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**Lake Rukwa Basin IWRMD Plan: Final Report**  
**Volume III: Implementation Strategy and Action Plan**



by

**WREM International Inc.**  
Atlanta, Georgia, USA



May 2016

# Lake Rukwa Basin Integrated Water Resources Management and Development Plan

## Final Report: Volume III

### Implementation Strategy and Action Plan

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## Disclaimer

The views expressed in this report are those of WREM International Inc. and do not necessarily reflect the views of the Lake Rukwa Basin Water Board, or the views of the Ministry of Water of the United Republic of Tanzania.

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## Preamble

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This report is one of six Final IWRMD Plan report volumes developed under the project “Lake Rukwa Basin Integrated Water Resources Management and Development Plan (IWRMDP).” This project was carried out for the Ministry of Water, United Republic of Tanzania, under the Water Sector Development Program (WSDP).

A brief description of these reports is provided below.

**Volume I: Lake Rukwa Basin IWRMD Plan Main Report** – Volume I contains the synthesis of information generated from all project activities with emphasis on the main study findings, conclusions, and recommendations. It contains results from the basin-wide integrated assessments and recommended actions that cut across sub-basins.

**Volume II: Sub-basin Water Resources Management and Development Plans** – Volume II (a) to (f) of the report series presents the sub-basin specific water resources management and development plans for Katuma, Songwe, Momba, Luiche, Muze, and Rungwa. The sub-basin plans are the basis for development of the basin-wide IWRMD Plan.

**Volume III: IWRMD Plan Implementation Strategy and Action Plan** – Volume III presents the IWRMD Plan implementation strategy and action plan which includes two main components: (a) the implementation strategy which highlights the administrative and financial modalities of the IWRMD Plan implementation, and identifies the key players to be involved in implementation of the Plan and their corresponding roles; and (b) the Action Plan which outlines the requisite steps to be taken and preparatory activities necessary to kick-start the Plan implementation process. The report also presents the Monitoring and Evaluation Strategy for the IWRMD Plan implementation process and a Communication Plan for information dissemination to the public to facilitate sustained stakeholder engagement and feedback.

**Volume IV: Capacity Building and Stakeholder Participation Plan** – Volume IV presents the proposed capacity building and stakeholder participation mechanisms. The report identifies the different basin stakeholder groups, assesses their capacity needs, and proposes capacity building measures to enable them to effectively participate in basin water resources management activities, particularly IWRMD Plan implementation.

**Volume V: Rukwa Decision Support System (Rukwa DSS v3.0)** – Volume V describes the third version of the Lake Rukwa Basin Decision Support System (Rukwa DSS v3.0) developed to support integrated water resources planning and management. The Rukwa DSS v3.0 is a state of the science information and modeling tool including comprehensive databases; data management and analysis tools; and detailed models for hydrologic forecasting, river simulation, and scenario/policy assessment. The report is a systematic guide to the use of this modern information, modeling, and assessment system for integrated planning and management of the basin water resources.

**Volume VI: Lake Rukwa Basin Monitoring Plan** – This volume provides recommendations for comprehensive monitoring of the basin climate, surface water hydrology, groundwater hydrology, and water quality. The condition of the existing monitoring networks is critically reviewed and existing gaps identified. Guiding principles for the design of effective monitoring

networks are outlined and used as the basis for specific recommendations on network upgrade, expansion, efficient operation, and coordination. Important data management issues are discussed, and an integrated data and information management process is outlined.

## Table of Contents

<b>1. Introduction .....</b>	<b>1</b>
<b>2. IWRMD Plan Strategic Implementation Framework .....</b>	<b>3</b>
2.1 Policy and Legal Framework .....	3
2.2 National Planning and Development Framework .....	3
2.3 Water Sector Development Program (2005–2025).....	3
2.4 Local Government Development Plans .....	3
2.5 Basin Business Plan .....	4
2.6 Integration of the IWRMD Plan into the existing Planning and Budgetary Framework..	4
2.6.1 Detailed Implementation Work Plans and Budgets .....	4
<b>3. Implementation Arrangements .....</b>	<b>6</b>
3.1 Roles and Responsibilities .....	6
3.1.1 Ministry of Water .....	6
3.1.2 Lake Rukwa Basin Water Board .....	6
3.1.3 Other Stakeholder Agencies and Groups .....	7
3.2 Coordination Mechanism.....	13
<b>4. Monitoring and Evaluation Strategy .....</b>	<b>15</b>
4.1 Justification and Scope .....	15
4.1.1 Monitoring Levels .....	15
4.1.2 Evaluation Levels .....	15
4.2 Monitoring and Evaluation Approach .....	16
4.2.1 Performance Indicators.....	16
4.2.2 Data Requirements.....	16
4.3 Review of the IWRMD Plan.....	16
<b>5. Communication Plan.....</b>	<b>17</b>
<b>6. IWRMD Plan Funding and Resource Mobilization.....</b>	<b>21</b>
6.1 Required Funding for IWRMD Plan Implementation .....	21
6.2 Existing Funding Sources .....	21
6.3 Resource Mobilization Strategy.....	22
6.3.1 Revision of Water Use Fees .....	23
<b>7. Action Plan .....</b>	<b>25</b>
<b>8. Annex A: Logical Framework.....</b>	<b>28</b>
<b>9. Annex B: Budget Estimates for IWRMD Plan Implementation.....</b>	<b>38</b>

## List of Acronyms and Abbreviations

AGRA	Alliance for Green Revolution in Africa
AIDS	Acquired Immunodeficiency Syndrome
ASDP	Agricultural Sector Development Program
ASDS	Agricultural Sector Development Strategy
BMUs	Beach Management Units
BRN	Big Results Now
CAADP	Comprehensive Africa Agricultural Development Program
CC	City Council
CDM	Clean Development Mechanism
COWSO	Community Owned Water Supply Organization
DC	District Council
DFID	Department for International Development
DP	Development Partners
DSS	Decision Support System
EEZ	Exclusive Economic Zone
EFA	Environmental Flow Assessment
EFRs	Environmental Flow Requirements
ESIA	Environmental and Social Impact Assessment
EWURA	Energy and Water Utilities Regulatory Authority
FSDP	Fisheries Sector Development Program
FYDP	Five Year Development Plan
GCA	Game Controlled Area
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GWh	Giga Watt hour
Ha	Hectares
HIV	Human Immunodeficiency Virus
IIDS	Integrated Industrial Development Strategy
IUCN	World Conservation Union
IWRM	Integrated Water Resources Management
IWRMD	Integrated Water Resources Management and Development
LGA	Local Government Authority
LGRP	Local Government Reform Program
LSDP	Livestock Sector Development Program
LTPP	Long Term Perspective Plan
LRBWB	Lake Rukwa Basin Water Board
MC	Municipal Council
MDA	Ministries, Departments and Agencies
MEM	Ministry of Energy and Minerals
MLFD	Ministry of Livestock and Fisheries Development
MNRT	Ministry of Natural Resources and Tourism
MTEFs	Medium Term Expenditure Frameworks
MTP&BF	Medium Term Plans and Budget Frameworks
MW	Megawatts
MWh	Mega Watt hour
NEAP	National Environmental Action Plan
NEMC	National Environment Management Council
NEPAD	New Partnership for Africa's Development

NFP	National Forest Program
NIMP	National Irrigation Master Plan
NORAD	Norwegian Agency for Development Cooperation
NSGRP	National Strategy for Growth and Reduction of Poverty
PES	Payment for Ecosystem Services
PPP	Public-Private Partnership
PRSP	Poverty Reduction Strategy Framework
PSMP	Power System Master Plan
PV	Photovoltaic
REA	Rural Energy Agency
REF	Rural Energy Fund
SADC	Southern Africa Development Community
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SEZ	Special Economic Zone
SIDA	Swedish International Development Cooperation Agency
SREP	Scaling up Renewable Energy Program
TAFIRI	Tanzania Fisheries Research Institute
TAFSIP	Tanzania Agriculture and Food Security Investment Plan
TANAPA	Tanzania National Parks
TANESCO	Tanzania Electricity Supply Company Ltd
TAWIRI	Tanzania Wildlife Research Institute
TAZARA	Tanzania-Zambia Railway
TC	Town Council
TDV 2025	Tanzania Development Vision 2025
TNBC	Tanzania National Business Council
TShs	Tanzanian Shillings
UNDP	United Nations Development Program
URT	United Republic of Tanzania
USAID	United States Agency for International Development
WASH	Water, Sanitation and Hygiene
WB	The World Bank
WCS	Wildlife Conservation Society
WREM	Water Resources and Energy Management
WRM	Water Resources Management
WSDP	Water Sector Development Program
WWF	World Wildlife Fund for Nature
UDSM	University of Dar es Salaam
USD	United States Dollar
VECs	Village Environmental Committees



# 1. Introduction

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The Government of the United Republic of Tanzania is implementing the Water Sector Development Program (WSDP; 2006-2025) to strengthen the existing water resources management framework, improve the delivery of sustainable water supply and sanitation services, and strengthen the capacities of sector institutions. The program includes four main components: (i) Water Resources Management and Development (WRMD); (ii) Community Water Supply and Sanitation (CWSS); (iii) Commercial Water Supply and Sewerage (CWS); and (iv) Sector Institutional Strengthening and Capacity Building.

The current project falls under the Water Resources Management and Development component the overall objectives of which are summarized below:

- (i) Develop a sound water resources management and development framework in all nine water basins, for optimizing the utilization of water resources in a sustainable manner for the various competing uses.
- (ii) Promote good governance of water resources through empowering water users; encouraging participatory and transparent decision-making in the allocation, utilization, protection and conservation of water resources; devolving ownership to the user level and granting secure water use permits with responsibilities to the water users, community groups, local government and basin boards; and promoting economic instruments to encourage wise use of water.
- (iii) Strengthen the capacity of basin boards to address trans-boundary water resources issues.

