurement specialist to augment the ORASECOM capacity and fill the gap in this area.

2.6 Cost and Financing

2.6.1 The total cost of the project, net of taxes and duties, is estimated at Euro 3,521,952 including 5% contingency. Table 2.1 presents the proposed project cost estimate for by component and sources of funding. The detailed cost estimate is provided in **Annex 6**.

Table 2.1: Project Cost Estimate by Component and Source of Financing in Euro net of taxes and duties (includes 5% contingency)

Component	AWF	NEPAD	GWP-SA	ORASECOM	Govt.	Total
1. Preparation of WRD Investment Strategy	568,495	363,464	-	-	-	931,959
2. Project Preparation - Feasibility study	1,200,079	767,264	-	-	-	1,967,343
3. Capacity Building and Stakeholders' Consultation	-	-	178,500	-	16,800	195,300
4. Project Management	211,050	-	-	171,360	44,940	427,350
Total	**1,979,624**	**1,130,728**	**178,500**	**171,360**	**61,740**	**3,521,952**
Percent of total	56%	32%	5%	5%	2%	100%

2.6.2 The main project cost consists of payment for the consultancy services for the preparation of to the investment strategy (Euro 931,959) and project preparation (Euro 1,967,343). The consultancy service cost constitutes 82% of the total project cost. The estimate for capacity building and stakeholders' consultation and project management are Euro 195,300 and Euro 437,850 respectively.

2.6.3 The proposed funding from the AWF is Euro **1,979,624** or 56% of the total project cost, and will cover part of the main consultancy as well as the Project Manager and procurement specialist. NEPAD IPPF will provide an amount not exceeding US$ 1,261,214 (Euro **1,130,728)** or 32% of the total cost to support part of the consultancy services cost. GWP-SA will contribute Euro **178,500 (in cash and in-kind)** or 5% for the basin wide consultation process and the capacity building. Table 2.2 and 2.3 below provides the cost estimate by sources of funding and category of expenditure and by component and category of expenditure respectively.

Table 2.2.: Project Cost Estimate by Source of Funding and Category of Expenditure net of taxes and duties (in Euro)

Sources of Funding	Category of Expenditure		Subtotal	Contingency	Total
	Goods	Services			
AWF	-	1,885,356	1,885,356	94,268	1,979,624
NEPAD-IPPF	-	1,076,884	1,076,884	53,844	1,130,728
GWP-SA	-	170,000	170,000	8,500	178,500
ORASECOM	3000	160,200	163,200	8,160	171,360
Government	-	58,800	58,800	2,940	61,740
Total	**3,000.00**	**3,351,240**	**3,354,240**	**167,712**	**3,521,952**

Table 2.3: Project Cost Estimate net of taxes and duties by Category of Expenditure (in Euro)

Description	Goods	Service	Operations	Total
Comp I :Preparation of WRD Investment Strategy & Implementation Plan	-	887,580	-	887,580
Comp II: Project Preparation - Feasibility study and ESIA	-	1,873,660	-	1,873,660
Comp III: Capacity Building and Stakeholders' Consultation	-	186,000	-	186,000
Comp IV: Project Management	3,000	360,800	43,200	407,000
Total	**3,000**	**3,308,040**	**43,200**	**3,354,240**
Contingency (5%)	**150**	**165,402**	**2,160**	**167,712**
Grand total	**3,150**	**3,473,442**	**45,360**	**3,521,952**

2.6.4 The in cash and in-kind contributions from ORASECOM is estimated as Euro **171,360 (5% of total cost)** and will bear the running costs of the PIU, including salaries, office space and equipment, the logistic of the Steering Committee and Technical Advisory Panel. Governments will contribute through the mobilization of national experts for the technical Advisory Panel and the organization of the local consultation process for an amount estimated to Euro **61,740** in kind corresponding to 2% of the total project costs as shown in Table 2.1 above. Annex 6 details ORASECOM's and Governments contribution.

3 PROJECT IMPLEMENTATION

3.1 Recipient and Executing Agency

3.1.1 The ORASECOM Secretariat located in Centurion, South Africa will be the recipient, beneficiary and Executing Agency of the Project. ORASECOM is a river basin organisation established by Botswana, Lesotho, Namibia and South Africa by agreement signed in 2000 within the framework of the SADC Protocol on Shared Watercourses. ORASECOM was established to advise the Member States on the development, utilisation and conservation of the water resources of the Orange-Senqu River Basin. The programme of work of ORASECOM is overseen by a Council of Commissioners (at operational and policy level) and Forum of the Parties (i.e. Ministers, for provision of policy and political direction) delegated by the Members States. The Council is supported by various technical Task Teams and the Secretariat.

3.1.2 The Secretariat is responsible for programme coordination, programme development, management and implementation of the decisions of the Council and the Forum of the Parties. The Secretariat is headed by an Executive Secretary who is an ex officio member of Council with responsibility for Strategic programme management; direction, planning and guidance, quality assurance, resources mobilisation and collaboration with partners and stakeholders.

3.1.3 The ORASECOM Secretariat has considerable experience in implementing projects financed by development partners including UNDP, GEF, DFID, GIZ, AuSAID, EU and management of high level consultancy firms. The development of the basin environmental management action programmes supported by GEF and preparation of the IWRM Plan and its adoption by the Member States are the important results of the various thematic and sector studies conducted under the supervisor of the Secretariat. The Secretariat has lean structure with core staff for conducting its core functions.

3.2 Implementation Arrangements

3.2.1 A Project Implementation Unit (PIU) headed by a competent Project Manager will be established under the Executive Secretary of ORASECOM. The PIU staff will consist of Project Manager, accountant, administrative assistant, procurement consultant, communication and monitoring officer and logistical support staff. The Project Manager and procurement consultant will be contracted through a competitive process and financed by AWF as the assessment of ORASECOM's capacities show that the current staffing would not allow to properly conduct these functions. All other team members will be nominated by ORASECOM and work part time on the project. The procurement consultant will be recruited only for the initial phase of the project, and will be remunerated based on a lump-sum contract with payments linked to deliverables. The ORASECOM Secretariat will provide furnished office of adequate space for the PIU and will cover the cost of office equipment, office supplies, running cost, communication, utilities and logistical support needs. Pending the recruitment of the Project Manager, an interim Project Manager was nominated by ORASECOM.

3.2.2 The services of a consultancy firm will be contracted to undertake the preparation of the investment strategy and plan as well as the priority project along with the resources mobilisation framework. The services will be provided by a reputable and qualified international consulting firms recruited on a competitive basis in accordance with the Bank rules and regulations. The draft terms of reference for the consultancy services is provide in **Annex 11**.

3.2.3 Project steering, validation and adoption of outputs will be assured through existing mechanisms in ORASECOM. The ORASECOM Council of Commissioners [2]will provide political and strategic guidance and approve and adopt the project outputs. The ORASECOM Technical Task Team will be extended to additional relevant ministries to constitute the Project Steering Committee which is responsible for providing project oversight, steering and guidance. A Technical Advisory Panel, funded by the Governments, consisting of qualified and experienced professionals will be established to support the Technical Task Team with respect to the technical and scientific integrity of the study. ORASECOM Communication Team will have a role of oversight and guidance of the Stakeholders Platform and capacity building. There will be participation of the national officers in the project Steering. The Finance Task Team will also provide procurement and financial advice to the Project and participate in the Project Steering Committee.

3.2.4 A basin wide stakeholders' consultation platform will be established with members from concerned government representatives, NGOs, private sector, local government and communities, cooperating partners, research institutions, bilateral and regional bodies, parliamentarian etc. This platform will be consulted during the elaboration of the water resources development investment strategy and plan. Local or national consultation processes will be organised and financed by the government concerned by the feasibility study.

3.3 Project Implementation Schedule

3.3.1 The project will be implemented over a period of 32 months from Grant Effectiveness or 26 months after consultancy contract signing as shown on the tentative project implementation and staff input schedule in **Annex 7**. The Project Manager, procurement specialist and main consultant for the study will be procured under advance contracting. Preparation of the investment strategy and plan will be undertaken over a 14 months' period while the project preparation will be implemented over the subsequent 10-month period.

3.3.2 The main tasks and timing of events are presented in Table 3.1 below. The Executing Agency will initiate advanced procurement actions in the recruitment of the consulting firm and the Project Manager to fast track implementation of the project activities. This will allow launching of the project as soon as the Grant is declared effective.

Table 3.1 Performance Plan

Item	Event	Schedule
1.	Advance contracting: launch of the procurement process	M-9
2.	**Project Approval**	M-6
3.	Contracting of Project Manager and procurement specialist	M-5
4.	**Grant effectiveness (signing)**	M-4
5.	Fulfilling of conditions of first disbursement	M-4

[2] The Council Commissioner consists of delegations from each of the four member countries. The delegations are comprised of three permanent members from the respective government agencies responsible for water resources management. Task teams are established by Council and contain representatives from the member countries.

Item	Event	Schedule
6.	Contracting of Consultancy services	M+0
7.	**Preparation of Investment Strategy**	**M+0-M+14**
8.	situation review and inception	M+3
9.	Thematic studies and model elaboration (Interim report)	M+7
10.	Investment analysis and strategy and plan preparation (draft final report)	M+12
11.	Investment strategy and plan (final report)	M+14
12.	Roadmap for operationalising the IWRM Plan report	M+14
13.	**Project Preparation**	**M+15-M+24**
14.	Survey and investigation	M+19
15.	Thematic studies and analysis	M+19
16.	Project preparation draft final report	M+22
17.	Project preparation final report	M+24
18.	Resources mobilisation donors conference	M+26

3.4 Procurement Arrangements

3.4.1 Procurement of goods (including non-consultancy services) and the acquisition of consulting services, financed by the AWF for the project, will be carried out in accordance with the *"Procurement Policy and Methodology for Bank Group Funded Operations" (BPM),* dated October 2015 and following the provisions stated in the Financing Agreement. Specifically, Procurement would be carried out following:

3.4.2 Bank Procurement Policy and Methodology (PPM) using the relevant Bank Standard Solicitation Documents shall be applied for the following packages:

Consulting Services:

- Preparation of WRD Investment Strategy & Plan and of a feasibility study, at estimated value of EUR 2,433,249 and ESIA and associated plans at an estimated value of EUR 466,053 following the Quality and Cost-Based Selection (QCBS) method.
- Recruitment of Project Manager amounting to Euro 184,800 and procurement specialist amounting to Euro 21,000 shall be carried out following selection method of Individual Consultant on the basis of shortlist.

Non - Consulting Services:

- Resources mobilization around table valued at EUR 5,250 will be carried out using Shopping procedure.

3.4.3 **Procurement Risks and Capacity Assessment (PRCA):** the assessment of procurement risks at the Country, Sector, and Project levels and of procurement capacity at the Executing Agency (EA), were undertaken for the project and the output have informed the decisions on the procurement regimes being used for specific transactions or groups of similar transactions under the project. The result of the procurement is attached as **Annex 8.**

3.4.4 The procurement of the consultancy firm and of the individual consultants will be

undertaken under prior review by the Bank.

3.5 Disbursement Arrangements

3.5.1 The AWF support for consultancy services, estimated at Euro 1,768,574 (including 5% contingencies), shall be disbursed in Euro through the Direct Payment Method. The NEPAD IPPF grant shall be disbursed in US Dollars through Direct Payment Method[3]. Verification and certification of invoices will be carried out by the PIU, in accordance with the Bank's disbursement rules and procedures.

3.5.2 The AWF supported expenses related to payment for the Project Manager, procurement specialist, organisation of resources mobilisation roundtable conference amounting to Euro 211,050 (including 5% contingencies), will be disbursed through the Special Account method. The Recipient will open a Special Account for the AWF grant, denominated in Euros in a bank acceptable to the AWF.

3.5.3 The special account resources will be replenished during the grant disbursement period, provided there is justification that up to 50% of the previous advance has been used and that the other previous advances have been fully justified. The justification of expenditure may be submitted as often as possible, but at least every semester. Justifications might not necessarily be accompanied by a request for replenishment of resources. The proposed disbursement arrangement for the project as indicated in the Table 3.3 below.

Table 3.3 Disbursement Schedule

Source of Funding	Special Account Method for Project Management support	Direct Disbursement Method for Consultancy Services	Total
AWF	Euro 211,050	Euro 1,768,574	Euro 1,979,624
NEPAD-IPPF	- -	US$ 1,261,214	US$ 1,261,214

3.5.4 The condition precedent to first disbursement of funds is submission of evidence of the opening of a foreign currency denominated Special Account for the Project in a bank acceptable to the Bank for the deposit of the proceeds of the Grant.

3.6 Financial Management Arrangements

3.6.1 The Financial Management (FM) of the project will be carried out by ORASECOM Secretariat, who shall be responsible for budgeting, accounting, internal control, funds flow and financial reporting. An assessment of the financial management capacity of the ORASECOM Secretariat (**Annex 9**) indicated that there is reasonable manpower and the technical capacity required to meet the accounting and reporting requirements of the proposed project. The ORASECOM Secretariat will be required to produce financial reports for the project every quarter in a format to be agreed with the AWF and submitted for AWF review no later than 30 days after

[3] NEPAD-IPPF only disburses in US Dollar amounts .

the end of each quarter, as part of the quarterly progress report.

3.6.2 The project accounts shall be kept separately managed, indicating expenditure by component category and source of financing. Statements of expenditure and supporting documents should be kept for review by the Bank and for submission for justification during the request for replenishment. The project will be audited twice by an independent auditor to ensure that the funds provided have been spent for the intended purpose. The AWF will recruit and retain an auditor for the project and will cover the cost from its administrative budget. Interim auditing is proposed 12 months after grant effectiveness and 2nd auditing at the end of the project. Review of financial management will also be conducted by AWF supervision missions.

3.7 Monitoring and Reporting Arrangement

3.7.1 The monitoring of the project implementation activities including that of the consultancy services will be carried out by the Project Manager under the Executive Secretary of ORASECOM. The ORASECOM Executive Secretary will have the overall responsibility of monitoring and of reviewing progress and providing guidance from time to time. The PM will submit quarterly progress reports for AWF and IPPF reviews as well as ORASECOM Members States and key stakeholders. The Logical Framework matrix included in this PAR, and as modified in the Inception Report, shall serve as a basis for the results-based assessment of the outputs of the project during implementation and after completion.

3.7.2 AWF and IPPF will also monitor project implementation through communication and correspondence with the ORASECOM and project team. In addition, AWF and IPPF will undertake supervision missions as the need arises but at once a year. ORASECOM and the Project team will apply the AWF and IPPF Communication and Visibility Guidelines as outlined in Annex 8 for project promotion, awareness building and other communication needs.

3.7.3 The project team shall adhere to the reporting requirements and schedule outlined in Annex 5. The timing for submission of reports, review requirement and final reports preparation will be clarified in the Inception Report. The technical reports prepared by the consulting firm shall be submitted through the PIU for review and validation by the PSC, TAP, stakeholders and AWF and NEPAD IPPF. ORASECOM is responsible for preparing the Project Completion Report at end of the project. The AWF Progress and PCR reporting formats will be used in preparing these reports.

3.7.4 The main reporting requirements are summarised as follows. Details of the reports prepared by the consultant are provided in the draft TOR for the consultant attached as **Annex 11**.

(i) **Quarterly Progress Report:** The reports prepared by the PIU with the input from the consultant, will cover technical, procurement, disbursement and financial progress, administrative issues and constraints affecting the project and suggested solutions.

(ii) **Investment Strategy and Plan Inception/Situation Assessment Report**: **The** Report will provide the results of the review and situation assessment and outline the consultants approach to the preparation of the investment strategy.

(iii) **Investment Strategy and Plan Interim Report:** The interim report prepared on completion of the thematic analysis and will elaborates the overall modelling analysis and assumptions for the development of investment strategy.

(iv) **Investment Strategy and Plan Report:** The report will provide the investment strategy and **plan which** will elaborate the short, medium and long term action plans with investment estimate and implementation mechanisms.

(v) **Project Preparation Interim Report:** The report will present an overall assessment and findings of the site investigation, survey and thematic studies and an indicative multipurpose project proposal with outline content of the final main and theme reports.

(vi) **Projects Preparation - Feasibility Study Report:** This report prepared by the consultant will elaborate the prefeasibility analysis of the priority projects with a recommendations feasibility study and design. This will include resources mobilisation report for consideration on the resources mobilisation **donors conference.**

(vii) **Project Preparation-** ESIA, RAP and ESMP reports

(viii) **Project Completion Report (PCR):** The PCR will be prepared by the Executing Agency at the end of the project implementation.

4 EFFECTIVENESS, EFFICIENCY AND SUSTAINABILITY

4.1 Effectiveness and Efficiency

4.1.1 The project provides an effective response to the multidimensional challenges of water resources development in an environment where climate change impact will increasingly encroach on the long term water security of the Orange-Senqu river basin. The project elaborates a strategic investment framework and plan that will effectively enhance and cement cooperation among the ORASECOM Member States to develop water resources of the basin for overcoming poverty and generating sustainable socio-economic growth. The preparation of the long term investment strategy and plan is a pivotal action that ensures implementation of the IWRM plan and underpins the SADC vision on transboundary cooperation and protocol on shared water courses.

4.1.2 The project aims to mainstream climate change at the basin level as part the investment strategy & plan and at the project level in the preparation if water transfer project to ensure the building of climate resilient water infrastructure. This will create the necessary linkages between the planned Strategic Action Programme designed to address the existing environmental issues at the basin scale with the long term basin wide infrastructure development and water resources management strategies as a consolidated operational framework for addressing the challenges climate change in the Orange-Senqu river basin.

4.2 Sustainability

4.2.1 The proposed project is an outcome of an IWRM planning process that led to the adoption of the Orange-Senqu River Basin IWRM Plan in February 2015. The preparation of an investment strategy and plan is logical progression for the implementation of the IWRM Plan to achieve sustainable water resources development in the basin. The project results will be instrumental in helping the riparian countries operationalise the SADC Protocol on Shared Watercourses and region and achieve their commitments, plans and priorities expressed in their national policies and strategies.

4.2.2 The IWRM based investment strategy and plan provides sustainable solution in achieving

the SDG and the long term development aspirations at the basin and national scale. Water as an economic good is vital in ending hunger, poverty and key to urbanization, industrial development and energy production as a basis of sustainable economic growth. Social inclusiveness and equity is enhanced through provision of basic water services for enhancing health, quality education, gender equality and quality livelihood. The environmental goals of combating climate change are addressed through sustainable water security; water conservation and safe guarding the water environment are the cornerstone of assuring sustainable water resources for the generation to come.

4.2.3 Ensuring integration of climate change in the long term investment strategy and mainstreaming climate resilience planning in the infrastructure development will address the critical factors of water security arising from the projected increases in temperature and variations in precipitation. Mainstreaming climate change factors in water resources development will enhance resilience of economies and livelihoods as water resources of the Orange-Senqu Basin is critical to the sustainability of the economic development of the riparian member states and SADC. The project will provide an integrated environmental management package that brings together the existing plans, future scenarios and climate change issues as an integral part of the investment strategy and plan.

4.2.4 The long term sustainability of water resources development in the basin is taken as central objective of the project design. The process of preparing the investment strategy & Plan and the water transfer project will be conducted in an inclusive, participatory stakeholders' engagement process. Political leadership and project oversight is assured at the levels of the ORASECOM's Council and the Forum of the Parties (Ministers). The technical quality and design of most appreciate and responsive solutions will have conducted by consulting firm of reputable quality and experience in this type of work. A technical panel of experts assures the technical quality and appropriates of the proposed solutions. A consolidated institutional framework for implementation and monitoring of the development activities and management of the whole aspect of basin water resources will be proposed based on strengthening the capacity of ORASECOM and broadening its mandate.