The WRMD component comprises three main sub-components:

- (i) Strengthen the institutional capacity for improving the management of water resources in all basins, including the systems for water resources planning, management and development, as well as for reducing stress.
- (ii) Coordinate the development and implementation of Integrated Water Resources Management and development (IWRMD) plans.
- (iii) Implement priority water resources (single and multi-purpose) management and development investments identified by the Government.

The overarching objective of the Lake Rukwa Basin IWRMD project is:

*“To develop a basin-wide Integrated Water Resources Management and Development (IWRMD) Plan for the Lake Rukwa Basin by (i) assessing water resources and identifying current and future water demands of different sectors, (ii) formulating/evaluating alternatives that will meet those needs, (iii) recommending specific water resources development and management options for the short term (up to 2015), medium term (up to 2025), and long term (up to 2035), and (iv) building capacity of staff of the basin water board and office and other stakeholder agencies to ensure successful development and implementation of the Plan.”*

The Lake Rukwa IWRMD Plan has been presented in Volumes I and II of the Final Report. This report volume addresses (a) the Plan implementation strategy, which highlights the administrative and financial modalities of the IWRMD Plan implementation process (including the key implementers and their roles), and (b) the Action Plan which outlines the requisite steps

to be taken and preparatory activities necessary to initiate the Plan implementation process. The report also presents the Monitoring and Evaluation Strategy for the IWRMD Plan implementation process and a Communication Plan for information dissemination to the public to facilitate sustained stakeholder engagement and feedback.

The report is organized in eight chapters. Chapter 2 provides the general IWRMD Plan strategic implementation framework. Chapter 3 is dedicated to the Plan implementation arrangements including coordination mechanisms. Chapter 4 presents the monitoring and evaluation strategy. Chapter 5 discusses the Communication Plan. Chapter 6 highlights the funding requirements for Plan implementation and the resource mobilization strategy. Lastly, Chapter 7 presents the Action Plan.

## 2. IWRMD Plan Strategic Implementation Framework

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### 2.1 Policy and Legal Framework

The National Water Policy (NAWAPO) and the Water Resources Management Act No.11 (2009) provide the broad policy and legal framework that shall guide implementation of the Lake Rukwa Basin IWRMD Plan. The Act requires that water resources planning and management be undertaken on the basis of river/lake basins following an integrated multi-sectoral and participatory approach. Part V of the Act mandates that each Basin Water Board (BWB), Catchment Committee, and Sub-catchment Committee prepare Integrated Water Resources Management (IWRM) Plans for areas under their jurisdiction. The Act requires that these plans form the basis for all water resources management, development, allocation, and use decisions in the respective basins. Particularly, Section (31) of the Act provides specific guidance on the scope and primary focus of the IWRM Plan.

### 2.2 National Planning and Development Framework

The Lake Rukwa IWRMD Plan shall be implemented within the broader national planning framework that guides implementation of all government development plans and programs. Particularly, the government of Tanzania has developed a Long Term Perspective Plan (LTPP) as the national strategic planning framework for guiding Tanzania's long-term development agenda. The LTPP is structured into three Five Year Development Plans (FYDPs) to ensure effective and timely realization of the TDV 2025 goals and targets. Each FYDP builds upon the achievements of the previous one, taking advantage of emerging opportunities while addressing identified challenges. The Rukwa IWRMD Plan Implementation Action Plan is designed to be consistent with the broader LTPP implementation framework for FYDP II (2016/17 - 2020/21) and FYDP III (2020/21 - 2025/26).

### 2.3 Water Sector Development Program (2005–2025)

The Lake Rukwa Basin IWRMD Plan was developed and will be implemented under the auspices of the broader Water Sector Development Program (WSDP). Since development and implementation of IWRMD Plans is one of the core WSDP activities, it is envisioned that significant technical and financial support for implementation of the Lake Rukwa IWRMD Plan shall be provided under WSDP.

### 2.4 Local Government Development Plans

Local Government Authorities (LGAs) play a central role in implementation of all development activities in the basin. Thus, LGAs are expected to play a major role in implementation of the Rukwa IWRMD Plan. Some of the IWRMD Plan activities are expected to be incorporated into the Local Government Medium Term Plans and Budget Frameworks (MTP&BF) also known as Medium Term Expenditure Frameworks (MTEFs) and Five Year Strategic Plans (FYSP).

## 2.5 Basin Business Plan

Section 23(a) of the Water Resources Management Act (2009) mandates Basin Water Boards to prepare basin water resources management plans, projects, budgets, and an implementation strategy. The LRBWB plans and implements all its activities through Five Year Business Plans (FYBP), the latest one covering the period (2010/11 - 2014/15). It is envisioned that the IWRMD Plan activities will be integrated into the LRBWB FYBPs over the IWRMD Plan implementation time frame (2015 – 2035)

## 2.6 Integration of the IWRMD Plan into the existing Planning and Budgetary Framework

Despite the existence of the above comprehensive planning framework, very minimal coordination across basin sectors occurs during the planning and budgeting process. The IWRMD Plan is intended to fill this gap by fostering close collaboration and coordination across all sectors in the Lake Rukwa Basin by using water resources as the unifying factor. The Plan helps to focus all basin interventions on the priority areas with the highest impact thereby ensuring efficient utilization of scarce budgetary resources. The challenge is therefore how to change the mindset of the different sectors (from the segregated sectoral planning they are accustomed to) and create more synergy in the planning process through the IWRMD Plan. In order to achieve this, first and foremost, it is prudent that all sectors “buy into” the concept of integrated planning and recognize the IWRMD Plan as an important basin planning document for water resources management and development issues. Secondly, all water related sectors are called upon to use the IWRMD Plan as one of the main reference documents during the routine planning and budgeting process. This will ensure that the IWRMD Planned activities are incorporated into the FYDPs, MTEFs, and Sectoral and LGA annual work plans and budgets to guarantee their funding and implementation.

To ensure that this happens, a multi-pronged approach should be used in popularizing the IWRMD Plan. First, the LRBWB (and the Ministry of Water) should invest in disseminating the IWRMD Plan and sensitizing all stakeholders at national and local levels. Support of the basin LGAs, private sector, and development partners is particularly crucial during the IWRMD Plan implementation process. Secondly, a high level directive should be communicated from the central government giving strong recognition to the IWRMD Plans as important government planning documents and instructing all concerned MDAs and LGAs to begin making reference to them in their planning and budgeting process. Such a directive could be issued by the Office of the President through the President’s Office Planning Commission responsible for coordination of national development planning processes. Thirdly, the Ministry of Water should follow up with the Ministry of Finance to ensure that the annual budget call circulars include an explicit directive to the responsible MDAs and LGAs requiring that all sectoral and LGA budget submissions reference the relevant IWRMD Plans during the budgeting process. Lastly, the LRBWB should ensure that preparation of all future basin Business Plans be based on the approved IWRMD Plan.

### 2.6.1 Detailed Implementation Work Plans and Budgets

The Lake Rukwa IWRMD Plan is intended to be a high level strategic planning document that shall guide future implementation of water resources management and development activities in the basin. It establishes the broad basin strategic goals and objectives and highlights the priority

strategic actions to be implemented in the short to long-term. However, actual detailed activities to be eventually implemented on the ground have to be defined and costed during the preparatory phase and formulated into detailed annual implementation work plans and budgets. It is envisioned that this process of preparing the detailed annual work plans and budgets shall follow the established government planning cycle and explicitly reference the IWRMD Plan as discussed above.

## 3. Implementation Arrangements

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### 3.1 Roles and Responsibilities

Water resources management and development roles and responsibilities in the Lake Rukwa basin are assumed by different institutions in line with their mandates. These will inform the specific roles to be taken by the different stakeholder institutions and groups during implementation of the IWRMD Plan to minimize duplication of efforts. Each institution shall take a lead role in implementing activities in line with their institutional mandate. The LRBWB, being the steward of water resources management in Lake Rukwa basin, will have a central role in the delivery of the Plan. The Ministry of Water will have an important coordination role, especially in mobilizing the necessary resources for successful implementation of the Plan. LGAs, WUAs, NGOs, and CBOs will play a central role in mobilization of local community participation in Plan implementation. Line Ministries and statutory agencies will also be involved in resources mobilization and provision of technical support and guidance in implementing Plan activities within their mandates. More specifically, the roles of the various water sector institutions in Plan implementation are outlined below.

#### 3.1.1 Ministry of Water

The Ministry of Water will play a central role in guiding and coordinating implementation of the IWRMD Plan. It will provide overall policy and technical guidance and also coordinate inputs by national level stakeholder agencies. A particularly important role of the Ministry will be to coordinate resources mobilization from different funding agencies and development partners to ensure successful implementation of the IWRMD Plan. Key aspects of the Ministry coordination function include:

- (1) Coordinate relevant government organs to ensure timely approval of the IWRMD Plan.
- (2) Ensure extensive dissemination of the IWRMD Plan to all national level institutions and agencies and ensure buy-in by the relevant managers and decision makers.
- (3) Sensitize the political leadership and high level managers and decision makers on the importance of the IWRMD Plan and the implementation roles for the different stakeholder agencies and groups.
- (4) Play a lead role in mobilizing financial resources from the Ministry of Finance, Parliament, and development partners to ensure adequate financial support for Plan implementation.
- (5) Undertake periodic monitoring and evaluation of the Plan implementation process to ensure efficiency and cost effectiveness.
- (6) Coordinate periodic review of the IWRMD Plan (every five years) and ensure that the Plan achieves its intended goals and objectives.

#### 3.1.2 Lake Rukwa Basin Water Board

The Water Resources Management Act (2009) Section 23(1) mandates Basin Water Boards to coordinate inter-sectoral water resources management activities at basin level and serve as a channel of communication between the different sectors and basin water users. The LRBWB will therefore play a lead role in coordinating implementation of the IWRMD Plan activities in the basin. Specifically, the LRBWB will be involved as follows:

- (1) Coordinate inter-sectoral Plan implementation activities at basin level and serve as a channel of communication between the different sectors and basin water users.
- (2) Ensure extensive dissemination of the Plan to all basin level institutions and LGAs and engage the relevant officials to ensure buy-in by the relevant managers and decision makers.
- (3) Sensitize the political leadership, managers, and decision makers in the basin LGAs on the importance of the IWRMD Plan and the roles of different stakeholder agencies and groups.
- (4) Revise the 5-year basin Business Plan to reflect the IWRMD Plan priorities.
- (5) Coordinate preparation and implementation of detailed annual work plans and budgets to ensure successful implementation of the IWRMD Plan.
- (6) Coordinate periodic monitoring and evaluation of the Plan implementation process to ensure efficiency and cost effectiveness.
- (7) Arrange basin level stakeholder consultation and information dissemination events to ensure that stakeholders are well informed about progress of implementation of the Plan.
- (8) Coordinate basin level inputs into the IWRMD Plan review process to ensure that the Plan meets its intended goals and objectives.

### **3.1.3 Other Stakeholder Agencies and Groups**

The IWRMD Plan strategic actions cut across sectors and have been grouped into six broad programmatic areas:

- Water Security Enhancement Program
- Environmental Flow Assessment and Monitoring Program
- Water Resources Monitoring and Assessment Program
- Water Permit Compliance Monitoring Program
- Integrated Watershed Management and Environmental Conservation Program
- Human and Institutional Capacity Development Program

Implementation of such a broad and complex initiative requires broad participation of many stakeholder agencies and groups with very effective coordination mechanisms. The specific roles of the other important stakeholder institutions and groups in implementation of the above programs are highlighted in the matrix below.

Program	Lead Agency	Other Participating Agencies	Role
<b>Water Security Enhancement</b>	Ministry of Water	LRBWB DDCA  Ministry of Agriculture, Food Security and Cooperatives  BRN, SAGCOT, and Kilimo Kwanza Secretariats LGAs  Urban Water Supply and Sanitation Authorities WUAs  Industrialists  Private Sector  NGOs/CBOs  Irrigation Associations/ farmers  Development Partners	<p>Planning and coordination of all stakeholder inputs.</p> <p>Planning and construction supervision of water production, transmission, and storage infrastructure (i.e., boreholes, dams, pipelines, canals, etc.).</p> <p>Planning and coordination of rehabilitation works for irrigation water supply infrastructure; training of farmers in sustainable on-farm water use and management practices.</p> <p>Participate in the planning and implementation of irrigation water infrastructure improvement activities.</p> <p>Participate in procurement and supervision of contractors, monitoring and evaluation of works, and mobilization of local communities to participate in program activities; and provision of extension services to farmers on good farming practices.</p> <p>Planning and coordination of urban water supply and use efficiency improvements.</p> <p>Mobilization of local water users to participate in program activities; and support LRBWB in monitoring progress of implementation of program activities in the local areas.</p> <p>Planning and coordination of industrial water use efficiency improvements.</p> <p>Provision of technical expertise in design and construction of water production, transmission, and storage infrastructure; and mobilization of private capital for investment in water infrastructure.</p> <p>Sensitization and mobilization of local communities to demand for services and participate in implementation of program activities; monitoring and evaluation of program activities; and demanding for accountability from program implementation teams.</p> <p>Provision of manual labor in rehabilitation of irrigation water supply infrastructure; and participate in sensitization and training sessions on good farming practices, provision of land and other local materials for the construction works.</p> <p>Provision of funding for program implementation.</p>



<b>Program</b>	<b>Lead Agency</b>	<b>Other Participating Agencies</b>	<b>Role</b>
<b>Environmental Flow Assessment and Monitoring</b>	Ministry of Water	LRBWB  WUAs  LGAs  Private Sector/Consultants  Development Partners NGOs/CBOs	<p>Planning and coordination of all stakeholder inputs; Identification of appropriate sites for EFAs; preparation of ToRs for EFA Consultants; procurement and supervision of EFA Consultants; and monitoring compliance with environmental flow requirements.</p> <p>Mobilization of local water users to participate in program activities; and support LRBWB in monitoring progress of implementation of program activities.</p> <p>Participate in supervision of consultants and monitoring of progress of works; and mobilization of local communities to participate in program activities.</p> <p>Provision of technical expertise in undertaking environmental flow assessments.</p> <p>Provision of funding for program implementation</p> <p>Sensitization and mobilization of local communities to participate in implementation of program activities; monitoring and evaluation of program activities; and demanding for accountability from program implementation teams.</p>
<b>Water Resources Monitoring and Assessment</b>	Ministry of Water	LRBWB  DDCA  WUAs  Private Sector/Contractors	<p>Planning and coordination of all stakeholder inputs; Identification of appropriate monitoring sites; preparation of ToRs for contractors to drill monitoring boreholes; procurement and supervision of drilling contractors; operation and maintenance of monitoring network; collection, processing, storage and dissemination of water resources data and information.</p> <p>Supervision of borehole drilling contractors; and monitoring and evaluation of drilling works.</p> <p>Mobilization of local water users to participate in program activities; and support LRBWB in monitoring progress of implementation of program activities and in collection of water resources data.</p> <p>Provision of technical expertise in drilling of groundwater</p>

Program	Lead Agency	Other Participating Agencies	Role
		Development Partners NGOs/CBOs  Gage Readers	monitoring boreholes. Provision of funding for program implementation Sensitization and mobilization of local communities to participate in implementation of program activities; monitoring and evaluation of program activities; and demanding for accountability from program implementation teams. Daily readings at monitoring stations and submit data to LRBWB.
<b>Water Permit Compliance Monitoring</b>	Ministry of Water	LRBWB  WUAs  Development Partners NGOs/CBOs	Planning and coordination of all stakeholder inputs; processing and issuance of water abstraction and wastewater discharge permits; monitoring compliance with permit conditions; carrying out annual water use surveys; operation and maintenance of water permit database; and collection of water use fees. Support LRBWB in monitoring and reporting illegal water use activities in their areas; sensitize water users on the importance of permits and the application process; participate in annual water use surveys; resolve water use conflicts among WUA members; and support the LRBWB in management and allocation of local water resources. Provision of funding for program implementation Sensitization and mobilization of local communities to participate in implementation of program activities; monitoring and evaluation of program activities; and checking and enforcing accountability from program implementation teams.
<b>Integrated Watershed Management and Environmental Conservation</b>	Ministry of Water	LRBWB  LGAs	Planning and coordination of all stakeholder inputs.  Planning and coordination of watershed afforestation activities and enforcement of forestry management regulations and by-laws; enforcement of public health standards and by-laws in local communities especially regarding household sanitation and hygiene; provision of extension services to farmers on good soil erosion control and agrochemical use practices; and coordination of preparation and implementation of village land use plans.

Program	Lead Agency	Other Participating Agencies	Role
		UWSAs Ward/Village Environmental Committees NEMC Ministry of Agriculture, Food Security and Cooperatives Ministry of Livestock and Fisheries Development WUAs Development Partners NGOs/CBOs	<p>Planning and coordination of urban wastewater, solid waste, and storm water management.</p> <p>Enforcement of environmental management by-laws and apprehension of defaulters; and sensitization of local communities on good environmental management practices.</p> <p>Planning and coordination of environmental management activities including establishment and enforcement of appropriate environmental guidelines, standards, and regulations; monitoring compliance with environmental standards and apprehension of defaulters.</p> <p>Planning and coordination of soil and water conservation practices, good land management practices, and good agrochemical use practices.</p> <p>Planning and coordination of good livestock and fisheries management practices; provision of livestock watering infrastructure; training of local communities in good aquaculture practices; and enforcement of fisheries standards and monitoring illegal fishing practices.</p> <p>Mobilization of local water users to participate in program activities; and support LRBWB in monitoring progress of implementation of program activities.</p> <p>Provision of funding for program implementation</p> <p>Sensitization and mobilization of local communities to participate in implementation of program activities; monitoring and evaluation of program activities; and demanding for accountability from program implementation teams.</p>
<b>Human and Institutional Capacity Development</b>	Ministry of Water	LRBWB Academic/ Research Institutions WUAs	<p>Planning and coordination of all stakeholder inputs; recruitment and training of LRBWB staff; procurement of equipment and tools for the LRBWB; motivation of staff to perform their duties; establishment of lower WRM structures; sensitization, training and facilitation of WUAs.</p> <p>Provision of technical expertise in training of LRBWB staff and other stakeholder groups; participation in research and dissemination of water related information.</p> <p>Support LRBWB in sensitization and training of local communities in good water use practices.</p>

Program	Lead Agency	Other Participating Agencies	Role
		Development Partners NGOs/CBOs	Provision of funding for program implementation. Sensitization and mobilization of local communities to participate in implementation of program activities; monitoring and evaluation of program activities; and checking and enforcing accountability from program implementation teams.