4.2.5 The project will result in the provision of financing and resource mobilisation strategy and plan in relation to the basin wide investment and implementation of the water transfer scheme. The strategy will make maximum use of public private sector partnership approach to ensure sustainable flow of resources for development and management of the basin resources.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

5.1.1 The project is well aligned to SADC Shared Watercourses Protocol and the goals of establishing ORASECOM. The project is a key component of implementing the Orange-Senqu River Basin IWRM Plan and is considered essential for mobilising investment to undertake long term development of the water resources of the basin. At the same time, the project is in compliance with the objectives and priority areas of intervention of the African Water Facility – the project comprises mainly strategic planning, project preparation, generation and harnessing of knowledge uptake for improved sector investments.

5.1.2 Given the IWRM-compliant approach and the factoring into the hydrological models of

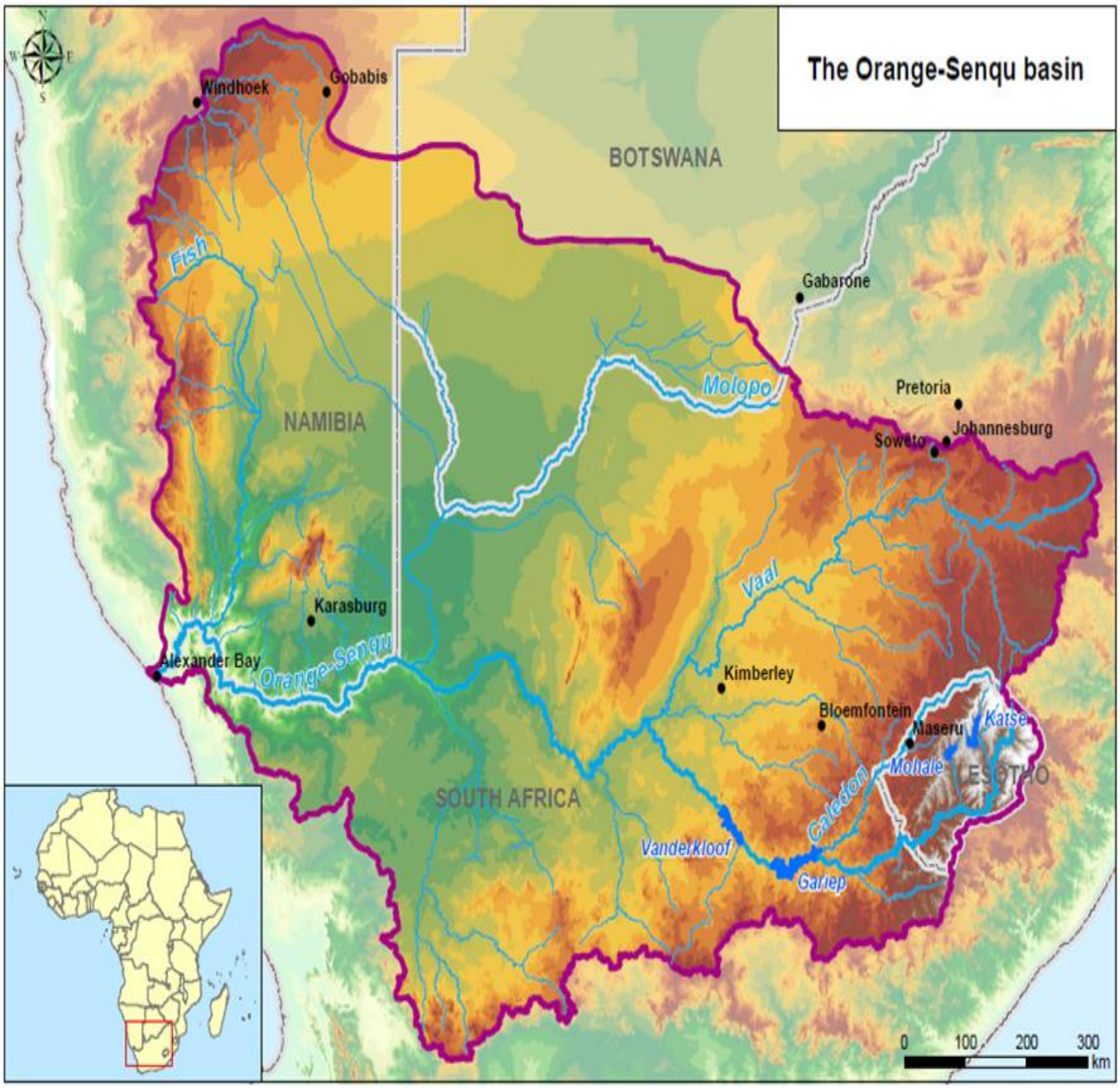
projected climate change impacts, the project will promote adaptation to the effects of climate change and enhance long-term security of access to water supply, energy and food production, industrial and mining development as enhancing the ecological services. The deteriorating water resources quality situation in the Basin is expected to improve through sustainable minimum water flow release throughout the river system.

5.1.3 The obligation of the Bank to make the first disbursement of the grant shall be conditional upon the entry into force of the Grant Agreement and upon submission of evidence of the opening of a foreign currency denominated Special Account for the Project in a bank acceptable to the Bank for the deposit of the proceeds of the AWF Grant.

5.2 Recommendation

5.2.1 In view of the anticipated benefits that will accrue from the implementation of the project, it is recommended that approval of the grant funding Euro 1,979,624 from **AWF** and USD 1,261,214 from **NEPAD-IPPF** be considered to enable ORASECOM execute the project.

Annex 1: The Orange-Senqu Basin



Source: Integrated Water Resources Management Plan for the Orange-Senqu River Basin 2014

Annex 2: Description of the IWRM Plan for the Orange-Senqu River Basin

The IWRM Plan[4] is designed to ensure the optimized and sustainable management of the basin's water resources to support socio-economic development and environmental requirement considering all competing use including consideration of the impact of climate change. The Plan promotes reduction in the adverse effects of catchment degradation, sustainability of the resource use and building resilience from water-related disasters. The IRWM plan promotes strengthened governance structures for ensuring the sustainable water resources development in basin.

The IWRM Plan provides a 10-year basin-wide water resources development road map for the Orange-Senqu River Basin covering the period 2015-2024. The Plan was developed through a long process which started in 2004 and involved the undertaking of various thematic studies and thorough process of stakeholders' consultations. Various thematic, socio-economic, environmental and reconciliation studies and situation analysis of existing and future water resources development needs were undertaken by applying hydrological analysis and water balance simulation under plausible development scenarios. Brief description of the thematic studies and water resources analysis that provided the building block for the IWRM is given in **Annex 3**.

The main objective of the IWRM Plan is **"to provide a framework for sustainable development and management of the water resources, taking into account the need for improved distribution and equitable allocation of benefits, in order to contribute towards socio-economic upliftment of communities within the basin, and ensure future water security for the basin States."** The Plan lays the foundation for a vision for the basin of '**a well-managed water secure basin with prosperous inhabitants living in harmony in a healthy environment'**

The strategic objectives of the IWRM Plan have been defined around 4 central, 5 enabling and 2 cross-cutting core objectives as indicated in the table below.

1. **Ensure the optimized sustainable management of the basin's water resources** 2. **Support socioeconomic upliftment and eradication of poverty in the basin** 3. **Ensure that the adverse effects of catchment degradation are reduced and the sustainability of resource use is improved** 4. **Maximize security from water-related disasters (especially flood and drought)**	5. Put an adequate knowledge base in place 6. Build sufficient capacity and institutional strength 7. Promote high level of stakeholder engagement 8. Ensure appropriate financing mechanisms are in place 9. Promote adaptive management and effective monitoring and evaluation systems.	10. Promote the mainstreaming of adaptation to potential impacts of climate change into planned actions 11. Ensure the mainstreaming of gender considerations into planned actions

[4] For full information refer to ORASECOM: Integrated Water Resource Management Plan for the Orange-Senqu River Basin – Main Report No. ORASECOM 019/2014, December 2014

The core objectives have been further disaggregated into 43 sets of main activity areas, 136 specific actions and 346 sets of implementable activities at national and river basin level. The action areas and activities required to realize the strategic objectives of the Plan were developed through a series of workshops with key regional and national stakeholders.

ORASECOM as a river basin organization has responsibility for following up and monitoring of implementation of the national level actions by national agencies and direct responsibility for implementing the actions that require multinational national efforts across the river basin. The primary action areas in which ORASECOM will be most actively involved has been identified as efficient development and management of water resources; equitable utilization of water resources; watershed management and land-use planning; environmental water requirements; flood and drought mitigation and climate proofing; data information management; and enabling and cross-cutting actions.

The Plan looks at water resources development and management alternatives needed to stratify the future water demand for socio-economic development and environmental requirement from 2016 to 2050. The development projection and water demand analysis is based on reconciliation studies and consideration of alternatives scenarios for building water infrastructure and implementing potential water resources management actions to raise water use efficiency and water quality while making adequate allocation for environmental requirement.

Specific water resources yield and planning models were developed and applied to assess the water resources and simulate future projected demand and use under various development scenarios. The planning analysis shows the need for water saving and conservation, increasing storage capacities from existing storage facilities and using the unexploited low level storage and construction of additional storage facilities in the basin over the coming 35 years. The list of projects identified in the IWRM Plan and their existing status in provided in **Annex 4**.

ORASECOM has taken steps to implement the IWRM Plan in accordance with its mandate following the implementation arrangements provided in the Plan. The main actions required to proceed with implementation are:

(i) the need for conducting detailed reconciliation study for all the riparian states as the study provided in the Plan does not cover adequately cover the Namibia, Botswana and Lesotho and integrating the results in the basin plan;

(ii) The analysis of development scenarios was based on application of hydrological models for assessing water availability and simulation of future demand and use. There is a need to consider economic factors as well as the social and environmental challenges in an integrated optimization analysis thus linking water availably, demand and use to the economic, social and environmental needs in the basin and

(iii) The action plans and road map for operationalizing the actions identified under the core strategic objectives need to be developed to enable ORASECOM to mobilize resources and institutional capacity for implementation. The project under consideration in this appraisal report is designed to address these key issues and provide ORASECOM with investment and operationalization plan for implementation over the coming decades.

Annex 3: Outline List of ORASECOM Study Reports[5]

Botswana
1. Government of Botswana, Department of Water Affairs; National Water Master Plan Review - 2006. The NWMPR updates and improves the first national water master plan (1991) and extends the projections of water demands and potential supplies for a planning period of thirty years taking into consideration the social, environmental and economic implications. The plan includes thematic study reports on sociology and demography, surface water resources, groundwater resources, water demands, rural water supply, sanitation and wastewater reuse, agriculture, environment, institutions and legislation reform, water development modelling, economics of urban water, water resources model manual and digital atlas.
2. Botswana IWRM Water Efficiency Plan Volume 1 - Main report: Prepared by the Centre for Applied Research for Department of Water Affairs & the Kalahari Conservation Society - 2012: Provide the overall guiding vision and strategic goal for water resources development and defines strategic actions for short term (2013-2015); medium term (2016-2023) and long term (2024-2030).
Namibia
3. Promulgation of Water Resources Management Act, Republic of Namibia Windhoek - 2013: It is an act on the management, protection, development, use and conservation of water resources as well as the regulation and monitoring of water services.
4. Integrated Water Resources Management Plan for Namibia Ministry of Agriculture, Water and Forestry-2010: This report provides the IWRM plan for Namibia which includes National Water Development Strategy and Action Plan and implementation framework.
Lesotho
5. Environmental Act, Kingdom of Lesotho, 2008: Provides legal provisions for the protection and management of the environment and sustainable utilization of the natural resources of the country.
6. Water Act, Kingdom of Lesotho, 2008: Provides legal provisions for the management, protection, conservation, development and sustainable utilization of the water resources of the country.
South Africa
7. Draft National Water Resource Strategy 2 (NWRS-2) – Department of Water Affairs – 2012: The report provides a clear perspective of water situation in South Africa and the critical interventions required under the integrated water resource management framework. The strategy promotes a holistic approach towards water management and a re-defined context with the inclusion of water losses, water use efficiency and demand management, improved water governance, optimization of existing water resources including groundwater, rainwater harvesting and water systems management, water re-use, resource protection and recharge.
8. DEVELOPMENT OF RECONCILLIATION STRATEGIES FOR LARGE BULK WATER SUPPLY SYSTEMS: ORANGE RIVER – Draft Department of Water Affairs, South Africa, 2014: This an important study that provides a reconciliation strategy for the bulk water resources of the Orange River System, to ensure that sufficient water can be made available to supply the current and future water needs for social, economic and environmental users up to the year 2050.
ORASECO - IWRM Plan
9. Integrated Water Resources Management Plan for The Orange-Senqu River Basin – ORASECOM 2014: The IWRM Plan is designed to ensure the optimized and sustainable management of the basin's water resources to support socio-economic development and environmental requirement considering all competing use including consideration of the impact of climate change. The Plan promotes reduction in the adverse effects of catchment degradation, sustainability of the resource use and building resilience from water-related disasters. The IRWM plan promotes strengthened governance structures for ensuring the sustainable water resources development in basin.

[5] This annex provides list of the some of the available study reports with respect to the Orange-Senqu basin that are considered relevant for the project. The list does not provide the complete catalogue of all studies and information and hence should not be considered to be exhaustive and definitive.

Climate Change
10. Downscaling Methodology and Ongoing Climate Modelling Initiatives – ORASECOM 2010: Provides the analytic approach for downscaling a global circulation model (GCM) for climate projection analysis for the Orange-Senqu basin.
11. Projection of impacts and Guidelines on Climate Change Adaptation Strategies: ORASECOM 2011: Provides an overview to vulnerability to climate change impacts and adaptation for the Orange-Senqu Basin.
Demographics:
12. Demographic and Economic Activity in the four Orange Basin States – ORSECOM 2007: The document elaborates the regional and international data provides an overview of demographics & economic activity for the four riparian countries and overall basin.
Economic Accounting
13. Economic Analysis of Water Based On Water Accounting for The Orange-Senqu Basin – ORASECOM 2014: The study was part of the IWRM Plan preparation and describes the water accounting and water foot printing methodology and components of economic accounts of water, methodology aspects of water in the economy analysis, water use and GDP contribution of water in the economy within each riparian state and implications for the IWRM plan. An excel base data base file has been compiled for the analysis.
Environment
14. Environmental Considerations pertaining to the Orange River – ORASECOM, 2007: Provides the environmental issues in Lesotho, South Africa, Botswana and Namibia, basin wide environmental issues, analysis of environmental flows and data availability and gaps.
15. Feasibility Study of the Protection of Orange-Senqu River Water Sources ('Sponges' Project) Lesotho - Final Report, ORASECOM 2008: Accompanying the final report under separate cover are: The summarizes the results of the detailed field investigations, analysis and conclusions on the state of the wetlands in the Highlands of Lesotho together with a proposal for the conservation and rehabilitation of the wetlands.
16. Environmental Flow Requirements OASECOM 2010: The study prepared in three volumes assesses the Environmental Flow Requirements (EFRs) at selected key areas of the Orange River Basin and provides the EFR sites eco-classification with the determination and categorization of the ecological state of various biophysical attributes of rivers compared to the natural reference condition. The ecological specification and thresholds of potential concern identified for each EFR site with monitoring framework and appendices on eco-hydraulics, geomorphology, water quality, diatoms, fish, and riparian vegetation are provided.
17. Delineation of Management Resource Units, ORASECO 2010: The document provides the rational and result of the delineation of the Basin Natural Resources Units and Management Resources Units based on eco-region, geomorphological, land cover and land use data which served for determining the EFR monitoring sites.
18. Desktop Eco Classification Assessment ORASECOM 2010: This is a scoping level assessment of the ecological and socio-cultural condition across the Basin to determine the existing ecological state and ecological importance and sensitivity of water resources across the basin and served as an input for determine the EFR sites.
19. Goods and Services Report, ORASECOM 2010: The report provides overall contextual background of environmental goods and services (direct and indirect use consumptive and productive use of the environment) for the part of the basin in the four riparian countries and detailed consideration at specific parts of the catchment as related to the EFR sites.
20. A Fitness for Use Assessment of the Waters of the Orange-Senqu Basin, ORASECOM, 2009: The 'Fitness for Use' provides an assessment of the suitability of use for both ground and surface water in the Orange-Senqu basin based on key water quality parameters and a broad overview of the possible impacts on water use in the basin.
21. Consolidation of Environmental Flow Requirements, ORASECOM IRWM Plan 2014: The report is part of the thematic studies undertaken to prepare the IWRM and provides consolidate information on

environmental flow requirements at key points in the basin and the implications of different combinations of water resource development scenarios on the ecological status and the implications of maintaining different levels of ecological status on different development options.
22. Strategic Action Programme (SAP) for the Orange–Senqu River Basin-ORASECOM 2014: The SAP is a strategic implementation programme prepared for addressing the four environmental priority areas of concern identified in the Transboundary Diagnostic Analysis. These are increasing water demand, declining water resources quality, changes to the hydrological regime and land degradation. The SAP provides project concept notes that were developed into packages of structured and implementable projects for the four priority areas of concern. Separate National Action Plans (NAP) has been prepared for the four riparian countries. The SAP and NAP collectively form the core of the environmental component of IWRM Plan.
23. Orange–Senqu River Basin Transboundary Diagnostic Analysis (TDA)-ORASECOM 2014: The TDA identifies and prioritizes key issues concerning the degradation of aquatic ecosystems in the Orange–Senqu River basin as part of the decision-support tool for action to address key issues. The 2014 TDA is a follow-up of development of a preliminary TDA (ORASECOM, 2008) which identified the priority transboundary issues as: stress on surface and groundwater resources; altered water flow regime; deteriorating water quality; land degradation; and spread of alien invasive plants and animals.
Institutional and legal
24. Analytical Methods and Technical Capacity of the four Orange Basin States-ORASECOM 2007: The document compiles and provides a description of the major hydrological and yield determination analytical methods for surface and ground water that were in use in the four basin states along with the technical capacity available within each basin state.
25. A Framework for ORASECOM's Basin Wide Plan Institutional and Governance Roles -ORASECOM 2011: This is an assessment of the institutional and legal mandate of OWASECOM and proposal on the adjustment in institutional architecture and role for planning and implementation integrated water resources management in the basin.
26. Institutional Analysis for ORASECOM-ORAECOM-2009: The report provides an institutional analysis of ORASECOM and proposals on institutional roles, responsibilities and structure for the development implementation and monitoring of the basin wide plan.
27. Legal Opportunities and Constraints for ORASECOM - 2009: The report provides an overview of the general international principles and SDAC frameworks as applied to ORASECOM agreement and mandate on the formulation of a Basin Wide Plan for ORASECOM.
Water Resources
28. Review of Groundwater Resources in the Orange River Catchment, ORASECOM 2007: This is a report of the scoping study carried out to provide an overview of the ground water resources, development and use in the four riparian countries and status of available information on ground water.
29. Review of Surface Hydrology in the Orange River Catchment, ORASECOM 2007: This report provides a description of the data base inventory along with summaries on pertinent data and data gaps and the situation assessment of the prevailing hydro-meteorological conditions, in the Orange River Basin.
30. Feasibility Study of the Potential for Sustainable Water Resources Development in the Molopo-Nossob Watercourse Project-ORASECOM 2009: The study assessed and evaluated the water resources of the Molopo-Nossob catchment and formulated a water resources management plan. The Molopo River forms the boundary between Botswana and South Africa and the Nossob River originates in Namibia and forms the south-western boundary between Botswana and South Africa.
31. Review of Existing Infrastructure in the Orange River Catchment-ORASECOM 2007: The report summarizes the physical characteristics of sub-systems and provides an inventory and operation of water resources development infrastructures in the basin.
32. Summary of Water Requirements from the Orange River-ORASECOM 2007: The report provides the water requirements data base inventory and summary of water demand and return flows. An excel based data base has been prepared for the current and future demands.
33. Irrigation GIS Database, Interactive Database and Irrigation Scenario Tools– ORASECOM-2011: An inventory of existing irrigation and irrigation water use by crop type has been prepared and complied as

GIS based database. The updated baseline crop water demand was used for the Water Resources System Simulation model.
34. Water demand projections and synthesis of planned infrastructure investments –IWRM Plan ORASECOM 2014: This work provides an up to date and comprehensive dataset for both current and projected water demands as well as return flows used for the water resources planning model. The report provides description of the hydrology of the river networks, overview of the current water demands and the existing water infrastructure implemented for different uses with analysis of future water demand and availability scenarios projected to 2040 based on population growth, economic development and climate change as the main drivers for water resources related changes in the basin. The report provides country by country description for irrigation, mining, industry, domestic and environmental demands.
35. Consolidation of Knowledge of Water Quality, IWRM Plan-ORASECOM 2014: This study provides a consolidation of the state of knowledge on water quality in the Orange-Senqu Basin, and recommendations on water quality related actions for the development of the IWRM plan
36. Development of Specifications for the Water Quality Model-ORASECOM 2011: The report assesses water quality modelling in the context two primary variables salinity and eutrophication for integration in the water resources planning model.
37. Development of Water Quality Monitoring programme and Data Management Framework-ORASECOM 2011: This report presents the trans-boundary water quality monitoring program developed for the Orange-Senqu Basin with specification on monitoring program, sampling protocols, data management and system modelling.
38. Water Resources Modelling, Baseline Scenario, Yield Analysis, Stochastic Verification and Validation-ORASECOM IWRM Plan-2014 Part I: This part presents the Water Resources Yield Model (WRYM) analysis and stochastic validation and verification processes undertaken as part of the IWRM planning. It includes brief description of the modelling process; operating rules; basin and sub catchment hydrology; generation of the stochastic flows and validation and verifications, model components for stochastic yield analyses and results for scenario analysis as input for the Water Resources Planning Model (WRPM).
39. Water Resources Modelling, Baseline Scenario, Yield Analysis, Stochastic Verification and Validation-ORASECOM IWRM Plan-2014 Part II: The second part presents the WRPM analysis and results which include the analysis of various trial scenario options and selection of the Core Scenario which represents the most likely developments in the basin over the coming 10 to 15 years and serves as the master tool to evaluate any future developments and possible deviations from the expected IWRMP developments, as well as the related impacts of these deviations on the Orange-Senqu Basin over the planning period.
40. Application of the WRPM to the Orange-Senqu River System for the Basin-Wide IWRM Plan; - Model Setup and User Guide – ORASECOM 2014: The is the user guide for the Integrated Orange-Senqu WRPM configuration with the various components of the model, and characteristics of for the Orange-Senqu system. The user guide provides description of the modelling process and models used; definition of terminology; data files associated with the WRPM related water quantity, water quality, and hydrology; description of model configuration for a simulation and results assessment. Specific annexes on WRPM Schematic Diagrams; procedural manual and WRPM Input Data and File Formats are included.

Annex 4 : Status of ORASECOM IWRM Plan Project Proposals as at August 2015

Item	List of Projects	Primary and secondary purpose[6]	Beneficiary Member sates	Status of Development August 2015 (to be completed)
	Real-time monitoring for better management of Vanderkloof etc.	Ensuring only required water by users downstream is released from Vanderkloof dam	Namibia, South Africa, and River Mouth	Planning for implementation
	Vioolsdrift flow re-regulation Dam	Accurate scheduling of low and high flows for River Mouth, for mimicking natural flows	Namibia, South Africa, and River Mouth	Feasibility study
	Polihali Dam (LHWP Phase 2)	Augmenting water supply to Gauteng	Lesotho and South Africa	Construction of advanced infrastructure i.e. roads, workers' houses, etc. Expected water delivery deadline from the Project site to targeted beneficiary areas is 2023
	Botswana supply via Gamgara	Augment water supply to southern part of Botswana	Botswana and South Africa	Design
	Lesotho (via South Africa) - Botswana water transfer	Possible water supply for Botswana, including Gaborone	Lesotho, South Africa, and Botswana	Study identifying configurations at reconnaissance level, taking into consideration the latest information on hydrology, environmental needs and the preferred options for such water supplies. Options will also be considered for the possibility of supply to water stressed communities adjacent to the conveyance routes in Lesotho and South Africa.
	Vanderklook Lower level storage	To balance water yield for the users in the Orange River, in the case where Polihali starts transferring water to Gauteng	South Africa, Namibia, and River Mouth	Preliminary design
	Raising of Gariep Dam or Verbeedlingskraai Da	To balance water yield for the users in the Orange River, in the case where Polihali starts transferring water to Gauteng	South Africa, Namibia, and River Mouth	Reconnaissance

[6] (i) Multipurpose (indicate use) - Hydropower, Water Supply, irrigation, Industrial use, Mining use, environmental use etc. (ii) Single purpose with secondary benefits

	Metolong Dam and distribution system	To augment supply of water to Maseru and surrounding towns	Lesotho	Water already being supplied to some of the beneficiary towns. Official commissioning of dam planned for 20th November 2015
	Lowlands dam sites in Lesotho	To augment water supply to the lowlands of Lesotho	Lesotho	The procurement of the Consultant to update the detail design ongoing. It is at the evaluation of the Proposals stage.
	Dual/multi-purpose dam sites in Lesotho	To supply water for domestic, industrial, hydropower generation and agriculture	Lesotho	The procurement of the consultant to do some works on going. Development of tender documents for some activities ongoing
	Neckartal Dam and irrigation scheme	To supply water for irrigation	Namibia	Dam under construction
	Desalination of AMD	To pre-treat water from old mines to required standards before being released into nearby streams and rivers	Basin wide	One mine water treatment plant started operating in January 2015, in Germiston, treating mine water from Central Gauteng Mining Basin Area, draining into tributary of Vaal River
	Welbedacht pumpstation pipeline to Knelpoort dam	To increase the capacity of the pipeline for increasing yield in the water supply system for Mangaung Municipality (Bloemfontein, Botshabelo, and Thaba Nchu)	South Africa	Preliminary design
	Increase of Tienfontein pumping capacity	To increase the capacity of the pump station for increasing yield in the water supply system for Mangaung Municipality (Bloemfontein, Botshabelo, and Thaba Nchu)	South Africa	Design
	Increase Novo Transfer scheme capacity	To increase the capacity of the transfer scheme for increasing yield in the water supply system for Mangaung Municipality (Bloemfontein, Botshabelo, and Thaba Nchu)	South Africa	Design

Annex 5: Copies of Letters of Support from the Riparian Member States

TELEPHONE: (267) 3656600
TELEGRAMS: MMEWA
TELEX: (267) 2503 BD
FAX: (267) 3909368
REFERENCE: CMMEWR 7/4/3 I (89)

REPUBLIC OF BOTSWANA

MINISTRY OF MINERALS,
ENERGY AND WATER
RESOURCES,
PRIVATE BAG 0018
GABORONE, BOTSWANA

20th July 2016

Mr. Kennedy MBEKEANI
Ag. Director
South African Regional Resource Centre
African Development Bank
Private Bag X1262
0127 Silverton
Pretoria

Dear Sir,

RE: ORANGE-SENQU RIVER BASIN- PREPARATION OF CLIMATE RESILIENT WATER RESOURCES INVESTMENT STRATEGY AND MULTIPURPOSE PROJECT

We refer to the request submitted by the Orange- Senqu River Commission (ORASECOM) to the African Water Facility and Infrastructure Project Preparation Facility for financing an investment strategy and the preparation of a priority transboundary project for the Orange-Senqu river basin and would like to thank the African Development Bank for its support to mobilise funding from these two instruments.

This request is aimed at operationalising the implementation of the core water development scenario developed with the Integrated Water Resource Management Plan (IWRMP) through (i) optimising water resource allocation with a cost benefit and environmental approach, (ii) considering additional water security infrastructure in the context of climate change that will significantly affect Southern Africa according to the Intergovernmental Panel on Climate Change, (iii) defining a financing strategy for the short and medium term investment projects, and (iv) preparing a priority transboundary infrastructure at pre-feasibility level. Finally this initiative will support ORASECOM and the Governments of the riparian states in preparing and mobilising funds for some of the priority actions identified in the IWRMP.

We fully support this request and would like to assure you that we shall mobilise the required resources to participate in ORASECOM's technical and steering instances, and organise the local and national consultation if need be.

Yours sincerely,

Gaolathe Dipholo
ACTING PERMANENT SECRETARY

LESOTHO

Ministry of Water
P.O. BOX 440
MASERU, 100.

MOW/4/24

19th July, 2016.

Mr. Kennedy MBEKEANI
Ag. Director
South African Regional Resource Centre
African Development Bank
Private bag X1262
0127 Silverton Pretoria

Dear Sir,

RE: ORANGE-SENQU RIVER BASIN- PREPARATION OF CLIMATE RESILIENT WATER RESOURCES INVESTMENT STRATEGY AND MULTIPURPOSE PROJECT

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We fully support this request and would like to assure you that we shall mobilise the required resources to participate in ORASECOM's technical and steering instances, and organise the local and national consultation if need be.

Yours sincerely,

K. TAU
PRINCIPAL SECRETARY

REPUBLIC OF NAMIBIA

MINISTRY OF AGRICULTURE, WATER AND FORESTRY

Telephone: (061) 208 7161
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Department of Water Affairs and Forestry
Private Bag 13193
WINDHOEK
Namibia

Mr. Kennedy MBEKEANI
Ag. Director
South African Regional Resource Centre
African Development Bank
Private bag X1262
0127 Silverton Pretoria

Dear Sir

RE: ORANGE-SENQU RIVER BASIN- PREPARATION OF CLIMATE RESILIENT WATER RESOURCES INVESTMENT STRATEGY AND MULTIPURPOSE PROJECT

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the Governments of the riparian states in preparing and mobilising funds for some of the priority actions identified in the IWRMP.

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Yours sincerely

MARIA AMAKALI
ORASECOM Leader of the Namibia Delegation
20 July 2016

water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

Private Bag X313, Pretoria 0001 / Sedibeng Building, 185 Francis Baard Street, Pretoria
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Enquiries: L Lusenga **Telephone**: 012 336 7250 **Reference:** 7/3/1/15

By E-mail: k.mbekeani@afdb.org

Mr Kennedy Mbekeani
Acting General-Director
South African Regional Resource Centre
African Development Bank
Private bag X1262
SILVERTON
0127

Dear Colleague

ORANGE-SENQU RIVER BASIN - PREPARATION OF CLIMATE RESILIENT WATER RESOURCES INVESTMENT STRATEGY AND MULTI-PURPOSE PROJECT

I refer to the request submitted by the Orange-Senqu River Commission (ORASECOM) to the African Water Facility and Infrastructure Project Preparation Facility for financing an investment strategy and the preparation of a priority transboundary project for the Orange-Senqu river basin and would like to thank the African Development Bank for its support to mobilise funding from these two instruments.

This request is aimed at operationalising the implementation of the core water development scenario developed with the Integrated Water Resource Management Plan (IWRMP) through (i) optimising water resource allocation with a cost benefit and environmental approach; (ii) considering additional water security infrastructure in the context of climate change that will significantly affect Southern Africa according to the Intergovernmental Panel on Climate Change; (iii) defining a financing strategy for the short and medium term investment projects; and (iv) preparing a priority transboundary infrastructure at pre-feasibility level. Finally this initiative will support ORASECOM and the Governments of the riparian states in preparing and mobilising funds for some of the priority actions identified in the IWRMP.

We fully support this request and would like to assure you that we shall mobilise the required resources to participate in ORASECOM's technical and steering events, and organise the local and national consultation if need be.

Yours sincerely

Mr Sifiso Mkhize
ACTING DIRECTOR-GENERAL
DATE: 02/08/2016

Annex 6: Project Cost Estimate

Annex 6.1 Cost summary

Description	Amount in €	Sources of Finance in €					
		AWF	NEPAD	GWP	ORASECOM	Government	Total
Consultancy Services							
Comp I :Preparation of WRD Investment Strategy & Implementation Plan							
Professional service fee	746,500	455,365	291,135	-	-	-	746,500
Allowance	63,900	38,979	24,921	-	-	-	63,900
Air travel	14,400	8,784	5,616	-	-	-	14,400
On site transport (vehicle rental)	12,780	7,796	4,984	-	-	-	12,780
Data collection	7,000	4,270	2,730	-	-	-	7,000
GIS and Modelling	35,000	21,350	13,650	-	-	-	35,000
Report preparation	8,000	4,880	3,120	-	-	-	8,000
Sub total Component 1	**887,580**	**541,424**	**346,156**	**-**	**-**	**-**	**887,580**
Comp II: Project Preparation - Feasibility study and ESIA							
Feasibiliyt study							
Professional service fee	791,500	482,815	308,685	-	-	-	791,500
Allowance	69,750	42,548	27,203	-	-	-	69,750
Air travel	17,600	10,736	6,864	-	-	-	17,600
On site transport (vehicle rental)	13,950	8,510	5,441	-	-	-	13,950
Data collection	9,000	5,490	3,510	-	-	-	9,000
GIS and Modelling	10,000	6,100	3,900	-	-	-	10,000
Survey and investigation	510,000	311,100	198,900	-	-	-	510,000
Report preparation	8,000	4,880	3,120	-	-	-	8,000
Sub total feasibility study	**1,429,800**	**872,178**	**557,622**	**-**	**-**	**-**	**1,429,800**
ESIA							
Professional service fee	356500	217,465	139,035				356,500
Allowance	42,300	25,803	16,497				42,300
Air travel	5,600	3,416	2,184				5,600
On site transport (vehicle rental)	8,460	5,161	3,299				8,460
Data collection	3,000	1,830	1,170				3,000
GIS and Modelling	-	-	-				-
Survey and investigation	20,000	12,200	7,800				20,000
Report preparation	8,000	4,880	3,120				8,000
Sub total ESIA	**443,860**	**270,755**	**173,105**				**443,860**
Sub total component 2	**1,873,660**	**1,142,933**	**730,727**	**-**	**-**	**-**	**1,873,660**
Total Consultancy Services	**2,761,240**	**1,684,356**	**1,076,884**	**-**	**-**	**-**	**2,761,240**

Annex 6.1: Cost summary cont.….

Comp III: Capacity Building and Stakeholders' Consultation							
Professional staff fee	70,000	-		70,000			70,000
Capacity building seminars	30,000	-		30,000			30,000
Basin wide Stakeholders consultation forum	40,000	-		40,000			40,000
National stakeholders consultations	16,000	-		-		16,000	16,000
Institutional development	25,000	-		25,000			25,000
Report preparation	2,000	-		2,000			2,000
Travel	3,000	-		3,000			3,000
Total	**186,000**	**-**	**-**	**170,000**	**-**	**16,000**	**186,000**
Description	**Amount**	**AWF**	**NEPAD**	**GWP**	**M**	**Government**	**Total**
Comp IV: Project Management							
Project management staff							
Executive Secretary	36,000				36,000		36,000
Water resources specialist	27,000				27,000		27,000
Project Manager including per diem (Consultant)	176,000	176,000					176,000
Procurement specialist (Consultant)	20,000	20,000					20,000
Finance and admin Officer	9,600	-			9,600		9,600
Administrative/Secretairl Assisitant	4,800				4,800		4,800
Communication and Monitoring	9,600	-			9,600		9,600
Task Team members (project monitoring)	12,800					12,800	12,800
Subtotal	**295,800**	**196,000**	**-**	**-**	**87,000**	**12,800**	**295,800**
Workshops and meetings							
Steering Committee (commissioners)	10,000	-			10,000		10,000
Technical Advisory Panel (Technical Task Team)	20,000					20,000	20,000
Technical Advisory Panel (additional specialists)	20,000				20,000		20,000
Finance Task Team	10,000	-			-	10,000	10,000
Resources mobilization round table	5,000	5,000			-		5,000
Subtotal	**65,000**	**5,000**	**-**	**-**	**30,000**	**30,000**	**65,000**
Project office and running cost							
Office equipment	3,000				3,000		3,000
Project office and running cost	43,200	-			43,200		43,200
Subtotal	**46,200**	**-**	**-**	**-**	**46,200**	**-**	**46,200**
Total Project Management	**407,000**	**201,000**	**-**	**-**	**163,200**	**42,800**	**407,000**
Project TOTAL	**3,354,240**	**1,885,356**	**1,076,884**	**170,000**	**163,200**	**58,800**	**3,354,240**
Contingency (5%)	**167,712**	**94,268**	**53,844**	**8,500**	**8,160**	**2,940**	**167,712**
Grand total	**3,521,952**	**1,979,624**	**1,130,728**	**178,500**	**171,360**	**61,740**	**3,521,952**
Percent of total		**56%**	**32%**	**5%**	**5%**	**2%**	**100%**

Annex 6.2 Detailed cost estimate – Compenent I and II - Consultancy fees

Professional Staff	Unit	input				fee				
		Comp.1	Comp . 2 FS	Comp.2 ESIA	Total	Rate(€)	Comp.1	Comp . 2 FS	Comp.2 ESIA	Total (€)
Investment strategy & project preparation										
Team Leader	MM	10	12	6	22	18,000	180,000	216,000	108,000	504,000
Hydrologist/Hydrological Modeling Expert	MM	6	3		9	16,000	96,000	48,000	-	144,000
Hydro-geologist	MM	2	-	1	2	16,000	32,000	-	16,000	48,000
GIS/Remote Sensing Expert	MM	3	2	3	5	12,500	37,500	25,000	37,500	100,000
Hydraulic/Dam Engineer	MM	3	5		8	12,500	37,500	62,500	-	100,000
Hydropower Engineer	MM	2	3		5	16,000	32,000	48,000	-	80,000
Water Resources Engineer	MM	4	-		4	12,500	50,000	-	-	50,000
Socio-economist	MM	3	2	6	5	12,500	37,500	25,000	75,000	137,500
Irrigation Engineer	MM	3	3		6	12,500	37,500	37,500	-	75,000
Climate Change Expert	MM	2	2		4	16,000	32,000	32,000	-	64,000
Environmentalist (s)	MM	3	1	6	4	16,000	48,000	16,000	96,000	160,000
Institutional specialist	MM	2	2		4	12,500	25,000	25,000	-	50,000
Project Economist/Optimization Modeling Expert	MM	4	3		7	16,000	64,000	48,000	-	112,000
PPP specialist	MM	3	2		5	12,500	37,500	25,000	-	62,500
Designers and other support staff	MM	-	12	3	12	8,000	-	96,000	24,000	120,000
Water Supply Engineer	MM	-	3		3	12,500	-	37,500	-	37,500
Geotechnical Engineer	MM	-	4		4	12,500	-	50,000	-	50,000
Total		**50**	**59**	**25**	**109**		**746,500**	**791,500**	**356,500**	**1,894,500**

Annex 6.3 Detailed cost estimate – Component III – Capacity Building and stakeholders consultation

Professional staff fee	**Unit**	**Input**	**Rate**	**Amount**
Institutional Capacity Building Specialist	mm	**4**	**10,000**	**40,000**
Stakeholders coordinator	mm	**3**	**10,000**	**30,000**
Subtotal		**7**		**70,000**
Capacity building seminars	ls	1	30,000	**30,000**
Basin wide Stakeholders consultation forum	No	2	20,000	**40,000**
National stakeholders consultations	No	8	2,000	**16,000**
Institutional development	ls	1	25,000	**25,000**
Report preparation	ls	1	2,000	**2,000**
Travel	ls	1	3,000	**3,000**
Subtotal				116,000
Total				**186,000**