## 3.2 Coordination Mechanism

Implementation of the Lake Rukwa Basin IWRMD Plan activities will involve several stakeholder agencies at national and local levels. Thus, there will be need for effective coordination of different stakeholder inputs to avoid duplication of efforts and wastage of resources. The LRBWB will play a lead role in coordinating implementation of the IWRMD Plan activities in the basin. The LRBWB is well positioned for this role as it is governed by a broad-based committee that draws representation from different stakeholder groups (public and private) with diverse mandates and interests. This diversity in representation gives the Board the necessary credibility to effectively coordinate different stakeholder inputs to ensure successful implementation of the IWRMD Plan activities. Regular (quarterly/biannual) inter sectoral Plan implementation coordination meetings shall be convened by the LRBWB to review implementation progress and address any emerging issues. The Ministry of Water, National Water Board, and Water Sector Working Group shall also play important roles in dissemination of the Plan and coordination of inputs from national level stakeholder groups.

The following additional coordination mechanisms are recommended to ensure smooth implementation of the IWRMD Plan activities.

- (1) **IWRM Technical Committee** – Given the technical nature of most planned activities, it is recommended that a multi-sectoral Technical Committee be established consisting of senior technical officers from all lead agencies involved in implementation of the IWRMD Plan activities. The committee will provide technical and advisory support to the LRBWB in coordinating implementation of the IWRMD Plan activities. The committee shall serve at the discretion of the board which will determine its operational and reporting modalities.
- (2) **IWRMD Plan Implementation Coordination Unit** – It is recommended that a designated unit be established to support the LRBWB in the day-to-day follow up with different stakeholders involved in implementation of the IWRMD Plan activities. This could be a temporary unit under the direct supervision of the Board Chair to ensure efficient and timely monitoring and evaluation of Plan implementation progress. The Coordination Unit will particularly be helpful in supporting the LRBWB in routine collection of data and information required for monitoring and evaluation of IWRMD Plan implementation process.
- (3) **Formation of a Lake Rukwa Basin Forum** – To ensure effective and sustained involvement of all basin stakeholders in implementation of the IWRMD Plan, it will be necessary to create a forum that fosters their regular interaction with different basin actors. The Forum will facilitate sharing of information on implementation progress and experience among different stakeholder agencies and groups. In essence the Forum will act as the “*parliament*” of the basin that will be especially important in monitoring and evaluation of progress of implementation of activities. This will help strengthen cross-sectoral coordination of basin development activities.
- (4) **Lake Rukwa Basin LGA IWRMD Advisory Group** – It is proposed that a special LGA IWRMD Advisory Group be established to promote regular interaction between high level LGA representatives and the LRBWB to discuss diverse issues (at basin/sub-basin level) regarding IWRMD Plan implementation and seek collective solutions to any emerging issues. Recommendations and memoranda from such high level meetings would carry a lot of weight in terms follow up action. Each LGA shall be represented by two senior officials (most

preferably the DED and a senior technical officer). The LRBWB shall be represented by the Chairman and BWO.

- (5) Creation of a Lake Rukwa Basin Trust Fund** – It is recommended that a designated Trust Fund for lake Rukwa Basin be established to ensure coordinated mobilization and management of financial resources from potential funding agencies, donors and development partners.

## 4. Monitoring and Evaluation Strategy

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### 4.1 Justification and Scope

Monitoring and evaluation is a very important component of the IWRMD Plan implementation process. Effective monitoring is required to provide early information on Plan implementation progress and initiate appropriate corrective measures as necessary. Routine evaluation of IWRMD Plan implementation progress will be required to identify intended and unintended outcomes of ongoing activities, and their overall stakeholder impact. Regular monitoring shall be undertaken to ascertain that activities are implemented as planned and intended objectives and targets are achieved in a timely manner. Systematic monitoring will provide continuous data and information to the implementation teams to enable them assess the effectiveness of their implementation strategies and approaches and make any necessary adjustments.

#### 4.1.1 Monitoring Levels

Different levels of monitoring are required for a large and complex initiative like the IWRMD Plan which will be implemented over a long period of time with involvement of several implementing institutions and stakeholder groups. Monitoring will take place at three levels:

- (a) At project level to track implementation progress of planned project activities and achievement of project level targets and outputs.
- (b) At program level to check if the observed aggregate progress of various projects being implemented leads toward achieving the desired program (strategic focal area) objectives and goals.
- (c) At basin level to check if the sum total of the implementation progress in all programs is having the desired impact on basin planning and management processes.

#### 4.1.2 Evaluation Levels

To ensure consistency with the monitoring levels discussed above, the following evaluation levels of IWRMD Plan implementation will be undertaken:

- (a) Project evaluation to (i) assess whether or not an individual project achieved its intended targets and outcomes and (ii) identify the factors responsible for these achievements or failures.
- (b) Program evaluation to (i) assess whether or not the desired program strategic objectives and goals were achieved and (ii) identify the factors responsible for these achievements or failures.
- (c) Overall IWRMD Plan evaluation to assess the aggregate impact of IWRMD Plan implementation on the basin planning and management processes and livelihoods of basin riparians.

Evaluation results are important source of evidence that the LRBWB will use to measure performance of the implementing institutions toward achievement of desired results. Detailed evaluation will be conducted at the end of each five year cycle to review the effectiveness of the IWRMD Plan implementation in the past five years and improve the design and performance of the Plan in the subsequent five years.

## 4.2 Monitoring and Evaluation Approach

Monitoring and evaluation will be conducted at all implementation levels (i.e., programs and projects). At input level, it will be important to monitor the flow of resources that will be made available to implement planned activities under the various projects and programs. This will increase efficiency and accountability to ensure transparency of the implementation process. At output level, implementing agencies will be held accountable for deliverables outlined in the implementation plan in accordance to the resources availed to them for this purpose. The LRBWB performance will also be assessed with respect to the degree with which the basin goals, mission, and intended outcomes and impacts have been realized. It will also involve measuring the progress of the implementation process itself in achieving project objectives and targets, and program goals.

### 4.2.1 Performance Indicators

Key performance indicators have been defined (see Logical Framework in **Annex A**) to enable regular and quality reporting on the IWRMD Plan implementation progress. These indicators will help the LRBWB to focus efforts and resources for effective monitoring and evaluation of Plan implementation. The report on the indicators will form a major input into the quarterly, annual, and mid-term progress reports, and the five year IWRMD Plan review reports. The underlining factor in selecting the indicators is their logical linkages to the overall IWRMD Plan goals and objectives.

### 4.2.2 Data Requirements

Effective monitoring and evaluation of Plan implementation will be dependent on availability of adequate and good quality data on the indicators and clear identification of the data source for each indicator. It is also assumed that the relevant data will be collected regularly, is reliable, and will be easily accessed. However, there are many data gaps that will need to be addressed before the indicators become reliable. Currently, the basin faces a serious challenge of inadequate and unreliable water resources data. This will impact the effective use of some performance indicators.

## 4.3 Review of the IWRMD Plan

The frequency of review and amendment of the IWRMD Plan is specified under Section 31 (4) of the Water Resources Management Act (2009). The Act stipulates that the IWRMD Plan shall be reviewed and amended as appropriate at least once in each successive five year period following Plan approval, but not earlier than three years. Five year Plan reviews and updates are an important part of the monitoring and evaluation process. The review enables the Plan to continuously be updated based on new data and information collected during the implementation process. The periodic review also enables the Plan to benefit from some of the lessons learned in the initial implementation phases, and also to address other emerging basin challenges and take advantage of new development opportunities over time.



## 5. Communication Plan

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Implementation of the IWRMD Plan is a multi-sectoral undertaking that will involve several stakeholder agencies and interest groups. It will also involve leveraging resources from different sources to ensure successful and timely implementation of activities. It is therefore prudent that the implementation process be made as transparent as possible to ensure maximum stakeholder support. This will require effective and timely communication and dissemination of information to stakeholders regarding progress of activity implementation, accountability for resource utilization, and demonstration of positive outputs and outcomes. Because of the significant information to be generated by different implementation agencies, it is important that all information be channelled through a central unit that will properly synthesize and package the information for dissemination to different stakeholder groups. It is therefore important that a comprehensive communication plan be developed and used to support Plan implementation. The objectives of the Communication Plan are as follows:

- (i) Disseminate information and raise awareness on the IWRMD Plan implementation process and expected outcomes.
- (ii) Provide regular updates to stakeholders on progress of implementation of different activities, major outcomes, and issues.
- (iii) Mobilize stakeholder support and participation in implementing different activities.

The Communication Plan will include the following communication and information dissemination strategies:

- (i) Conduct regional stakeholder workshops to officially launch the IWRMD Plan implementation process.
- (ii) Conduct sensitization campaigns and focus group briefings/discussions for different stakeholder groups at national level (Members of Parliament, Central Government Ministries/Departments/Agencies, Funding Agencies, Development Partners, NGOs, private sector, media, etc.) regarding the importance and content of the IWRMD Plan and their respective implementation roles.
- (iii) Conduct sensitization campaigns and focus group briefings/discussions for different stakeholder groups at basin level (LGAs, WUAs, NGOs, CBOs, private sector, media, etc.) regarding the importance and content of the IWRMD Plan and their respective implementation roles.
- (iv) Upload the IWRMD Plan and regular implementation progress reports on the LRBWB and Ministry of Water Websites for public access, review, and feedback.
- (v) Produce several copies of the IWRMD Plan and distribute to important stakeholders at all levels (national and local).
- (vi) Produce a brochure (providing Plan highlights) in Swahili for dissemination to different stakeholder groups at the local level, especially basin Ward and Village leaders, Water User Groups, Irrigation Associations, etc.
- (vii) Produce regular Radio and TV programs through which information is aired to the public regarding the IWRMD Plan implementation process and progress updates.
- (viii) Hold regular press briefings to update the public on the implementation progress and dissemination of important results and findings.
- (ix) Hold regular thematic workshops targeting different stakeholder groups to discuss important issues regarding the IWRMD Plan implementation process and outcomes.

It is recommended that a designated Public Relations Unit (including a trained communications expert) be established to coordinate the communication and information dissemination activities as part of the overall IWRMD Plan Implementation arrangements.

The chart below shows details of the proposed Communication Plan for the initial and main phases of the IWRMD Plan implementation process.

**Communication Plan – Initial Phase**

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	18	20	21	22	23	24	Budget Estimate (Tshs Millions)
<b>Stakeholder workshops to launch the IWRMD Plan implementation process</b>																									
TASK 1.1: Conduct workshop in Mbeya City for Mbeya Region Stakeholders																									40.60
TASK 1.2: Conduct workshop in Sumbawanga Town for Rukwa Region Stakeholders																									38.70
TASK 1.3: Conduct workshop in Mpanda Town for Katavi Region Stakeholders																									36.20
TASK 1.4: Conduct workshop in Dar es Salaam for National level Stakeholders																									28.80
<b>Produce copies of the IWRMD Plan and disseminate widely to stakeholders</b>																									
TASK 1.5: Production of 500 copies of IWRMD Plan																									102.00
TASK 1.6: Disseminate IWRMD Plan to all basin regional and district headquarters																									35.00
TASK 1.7: Disseminate IWRMD Plan to Water User Associations and other groups																									18.00
TASK 1.8: Upload IWRMD Plan and progress reports on basin/MoW website																									
<b>Basin-wide awareness campaigns regarding the IWRMD Plan implementation process and stakeholder participation</b>																									
TASK 1.9: Conduct one-week awareness campaign in all LGAs in Katavi Region																									56.00
TASK 1.10: Conduct one-week awareness campaign in all LGAs in Rukwa Region																									66.00
TASK 1.11: Conduct one-week awareness campaign in all LGAs in Mbeya Region																									52.00
TASK 1.12: Conduct one-day workshop for stakeholders in Dar es Salaam																									12.40
<b>Produce brochure/information leaflets on IWRMD Plan in swahili and disseminate widely to stakeholders in basin rural areas</b>																									
TASK 1.13: Production of brochure/information leaflets																									96.40
TASK 1.14: Distribution of brochure/information leaflets in all LGAs in Katavi Region																									6.80
TASK 1.15: Distribution of brochure/information leaflets in all LGAs in Rukwa Region																									4.70
TASK 1.16: Distribution of brochure/information leaflets in all LGAs in Mbeya Region																									3.80
<b>Produce regular Radio/TV programs to disseminate information on IWRMD Plan implementation progress</b>																									58.90
<b>Hold regular press briefings to update public on IWRMD Plan implementation progress</b>																									35.60

**Communication Plan – Main Phase**

Year	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Budget Estimates (Tshs Millions)
TASK 1.1: Production and dissemination of Quarterly Progress Reports																			107.65
TASK 1.2: Dissemination of information brochures at Annual Basin Forum																			72.66
TASK 1.3: Conduct bi-annual regional stakeholder sensitization workshops on implementation progress including dissemination of major findings																			287.48
TASK 1.4: Conduct Quarterly TV/Radio Talk Shows to disseminate information to the public on implementation progress and other general basin issues																			48.43
TASK 1.5: Conduct annual basin-wide surveys to receive feed back from stakeholders regarding their opinion on implementation progress and any issues of concern																			87.54
TASK 1.2: Updating BWB/MoW website with new information for public consumption																			15.62
TASK 1.6: Production and dissemination of updated IWRMD Plan following the five-year reviews																			562.75
TASK 1.6: Disseminate findings from five-year IWRMD Plan Reviews																			112.84

## 6. IWRMD Plan Funding and Resource Mobilization

### 6.1 Required Funding for IWRMD Plan Implementation

The total estimated budget required for implementation of the Rukwa IWRMD Plan over the period 2016 to 2035 is 176.68 Billion TShs. The detailed budget breakdown is presented in **Annex B**. The budget estimates are derived using unit costs from several planning documents including the Lake Rukwa Basin Business Plan (2010/11 – 2014/15), WSDP—Programme Implementation Manual, District Development Plans, Five Year Development Program-1 and several other sources. **Table 6.1** shows a summary of the budget estimates by program. Program 1 (Water Security Enhancement) has the highest budget allocation (55%) because of the high capital costs associated with construction of water storage and supply infrastructure. Phase 1 activities account for the highest percentage of the budget (30%) because of the initial investments in the water resources monitoring network and the several initial technical studies to be undertaken under most programs.

**Table 6.1: Budget Estimates by Program**

PROGRAM	Rukwa IWRMD Plan Summary Budget Estimate (TShs Billion)				
	Phase 1 (2015-2020)	Phase 2 (2020-2025)	Phase 3 (2025-2030)	Phase 4 (2030-2035)	TOTAL
<b>PROGRAM 1:</b> Water Security Enhancement Program	27.10	20.60	21.60	24.60	<b>93.90</b>
<b>PROGRAM 2:</b> Environmental Flow Reserve Compliance Program	4.14	1.60	1.60	4.14	<b>11.48</b>
<b>PROGRAM 3:</b> Water Resources Monitoring and Assessment Program	8.94	2.80	3.34	3.40	<b>18.48</b>
<b>PROGRAM 4:</b> Water Permit Enforcement and Compliance Monitoring Program	2.94	2.80	2.84	2.80	<b>11.38</b>
<b>PROGRAM 5:</b> Integrated Watershed Management and Environmental Conservation Program	5.30	5.30	5.30	5.30	<b>21.20</b>
<b>PROGRAM 6:</b> Human and Institutional Capacity Development Program	5.24	5.00	5.00	5.00	<b>20.24</b>
<b>TOTAL</b>	<b>53.66</b>	<b>38.10</b>	<b>39.68</b>	<b>45.24</b>	<b>176.68</b>

### 6.2 Existing Funding Sources

Section 25 (1) of the Water Resources Management Act (2009) prescribes the funding sources for Basin Water Boards as being fees and charges collected from issuance and operation of permits; central government budget appropriations as approved by Parliament; and donations, grants, and loans that the BWB can receive from any person or organization. Section 96 of the Act describes the type of fees that can be charged by the BWB and the purposes for which the funds may be used. The fees charged include water abstraction permit fees, wastewater discharge permit fees, payment for environmental services, and any other service for which the Board determines fees can be charged.

The main funding source for the BWB is supposed to be fees charged for different water resources related services as stipulated in the WRM Act (2009). However, the fees, which are currently set by the Minister for Water affairs, are small and cannot fund all the BWB activities. The BWB currently relies heavily on financial support from the central government mostly for capital development and some incremental costs through the Water Sector Development Program. In addition, the central government also finances most of the BWB administrative costs including staff salaries. The small amount collected in fees is mostly used to meet some of the BWB operational costs. Despite being the major source of funding for the BWB, the central government contributions are insufficient to meet all BWB financial requirements and significant funding gaps remain. According to the WRM Act (2009), all BWBs are required to be autonomous by 2015, after which central government financial support will be significantly reduced. In preparation for this transition, the government has commissioned a study to identify sustainable financing options for river basin operations. The study is expected to recommend more realistic and sustainable funding mechanisms for river basins. The study shall enable the BWBs to establish more realistic water user fees that reflect the actual economic costs of water resources management and use. In this way, the BWBs will be able to raise more revenue from permit fees to finance their activities. Autonomous basins will also be able to utilize other funding options such as grants and loans from national and international funding agencies.

### 6.3 Resource Mobilization Strategy

Successful implementation of the IWRMD Plan activities will require significant resources far beyond the current LRBWB budget estimates. The proposed investments in water resources storage and supply infrastructure are enormous and would require a change in the current resources mobilization strategy if the required resources are to be realized. It is envisioned that once the BWBs become fully autonomous in 2015 as required by law, they will have the flexibility and innovation to raise the required funding for IWRMD Plan implementation.

The following are resources mobilization strategies that the LRBWB could adopt:

- (1) **Government Financing:** The government resources, broadly defined to include the quasi-government and donor resources, will continue to play an important role in financing the BWB development budget. The sources of government financing will continue to be from general taxes, voted to the BWB through the government budget. However, due to the tight fiscal policies it will be crucial to streamline and rationalize government financing to those areas which cannot be operated on a commercial basis.
- (2) **Levies and Fees:** The “user pays” principle requires that users meet the costs of statutory and regulatory functions of the BWB. The BWB is encouraged to devise a phased financing system to support its activities, which can entail charging appropriate fees reflecting the economic value of water. An appropriate fee structure can play an important role in financing the basin water resources management activities as well as in promoting efficient utilisation of water resources. The current fee structure is inadequate and cannot sustain the BWB operations and requires urgent review. The current fee structure is based on social and political considerations which outweigh the economic considerations in setting the fee level. Consequently, water is still largely considered to be a *social* good despite its recognition in various government policy documents as an *economic* good, crucial for socioeconomic development. The low fees do not promote efficient utilisation of water, environmental conservation and preservation. With the increasing pressures on water resources, the need to have a different view on water pricing becomes important. It is critical to send out a strong

and consistent message to all water users that water is an economic good that is costly to manage and conserve. In order to gain acceptance, revision of the fee structure should be done through a transparent and participatory process with full involvement of all water users.