Annex 6.4 Detailed cost estimate – Project Management

Project management staff	**Unit**	qty	Rate	amount	Contribution
Executive Secretary	mm	6	6,000	36,000	ORASECOM
Water resources specialist	mm	6	4,500	27,000	ORASECOM
Project Manager including per diem (Consultant)	mm	32	5,500	176,000	AWF
Procurement specialist (Consultant)	mm	2	10,000	20,000	AWF
Finance and admin Officer	mm	6	1,600	9,600	ORASECOM
Administrative/Secretairl Assisitant	mm	6	800	4,800	ORASECOM
Communication and Monitoring	mm	6	1,600	9,600	ORASECOM
Task Team members (project monitoring)	mm	8	1,600	12,800	Governments
Subtotal				**295,800**	
Workshops and meetings					
Steering Committee (commissioners)	Nos of meeting	4	2,500	10,000	ORASECOM
Technical Advisory Panel (Technical Task Team)	Nos of meeting	4	5,000	20,000	Governments
Technical Advisory Panel (additional specialists)	Nos of meeting	4	5,000	20,000	ORASECOM
Finance Task Team	Nos of meeting	4	2,500	10,000	Governments
Resources mobilization round table	Nos of meeting	1	5,000	5,000	AWF
Subtotal				**65,000**	
Office equipment					
Laptop, printer, etc.	Sum	1	3000	3,000	ORASECOM
Subtotal				**3,000**	
Project office and running cost					
Furnished office space (25 sq m) including running costs	month	32	500	16000	ORASECOM
Communication (tel, fax, internet)	month	32	300	9600	ORASECOM
Consumable (paper and other items)	month	32	50	1600	ORASECOM
Transport (car rental and flights)	month	32	500	16000	ORASECOM
Subtotal				**43200**	

Annex 7: Consultancy Implementation Schedule

Activity Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	1	2	3	4	5	6	7	8	9	10
Comp I :Preparation of WRD Investment Strategy & Implementation Plan																								
Comp IA: Preparation of WRD Investment Strategy																								
Data collection and assessment of existing situation																								
Situation overview and inception																								
Review, studies and analysis of development options																								
Environmental and social management update																								
Review and updating of the Water Resources Planning Model																								
Climate change analysis and mainstreaming																								
Modelling analysis and development of TWRM investment																								
Elaboration of preferred option and cost estimate																								
Institutional analysis for implementation																								
Preparation of investment and financing strategy																								
Comp IB: Preparation of IWRM Plan Implementation Road Map																								
Analysis of IWRM Plan Strategic action areas																								
Elaboration and prioritization of actions																								
Preparation of concept notes, TORs and cost estimate																								
Elaboration of IWRM plan implementation road map																								
Comp II: Project Preparation - Feasibility study and ESIA																								
Feasibility study																								
ESIA, RAP, ESMP																								
Comp III: Capacity Building and Stakeholders' Consultation																								
Capacity building support																								
Stakeholders consultation																								
Comp IV: Project Management																								
Steering Committee meetings																								
Tehcnical Advisory Panel meetings																								
Rources mobilisationa roundtable																								
Reporting schedule																								
Progress reports																								
Investment stratgey inception report																								
Investment strategy interim report																								
Draft investment strategy report																								
Final investment strategy report																								
IWRM Plan implementation report																								
Project preparation interim report																								
Final feasibility study report																								
Final ESIA RAP ESMP reports																								
Financing strategies and resources mobilization report																								

Annex 8: Assessment of Procurement Policy and Procedures

A.1 Summary of the Main Findings of the Bank Procurement Assessment Report (BPAR)

ORASECOM relies on three procurement systems in conducting procurement transactions. For small purchases for the routine running of ORASECORM Secretariat amounting to maximum of ZAR5,000.00, Procurement Guidelines and System of ORASECOM is used. However, Procurement Policy of SADC, March 2014, provides overall guidance in conducting procurement transactions using institutional budget. For the implementation of large projects funded through donor financing, ORASECOM relies on the Procurement Policy and Guidelines of South Africa.

South Africa's procurement system has been assessed against the 21 critical sub-indicators, selected by the Bank among the OECD/DAC Methodology for Assessing Procurement Systems (MAPS) sub-indicators, in order to ensure that the Bank's fiduciary obligations and standards are not jeopardized when using Borrower Procurement System for a Bank-financed project. The assessment gives an indication of the extent to which the use of such system should be allowed in Bank-financed operations taking into account the discrepancies identified in particular with the principle of Equity (which includes fairness, transparency, integrity, etc.) set forth in Bank Procurement Policy. The findings summary with a focus on the following: 1) Procurement law and regulatory framework; 2) National Standard bidding documents; 3) Regulatory function; 4) Internal and external controls; 5) Complaints mechanism; and 6) Prohibited practices. The overall risk rating for the use of South Africa's procurement system in Bank-financed project is **substantial** due to the issues/risks identified.

A.2 Procurement Risk and Capacity Assessment (PRCA)

A.2.1 ***Country Procurement Information Relevant to The Project*****:** ORASECOM being the recipient of the Grant has no procurement policy established for the implementation of projects financed by Development Financing Institutions (DFIs). A section on procurement policy in the organization's Operations Manual deal only on office maintenance, travels and pretty purchases, which were mainly based on s procurement principle SADC. Review of the policy has been done and found acceptable only for operational expenses and travels financed from AWF resources. This was effectively used in implementing similar activities financed by other Donor Organizations such as UNDP, GEF, DFID, GIZ, AuSAID and EU. However, other activities, including consultancy services recruitment, were undertaken by the others using their own procurement procedures.

In view of the level of risk in using South African procurement system being substantial, requiring some stringent mitigation measure that are difficult to put in place for the purpose of this operation, all procurement activities involving recruitment of consultancy services financed by AWF resources will be carried out in accordance with the *"Procurement Policy and Methodology for Bank Group Funded Operations" (BPM)*, dated October 2015".

A.2.2 Sector and Market Analysis: Given the nature of activities under the program involving mainly consultants in project management, procurement and studies in water resources, assessment of the sector and the market was carried out to determine strength of the market in providing the types of services required under the project. Though private sector market in the services industry, especially in the water sector is ripe, the specific requirement under this project call for the services of consulting firms with multi-disciplinary nature to undertake studies that require significant amount of analysis. Similar assignments undertaken by ORASECOM through various interventions were undertaken by hiring the consultants in International markets in order to obtain high quality services to international standards. Focus of procurement arrangement under this intervention is to source for reputable consultants from the international market through competitive process. This will further strengthen the local market as it allows firms in South Africa and across the Southern region to compete with other firms globally.

A.2.3 Project Design and Complexity: The design and complexity of the project have been reviewed from procurement perspectives and procurement risk is found to be moderate. Though ORASECOM has significant experience in designing and implementing similar activities in previous projects, procurement actions were mainly undertaken by consultants hired under the respective projects. However, there exist core technical competence in-house that will ensure quality of output from the consultancy services. A provision is made to recruit a procurement consultant to work with the technical teams to ensure procurement is conducted with due regard to economy, efficiency, effectiveness and equity.

A.2.4 Executing Agency (EA) Assessment: The ORASECOM Secretariat has considerable experience in implementing projects financed by development partners including UNDP, GEF, DFID, GIZ, AuSAID, EU and management of high level consultancy firms. Example of ORASECOM's experience is the implementation of some Donor financed operations, notably, a project funded by GiZ valued at ZAR2.7 Million (approx. USD 250,000. Other projects include the GEF financed through the UN system. It is however noted that procurements under these projects were not independently executed by ORASECOM, but they relied on the expertise and systems of the donors.

In terms of human capacity within ORASECOM to implement procurement transactions, a Project Manager on a previous projects appointed as individual consultant provided the needed support to the office. An administrative assistant based in the secretariat also provides valuable support in terms of documentation and records keeping. Outcome of the assessment revealed that ORASECOM as an institution has no sufficient knowledge and manpower to carryout procurements under the project. Therefore, risk level is high. To mitigate this risk, an experienced procurement expert, knowledgeable in procurement systems of the Bank, or any other MDB, with track record of experience, need to be recruited to ensure effective and efficient implementation of the project.

A.2.5 Project Procurement Risks Rating (PPRR): Procurement Risk Assessments were undertaken for this project by conducting an exhaustive assessment covering the risks associated with the country, sector and project environments as well as the executing Agency responsible for the implementation of the Project's procurement activities. The outcome of assessments provides the justifications to the risks indicated in the Summary of PPRR as shown in the table below.

Item		**Assessment Rating**
Risk factor #	**Risk factor**	**Low (L) / Moderate (M) / Substantial (S) / High (H)**
Project Procurement Risk Rating		
Country Level		
1	Procurement Legal and Regulations Framework	Substantial (**S**)
2	Systemic Prohibited Practices	High (**H**)
Sector Level		
3	Capacity of the Sector	Low (**L**)
4	Capacity of local industry	Low (**L**)
Project Level		
5	Project design risks	Low (**L**)
6	Delivery risks	Low (**L**)
Capacity Risk of the Executing Agency		

7	Capacity	Moderate (**M**)
8	Governance & Prohibited Practices	Low (**L**)

The issues/ risks identified at country level are substantial, however, sector and project level risks are low. Therefore, the risk to project implementation is minimal. The low risk ratings at sector and project level is attributed to experience of ORASECOM in implementing similar projects using financing from other DFIs. Capacity risk is moderate due to unavailability of substantive procurement specialist at the PIU. This is mitigated by recruitment of an experienced procurement consultant. The fiduciary safeguards include regular internal audits. In addition, there is a strong performance culture with at ORASECOM with a systematic system / records system in place.

A.3 Details of Procurement Methods & Procedures (PMPs) to be used under the Project

A.3.1 Bank Procurement Policy and Methodology (BPM): The following contracts will be carried out using the BPM in line with the Bank's *Procurement Policy and Methodology for Bank Group Funded Operations" (BPM)*, dated October 2015", utilizing available Bank's Standard Solicitation Documents (SSDs).

Consulting Services:

- Preparation of WRD Investment Strategy & Plan and of a feasibility study, at estimated value of EUR 2,433,249 and ESIA and associated plans at an estimated value of EUR 466,053 following the Quality and Cost-Based Selection (QCBS) method.
- Recruitment of Project Manager amounting to Euro 184,800 and procurement specialist amounting to Euro 21,000 shall be carried out following selection method of Individual Consultant on the basis of shortlist.

Non - Consulting Services:
Resources mobilization around table valued at EUR 5,250 will be carried out using Shopping procedure

A.3.2 Summary of the Procurement Arrangements for the Project: "The procurement arrangements for the various components, elements, and items, under the different expenditure categories to be financed by the Grant and procured using BPS and BPM are summarized in Table A.1 below. Large-value contracts, each group of similar transactions/contracts, the different procurement regimes, estimated costs, oversight requirements, and the timeframe as agreed between the Borrower and the Bank, are documented in the Procurement Plan

Table A.1: Summary of Procurement Arrangements (AWF + NEPAD)

Project Categories	EUR						
	BPS			BMP			Total
	OCB	LCB	Other	OCB	LCB	other	
1. Non-Consulting Services	-	-	-	-	-	-	-
1.1 Resources mobilization around table Details	-	-	-	-	-	5,250	5,250
2. Consulting Services	-	-	-	-	-	-	-
2.1 WRD Investment Strategy & Implementation Plan and project preparation	-	-	-	2,433,249	-	-	2,433,249
2.2 ESIA				466,053			466,053
2.3 Project Manager	-	-	-	184,800.00	-	-	184,800.00
2.4 Procurement Specialist	-	-	-	21,000.00	-	-	21,000.00
Total	-	-	-	**3,105,102**	-	**5,250**	**3,110,352**

The following activities that are non - AWF financed will be carried out using ORASCOM's General Policies and that of contributing institution: Capacity building and consultation valued at EUR 178,500 will be carried out using GWP procedures. National stakeholders' consultations valued at EUR 16,800 will be carried out using Government procedures. All procurement of operating related costs which is valued EUR48,510, to be carried out using ORASECOM procedures.

Table A. 2: Non AWF Financed Activities

Item	Description	Sources of fund	Amount €	Procurement mode
1	Capacity building and consultation	GWP	178,500	GWP's procedures
2	National stakeholders' consultations	Government	16,800	Governments procedures
3	Other PIU staff	ORASECOM	91,350	In kind contribution
4	Task Team members (project monitoring)	Government	13,440	In kind contribution
5	Steering Committee (commissioners)	ORASECOM	31,500	In kind contribution
6	Finance Task Team	Government	31,500	In kind contribution
7	Project office and running cost	ORASECOM	48,510	ORASECOM's procedures
8	**Total**		**411,600**	

A.4 Advertising

General and Expression of Interests (GPN and EOI) for consultancy services will be prepared by the ORASECOM for review and no objection by AWF for online publication on the AfDB and UNDB sites and advertised in local media, in accordance with the Bank's procurement policy.

A.5 Bank's Oversight of Borrower's Procurement

As some activities of the project will be carried out using procedure of ORASECOM and other contributors, procurement oversight is carried out according to ORASECOM's General Operations' guidelines.

A.6 Procurement Plan

A.6.1 General: Procurement plan: The Executing Agency shall prepare and submit to the Bank a Procurement Plan based on Bank's template. The Bank shall review the proposed procurement arrangements in the Procurement Plan for its conformity with the financing agreement and its Rules. The Executing Agency shall update the Procurement Plan on an annual basis or as needed and submit to the Bank's prior no objection and implement it in the agreed manner.

A6.2 Advance contracting: In order to fast-track the project implementation, ORASECOM will request the Bank's no objection to launch the procurement processes of the Project Manager, procurement specialist and main consultancy under the advance contracting procedure.

Annex 9: Financial Management Assessment Report

A Financial Management (FM) assessment of the Orange-Senqu River Basin Commission (ORASECOM) was carried out by Bank's Fiduciary Services Division (ORPF.2) in line FM guidelines for Small Operations in accordance with the Financial Management Policy in African Development Group financed operations (2014) and the Financial Management Implementation Guidelines for Bank Group Operations (2014). The objective of the assessment was to determine whether ORASECOM as the designated Executing Agency, has acceptable FM arrangements, capable of (i) correctly and completely recording all transactions and balances relating to the project; (ii) facilitating the preparation of regular, timely and reliable financial statements; (iii) safeguarding the project's assets; and (iv) can be subjected to auditing arrangements acceptable to the Bank.

The results of the assessment and the agreed financial management, disbursement and auditing arrangements for the proposed project are documented below.

Executive Summary
The project's FM will be managed within ORASECOM's existing structures under the overall responsibility of the Finance and Administrative Officer as the head of a two-man finance unit. The FM assessment carried out by the Bank (including a review of the budgeting, accounting, internal controls, flow of funds, financial reporting and auditing arrangements) concluded ORASECOM FM capacity satisfies the Bank's minimum requirements, to ensure that funds made available for the project are used economically and efficiently and for the purpose intended. Even though the Commission has no prior experience implementing Bank-funded project, they have prior experience with other donors (mostly bilateral – USAID, Australian Aid, GIZ etc.) and still receiving some bilateral funds in support of some ongoing project activities. There is a basic but sound FM systems which is computerized and based on QuickBooks Accounting Software. The overall FM risk is rated as Moderate. Detailed results from the assessment and the agreed FM, disbursement and auditing arrangements for the proposed Project are documented below.

Summary Project Description
The broader objective of the project is to assist ORASECOM and Member States prepare climate resilience water resources development projects and investment in action plans for the Orange-Senqu river basin. The project which is estimated to cost about EUR 3million and to be implemented over a thirty-six (36) month period, with the main objective of facilitating the preparation of prioritised investment projects in the IWRM Plan that will enhance climate resilience in the Orange-Senqu River Basin. The project is aimed at delivering bankable investment projects that enhance water security and build climate resilience in the basin.

Use of Country and Institutional Systems
The Agreement establishing ORASECOM provides that it shall be an international organization and shall possess international legal personality with capacity to enter into international agreements, and shall further possess legal personality within the legal systems of each of the parties establishing the commission. Even though ORASECOM is currently being hosted by the South African government, its legal standing ring-fences its operations from the fiduciary risks inherent in South African PFM systems. Consequently, previous and on-going project implemented using ORASECOM's existing FM systems which is guided partly by SADC Secretariat's Financial Management Rule and supplemented with the South African Public Finance Act (PFA); which have been assessed to be satisfactory to handle and account for Bank resources in a required manner; hence, the FM arrangements for the proposed project will therefore use the existing systems, in line with the Bank's financial reporting requirements.

Harmonization with Other Donors
Although ORASECOM has received and continue to receive various forms of support from Cooperating Partners (CPs) including the USAID, Australian Aid, and GIZ etc. interventions from respective CPs has focused on their individual specific projects, and there has been conscious effort by ORASECOM towards harmonizing various support and interventions from these partners. This proposed study is a stand-alone intervention (even though there are on-going effort by the Bank and ORASECOM team to collaborate with other CPs to help provide the anticipated financing gap) to be financed and implemented solely by the Bank unless a co-financier is identified. Consequently,

the project FM issues are tailored in line with ORASECOM's existing FM systems and the Bank financial management, disbursement and auditing requirements.

Executing Agency

The ORASECOM has been designated as the Executing Agency to facilitate and coordinate the implementation of the study on behalf of member states. The Commission has implemented and continue to implement some donor-funded projects, and a review of their financial performance (including sampled audited financial statements) seems satisfactory. ORASECOM operates a computerised FM system which is computerized, based on QuickBooks Accounting software package. The review of sampled processed financial transactions revealed there is adequate capacity to ensure project resources would be handle in a manner required by the Bank. The Bank's fiduciary team would continue to provide the necessary guidance and support to the project team to further strengthen the control environment to improve accountability processes under the proposed project.

Summary of assessed Financial Management arrangements

The results of the assessment (that included a review of the budgeting, accounting, internal controls, funds flow, financial reporting and auditing arrangements) revealed the existing arrangements meet the Bank's minimum requirements to ensure that project funds will be used in economic and efficient manner and for the intended purpose. Overall FM risk rating is assessed as Moderate. Detailed outcome from desk reviews, FM supervisions and FM performance review of on-going proposed project, together with discussions held with relevant officials in ORASECOM are documented below.

Planning and Budgeting: Even though ORASECOM does not have their own comprehensive rules governing the annual budget process, the annual budgeting preparation and control process follows the SADC Secretariat prescribed rules and regulations; which clearly defines budget preparation, review, approval, funds allocation as well as budgetary control and funds reallocation procedures. The Finance Officer prepares the budget after receiving inputs from relevant program officers, reviewed by the Executive Secretary and approved by the ORASECOM Council. Previous projects have also followed specific donor budgeting requirements. As a result, the proposed project will follow the existing budgeting principles, and would be complimented by annual work plan and budget to be prepared agreed between the Bank and ORASECOM.

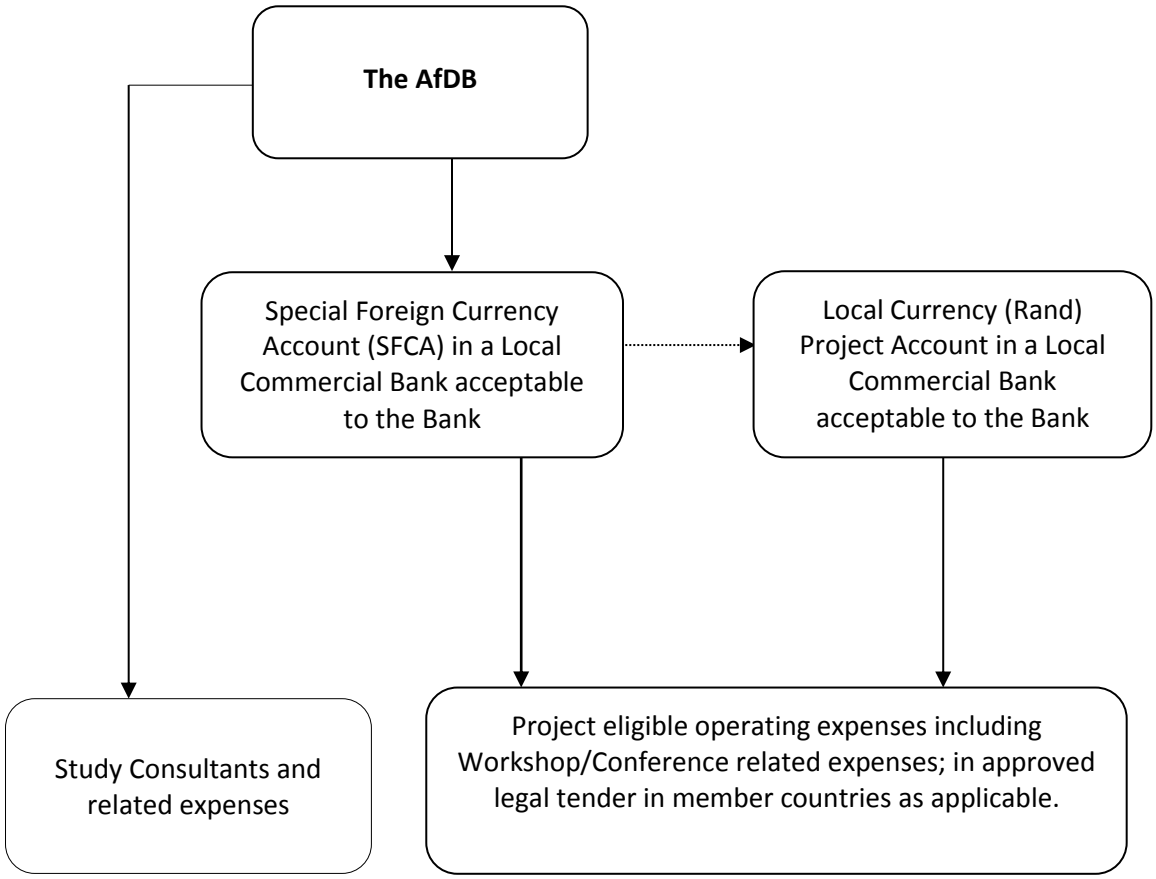
Accounting Systems: Currently, ORASECOM has adopted and make use of SADC Secretariat's Financial Management Rule and supplement it with the South African Public Finance Act (PFA); consequently, financial transactions are guided by these financial rules and regulations. Transaction recording and processing is based on computerised (QuickBooks) accounting system, and reports generated from the existing system seem comprehensive. There are control over transaction processing from initiation, authorization, approval, payment voucher preparation, disbursements, transaction recording and processing for reporting purposes. FM under the proposed operation will therefore follow existing rules which are found to be adequate, in keeping with Bank's financial reporting requirements. Recording and processing of project transaction will be done using the existing QuickBooks accounting software by using separate expenditure codes for project transactions, to facilitate proper accounting of project resources.

Internal Control and GAC: Currently, ORASECOM does not have its own set of financial rules and regulations but uses SADC Secretariat's financial manual in conjunction with South Africa's PFA, which are assessed to be adequate. There is also no existence of internal audit function within the Commission. Despite the above, sample processed transactions reviewed revealed controls exists over transaction processing, from initiation to completion; and seem to be working as required. There is also a system of peer-review where member countries task teams peer-reviews the work of their respective counterparts within the Commission. The project resources would be subjected to the existing rules; with the Bank's approval and review processes (no objections and supervision missions etc.) serving as further checks and controls. In addition, the project detailed costing table would also highlight specific eligible expenditures to be financed under the project, which would serve as additional guidance to the project team.

Funds Flow and Disbursements Arrangements: Currently ORASECOM operates one main Bank account which receives member-countries contribution to finance the Commission's operational activities. In addition, separate

bank accounts are opened for different donor projects; and cash book, bank reconciliation statements are prepared for respective bank accounts. Based on the nature of activities to be carried out under the project, the Commission will mainly make use of two of the Bank's disbursement methods namely; the Special Account (SA) for small operating eligible expenditures; and Direct Payment methods for payment of eligible consultancy services under the project. ORASECOM would open one (1) Special Foreign currency Account in the agreed disbursement currency; and one (1) local currency (Rand) sub-account in a commercial Bank acceptable to the Bank to be used in paying agreed eligible operating expenditures. The fund flow arrangement is depicted in the diagram Figure1 below. In addition, the Bank will issue a Disbursement Letter of which the content will be discussed and agreed during negotiations; and ORASECOM will be required to submit to the Bank, details of all Bank Accounts as well as specimen signatures of authorized signatories for signing withdrawal applications and direct payments..

Figure 1: Funds Flow Diagram



Financial Reporting: ORASECOM currently prepares monthly and quarterly management reports covering for the Commission's activities including reports for on-going donor-funded projects; and these reports are prepared taking into account respective donor periodic progress reporting requirements. As a requirement, the Commission prepares a Statement of Income and Expenditures twice yearly for the Governing Council's review and decision-making. Annual reports are also prepared by the Commission in accordance with International Financial Reporting Standards (IFRS) for annual audit purposes. The annual reports include (i) Statement of financial position (ii) Statement of comprehensive income; (iii) Statement of changes in equity; and (iv) Statement of cash flow. Review of these reports revealed they are comprehensive. In this regard, the Commission will be required to handle and account for the project financial resources using the existing system in keeping with the Bank's financial reporting requirements including. The Commission would be required to prepare and submit withdrawal applications and payment requests to the Bank in a manner and timing contained in the Bank's disbursement handbook; as well as preparation and

submission to the Bank of an Interim Quarterly Progress Report (IQPR) no later than 45 days after the end of each calendar quarter. Format for the IQPR will be discussed and agreed with the Commission.

External Audit: ORACOM's statutory and project audits are conducted by private external auditors annually or in accordance with the provisions of the member-country agreements establishing the Commission. The latest signed audited financial statements is the 2012/2013 financial year and the auditors issued an unqualified (i.e. clean) audit opinion; and even though the draft reports for 2013/2014 has been issued by the auditors, the Council is yet to deliberate on the reports for adoption. The audit for 2014/2015 (for period ending 31st March 2015) is currently ongoing and the draft report is expected to be issued by the auditors to the Commission by end of September 2015.

The assessment raised and discussed the issue of delayed finalization with the Commission's team for their rectification. In line with the Bank's auditing requirements, an AWF appointed private external auditors would be required to undertake annual audit of the project and submit the audited financial statements and the management letter to the Bank no later than six (6) months after the end of each financial year; or alternatively, the audit shall be carried out and the final reports submitted to the Bank at periodic intervals and dates to be agreed between the Bank (AWF) and ORASECOM in the financing agreement. In this regard, the management of ORASECOM will ensure that all project financial records and transactions are processed up to date throughout project implementation period and in readiness for the audit.

Action Plan

To further strengthen the FM systems for the proposed project, the following actions were discussed and agreed with MoWEC to be undertaken, as indicated in Table 1.

Table 1: FM Action Plan

#	Required Actions	By Whom	By When
1	Create separate codes in the existing computerized accounting system to record and process project transactions.	Finance Officer	Before first disbursement
2	Provide training in Bank FM and disbursement procedures to MoWEC's NCU Finance team.	Financial Management Specialist, AfDB	Project technical launching

FM Supervision: The frequency of FM supervision is determined by the outcome of the assessed FM risk rating. The project would be implemented in a "Moderate" risk environment and hence, subject to one supervision per year. Other supervision activities would be desk reviews of the IQPRs, annual audit reports, and management letters for follow-up actions. The outcome of these reviews would inform the intensity of subsequent FM supervisions.

FM Conditionality

There is no FM effectiveness condition.

FM Supervision

The frequency of FM supervision is determined by the outcome of the assessed risk rating. The overall FM risk rating for the MoWEC under the proposed project is assessed as "Moderate" and hence subject to one supervision per year. Other supervision activities would be desk reviews of the IQFRs, annual audit reports, and management letters for follow-up actions. The outcome of these reviews would inform the intensity of subsequent FM supervisions.

Appendix 1: Detailed FM Risk Assessment

Risk Type	Rating Risk	Risk Mitigation Measures Incorporated into the Project Design	Risk after Mitigation
Inherent Risk			
Country Level **N/A**		**N/A**	**N/A**
Entity Level Inadequate finance personnel within the Commission.	**S**	Proposal made to recruit one additional finance assistant; but may not occur soon.	**S**
Project Level ORASECOM has no prior experience in Bank FM and disbursement procedures.	**S**	Bank FM team will provide relevant FM and disbursement training; and provide relevant templates as guidance. Project will benefit from teams experience from other bilateral donor-funded projects implemented by the Commission	**M**
Overall Inherent Risk	**S**		**S**
Control Risk			
Budgeting No material risks identified	**L**	N/A.	**L**
Accounting ORASECOM lacks prior experience in Bank FM procedures.	**S**	The project will benefit from the team's prior experience with other donors Bank FM team will provide training to the FM team	**M**
Internal Control ORASECOM has no internal audit Unit	**S**	Periodic reviews are carried out by respective Task Teams Bank FM Supervision mission reviews will highlight any weaknesses and make appropriate guidance to address.	**M**
Funds Flow ORASECOM has no prior experience in Bank FM and disbursement procedures.	**S**	Bank will provide disbursement training to ORASECOM FM team FM guidelines and Disbursement Handbook have already been provided to the project team to familiarize themselves.	**M**
Reporting and Monitoring Lack of familiarity with Bank reporting requirements by ORASECOM could delay reports submission.	**S**	Relevant FM reporting template and guidelines and training to the project FM team.	**M**
External Audit and Oversight There have been delays in finalizing annual audited financial statements in the last two years	**M**	AWF appointed auditors would undertake project audits at agreed dates; hence serious delays are anticipated.	**L**
Overall Control Risk	**S**		**M**
Overall Project Risk Rating			**M**

H – High ***S - Substantial*** ***M – Moderate*** ***L – Low***

Annex 10: AWF and NEPAD-IPPF Communication and Visibility Guidelines

Communication and brand visibility greatly matter to the AWF and NEPAD-IPPF. They view communication as a strategic function firmly tied to its strategies and business objectives. Steady communication with AWF and NEPAD-IPPF stakeholders helps build credibility and secure their trust and esteem, which in turn, helps AWF and NEPAD-IPPF build and protect its reputation. Communications is also about disclosure. The AWF and NEPAD-IPPF are a multi-donor funds, and are accountable to a Governing Council that expects the AWF to hold itself to the highest level of accountability and transparency. The AWF and NEPAD-IPPF are committed to making every effort to disclose, share and report information useful and relevant to its stakeholders and the greater public. This entails effectively communicating its achievements, progress, and results by using all means available, in a timely manner. All these elements are important for business and essential to attract and retain donors, and for AWF and NEPAD-IPPF to maintain its social license to operate.

Brand awareness is about making sure the public knows AWF and NEPAD-IPPF exists and can tell the AWF and NEPAD-IPPF apart from other water funds/preparation facilities or organisations. The brand is a visual, memorable trigger, or logos, that embodies the AWF and NEPAD-IPPF and captures its core identity. Brand awareness is achieved over time, through activities meant to increase brand visibility, by repeated use and exposure of the logos at strategic places and times. The AWF and NEPAD-IPPF logos are used as a seal or a signature used to signal AWF and NEPAD-IPPF financial support or special collaboration.

The AWF and NEPAD-IPPF has established **Communication and Visibility Guidelines** to the attention of partners, AfDB regional offices and grant recipients to help AWF and NEPAD-IPPF more effectively achieve its brand and communications objectives, as laid out in the AWF and NEPAD-IPPF Long Term Communications Strategies.

1. GENERAL REQUIREMENTS

1.1 At an early stage, when preparing communication activities related to AWF and NEPAD-IPPF -supported event or project, contact the AWF and NEPAD-IPPF Secretariat.

1.2 At a minimum, and wherever possible, the AWF and NEPAD-IPPF logos should be applied to outreach materials that pertain to AWF and NEPAD-IPPF -supported projects or events. The proper use of the logos should be discussed with the AWF and NEPAD-IPPF.

1.3 The AWF and NEPAD-IPPF should be verbally mentioned as donor of the project it is funding at public speaking events where the project is discussed, and also be mentioned as donor in any PowerPoint presentations relevant to the project funded by the AWF and NEPAD-IPPF, using the name and the logos of the AWF and NEPAD-IPPF appropriately.

1.4 The logos are to be obtained upon request from the AWF and NEPAD-IPPF Secretariat.

1.5 Documents and publications related to AWF and NEPAD-IPPF -supported project or sponsored publication should contain the AWF and NEPAD-IPPF logos, as well as this phrase on the cover page: "This project/program/study is funded by the African Water Facility and NEPAD Infrastructure Project Preparation Facility".

1.6 Implementing and executing agencies should always have a link to the AWF and NEPAD-IPPF websites on the page of their website relevant to an AWF and NEPAD-IPPF -funded project/activity.

1.7 The AWF and NEPAD-IPPF asks that grant recipients report back to the AWF and NEPAD-IPPF Secretariats any special mention, award nominations or recognition that the project may have received.

2 VALIDATION PROCESS

2.1 The AWF and NEPAD-IPPF Management are responsible for the final clearance of AWF and NEPAD-IPPF communications products/outputs.

3 PRESS RELEASES & MEDIA ADVISORIES

3.1 The AWF and NEPAD-IPPF will issue an AWF and NEPAD-IPPF -branded press release every time a project is approved and/or signed, and when completed (handover).

3.2 AWF and NEPAD-IPPF press releases must always include a quote from the Coordinators of the AWF and NEPAD-IPPF, which must be cleared by the Coordinators.

3.3 The AWF and NEPAD-IPPF encourages and appreciates initiatives to issue joint press releases with its grant recipients. A standard joint press release can be issued at any time agreed by the AWF and NEPAD-IPPF (between launch and completion).

3.4 When the grant recipient wishes to produce a press release, liaising with the AWF and NEPAD-IPPF Secretariat is

required, as well as receiving a quote from the AWF and NEPAD-IPPF Coordinators, as appropriate, and getting approval and clearance.

3.5 The AWF and NEPAD-IPPF should be included in the title and/or first paragraph of the press release, as appropriate.

3.6 The press release should incorporate the AWF and NEPAD-IPPF logos, mention that funding was provided by the AWF and NEPAD-IPPF, and mention the amount of the AWF and NEPAD-IPPF funding.

3.7 If a press conference is planned, the press release should include the name of the AWF and NEPAD-IPPF senior representatives who will be present at the press conference, when relevant.

3.8 All press releases must bear the name and contact information of the AWF and NEPAD-IPPF Secretariat, and if possible that of the communication/media representative from the grant recipient.

3.9 The AWF and NEPAD-IPPF boilerplate text ("About the AWF and NEPAD-IPPF") must be added to the text, including the AWF and NEPAD-IPPF website address. Please contact the AWF and NEPAD-IPPF Secretariat for the latest version.

3.10 The AWF and NEPAD-IPPF has final validation of all its press releases, following a review process.

3.11 The rules above also apply to media advisories.

4 PRESS CONFERENCES

4.1 Press conferences to launch projects funded by the AWF and NEPAD-IPPF should be organised in cooperation with the AWF and NEPAD-IPPF, as much as possible.

4.2 The invitations should bear the AWF and NEPAD-IPPF logos.

4.3 The AWF and NEPAD-IPPF logos of a visible size should appear on any banner or poster to be displayed at the site of the conference.

4.4 Press kits need to include a press release with the AWF and NEPAD-IPPF logos.

4.5 Whenever possible, the AWF and NEPAD-IPPF banner should be on hand and set up to serve as a backdrop for TV and photo purposes.

5 PRESS VISITS

5.1 When appropriate, journalists should be invited to visit the project funded by AWF and NEPAD-IPPF, accompanied by representatives of the AWF and NEPAD-IPPF or the AWF and NEPAD-IPPF Focal Points in the respective authority / government of the grant recipient.

6 VISITS BY GOVERNMENT OFFICIALS, AWF DONORS

6.1 Visits to projects by government officials and AWF and NEPAD-IPPF donors are encouraged. Those should be prepared in coordination with the AWF and NEPAD-IPPF and the AWF and NEPAD-IPPF Focal Points of the host government. This can include meetings with local beneficiaries.

6.2 These visits may also include government officials and AWF and NEPAD-IPPF donors' participation to roundtables and other events, as relevant.

7 LEAFLETS, BROCHURES AND NEWSLETTERS

7.1 All leaflets and brochures relevant to the project/program financed by AWF and NEPAD-IPPF should incorporate the basic elements of the AWF and NEPAD-IPPF visual identity, i.e. the AWF and NEPAD-IPPF logos – with or without tagline.

7.2 Leaflets and brochures produced by a grant recipient must also incorporate a definition of the AWF and NEPAD-IPPF (boilerplate text).

7.3 The cover page of all documents pertaining to the project financed by the AWF and NEPAD-IPPF must clearly identify the activity as being part of the AWF and NEPAD-IPPF -funded activity.

7.4 Copies, including electronic copies of the publications, should be made available to the AWF and NEPAD-IPPF.

8 ELECTRONIC COMMUNICATIONS

8.1 Electronic communication disseminating information on AWF and NEPAD-IPPF -funded projects including websites, newsletter, and social media platforms, should link to the AWF and NEPAD-IPPF websites.

9 SIGNAGE

9.1 The grant recipient should produce display panels, posters or banners to promote their AWF and NEPAD-IPPF -funded or AWF and NEPAD-IPPF -related activities at exhibitions and other events, placed in strategic locations for all to see.

10 VEHICLES, SUPPLIES AND EQUIPMENT

10.1 AWF and NEPAD-IPPF generally requests that vehicles, supplies and equipment funded by AWF and NEPAD-IPPF be clearly identified, and visibly carry the AWF and NEPAD-IPPF logos and the phrase "Provided with the support of the African Water Facility and NEPAD Infrastructure Project Preparation Facility" in English or French as relevant.

10.2 This requirement is subject to negotiation between AWF and NEPAD-IPPF and the grant recipient as some supplies and equipment may be exempt.

10.3 The grant recipient must provide evidence of compliance with this rule (digital photos sent by email are recommended).

11 PHOTOGRAPHS AND AUDIOVISUAL PRODUCTIONS

11.1 Professional high resolutions (300 dpi) digital photographs of the project funded by AWF and NEPAD-IPPF should be supplied to the AWF and NEPAD-IPPF throughout the different phases of the project, to document the progress of actions and events related to these, and to be used in print and online publications.

11.2 All photos should be submitted with full caption and credit information.

11.3 The AWF and NEPAD-IPPF will be entitled to use or reproduce photos submitted to it without payment of royalties.

11.4 Whenever relevant, audiovisual materials should acknowledge AWF and NEPAD-IPPF support, by featuring the AWF and NEPAD-IPPF logos at the beginning and/or end of the movie/documentary.

11.5 Copies of the movie(s) / documentary (ies) should be supplied to the AWF and NEPAD-IPPF.

12 COMMEMORATIVE PLAQUES OR SIGNAGE

12.1 Whenever relevant, the grant recipient should place a permanent plaque, or some other type of large, commemorative signage, on the most visible part of the building, infrastructure or near the project site, which received funding by AWF and NEPAD-IPPF, beside the name of the implementing agency and/or name of the project, for visitors to see.

12.2 When appropriate, the plaque or signage could contain the following sentence: "This [name of the infrastructure] was funded by the African Water Facility and NEPAD Infrastructure Project Preparation Facility" alongside the AWF and NEPAD-IPPF logos.

13 PROMOTIONAL ITEMS

13.1 Before taking any decision on the production of such items, the Communication Officer at the AWF and NEPAD-IPPF should be consulted.