- (3) **Money Market Financing:** The money market is also another source of funding that can be used by both the private and public sector. Funds can be raised through bonds or commercial loans and used to finance various water resources infrastructure investments such as dam construction. Opportunities have to be created to allow such funding to be accessible to BWBs as alternative financing options for the more capital intensive investments in water resources storage infrastructure which have the potential to generate adequate revenue for repayment purposes.
- (4) **External Funding:** Funding of development programs through external resources will continue to play an important role in water resources development. These funds can be in the form of concessionary loans, grants, or commercial loans. Concessionary loans and grants can be obtained at relatively low cost to benefit the disadvantaged groups. Such funding sources could also potentially be used to meet targeted subsidies for poor basin communities. There is a need for clear guidelines on policies and procedures for the targeted subsidies to facilitate proper use of such funding. Ideally the donor resources should be seen as temporary resources or resources to facilitate kick-starting development in areas that may not otherwise be supported.

### 6.3.1 Revision of Water Use Fees

Market forces rarely establish the price of water. The social and cultural value and the fact that water is a public good are factors that negate the role of market forces in water resources management. Because the water fees have to be set by a public agency like BWB, the fee structure has to be based on an administered pricing system that incorporates the “user pays” principle. Following are potential strategies for setting an appropriate fee structure:

- (a) **Average Basin Fee Strategy** – this strategy involves determining all BWB costs (i.e., capital, operation, and maintenance costs) and dividing by the average basin yield or estimated total volume of basin water abstractions. This will either give an average water use fee which is uniform throughout the basin regardless of geographic, socioeconomic, or climatic differences. The system is characterised by an inherent cross subsidy between different categories of water users. This fee strategy does not signal the true cost of water to the consumer and hence compromises the incentive for efficient utilisation of water. It also involves considerable cross-subsidisation which is not benefiting the intended beneficiaries i.e., poor local communities. The main advantage of this fee strategy is that it allows for effective management and development of water resources in all basin areas regardless of socioeconomic status. A uniform fee would therefore be applicable to all basin water users regardless of the use which water is put to serve.
- (b) **Site Specific Fee Strategy** – In its truest form, the user pays principle requires site specific water use fees. This option embraces the principles of cost recovery where the fees would cover all capital, operation, and maintenance costs associated with management of the basin water resources. This strategy reflects the true user pays principle and embodies the marginal pricing concept that is crucial to the implementation of an economic approach toward water pricing. In this option, every water use is priced differently taking into consideration the nature of water use, hydro-climatic and socioeconomic conditions, other competing water

uses, and other contributing factors. The main advantages of this option are that it satisfies the main dictates of economics in that it provides the correct signal of the cost of water and therefore can promote water use efficiency and conservation. It is also consistent with the long-term IWRM goals of equitable access to and efficient use of water. The main disadvantage is that cost recovery may not be affordable by all water users. Water resources storage projects in the drier areas can make the cost of water very expensive to poor communities. The water resources storage projects in these areas will more often be deemed non-viable and hence may never be implemented. To implement such projects targeted subsidies would instead be required.

- (c) **Strategy for Targeted Subsidies** – The site-specific and basin average fee strategies require targeted subsidies to vulnerable groups if they are to be socially acceptable. These could be temporary subsidies in the form of once-off capital contribution to extend water access for productive purposes or initiate potentially viable projects for the rural poor. Beneficiaries pay operation, maintenance, and replacement costs. The capital subsidy is to be financed by government through budgetary allocations and donor contributions. The advantage is that the subsidy is not ongoing, beneficiaries also contribute, and the target group is likely to benefit. The disadvantage is that large capital sums may not be readily available to pay for the required investment costs thus denying communities access to water.



## 7. Action Plan

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Following development of the IWRMD Plan, a number of preparatory activities will have to be implemented before actual Plan implementation can begin on the ground. The Plan will have to be subjected to a review and approval process by the relevant government organs (e.g., LRBWB, National Water Board, Ministry of Water, etc.). This process can be lengthy and time consuming due to bureaucratic delays and the scheduling of the necessary meetings. It is thus difficult to anticipate how long the Plan review and approval process will take and when actual Plan implementation will commence. The Action Plan presented in this section addresses the activities that initiate the Plan implementation process following its approval. The actual scheduling of activities in the Action Plan depends on when the Plan will be approved. The start-up activities pertain to the preparatory phase that precedes actual Plan implementation and include:

- IWRMD Plan launch and high-level awareness raising.
- IWRMD Plan dissemination and general stakeholder sensitization.
- Initiation of the process of integration of the IWRMD Plan into the National Planning and Budgeting Process.
- Mobilization of the necessary financial resources for Plan implementation.
- Mobilization and setting up of the necessary coordination and implementation structures.

The preparatory activities are estimated to last up to 18 months from the date of approval of the Plan and cost about 437 million Tshs. to implement. The details of the activities and their scheduling and cost estimates are presented in the chart below.

**Action Plan**

<b>Month</b> (Begin counting Month 1 from the date of Plan approval)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	<b>Budget Estimate (Tshs Millions)</b>	
<b>IWRMD Plan Approval, Launch, and High-level Awareness Raising</b>																				
<b>TASK 1:</b> Approval of the IWRMD Plan by LRBWB/NWB/MoW																				
<b>TASK 2:</b> LRBWB to conduct press briefing at the Secretariat in Mbeya City regarding the IWRMD Plan, its importance, and implementation process		M																		
<b>TASK 3:</b> Minister of Water to brief Cabinet on the IWRMD Plan, its importance, and implementation process			M																	
<b>TASK 4:</b> Ministry of Water to conduct one-day seminar for Parliamentarians to brief them about the IWRMD Plan, its importance, and implementation process				M																20.00
<b>TASK 5:</b> Ministry of Water to conduct one-day meeting for funding agencies and development partners to brief them about the IWRMD Plan, its importance, and implementation process					M															10.00
<b>TASK 6:</b> LRBWB to conduct one-day seminar for basin Regional Commissioners, District Commissioners, and District Executive Directors to brief them about the IWRMD Plan, its importance, and implementation process					M															15.00
<b>TASK 7:</b> Ministry of Water to conduct one-day seminar for senior officials from government Ministries, Departments, and Agencies in Dar es Salaam to brief them about the IWRMD Plan, its importance, and implementation process						M														12.00
<b>IWRMD Plan Dissemination and Stakeholder Sensitization</b>																				
<b>TASK 8:</b> Conduct TV and Radio talk shows in basin districts to popularize the IWRMD Plan.																			36.00	
<b>TASK 9:</b> Production of 500 copies of IWRMD Plan and 2000 brochures																			120.00	
<b>TASK 10:</b> Disseminate IWRMD Plan and brochures to all basin regional and district headquarters																			12.00	
<b>TASK 11:</b> Disseminate IWRMD Plan and brochures to Water User Associations and other groups																			5.00	
<b>TASK 12:</b> Upload IWRMD Plan on LRBWB/MoW website			M																	
<b>TASK 13:</b> Conduct IWRMD Plan stakeholders awareness workshop in Mbeya City for Mbeya Region Stakeholders						M														40.00
<b>TASK 14:</b> Conduct IWRMD Plan stakeholders awareness workshop in Sumbawanga Town for Rukwa Region Stakeholders							M													35.00
<b>TASK 15:</b> Conduct IWRMD Plan stakeholders awareness workshop in Mpanda Town for Katavi Region Stakeholders								M												30.00
<b>TASK 16:</b> Conduct IWRMD Plan stakeholders awareness workshop in Dar es Salaam for National level Stakeholders									M											15.00

Month (Begin counting Month 1 from the date of Plan approval)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Budget Estimate (Tshs Millions)	
<b>Integration of IWRMD Plan into National Planning and Budgeting Process</b>																				
<b>TASK 17:</b> Preparation of concept paper on how the IWRMD Plan implementation process should be integrated into the National Planning and Budgeting Process																				
<b>TASK 18:</b> Conduct one-day planning meeting with senior officials from the President's Office Planning Commission (PO-PC), Prime Minister's Office (PMO-RALG), Ministry of Finance, and other water related sectors (especially those represented on the Water Sector Working Group) to discuss the concept paper and agree on the way forward.																				2.00
<b>TASK 19:</b> Conduct one-day planning meeting with Planning Officers from basin Regional Secretariats and District Councils to discuss the concept paper and agree on the way forward.																				15.00
<b>TASK 20:</b> LRBWB to revise its five-year Business Plan to be consistent with the basin IWRMD Plan.																				
<b>TASK 21:</b> Ministry of Water to revise water sector FYDP to be consistent with all basin IWRMD Plans and submit to PO-PC and Ministry of Finance.																				
<b>TASK 22:</b> Prepare detailed five-year plan for implementation of the first phase of the IWRMD Plan for review and approval by the LRBWB.																				
<b>TASK 23:</b> Share the approved five-year plan with all stakeholder agencies and groups for integration into their FYDPs.																				
<b>TASK 24:</b> Conduct two-day working session with planning and budgeting officers from relevant central government Ministries, Departments, and Agencies to walk them through the process of integrating applicable IWRMD Plan activities into their respective sectoral plans and budgets																				16.00
<b>TASK 25:</b> Conduct two-day working session with planning and budgeting officers from basin districts to walk them through the process of integrating applicable IWRMD Plan activities into their respective district plans and budgets																				21.00
<b>Mobilization of funding for Plan Implementation</b>																				
<b>TASK 26:</b> Prepare portfolio of bankable projects for Phase 1 of the IWRMD Plan																				
<b>TASK 27:</b> Organize a fundraising conference for all donors and development partners and present the portfolio of bankable projects for review and consideration for potential funding.																				18.00
<b>TASK 28:</b> Preparation of project pre-appraisal documents and prepare for pre-appraisal missions by interested funding organizations.																				
<b>TASK 29:</b> Work together with interested funding organizations to prepare detailed project proposals and submit for review and funding approval .																				
<b>Establishment of Plan Implementation Structures</b>																				
<b>TASK 30:</b> Constitute Project Coordination Units and Implementation Teams.																				
<b>TASK 31:</b> Conduct necessary training for Project Coordination and Implementation Teams to improve their capacity.																				15.00
<b>TASK 32:</b> Prepare detailed annual implementation plans and budgets with participation of all stakeholder agencies and groups and submit to the LRBWB for review and approval.																				
<b>TASK 33:</b> Commence implementation of funded projects.																				