13.2 Promotional items bearing the AWF and NEPAD-IPPF logos can be distributed to support communications activities related to the project funded by AWF and NEPAD-IPPF. This may include T-shirts, caps, pens, notebooks, USB keys, etc.

Annex 11: Draft Terms of Reference

Orange-Senqu River Basin: Preparation of Climate Resilient Water Resources Investment Strategy &Plan and Feasibility Study of a Multipurpose Project

TABLE OF CONTENT

1 BACKGROUND

1.1 The Orange Senqu River Basin

1.1.1 The Orange-Senqu River Basin originates in the highlands of Lesotho and runs for over 2300 km to its mouth on the Atlantic Ocean in Namibia/South Africa. The river system is one of the largest river basins in Africa with a total catchment area of about 1.0 million km^2 and encompasses all of the Lesotho, a significant portion of South Africa, Botswana and Namibia. In terms of spatial coverage, about 64.2% basin lies in South Africa, 24.5% in Namibia, 7.9% in Botswana and 3.4% in Lesotho. The mean annual runoff is estimated as 11.5 billion m3 of which 53% is from South Africa, 41.5% from Lesotho, 5.2% from Namibia and 0.3% from Botswana. The Orange-Senqu River basin is a highly complex and integrated water resource system characterised by a high degree of regulation and a large number of major inter-basin transfers to manage the mismatch between location of abundant water resources and the location of greatest demands.

1.1.2 The basin is of major economic importance to South Africa contributing 26% to South Africa's GDP from the Vaal and Orange rivers development for agriculture, mining, energy production and manufacturing. In Lesotho, all economic activity (agriculture, livestock and manufacturing) lies within the Orange-Senqu River Basin as the entire country is in the basin. The basin also contributes to the GDP of Botswana and Namibia, where mining and agriculture are the main areas of water usage. Development of water resources management infrastructure for assuring water for sustaining agriculture and other economic activities and domestic needs has been taking place over the past decades. The infrastructure involves storage and transmission of water to use centres that are in some cases outside of the basin.

1.1.3 Developments in the basin lack an overarching strategy for the transboundary water resources management. There are concerns around the changes in precipitation and temperature due to climate variability and climate change. Increase in water demand and degradation of the water resources quality in the basin together with the highly variable nature of the rainfall and hence hydrology, makes management of the water resources highly challenging. The negative impacts from climate variability and change will lead to adverse losses and damages to key livelihood and economic activities in the basin.

1.1.4 The Orange-Senqu River Basin Commission (ORASECOM) is the river basin organisation established in 2000 by the Governments of the four riparian States for managing the transboundary water resources of the Orange-Senqu River basin and promoting its beneficial development for socio-economic wellbeing and safeguarding the basin environment. Over the past decade ORASECOM, with the support of key development partners, has been assessing the water resources management conditions in the basin and commissioning specific studies to understand the challenges and design appropriate responses to ensure sustainable management of the basin water resources. This has led to the development of a consolidated Integrated Water Resources Management Plan adopted in February 2015 by the ORASECOM Member States.

1.1.5 The IWRM plan provides a strategic transboundary water resources management framework and action areas and serves as guiding and planning tool for achieving the long-terms development goals in the basin. It defines strategic actions that will ensure and enhance water security considering the long term socio-economic and environmental demand on the water

resources of the basin. The Plan promotes building climate resilient development taking cognisance of the impact of high variability in rainfall and hydrological flow patterns. It also prioritises a ten-year planning horizon to focus on the key actions to respond to these challenges The IWRM Plan is thus an agreed framework towards long-term goals; provides a clear basis for transboundary cooperation; enhances the role of ORASECOM and strengthen its position and supports efficient development of water resources and optimized management.

1.1.6 The IWRM Plan identifies the lack of integrated transboundary water resources investment strategy and plan as key challenge for achieving the sustainable development of the basin water resources. A key aspect of the transformative approach for strengthening cooperation has been identified as the need for joint project implementation that provides a mutually inclusive transboundary benefit.

1.2 Previous Assessment and Studies

1.2.1 The project is a result of a comprehensive IWRM process undertaken by ORASECOM over the past decade under the cooperative environment created by the SADC Protocol on Shared Watercourses and the 2000 Agreement that established ORASECOM. ORASECOM has conducted a number of thematic, planning and strategic studies with the support of key development partners that has deepened the understanding of the developmental challenges, created common understanding of the issues and facilitated the planning of joint development approaches between the riparian countries. The IWRM Plan adopted in February 2015 is the result of the consolidation of the various assessments and studies undertaken at the national and basin level over the past 10 years.

1.2.2 The preparation of the investment strategy and plan for the basin under the project is envisaged to provide road map for implementing the IWRM Plan. The water resources planning modelling studies; the transboundary diagnostic analysis and the strategic action planning; development of reconciliation strategies for large water supply systems (particularly on the South African side of the basin); the environmental flow requirements analyses; climate downscaling and change adaptation studies; economic account ting of water; water demand projections and synthesis of planned infrastructure investments are some of the key study results that will provide the basis for the preparation of the investment strategy and plan . The IWRM operational plan will be developed for implementing the actions and priorities listed in the IWRM Plan.

1.2.3 The the Water Resources Yield Model (WRYM) and the Water Resources Planning Model (WRPM) developed for the basin which have been adopted by the countries and applied in setting the development scenarios are also available for the water resources simulation and optimisation analysis. The project for prefeasibility study will be prioritised as part of component 1 based on the results of available studies including the reconnaissance studies. There are also national IWRM planning studies for the four riparian countries that will provide the national perspectives for the investment analysis. The climate change study has focused on the downscaling methodology from the global model and defining the methodology to conduct downscaling exercise for the Orange-Senqu River Basin in order to reveal the nature, extent and spatial coherence of climate change in the basin. The project will build upon all these available studies to assist ORASECOM and its Member States in preparing projects and programmes for implementation.

2 Priorities and Problem Definition

2.1 Development Priorities

2.1.1 The Orange-Senqu River Basin is one of the major transboundary water system within the SADC region. The SADC Protocol on Shared Watercourses is a legal instrument for fostering cooperation on transboundary water resources management. The SADC Regional Water Policy, Regional Water Strategy and Climate Change Adaptation Strategy set the operational context for transboundary water resources management. The proposed project which aims to enhance investment on transboundary water security and building resilience to climate change contributes directly to the implementation of these strategic regional instruments.

2.1.2 The project is the result of the cooperative framework that created ORASECOM to advise Member States on the development, utilisation and conservation of the water resources of the Orange-Senqu River Basin. The project is anchored in the IWRM Plan which presents the consolidated water resources development strategy for the basin. The main areas of concern are related to lack of optimised management of the basin's water resources. There is a need to enhance contribution from water resources to social development and poverty reduction; reversal of land and environmental degradation; and disaster management as related to climate change.

2.1.3 The Orange-Senqu River Basin poses complex water management challenges for safeguarding future water security. The central theme of ensuring water security under increased hydrological variability compounded by climate variability and change impact remains the key water resources management problem. The main goal of the project is to assist ORASECOM and its Member States to address this central problem based on a long term planning and strategic investment approach. There are multiple problems related to deteriorating land and environmental conditions and lack of inclusive water resources development in some parts of the basin in order to support economic growth and alleviate poverty. Meeting the urgent water needs of some part of the society is critical. The solutions to these problems are to be addressed through optimisation of the water resources development based on balanced economic, social and environmental considerations.

2.2 Problem Definition

2.2.1 There is an impending water scarcity in the Orange-Senqu River Basin**.** Much of the basin is semi-arid to arid and in the lower reaches of the river the tributaries are ephemeral and contribute little runoff to the main river. A decrease in precipitation due to climate variability and change will have a huge impact on agriculture in the lower Orange River Basin. Most of the runoff is generated in the wetter eastern part in the highland of Lesotho. There is a high level of inter and intra-annual variability making development difficult and costly. The impact of climate variability and change on water will translate directly into risk for various sectors of the economy that are dependent on the resource, such as agriculture, energy production, urban environment, biodiversity and rural livelihoods.

2.2.2 There is a need to optimise and make efficient water resources development and management in the basin. The development of new infrastructure to meet increasing demand, even if technically and environmentally feasible is both expensive and complex. Economic

considerations of water use will be a key part in planning the optimum use of what will become an increasingly scarce and expensive resource. Projections of future water demand and associated infrastructure development should be based on balanced consideration of economic, social, and environmental factors. The integration of water resources yield analysis, water resources development planning and economic optimisation will ensure the development of long term solutions to address basin water resources development challenges.

2.2.3 The Transboundary Diagnostic Analysis of the basin revealed profound environmental problems as a result of unsustainable water resources development. These include changes in the hydrological regime, loss of ecosystem services, land degradation, increased sediment loads, deteriorating water resources quality, increased presence of alien invasive plants and loss of biodiversity. A Strategic Action Programme (SAP) has been designed to address some of the existing critical environmental issues as well as their causes and to this effect UNDP-GEF is considering substantial support for the implementation of the programme. A critical dimension of the actions required for sustainable environmental management is the need for a link of the results of analysis of existing situation and proposed solution into a coherent and consolidated basin wide long term environmental management strategic framework linked to the optimum future water resources development scenario for the basin.

2.2.4 The solution for addressing the water security challenges is the need for increasing the efficient use of existing infrastructure and develop additional water resources management systems based on the water resources availability and use reconciliation studies undertaken as parts of the IWRM Plan preparation. The basin wide reconciliation analysis will be strengthened by covering all part of the basin at an equal level. The consultant will undertake reconciliation studies in the Botswana, Lesotho and Namibian parts of the basin and updating the existing studies conducted for the South African part of the Basin to establish comprehensive basin wide analysis which will be integrated with economic analysis to determine the optimised and most efficient development option as part of setting the long term development investment strategy and plan for the basin.

3 Objectives and Scope of the Assignment

3.1 Overall Goals and Framework

3.1.1 The primary developmental goal of the project is to promote sustainable socio-economic growth in four riparian countries through climate resilient water resources development in the framework of basin wide cooperation. The implementation of the project over the long term will contribute to enhanced climate resilient socio-economic condition and poverty eradication in the basin. The development of multipurpose water resources projects and programme will result in improved standard of living, inclusive growth, enhanced preparedness and adaptation to deal with vulnerability to climate change impact and variability thus ensuring long term water security for social, economic and environmental uses.

3.1.2 The investment strategy and plan prepared through participatory process involving the basin stakeholders will facilitate the optimisation of multipurpose water use in the basin. It will improve the body of knowledge and analysis of water use for various social, economic and environmental purposes. The analysis of demand and supply of water resources considering the contemporary challenges of climate variability and change impacts will generate, understanding of the social, economic and environmental issues, particularly, the deteriorating ecological situation resulting from current water management practices. The investment strategy and plan

will provide a road-map for water resources development for the short to long term periods (2020-2050) and the institutional framework for implementing and managing the river basin development programme.

3.1.3 The implementation of the multipurpose water resources development programme will enhance preparedness and adaptation to deal with vulnerability to climate variability and change impact and ensure long term water security for social, economic and environmental purposes. The degraded land and ecological services and the livelihoods that are dependent on these will be regenerated by improving the reliability of water supplies for productive uses and restoration of environmental flows. Maintenance of sustainable minimum environmental flows will restore river basin connectivity, enhance aquatic ecosystems, improve water resources quality and enhance value of ecological goods and services.

3.1.4 The proposed assignment for which consultancy services is required will be conducted within the framework of achieving the broad regional water resources development agenda. The project will enable ORASECOM to operationalise the Integrated Water Resources Management Plan for the Orange-Senqu river basin. The investment strategy and plan will focus on developments that have transboundary benefits over the period of the planning horizon spanning to 2050.

3.2 Objectives of the Assignment

3.2.1 The main objective of the consultancy service is to prepare climate resilient multipurpose water resources development investment strategy and plan for the Orange-Senqu River Basin. The project will lead to the preparation of the basin wide investment strategy and plan for climate resilient water resources development implementation phased over a period of 30 years in short, medium and long-term actions and programmes. Financing and resources mobilisation strategy will be developed to attract public and private sector investment for development. Proposal on the institutional framework and capacity for implementation and management including the strengthening of ORASECOM will be prepared through amongst others building on previous undertakings and implementing actions in the IWRM Plan. The investment programmes will be implemented in three phases covering the short term (2020-2025), medium term (2026-2035) and long term (2036-2050).

3.2.2 The specific objectives of consultancy services are to undertake water resources development planning and investment based on optimisation analysis considering water resources availability and use for economic, social and environmental purpose. The optimisation exercise will integrate basin wide climate change impact assessment and mainstreaming climate variability and change factors in water resources planning; basin environmental and social-economic assessment and analysis of institutional mechanisms and assessment of the strengthening of ORASECOM. The consultancy services will also cover (i) an analysis of strategic actions identified in the IWRM Plan and preparation of road map and cost estimate for further implementation, and (ii) the preparation at feasibility stage of a transboundary priority project selected during the development of the investment strategy and plan. However, project preparation may proceed to feasibility level analysis depending on the complicity of the priority project selected for consideration.

4 Preparation of Climate Resilient Water Resources Investment Strategy and Plan

4.1 Study Approach

4.1.1 The investment strategy and plan assessment will be based on the use of existing Water Resources Yield Model (WRYM) and the Water Resources Planning Model (WRPM) developed and adopted by the countries for water resources assessment and utilisation simulation analysis of development scenarios. The models and data base with the operating manuals will be made available to the consulting firm by ORASECOM. The consultant will develop an optimisation model for incorporating the economic analysis, socio-economic and environmental factors resulting in the formulation of the optimum transboundary water resources development scenario along with the investment requirement. The selection of the preferred scenario will also be based on a broad environmental impact assessment. The cost-benefit analysis and the environmental assessment were not undertaken in the definition of the core scenario developed for the IWRMP, and are of utmost importance for this study.

4.1.2 Conceptual and mathematical modelling shall be applied to undertake analysis and simulate the existing social-ecological interactions within the basin and testing of future growth scenarios as a basis for formulating the optimum development option. The modelling analysis shall be conducted in discrete structures covering the main sub-basins and developmental zones.

4.1.3 The hydrologic modelling shall be applied to simulate inflow scenarios upstream of the dams, reservoir operations and release partners and downstream of dams extending to the confluence to the Atlantic Ocean. Demand on water resources throughout the basin include provisions for hydropower, agriculture (irrigation, livestock, fisheries), urban and rural water supply (including the full range of municipal, mining and industrial development requirements) and maintenance of ecological function (flood plain, wetlands, riverine environment). Climate change and variability shall be integrated in the modelling analysis.

4.1.4 The optimisation modelling analysis shall identify trade-offs among different developmental objectives in the basin and to determine the most optimum scenario for water resources development and reservoir operations. Cost-benefit analysis using social, economic and technical criteria and production requirement taking into account environmental functions and associated costs will be conducted to determine the most optimum proposition.

4.1.5 A GIS structure will be established for compilation of data and information, analysis, mapping and plan elaboration. The GIS system will reside with the Executing Agency on completion of the assignment with capacity created to manage and use the system for implementation, monitoring and follow-up plan elaboration. Hydrological modelling, simulation of the river system for scenario analysis and optimisation of development options constitutes an essential part of the tools applied to undertake the assignment. Demonstration and transfer of a functioning modelling systems and creation of local capacity is necessary.

4.1.6 Stakeholders' consultation during the study process and at intermediate and final output of the assignments is required as an integral part of the study. The stakeholders' structure constitutes the beneficiary community in the basin; local, Governments, regional organisations, CSOs, universities, research institutions, key water users (mining, industry, energy, agriculture etc.) and other community of practitioners concerned with the sustainable development of the river basin. Consultation shall be conducted through proper participatory methods including survey,

workshops, seminars, etc. The intermediate and final outputs of the assignment shall be subjected to review, validation and adoption by stakeholders and the Executing Agency as appropriate

4.1.7 The investment plan should not be based only on infrastructure development and optimisation, but should include water demand management measures aimed at reducing the water demand. In this regard, the irrigation sector being the main water consumer, should be studied in details.

4.2 Scope of Assignment

4.2.1 The scope of assignment covers an assessment and analysis of existing water resources development situation, specific thematic studies and analysis, formulation of long term development scenarios, investment analysis based on optimisation exercises and development of the preferred investment option. Water resources development reconciliation strategies based on simulation analysis of potential development scenarios have been comprehensively undertaken on the South Africa side of the basin but may need updating and expansion. It necessary to undertake similar comprehensive reconciliation studies on the Botswana, Lesotho and Namibian parts of the basin and come-up with an integrated recompilation study for the Basin. Results of basin wide down scaling studies of the global climate change model and diagnostic analysis of the environmental issues are available. The IWRM Plan provides an overarching framework for the basin development. The results of the thematic studies conducted for preparing the IWRM Plan provide an important source of data and information.

4.2.2 The main outputs under the assignment are (i) a validated and adopted investment strategy investment and plan for the Orange –Senqu River Basin that has mainstreamed resilience to climate variability and change impact and provides short, medium and long-term development programmes spanning to 2050, (ii) a prioritised road map (including cost and implementation plan) for the operationalisation of the strategic actions of the IRWM Plan for the Orange-Senqu River Basin , (iii) an update of basin wide environmental management plan and (iv) financing strategy for implementing the strategic plan and (v) governance and institutional framework and system for implementing the investment strategy & plan and the road map of the IWRM Plan implementation. The study shall be conducted by qualified multidisciplinary team of experienced experts consisting of international and national consultants. Detailed description of the activities to be undertaken under the consultancy services are elaborated as follows.

4.3 Situation Assessment and Review

4.3.1 Existing data, information and study documents will be collected, collated and analysed to assess the existing data quality and establish an overview of the existing situation. A comprehensive assessment of the existing situations based on review of existing data. Field assessment will be undertaken to determine the state of water resources development and management in the basin.

4.3.2 The situation assessment will establish water availability at key locations; water use (agriculture, industry, power, urban, rural, mining, ecological services etc); major water infrastructures; policy and strategy frameworks; national and transboundary governance structure; planned water related developments; environmental, economic and social factors; and water

management technologies and analytic tools. The data and information gap will be assessed and the need and methodology for additional work identified.

4.3.3 The situation assessment will provide the basis for water resources planning and optimisation analysis. It will be based on a series of thematic mapping illustrating the situation assessment and the main challenges. An Inception/situation assessment report will be prepared to provide an overview of the exiting situations and the approach and work plan for preparing the investment strategy and plan.

4.4 Thematic and Sectoral Studies and Analysis

4.4.1 This task will focus on thematic and sectoral studies, and the examination of development options under different sets of assumptions. The thematic and sectoral studies will include physical characteristics, natural resources, water resources, infrastructure, socio-economic development, climate change and environmental aspects.

4.4.2 The analysis will establish the demographic and social factors; national and regional socio-economic development plans and related water requirement; land use and irrigation potential; ground and surface water resources; water requirement and allocation by sector (i.e for agriculture, industry, hydropower, mining, urban and rural water supply, ecological requirement, transport and touristic requirement) and water resources infrastructure development requirement and cost (rehabilitation of existing infrastructure and additional requirement). The analysis will provide the synthesis of existing and planned water resources infrastructure development over the plan period to 2050 with cost and benefit estimate. The main areas of thematic and sectoral studies and analysis are outlined in the following paragraphs.

4.4.3 **Hydrology** Data shall be collected complied and analysed to establish the metrological and hydrological parameters needed for understanding and qualifying the basin's spatial and temporal climatological factors and water resources availability. The analysis will establish the inflow and outflow from natural water bodies and reservoir systems; the spatial and temporal characteristic of the flow regimes along the basin river systems and the occurrences of flood and drought conditions. shall be undertaken. The water resources of each sub basins and basin at key location shall be established.

4.4.4 Rainfall, runoff and other climatological parameters required for irrigation assessment; design of water infrastructure and environmental allocation shall be determined. Specific aspect of the hydrological analysis is to assess the risks associated with climate variability and changes on the long term water security of the basin. Time series data base shall be established as part of the GIS and metrological and hydrological maps shall be prepared at the appropriate scale.

4.4.5 **Groundwater:** Major aquifer system shall be identified and mapped. The ground water analysis shall establish the extent, recharge, quality availability and sustainability of groundwater resources throughout the basin. Analysis of the development potential for conjunctive use with surface water, urban and rural water supply and provision for livestock shall be undertaken.

4.4.6 **Soils, land use and land cover:** Data and available maps on soils, land use and land cover shall be compiled for suitability analysis for agriculture (rainfed and irrigated) and other economic development and environmental uses. The data base with mapping attributes shall be established in the GIS structure. Analysis of land use and land cover shall be made based on acceptable standards to show features settlement, cropland, and vegetation cover (forest, woodland, bush land,

riparian vegetation, and grassland), wetland, rivers, water bodies, etc. Soil and land suitability, land use, land cover and vegetation maps shall be compiled for use in the preparation of investment strategy and plan.

4.4.7 **Wetlands and water ecosystem:** Data collection and analyse shall be undertaken to characterise the main ecosystems of the river basin and identify the impacts of the potential investments with particular focus of the wetlands and lake environ. The major ecosystems around the potential project areas shall be broadly characterised and assessment and mapping of their general condition; current and future commercial and livelihood uses such as agro-forestry; environmental benefits of the riparian flora and wetlands in terms of water quality protection, flood control and river regulation, sediment retention, and wildlife habitat shall be undertaken. Maps of wetland areas and watersheds classification according to the intensity of the erosion and other characteristics shall be prepared with the data base established in the GIS structure.

4.4.8 **Agriculture and fisheries:** Data collection, studies and analysis shall be undertaken to establish and map the main agricultural production practices (rainfed, irrigated, subsistence, commercial, etc.), farming systems and land use in the basin particularly along the river and flood plains. The study and analyses shall focus on the assessment of existing irrigation farming systems and future potential to determine the extent of irrigation development in the basin. Collection and analysis of data and information shall be undertaken to assess and map existing fishery production and constraints faced in relation to the water management in the basin. Project proposals shall be developed for integrating sustainable fishery production as part of the water resources development strategy of the basin.

4.4.9 **Socio-economic Development:** Socio-economic studies shall be undertaken to determine the existing socio-economic condition in the basin and assess the developmental needs related to integrated water resources development in the basin. Collection and analysis of data shall be made from community structure to the national and river basin level (where appropriate) disaggregated over the sub basin and basin boundary. Similarly, the social and economic development forecasts for the riparian Sates relevant for the strategy and priority projects preparation shall follow the sub-basin and basin delineation. Analysis of social and macro-economic development for establishing comparative indicators with State and regional indicators shall be made. The socio-economic development studies shall cover the following main aspects.

(i) Settlement studies and mapping to determine existing rural and urban pattern in the basin; impact of basin development and provisions for future growth centres in relation to basin water resources development.

(ii) Population studies and analysis to establish past and existing demographic and socio-economic trends; key livelihoods and growth indicators; projection and demand forecasting for basin planning and project development.

(iii) Assessment, analysis and mapping of status existing transportation and communication networks as applied to the basin development and preparation of strategies and proposal

for transport and communication development to support the basin water resources development.

(iv) Assessment of existing industrial development and identification of future growth potential particularly for agro-industry and analysis of water requirement to sustain industrial growth as part of integrated basin water resources development.

(v) Analysis of poverty and livelihood condition in the basin to determine existing situation and future poverty reduction targets. The primary objective of river basin development shall be to overcome poverty and bring about growth and development.

(vi) Assessment and analysis of existing marketing system and infrastructure in the basin and proposals for improvements to cater for the needs of future development in the basin.

(vii) Assessment of investment and finance needs and preparation of strategies for mobilisation from public and private sector as well as market and credit opportunities.

4.4.10 **Water Resources Development**: Water resources development reconciliation strategies based on simulation analysis of potential development scenarios have been comprehensively undertaken on the South Africa side of the basin. The same comprehensive reconciliation studies need to be undertaken on the Botswana, Lesotho and Namibian parts of the basin and integrated with an updated reconciliation study of the South African Part of the Basin to provide a comprehensive reconciliation analysis result for the whole basin.

(i) Analysis of the water resources potential both surface and underground shall be undertaken to assess the development potential, status of existing use and opportunities for future sustainable development of the basin. Data collection shall focus on water supply and demand; consumption standards; operational, planned and identified water resources development projects. Emphasis shall be given to multipurpose use in projects formulation. Project proposal shall consider technical, institutional, social, policy and financial implications and provide conceptual design and estimates of cost and investment requirement.

(ii) Inventory and analysis of existing and potential storage reservoirs on the main rivers and tributaries shall be carried out using remote sensing and existing topographic maps as well as site visits. Proposals for rehabilitation of existing storage facilities and development of new reservoirs shall be made as part of investment strategy and plan preparation.

(iii) Potential areas suitable for irrigation and drainage projects shall be determined from the analysis of hydro-metrological factors, soils suitability, drainage characteristics, location, topography, copping pattern and water availability.

(iv) Engineering studies for preliminary costing particularly for priority projects shall include storage dams and reservoirs; river diversions and off take works; canals and hydraulic structures; typical on farm layouts; drainage types and layouts; miscellaneous infrastructure; land allocation for other uses such as livestock.

(v) The potential for hydropower generation from existing dams and new sites shall be studied in terms of water availability and storage requirement; infrastructure; demand and transmission requirement. Project proposal for the development of potential hydropower schemes shall be made.

(vi) The potential for local water transport with respect to existing reservoirs, lakes and proposed development shall be assessed including demand, limitations and infrastructure development needs.

(vii) An inventory and mapping of exiting water infrastructure including dams, hydraulic facilities, irrigation, water supply, flood management and river training shall be made. The rehabilitation or replacement needs shall be assessed and analysed with proposals on changes, outline design and costing.

(viii) Data collection, analysis and mapping on drought and flood events and the associated socio-economic and environmental impacts shall be undertaken.

(ix) Data collection and analysis of existing rural and urban water supply and sanitation shall be made for the purpose of assessing the adequacy and quality of existing coverage. Strategies and programmes for providing water supply and sanitation services over the plan period shall be prepared. A key aspect of water supply and sanitation provisions is the need to provide basic services to meet national and international targets. The sanitation assessment and analysis should consider the potential for recycling and reuse both at the urban and rural setting.

4.4.11 Analysis and mapping of physical and natural characteristics at the river basin shall be undertaken based on use of existing data base and maps with field verification and use of earth observation data to augment and update as necessary. The maps shall be prepared using the river basins and State boundaries as appropriate. The required scale and type of maps shall be confirmed at the situation assessment stage. The quality of the available data should be compatible with the mapping scale and remote sensing imageries may be acquired and limited field assessments may be carried out for purposes of complementing existing data. The map data base shall be established within GIS to enable input of additional data and produce maps at the desired scale.

4.4.12 **Development of analytics tools and models:** Possession, assessment, familiarisation and validation of the existing Water Resources Yield Model, Water Resources Planning Model, GIS and model data base will be undertaken. The background studies, analytic procedures, results and data base of the past reconciliation analysis will be compiled.

4.4.13 The models, operating rules and procedures with the existing data base will be made available by ORASECOM. Test runs will be conducted and selection of suitable optimisation model mainly for socio-economic analysis and economic optimisation will be undertaken. The data base structure and GIS will be updated to meet the economic analysis and environmental framework development requirements. Additional data and information required for the simulation and optimisation exercises will be collected and entered into the modelling data base and GIS.

4.4.14 The hydrological (water resources availability and use) and optimisation (balance of economic, social and environmental benefits) modelling requirements will be set-up, for the basin, tested and ready for undertaking the investment strategy and plan analysis and formulation. A clear structural chart of the model will be elaborated so as to facilitate the understanding of the model structure.

4.4.15 The consultant will in particular detail in its technical proposal how the model will be selected/developed, validated and extended. Planning and modelling database modules will be set up within the GIS based ORASECOM Water Information System (WIS).

4.4.16 **Mainstreaming of climate variability and change impact:** The study will consider the

impact of climate change and variability which is expected to have a significant influence on availability of water resources, operations of water infrastructure, and occurrence of droughts and floods in the Basin. Review of the downscaling of the Global Climate Circulation Model to the basin level undertaken for the IWRM Plan preparation will be updated as part of the analysis of the overall climate variability and change impact on future water security of the basin.

4.4.17 Guidelines for mainstreaming climate change impact factors in the design of water infrastructure will be prepared and integrated with the modelling analysis. The Water Resources Yield Model and Water Resources Planning Model will be applied to analyse the sensitivity of the system to extreme hydrological conditions and establish the parameters for climate impact consideration in the optimisation exercises.

4.4.18 Climate resilience factors should be built into the modelling analysis in formulating the investment strategy and plan. The climate variability & change database module will be set up within the GIS based ORASECOM Water Information System (WIS).

4.4.19 **Environmental and social management framework:** An environmental and social baseline assessment will be undertaken to establish potential project environmental and social impacts and risks and propose the environmental and social management framework. The main activities relate to this component are:

(i) Review and examination of the main social and environmental concerns and management issues and existing actions and programmes will be undertaken based on a review of data and available studies, including the Transboundary Diagnostic Analysis and basin wide and national Environmental Sustainability Strategic Action Programme of 2014. Consultations with relevant organisations, resource experts and stakeholders will be undertaken to compile the diagnostic information. The review will lead to a diagnosis of the social and environmental challenges and key issues that should be addressed as an integral part of the investment strategy and plan.

(ii) An assessment and mapping of the environmental and social challenges related to each of the development scenarios will be undertaken. This will be followed by a more in depth analysis of the environmental and social impact of the preferred scenario that will constitute the investment strategy and plan. The scenario assessment will be mainstreamed into the multi-criteria analysis which will lead to the selection of the preferred scenario. The results of review of the existing situation and future conditions will be integrated into a proposed environmental and social management framework as part of the investment strategy and plan preparation.

(iii) The framework will provide the main environmental and social challenges with proposals for specific actions to address them. Terms of Reference for full Strategic Environmental and Social Impact Assessment will be prepared with cost estimates for conducting the assessment.

4.4.20 **Gender and social equity considerations:** An assessment of gender and social equity conditions will be undertaken to identify the existing challenges and issues. A draft gender mainstreaming strategy has been developed for ORASECOM as part of the consolidation of the IWRM Plan, but needs to be reviewed and updated as an integral part of the investment strategy and plan.

4.4.21 An overall framework for addressing the gender and social equity issues will be prepared and mainstreamed into the investment strategy and plan. The gender studies and analysis shall examine the condition of women and other disadvantaged groups to assess the current conditions

and measure taken to ensure their involvement in the water resources development of the basin.

4.4.22 The existing gender based policy and institutional measures and their implications for proposed water resources development programmes shall be investigated. The different constraints faced by both women and men in terms of using available services will be examined. Proposals shall be made on a comprehensive sets of measure required to overcome the gender constraints to ensure full participation in the development of the basin.

4.4.23 Gender and social equity considerations shall be mainstreamed into the basin planning and will constitute an integral part of the river basin development process as well as benefit from its development.

4.5 Investment Strategy and Plan Formulation

4.5.1 **Formulation of development options and scenarios:** Analysis of potential water resources development options over the plan period will be undertaken by considering the national and transboundary development needs. The core theme in the scenario formulation is water security under the impending climate variability and change impact. Scenarios to be developed will include projects or programmes for water supply, hydropower generation, irrigation, industrialisation, mining, flood management, enhancement of ecological services, livestock, fisheries, transport recreation etc. It will also include water demand management measures.

4.5.2 The analysis should result in the formulation of plausible options that will provide the basis for the construction of scenarios that will be considered for simulation and optimisation analysis. The base case scenario will be based on the outcome of the reconciliation study with the list of project proposals provided in the IWRM Plan and attached herewith as Annex 3.

4.5.3 The reconciliation strategy for the South African portion of the basin has been established based on detailed yield and planning modelling analysis. There is a need to bring to the same level the remaining portion of the basin and undertake the economic analysis through the optimisation modelling.

4.5.4 Additional project proposals with transboundary benefit or impact will be considered leading to the design of possible options and analysis of implication (infrastructure, water management requirement, cost and benefit). This should culminate with the formulation of possible development scenarios (at least three) for detailed modelling analysis. Each of the scenarios will be presented in a synthetic manner through maps and schemes.

4.5.5 Formulation and selection of the preferred scenario:

4.5.6 The hydrological and optimisation modelling analysis of the proposed scenarios should result in the comparison of the efficiency of the scenario in terms of water security and resilience to climate change.

4.5.7 The modelling analysis will identify trade-offs among different developmental objectives in the basin and implications for national water resources development and the linkages with the transboundary plan.

4.5.8 A cost-benefit analysis in economic prices will then be undertaken for each scenario, and the preferred scenario will be selected through a multi-criteria analysis. Criteria of comparison will include: water security and resilience to climate change, broad environmental impact assessment, cost-benefit analysis including transboundary dimensions and the food and energy nexus. The cost-

benefit analysis will take into account indirect costs and benefits, non-market impacts and externalities, in particular those related to eco-system services and climate change externalities (greenhouse gas emission or saving). The consultant will detail its approach regarding these aspects in its methodology.

4.5.9 Finally, a multi-criteria analysis based on water security, resilience to climate variability and change, social and economic analysis, broad environmental assessment and other criteria will be considered in selecting the preferred scenario. At least three multipurpose transboundary priority projects will be selected and screened for consideration and decision to proceed with feasibility analysis level project preparation.

4.5.10 **Development of the investment strategy and plan:** The investment strategy and plan for the basin will then be prepared for the preferred scenario. The strategy and plan includes the development programme with prioritised list of programmes and projects to be implemented over the short (2025), medium (2035) and long-term time frame (2050). Cost estimates and transboundary benefits along with the financing requirement and the investment resources mobilisation package from the public and private sector will be provided.

4.5.11 The prioritisation of projects should be based on an analytic work classifying the 'value for money' of each project. A key aspect in project formulation and prioritisation is the need for ensuring that projects identified are financeable and be able to attain financial closure. The investment strategy and plan will be presented in a synthetic manner with maps and schematics.

4.5.12 **Financing strategy:** The financing strategy for implementing the plan will be developed in a participatory manner with focus on the short and medium term projects. The consultant will carry out an analysis of the implementation of each project under a Public-Private-Partnership (PPP) scheme. The analysis will include an assessment of national and transboundary legal framework for the development of PPP. Short and medium term projects will then be screened to broadly assess their potential to be developed under a PPP scheme based on qualitative and quantitative criteria.

4.5.13 For the most favourable projects, the consultant will develop a broad financial analysis and propose a financing and institutional structure. A specific analysis note per project shall be prepared and attached to the main report. For each of the short and medium term projects, in addition to the PPP pre-feasibility, the consultant will also assess the potential of the project to mobilise carbon financing and climate change financing.

4.5.14 Finally, the consultant shall prepare a financing plan for each of the projects.

4.5.15 **Policy and institutional framework:** A comprehensive assessment of existing policies, institutional arrangements and structures considering the different elements of regional, national, multilateral and basin level structures responsible for water resources development and management will be undertaken. The governance and institutional assessment for implementing the investment strategy and plan will be undertaken and a framework for strengthening ORASECOM will be developed.

4.5.16 The policy and institutional framework required for the sustainable development and management of the river basin shall be assessed and elaborated. The institutional framework will elaborate the interstate and transboundary water resources infrastructure management set-up; refinement of the existing policy, legal and regulatory system; information and knowledge management and monitoring and evaluation frameworks.

4.6 Preparation of Road Map for the Implementation of the IWRM Plan

4.6.1 The implementation of IWRM Plan is centred on 11 core strategic objectives for achieving the water resources development goals and vision of the basin. The central strategic objectives are defined as optimisation of water use for socio-economic development while ensuring environmental sustainability and water security that enhances resilience to water related disasters including climate variability and change impact.

4.6.2 The enabling strategic objectives relate to creating knowledge, capacity building and institutional strengthening, stakeholders' engagement and M&E. Cross-cutting strategic objectives are set as mainstreaming climate change and mainstreaming gender. The IWRM Plan has identified 43 strategic actions, 136 specific actions and 349 activities for implementing the strategic objectives

4.6.3 There is a need for road map and operational action plan for ORASECOM to rollout implementation over the coming years for activities under its direct operational responsibility. The main tasks to be undertaken are:

(i) A review of the IWRM Plan and background documents will be undertaken to understand the process and underlying assumption of the actions development. This will be followed by an analysis of the strategies and activities listed in the IWRM Plan to consolidated the actions and differentiate the in house and outsourced activities.

(ii) Selection of 10 strategic or specific actions (or consolidated set of specific actions in certain cases) through a participatory screening process.

(iii) Development of, for each of the selected actions, concept notes that provide background, rationale, specific tasks, activities, timeline, implementation arrangements and cost estimates and possible financing sources. Terms of references will be prepared particularly for actions that need to be outsourced.

(iv) Preparation of an implementation road map that incorporate concept notes, outline TORs and cost estimate for will be prepared for operationalisation of selected specific actions.

(v) Elaboration of institutional arrangements required for operationalisation and monitoring of implementation under ORASECOM Secretariat will be elaborated. The financing arrangement and resources mobilisation approaches will be developed as part of the institutional framework.

(vi) Preparation of a consolidated operationalisation action plan will be prepared to serve as guideline for the implementation of the IWRM Plan strategies.

(vii) Assessment of donors' support for financing the selected options and preparation of requests for 10 priority actions for consideration on the donors' conference.

5 Project Preparation: Feasibility Study

5.1 Study Approach

5.1.1 Feasibility study and analysis of the preferred project will be undertaken based on the recommendations of priority projects from the basin wide investment strategy and plan. The feasibility study will be conducted in accordance with the accepted best practice and guidelines and will confirm the project's technical soundness, economic and financially viability, socially acceptability and environmental sustainability.

5.1.2 Project preparation may proceed to feasibility level analysis depending on the complexity of the selected priority project and availability of data and information. This situation will be clarified and the analysis level will be established on completion of the Investment Strategy report referred to under Section 4 above.

5.2 Scope of the Study

5.2.1 The feasibility study will provide a bankable project proposal for follow-up investment and implementation. The main activities under this sub-component generically cover the following aspects.

5.2.2 **Hydrological analysis:** Undertake the hydrological analysis in the catchment of the proposed project area to determine the resulting characteristics of the yield and river discharge, long term flow pattern and risks indoor to establish the available water resources and the hydrological parameters for selection and design of hydraulic infrastructures and management (including maximum probable flood); risk assessment and environmental flow conditions and provisions for ensuring long-term water security and investment sustainability under the impending climate variability and change scenario.

5.2.3 **Water resources assessment:** The study will establish the available water resources and use under planned water resources development scenario in the catchment and other requirement within the catchment and linked basin, including for water transfer towards another basin if relevant. The study will determine the volume of available water for the project under multipurpose use conditions such as for agriculture, energy, human and livestock, industry and urban development and ecological services as well as sustainable water security by factoring climate variability and change considerations. The impact of climate variability and change effects on water resources availability and floods frequency will be assessed.

5.2.4 The analysis will include drought and flood risk assessment and mapping; sediment and morphology; minimum flow requirement and water resources quality; water storage requirement and yield; economic and environmental optimization of hydraulic structures such as dams and reservoirs; and operational and maintenance requirement of water resources development and management facilities.

5.2.5 **Topographical surveys and mapping:** Undertake survey and mapping at appropriate scale and contour interval for storage areas and dam site; irrigated areas; main hydraulic infrastructure routes, access roads; river sections, construction material sites etc. Use satellite imagery will be made to augment the field survey and mapping works.