## 8. Annex A: Logical Framework

NARRATIVE	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p><b><u>IWRMD PLAN MISSION</u></b> A prosperous basin community sustainably managing and utilizing its water resources for wealth creation, socioeconomic transformation, and environment conservation.</p>	<ul style="list-style-type: none"> <li>➤ Percentage of basin population living below the poverty line.</li> <li>➤ Basin GDP</li> </ul>	<ul style="list-style-type: none"> <li>➤ National Bureau of Statistics</li> <li>➤ Regional and District Socio-economic Profile Reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ Water is the major constraint to basin socioeconomic development.</li> </ul>
<p><b><u>STRATEGIC GOALS:</u></b></p> <p><b>GOAL 1:</b> Sustainable balance between water supply and demand achieved by 2035</p> <p><b>GOAL 2:</b> Adequate and reliable water resources data available for all basin watersheds and aquifers by 2035</p> <p><b>GOAL 3:</b> All basin water abstractions registered with 100% compliance to permit conditions by 2025</p> <p><b>GOAL 4:</b> Flow reserve maintained in all basin rivers all year round by 2035</p> <p><b>GOAL 5:</b> Integrated watershed management and environmental conservation achieved by 2035</p> <p><b>GOAL 6:</b> Fully established and operational basin water resources management framework in place by 2035</p>	<ul style="list-style-type: none"> <li>➤ Percentage of annual sub-basin water demands not satisfied by available water resources.</li> <li>➤ Percentage of watersheds and aquifers with inadequate and/or poor quality data.</li> <li>➤ Percentage of water abstractions not registered and/or not complying with permit conditions</li> <li>➤ Percentage of time per year that flow reserve requirements are breached.</li> <li>➤ Percentage of basin area implementing integrated watershed management and environmental conservation practices.</li> <li>➤ Percentage of basin management structure not in place and/or not operational.</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB Reports</li> <li>➤ LRBWB Reports</li> <li>➤ LRBWB Reports</li> <li>➤ LRBWB Reports</li> <li>➤ LRBWB Reports</li> <li>➤ LRBWB Reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ Adequate and reliable data available to conduct sub-basin water balance assessments and determine deficits.</li> <li>➤ Required funding available for network upgrade and expansion</li> <li>➤ LRBWB has sufficient technical and financial resources to enforce water permit compliance.</li> <li>➤ Cooperation from stakeholders to report illegal water abstractions.</li> <li>➤ LRBWB has required funds to conduct environmental flow assessments for all critical sites.</li> <li>➤ LRBWB has sufficient technical and financial capacity to monitor compliance with environmental flow requirements.</li> <li>➤ Cooperation from local communities to implement integrated watershed management activities.</li> <li>➤ LRBWB has sufficient</li> </ul>

NARRATIVE	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
			funds to facilitate establishment and operations of the institutions.
<p><b><u>EXPECTED OUTPUTS</u></b>  <b>OUTPUT 1:</b> Sub-basin water deficits eradicated.</p> <p><b>OUTPUT 2.1:</b> Water resources monitoring network (surface and groundwater; quantity and quality) upgraded and expanded to cover all important basin watersheds and aquifers.</p> <p><b>OUTPUT 2.2:</b> Water resources monitoring network properly operated and maintained.</p>	<ul style="list-style-type: none"> <li>➤ Additional sub-basin water storage capacity constructed</li> <li>➤ Additional water supplied from inter-basin water transfer schemes constructed.</li> <li>➤ Additional water supplied from medium to large groundwater schemes</li> <li>➤ Percentage reduction in annual sub-basin water demand as a result of water use efficiency improvements especially in traditional paddy irrigation schemes.</li> <li>➤ Basin climate change adaptation strategy developed and implemented.</li> <li>➤ Number of existing hydrometric stations rehabilitated/upgraded</li> <li>➤ Number of new hydrometric stations constructed</li> <li>➤ Number of existing climate/ rainfall stations rehabilitated/ upgraded</li> <li>➤ Number of new climate/rainfall stations established</li> <li>➤ Number of groundwater level monitoring boreholes drilled</li> <li>➤ Number of additional water quality sampling sites established</li> <li>➤ Number of operational stations visited routinely.</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB Reports</li> <li>➤ District Development Reports</li> <li>➤ Irrigation development project reports (SAGCOT, BRN, etc.).</li> <li>➤ LRBWB Reports</li> <li>➤ LRBWB Reports</li> <li>➤ LRBWB Reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ Adequate funding available for construction of water storage and inter-basin water transfer infrastructure.</li> <li>➤ Potential storage sites of adequate capacity are available in most sub-basins.</li> <li>➤ Adequate potential for inter-basin water transfer exists</li> <li>➤ Adequate groundwater potential exists to support medium to large scale groundwater pumping to augment surface water supplies in stressed basins.</li> <li>➤ Adequate funding available to finance rehabilitation and upgrading of irrigation water supply infrastructure to reduce water losses and reduce demand.</li> <li>➤ Adequate funding available for rehabilitation and expansion of monitoring network.</li> <li>➤ Potential sites for construction of new stations are accessible with no encumbrances.</li> <li>➤ Adequate funding and staff available for</li> </ul>

NARRATIVE	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p><b>OUTPUT 2.3:</b> Comprehensive and up to date water resources database maintained.</p> <p><b>OUTPUT 3:</b> All basin water users registered and in possession of valid water permits and fully complying with permit conditions.</p> <p><b>OUTPUT 4:</b> Flow reserve established for all critical river sections in the basin and fully complied with.</p> <p><b>OUTPUT 5.1:</b> All vulnerable watersheds protected and basin environmental degradation reversed.</p> <p><b>OUTPUT 5.2:</b> Pollution from point and non-point sources controlled.</p>	<ul style="list-style-type: none"> <li>➤ Number of data records collected from water resources monitoring networks as a percentage of the target collection</li> <li>➤ Number of monitoring stations with up to date data records.</li> <li>➤ Number of data records entered into database as percentage of target.</li> <li>➤ Number of permits issued and/or renewed.</li> <li>➤ Number of illegal and /or non-compliant water users reported and/or apprehended.</li> <li>➤ Basin water resources classified.</li> <li>➤ Number of sites for which environmental flow assessments have been conducted and EFRs determined.</li> <li>➤ Number of EFR compliance trips undertaken.</li> <li>➤ Number of EFR non-compliance cases reported.</li> <li>➤ Number of catchments upstream of important water sources demarcated and protected.</li> <li>➤ Area of forest coverage planted.</li> <li>➤ Area of wetlands conserved.</li> <li>➤ Number of conventional sewerage treatment plants constructed.</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB Reports</li> <li>➤ LRBWB Reports</li> <li>➤ LRBWB Reports</li> <li>➤ LRBWB Reports</li> <li>➤ LRBWB Reports</li> <li>➤ LRBWB Reports</li> </ul>	<p>effective operation and maintenance of the monitoring network.</p> <ul style="list-style-type: none"> <li>➤ The LRBWB shall adopt the Rukwa DSS as the central repository of water resources data and information for the basin.</li> <li>➤ LRBWB will procure appropriate computing facilities on which to install and operate the Rukwa DSS.</li> <li>➤ LRBWB has adequate funding to conduct regular compliance monitoring to curb illegal water abstraction and use.</li> <li>➤ Local communities are willing to cooperate and report illegal water users in their neighborhoods to the LRBWB for follow up.</li> <li>➤ LRBWB has sufficient funds to conduct detailed environmental flow assessments for all critical river sections in the basin.</li> <li>➤ LRBWB has sufficient technical and financial resources to enforce and monitor compliance with the environmental flow reserve.</li> <li>➤ LRBWB has sufficient funds to protect identified watersheds.</li> <li>➤ Cooperation from local communities to plant trees and protect wetlands.</li> </ul>