5.2.6 **Geological and geotechnical investigations:** Undertake geological and geotechnical

investigations including seismic refraction, drilling, field testing and laboratory analysis for major hydraulic infrastructure such as dam sites, reservoir areas, diversion sites, irrigated areas, water conveyance and drainage lines etc. Geological and geotechnical maps will be prepared at the required scale for feasibility analysis. The analysis, investigation and mapping will be conducted to scale and details that will enable to determine the type and configuration of all types of water resources management infrastructures and provide parameters for conducting preliminary design.

5.2.7 **Thematic studies and analysis:** Thematic studies for the proposed project area includes soil survey and mapping for irrigated are; land use and suitability; vegetation and land cover, demographic assessment and mapping; gender analysis, social-economic survey etc. The survey, investigation and mapping and associated data will be conducted at the feasibility study level and will provided adequate and quality information for project design analysis and implementation.

5.2.8 **Watershed management and ecological services**: A baseline survey of the watershed conditions and accrued ecological services will be conducted to take stock of the existing conditions and determine the interventions required to improve, protect and maintain the watershed and enhance the ecological services as part of an integrated project package.

5.2.9 **Engineering design of water and associated infrastructure:** Feasibility level design of hydraulic and other associated infrastructures required for the project development will be undertaken. The design will be based on preliminary technical analysis and will consider the construction, operation and maintenance requirement and sustainability of the selected infrastructures. The design will establish the type and dimensions of the infrastructures and provide sufficient details for estimating quantities and cost. The design will include dam and appurtenant structures; hydropower systems; flood protection and river training; water diversion, conveyance and distribution systems; irrigation and drainage systems; water supply and treatment; roads and other productive infrastructure etc.

5.2.10 Environmental and Social Management Assessment: An environmental and social scoping analysis will be undertaken to establish potential environmental and social issues and risks arising from the implementation of the proposed project. The analysis will include review of existing environment and social conditions and the policy, strategy and institutional frameworks relevant for safeguarding the environment. A rapid appraisal process to engage key stakeholders and analyse main environmental and social concerns and issues and establish a broad environmental baseline conditions and socio-economic profile will be undertaken. The environmental and social assessment will provide an outline of the environmental and social management plan and prepare detailed TOR for undertaking the ESIA at feasibility study stage. It should identify the number of households potentially concerned by relocation.

5.2.11 **Mainstreaming climate change impact:** Project specific assessment and evaluation of climate change risks and adaptation measures will be undertaken based on the results of general basin wide and prefeasibility analysis. Risk management strategy and adaptation measures will be developed and integrated into the project design and implementation plans.

5.2.12 **Project implementation planning:** Preliminary construction plans and implementation schedule for infrastructure development will be prepared. This will identify the main construction components with the methodology, material, technology, workflow and schedule required to develop the project.

5.2.13 **Institutional analysis:** Assess and develop the institutional arrangements required for

project implementation and operation in the framework of the national and river basin institutional set-ups. Development of institutional arrangement will include elaboration of the legal and regulatory framework, stakeholders' engagement, coordination and monitoring with the organizational structure, the broad human resources and budget requirement necessary for the project implementation, operation and production on sustainable manner.

5.2.14 **Cost benefit analysis:** Assessment and analysis of the cost and benefit for the with and without project situations will be made to establish the incremental net benefit arising project investment as well as the sustainability positive impact over a long-term time horizon. Preliminary Financial and economic cost estimate will be made for the various project component with schedule of expenditure for capital, replacement, operation and maintenance and management costs for all activities and services. Estimates of project benefits include direct and indirect benefits; tangible and intangible benefits and secondary benefits related to the project as well as externalities. Analysis should include sensitivity tests for different critical parameters including climate variability and change impact. The economic analysis will be conducted in economic prices through the estimation of individualised conversion factors.

5.2.15 **Financial analysis and financing plan:** the PPP feasibility carried out under the investment strategy and plan will be refined through the development of a detailed financial model to determine the financial IRR and equity IRR. If the PPP reveals feasible the consultant will propose an institutional structuration and a financing plan.

5.2.16 The cost of the geotechnical and topographic investigations cannot be easily estimated as long as the project to be studied at feasibility stage is not identified. The consultant should therefore consider for its financial bid a provisional sum of €260 000. Once the project is identified, the consultant will propose and cost a programme of investigations to be validated by ORASECOM, and will launch a competitive procurement process with at least three quotations received. The procurement process and its results will have to be validated by ORASECOM.

6 Organisation and Management

6.1 Implementation Arrangement

6.1.1 The ORASECOM Secretariat is the Executing Agency of the Project. ORASECOM is a river basin organisation established by Botswana, Lesotho, Namibia and South Africa by Agreement signed in 2000 within the framework of the SADC Protocol on Shared Watercourses. ORASECOM was established to advise the Member States on the development, utilisation, and conservation of the water resources of the Orange-Senqu River Basin. The highest body of ORASECOM is the Council of Commissioner constituted by ministers delegated by the Members States. The Council is supported by various technical Task Teams and the permanent Secretariat with its head office in Pretoria, South Africa. The Agreement is being revised and is proposing the Forum of the Parties (Ministers) to be highest decision making body of ORASECOM.

6.1.2 The Secretariat is responsible for programme coordination, programme development, management and implementation of the Council decisions. The Secretariat is headed by an Executive Secretary who is an ex officio member of Council with responsibility for Strategic programme management; direction, planning and guidance, quality assurance, resources mobilisation and collaboration with partners and stakeholders.

6.1.3 A Project Implementation Unit (PIU) headed by the Project Manager will be established

under the Executive Secretary of ORASECOM. The main responsibility of the Project Manager will be to oversee the implementation of all aspects of the Project and be fully responsible for its day to day management. The PM will report and oversee the activities of the consulting firm and facilitates and coordinate the support and inputs required from the ORASECOM and the State Parties/Member States.

6.1.4 Project steering, validation and adoption of outputs will be assured by the ORASECOM Council of Commissioners which will provide policy and strategic guidance and approve and adopt the outputs. The ORASECOM's Task Team (Technical, Communications, and Finance) will be responsible for providing project oversight, steering and guidance. A Technical Advisory Panel consisting of qualified and experienced professionals will be established to support the Task Team with respect to the technical and scientific integrity of the study.

6.1.5 A stakeholders' consultation platform will be established with members from concerned government representatives, NGOs, private sector, local government and communities, cooperating partners, research institutions, bilateral, multilateral and regional bodies, parliamentarian etc.

6.1.6 The investment strategy and plan along with project preparation will be implemented over a period of 24 months from date of consultancy contract signature. The main tasks and timing of events are provided in the table below.

Item	Event	Schedule
(i)	Contracting of Consultancy services	M
(ii)	**Preparation of Investment Strategy and Plan**	**M+0-M+14**
(iii)	situation review and inception	M+3
(iv)	Reconciliation and thematic studies and model elaboration (Interim report)	M+7
(v)	Investment analysis and strategy preparation (draft final report)	M+12
(vi)	Investment strategy and plan (final report)	M+14
(vii)	Roadmap for operationalising the IWRM Plan	M+14
viii)	**Project Preparation**	**M+15-M+24**
(ix)	Survey and investigation	M+18
(x)	Thematic studies and analysis (Interim Report)	M+19
(xi)	Project preparation draft final report	M+22
(xii)	Project preparation final report	M+24
xiii)	Resources mobilisation donors conference	M+26

6.2 Reporting Arrangement and Staffing

6.2.1 The main reporting requirements are summarised as follows.

(i) **Investment Strategy Inception/Situation Assessment Report:** The Inception/Situation Assessment Report for the strategy and plan preparation will provide the results of the review and situation assessment and outline the consultants approach to the preparation of the investment strategic and methodology for the modelling analysis and establishment of

GIS based data and information management system. The report will be submitted 3 months after commencement of the consultancy services.

(ii) **Investment Strategy and Plan Interim Report:** The interim report will be prepared on completion of the thematic analysis for the investment strategy and plan will propose three scenarios and elaborate the overall modelling analysis and assumptions for the development of investment strategy and plan. Proposals on the outline contents for the final main and theme reports will be provided. The report will be submitted 7 months after project commencement for review by PSC and other stakeholders.

(iii) **Investment Strategy and Plan Report:** The report, prepared by the consultant will be submitted in draft 12 months after commencement and finalised on the 14th months. It will provide the investment strategy and plan will elaborate the short, medium and long term action plans with investment estimate and implementation mechanisms. The report will include the mainstreaming aspect of climate change, institutional arrangement for implementation, environmental management framework and financing strategy and resources mobilisation approach. The report will be submitted in draft for review by PSC, TAP, stakeholders and AWF and finalised with review input for adoption by the ORASECOM.

(iv) **Roadmap for IWRM Operationalisation Report:** The report will provide the road map and action plan for the operationalisation of the IWRM Plan. This will include implementation road map, cost estimate, outline concepts and TOR and the institutional arrangements required for implementation. The report is scheduled for submission 14 month after the study commencement.

(v) **Project Preparation Interim Report:** The report will present an overall assessment and findings of the site investigation, survey and thematic studies and an indicative multipurpose project proposal with outline content of the final main and theme reports. The report will be submitted 19 months after commencement.

(vi) **Projects Preparation - Feasibility Study Report:** This report prepared by the consultant will elaborate the prefeasibility analysis of the priority projects with a recommendations feasibility study and design. This will include resources mobilisation report for consideration on the resources mobilisation donors' roundtable conference, TORs for feasibility study and ESIA. The report will be submitted in draft on month 22 and finalised on month 24.

6.2.2 All draft reports will be submitted in 20 hard copy and a soft copy. Final reports will be submitted in 15 hard copies and a soft copy for the investments strategy and plan related reports and 5 hard copies and a soft copy for the feasibility related reports. Soft copies shall be submitted in both word and pdf formats.

6.2.3 Brief description of responsibilities with qualification and experiences required for the assignment is provided for proposed positions are provided as follows.

(i) **Team Leader/Water Resources Engineer (TL)**: The Team Leader will be responsible for the overall planning and implementation of the consultancy services including team management and coordination; ensuring the achievement of the study objectives; facilitating stakeholder consultation. As the Water Resources Engineer, the TL will be responsible for water assessment and allocation study; modeling analysis, strategic plan formulation and

preparation of water resources development scenarios. The TL will have the overall responsibility for the preparation and finalization of the various reports outlined above. He/she should have as a minimum MSc. Degree in water resources engineering and 20 years of experience partly in Africa, related to transboundary river basins planning and modeling and multipurpose water resources project preparation, and track record of leadership in managing multi-disciplinary teams.

(ii) **GIS / Remote Sensing Expert:** Minimum qualifications are Master's degree in remote sensing and application of GIS. His main tasks will be the establishment of the water and other natural resources data base for the basin wide and project specific studies, the production of a compendium thematic base map, data analyses for the investment plan and project formulation and production of a planning atlas. The specialist will also be responsible for the identification and specification of remote sensing imagery; installation of the image processing system; and the production of thematic maps. He/she will oversee the database modules to be prepared and put onto ORASECOM Water Information System (WIS). Minimum requirement of M.Sc. in geography, GIS, remote sensing or related fields, strong background in remote sensing, computer programming and experience in web-based database module formulation, and 10 years of experience in GIS based works.

(iii) **Hydrologist/Modeler**: He/she will be responsible for compiling and analysis of all available hydro-meteorological data and overall assessment of the surface water resources in the sub basins and the basin; analysis of reservoir operations and other proposed reservoirs and hydrological simulations of inflow and outflow from existing and proposed reservoirs and wetland system as well as analysis of impact of climate variability and change.Will undertake the modelling tasks including the hydrological modelling and simulation and optimisation at project, sub-basin and basin level by applying appropriate computer program package. Minimum qualification of a Master's degree in hydrology/ Water Resources Planning/ Modeling or related field with 15 years of relevant experience. He/She will have extensive experience with hydrology of large river basins with surface, ground water, wet land and lake systems; working on large dams' projects, multipurpose water projects and strategic water resources assessments.

(iv) **Hydro-geologist:** He/she shall be responsible for assessing the quantity, quality and condition of the ground water resources of the basins and preparation of review of the geological and hydro geological map of the basins. In coordination with the water resources and irrigation engineer, He/she will develop proposals for groundwater use both for irrigation, livestock and for potable water supplies and incorporation of groundwater components into the WRYM and the WRPM models. Minimum qualification is Masters degree in hydrogeology with at least 15 years' experience in projects involving both ground and surface water management in large river basins.

(v) **Dams/Hydraulic Engineer**: He/she will be responsible for assessing existing hydraulic structures and identify additional needs over the planning period, provide conceptual design and cost estimate, setting up cost database for use in the estimation of investment costs of irrigation, water supply, and multipurpose water resource projects. Minimum qualification of Masters degree in civil or hydraulic engineering and at least 15 years' experience in large river

basin water infrastructure (dams, weirs, power house, river diversions) planning, investigations, and design.

(vi) **Hydropower Engineer:** Will assess hydropower generation from existing dams and future potentials provide conceptual design and cost estimate for modeling analysis. Minimum qualification Master's degree in Hydropower with at least 10 years' experience in projects involving hydropower dam projects planning in large river basins, feasibility study and design of hydropower.

(vii) **Water Resources Engineer:** WRE will complement the TL and provide input in water assessment and allocation study; modeling analysis, strategic plan formulation and preparation of water resources development scenarios. He/she should have as a minimum MSc. degree in water resources engineering and 10 years of experience related to river basins planning and modeling and multipurpose water resources project formulation.

(viii) **Irrigation Engineer**: The IE will be responsible for assessing the basin wide land resources and irrigation potential, identification irrigation projects and estimation of water requirement; assessment of water use efficiency and rehabilitation needs of existing irrigation schemes; costing and prioritisation of irrigation development in the basin and conceptual design and cost estimate for the modelling analysis. The IE will for irrigation development analysis as part of the multipurpose project feasibility study. Minimum Master's Degree in Irrigation Engineering with at least 15 years of relevant experience in irrigation planning, design and implementation particularity in Africa.

(ix) **Environmental Expert**: She/he will lead and undertake the overall environmental and social assessment and prepare the environment framework and terms of reference for strategic environmental and social assessment. The expert will also undertake the scoping study in relation to the multipurpose project preparation and prepare TOR for ESIA work. Minimum of M.Sc. degree in Environmental Sciences or a related field and have at least 15 to 20 years of relevant experience in analysing positive and negative aspects of large basin water resources development and multipurpose water resources development projects. Substantial experience with SESA and ESIA related to large basin water resources development projects, wetland, lakes and land management. Experience of economics and water resources management, climate change, and policy and institutional analyses would be desirable.

(x) **Climate Change Expert:** The expert will assess the most up to date global climate modeling experiences, review the works undertaken in downscaling to the river basin level and propose modalities for mainstreaming climate change impact in the basin wide and project level infrastructure planning. She/He will make specific proposal on enhancing resilience in the river basin and provide input to the modeling analysis to ensure consideration of climate change in the water security planning in the basin and multipurpose project preparation. The expert shall have at least a Master degree in Environmental science, water resources or related areas and minimum experiences 15 years in climate change or related areas of which at least 5b years are in climate change analysis.

(xi) **Institutional Specialist:** Review existing national, transboundary and regional institutional arrangement and provided overall institutional framework for implementation of the Investment Strategy with special focus on strengthening ORASECOM. He/She will assess the institutional and organisational requirement for implementing the multipurpose project. Minimum of Master's degree in institutional studies with at least 15 years of relevant

experience in large transboundary river basin institutional assessment and development, policy analysis, sector regulation, and legal framework analysis in developing countries.

(xii) **Socio-Economist/Gender Specialist:** The expert will be responsible for collection and analysis of information and data on socio-economic and cultural factors that impact on basin wide water resources development. The specialist will assess the adequacy of the legal, institutional and policy framework both at the national and transboundary level for mainstreaming gender issues and the empowerment of women to ensure that all aspect of gender requirements is integrated in the investment strategy and project preparation. He/she will undertake rapid appraisal of socio-economic condition with respect to the proposed multipurpose project and provide support the stakeholder consultation to ensure an inclusive all-encompassing process is put in place. Minimum of Master's Degree in sociology, socio-economics or related discipline with at least 10 years' field experience social impact assessment and gender analysis particularity in Africa.

(xiii) **Planning Economist:** The economist will assemble information on the basin; analyse the economic, social, and production situation and prepare proposals on various water resources development approaches and options. He/She will provide input to the formulation of the optimisation modelling and undertake scenario analysis and propose the short to long term development strategies and actions plan in coordination with other team members. Undertake general economic and financial evaluation, assessment of the opportunity cost of water, determination of the sensitivity of the results to variations in key variables, and project investment scheduling. He/she will undertake the economic and financial analysis for the multipurpose project preparation and be involved in preparation of policy framework, projects formulation, prioritisation of phasing of development and financial plan. Minimum qualifications are MSc in Economics and 15 to 20 of regional planning, optimisation modelling and large river basin water resources master plan and project preparation.

(xiv) **Investment analyst / PPP specialist:** The expert will assess the investment environment and positional investment sources from the public and private sector; assess the PPP feasibility of the proposed projects, elaborate the basin wide and project investment requirement and flow and prepare the basin wide and project specific investment reports for resources mobilization purposes and use by potential investor to consider project implementation. Minimum qualifications are MSc in economics, finance, business development or related fields with 15 years of experiences in project financing and investment analysis, in particular for PPP projects.

(xv) **Infrastructure Engineer:** He/she will be responsible for assessing types of civil engineering facilities including roads, storage, social (education and health), production and marketing facilities, etc. in relation to the multipurpose project preparation; prepare conceptual designs, setting up cost database for use in the estimation of investment costs; and provide preliminary design and cost estimate. Minimum of Master's degree in civil engineering with experiences in civil engineering design, with at least 10 years' experience in infrastructure planning and design in connection with large multipurpose water resources development planning and implementation.

(xvi) **Water Supply Engineer:** He/she will review existing water supply and sanitation situation and undertake outline design and cost estimate for WSS aspect with respect to the multipurpose project preparation. Minimum qualifications are Master's degree in water

supply and sanitation with at least 10 years' experience in planning, design and hygiene promotion.

(xvii) **Geotechnical Engineer:** The GE will be responsible for geotechnical investigations and analysis including safety aspects in the context of planning and design of large dams and command areas. Have a minimum MSc degree in geotechnical engineering or relevant fields with 10 years of relevant experience on geotechnical investigation and mapping of large hydraulic structures.

7 Responsibilities and Modalities of Payment

7.1 Responsibilities of the Executing Agency

7.1.1 The Executing Agency shall establish the project management unit and appoint a Project Manager to co-ordinate and follow-up day to day implementation of the study. The EA shall be responsible for all communication with the riparian countries, SADC and other concerned stakeholders in all matters relating to the project. The EA shall facilitate collection of existing data and information; access to relevant authorities and institutions; field visits and consultation with stakeholders.

7.1.2 The EA is responsible for all costs and support for conducting stakeholders' consultation meeting and review meetings and organisation of the donors' roundtable. However, the Consultant will provide technical support for organising and conducting the workshop and meetings.

7.2 Responsibilities of the Consultant

7.2.1 The consultant shall carry out the study according to the terms of reference and in keeping with internationally accepted standards, using qualified and appropriate staff. The consultant shall be responsible for the collection, compilation and analysis of existing data and information and undertaking of additional field investigation survey.

7.2.2 At the end of the contract all the equipment and supplies procured for the studies, or for whom reimbursement was claimed and received by the Consultant, shall be handed over to the EA. All models developed for the study will be the property of the Executing Agency and handed over at the end of the contract with a presentation manual. The consultant shall also hand over all original documents, working files and computer data that have been produced during the studies. All data shall be properly organised and filed with all digital/map/imagery delivered as GIS. The consultant shall handover a fully functioning data base and GIS.