NARRATIVE	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p><b>OUTPUT 6:</b> All basin water resources management institutions established and fully functioning.</p>	<ul style="list-style-type: none"> <li>➤ Number of solid waste management and disposal facilities constructed.</li> <li>➤ Percentage of industries with on-site effluent pretreatment facilities.</li> <li>➤ Percentage of industries issued with wastewater discharge permits.</li> <li>➤ Number of mining entities issued with wastewater discharge permits.</li> <li>➤ Percentage of farmers trained in proper use of agrochemicals.</li> <li>➤ Percentage of households with improved household sanitation facilities.</li> <li>➤ Number of Water User Associations, Catchment Committees/Councils, and Sub-catchment Committees/Councils established and/or fully operational.</li> <li>➤ Number of vacant positions in established LRBWB staff structure.</li> <li>➤ Number of staff trained to improve their performance skills</li> </ul>		<ul style="list-style-type: none"> <li>➤ UWSAs have adequate funds to finance construction of necessary facilities.</li> <li>➤ Cooperation from industries and mining entities.</li> <li>➤ Cooperation from farmers regarding proper use of agrochemicals.</li> <li>➤ Local communities willing to adopt improved sanitation technologies.</li> <li>➤ LRBWB has adequate funding to establish all lower level water resources management structures and facilitate their operations.</li> <li>➤ LRBWB has sufficient funds to recruit new staff to fill vacant positions and provide the necessary incentives to minimize staff turnover.</li> </ul>
<b><u>ACTIVITIES/PROCESSES</u></b>			
<b>OUTPUT 1: Sub-basin water deficits eradicated</b>			
<p><b>Output 1.1:</b> Sub-basin water storage and supply capacity enhanced</p> <p><b>Strategic Action 1.1.1:</b> Assess potential for and construct surface water storage infrastructure to increase sub-basin water storage capacity.</p> <p><b>Strategic Action 1.1.2:</b> Assess potential for and construct inter-basin</p>	<ul style="list-style-type: none"> <li>➤ Consultancy Services</li> <li>➤ LRBWB Staff time</li> <li>➤ Contractor</li> <li>➤ Consultancy Services</li> <li>➤ LRBWB Staff time</li> <li>➤ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>➤ Consultancy Report</li> <li>➤ LRBWB Reports</li> <li>➤ Consultancy Report</li> <li>➤ LRBWB Reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB has adequate funds to hire consultancy services for the different technical and prefeasibility studies.</li> <li>➤ Adequate and reliable data available for use</li> </ul>

NARRATIVE	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p>water transfer schemes to increase sub-basin water supply capacity.</p> <p><b>Strategic Action 1.1.3:</b> Assess potential for and construct medium to large scale groundwater supply schemes to increase sub-basin water supply capacity.</p>	<ul style="list-style-type: none"> <li>➤ Consultancy Services</li> <li>➤ LRBWB Staff time</li> <li>➤ Contractor</li> </ul>	<ul style="list-style-type: none"> <li>➤ Consultancy Report</li> <li>➤ LRBWB Reports</li> </ul>	<p>in the technical and prefeasibility studies.</p> <ul style="list-style-type: none"> <li>➤ Adequate and reliable groundwater data available to assess groundwater potential.</li> <li>➤ Adequate funds for consultancy services to carry out groundwater assessments and mapping.</li> </ul>
<p><b>Output 1.2:</b> Sub-basin water demand growth reduced and effectively managed.</p> <p><b>Strategic Action 1.2.1:</b> Rehabilitate and upgrade water supply infrastructure in traditional paddy irrigation schemes to improve irrigation water use efficiency and reduce water demand.</p> <p><b>Strategic Action 1.2.2:</b> Rehabilitate and upgrade urban water supply infrastructure in in major basin urban areas to reduce water transmission and distribution losses and reduce water demand</p> <p><b>Strategic Action 1.2.3:</b> Implement other water demand management measures in urban areas (including water recycling and re-use, tariff increase to reduce water wastage, etc.) to reduce water use.</p>	<ul style="list-style-type: none"> <li>➤ Consultancy Services</li> <li>➤ LGA staff time</li> <li>➤ LRBWB Staff time</li> <li>➤ Irrigation Association Members' time</li> <li>➤ Contractor</li> <li>➤ Consultancy Services</li> <li>➤ UWSA staff time</li> <li>➤ LRBWB Staff time</li> <li>➤ Contractor</li> <li>➤ UWSA staff time</li> <li>➤ LRBWB Staff time</li> </ul>	<ul style="list-style-type: none"> <li>➤ Consultancy Reports</li> <li>➤ LRBWB Reports</li> <li>➤ LGA Reports</li> <li>➤ SAGCOT Reports</li> <li>➤ BRN Reports</li> <li>➤ Project Completion Reports</li> <li>➤ Consultancy Reports</li> <li>➤ LRBWB Reports</li> <li>➤ UWSA Reports</li> <li>➤ Project Completion Reports</li> <li>➤ LRBWB Reports</li> <li>➤ UWSA Reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ Irrigation associations and LGAs prioritize the activity and have adequate funds for its implementation.</li> <li>➤ Activity prioritized for funding under SAGCOT and/or BRN</li> <li>➤ Urban Water Supply and Sanitation Authorities prioritize the activity and have adequate funds for its implementation.</li> <li>➤ Urban Water Supply and Sanitation Authorities prioritize the activity and have adequate funds for its implementation.</li> </ul>
<b>OUTPUT 2: Adequate and reliable data available for all important watersheds and aquifers in the basin</b>			
<p><b>Output 2.1:</b> Water resources monitoring network (surface and groundwater; quantity and quality) upgraded</p>			



NARRATIVE	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p>and expanded to cover all important basin watersheds and aquifers.</p> <p><b>Strategic Action 2.1.1:</b> Rehabilitate and expand surface water resources monitoring network to cover all important basin watersheds.</p> <p><b>Strategic Action 2.1.2:</b> Establish network of groundwater level monitoring boreholes to cover all major basin aquifers.</p> <p><b>Strategic Action 2.1.3:</b> Establish additional water quality sampling sites to cover all important pollution prone basin areas.</p>	<ul style="list-style-type: none"> <li>➤ LRBWB Staff time</li> <li>➤ Contractor</li>   <li>➤ LRBWB Staff time</li> <li>➤ Contractor</li>   <li>➤ LRBWB Staff time</li> <li>➤ Mbeya and Sumbawanga Water Quality Lab Staff time</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB Reports</li> <li>➤ Construction Completion Reports</li>   <li>➤ LRBWB Reports</li> <li>➤ Construction Completion Reports</li>   <li>➤ LRBWB Reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB has adequate funds to rehabilitate and expand monitoring network.</li>   <li>➤ LRBWB has adequate funds for drilling groundwater monitoring wells.</li> </ul>
<p><b>Output 2.2:</b> Water resources monitoring network properly operated and maintained.</p> <p><b>Strategic Action 2.2.1:</b> Conduct routine and consistent network visits for data collection and equipment maintenance.</p> <p><b>Strategic Action 2.2.2:</b> Conduct routine training for technicians and gage readers to ensure collection of reliable data and proper maintenance of monitoring equipment.</p>	<ul style="list-style-type: none"> <li>➤ LRBWB Staff time</li>   <li>➤ LRBWB Staff time</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB Reports</li>   <li>➤ LRBWB Reports</li> <li>➤ Specific Training Reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB has adequate funds and staff for routine data collection trips.</li>   <li>➤ LRBWB has adequate training budget.</li> </ul>
<p><b>Output 2.3:</b> Comprehensive and up to date water resources database maintained.</p> <p><b>Strategic Action 2.3.1:</b> Establish comprehensive central database for the basin based on the Rukwa DSS information management system.</p> <p><b>Strategic Action 2.3.2:</b></p>	<ul style="list-style-type: none"> <li>➤ LRBWB Staff time</li>   <li>➤ LRBWB Staff time</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB Reports</li>   <li>➤ LRBWB Reports</li> <li>➤ Quarterly Database Status Reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB has adequate funds to procure suitable computing facilities for installation and operation of Rukwa DSS</li> </ul>

NARRATIVE	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p>Undertake routine data entry into the database and perform data quality checks.</p> <p><b>Strategic Action 2.3.2:</b> Conduct routine training for data entry staff to ensure proper maintenance of the database.</p>	<ul style="list-style-type: none"> <li>➤ LRBWB Staff time</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB Reports</li> <li>➤ Specific Training Reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB has adequate training budget.</li> </ul>
<p><b>OUTPUT 3: All basin water users registered and in possession of valid water permits and fully complying with permit conditions.</b></p>			
<p><b>Output 3.1:</b> All water users identified, registered, and issued with water permits.</p> <p><b>Strategic Action 3.1.1:</b> Conduct annual basin-wide water use surveys to locate, verify, map, register and regularize all water withdrawals, waste water discharges and hydraulic infrastructure.</p> <p><b>Strategic Action 3.1.2:</b> Conduct routine processing of new water permit applications and renewals.</p>	<ul style="list-style-type: none"> <li>➤ LRBWB staff time</li> <li>➤ Staff travel allowances</li> <li>➤ Flow measurement equipment</li> <li>➤ Water quality field equipment</li> <li>➤ LRBWB staff time</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB Reports</li> <li>➤ Basin annual water use survey report</li> <li>➤ LRBWB Reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB has adequate funds for implementation of activity.</li> </ul>
<p><b>Output 3.2:</b> Comprehensive and up to date water permit database maintained.</p> <p><b>Strategic Action 3.2.1:</b> Establish comprehensive water permit database based on the Rukwa DSS information management system.</p> <p><b>Strategic Action 3.2.2:</b> Undertake routine update of the water permit database.</p>	<ul style="list-style-type: none"> <li>➤ LRBWB staff time</li> <li>➤ Database computers</li> <li>➤ Rukwa DSS Software</li> <li>➤ LRBWB staff time</li> </ul>	<ul style="list-style-type: none"> <li>➤ Physical inspection and verification of database existence.</li> <li>➤ Printouts from permit database</li> <li>➤ LRBWB Reports</li> <li>➤ Quarterly water permit database status reports.</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB has adequate funds to procure suitable computing facilities for installation and operation of Rukwa DSS</li> </ul>
<p><b>Output 3.3:</b> Full compliance with water permit conditions achieved.</p> <p><b>Strategic Action 3.3.1:</b></p>	<ul style="list-style-type: none"> <li>➤ LRBWB staff time</li> <li>➤ Staff travel allowances</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB Reports</li> <li>➤ Quarterly compliance monitoring reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB has adequate funds and staff for routine compliance</li> </ul>

NARRATIVE	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p>Conduct routine field visits to check compliance with permit conditions and apprehend illegal water users.</p> <p><b>Strategic Action 3.2.2:</b> Conduct regular public awareness raising campaigns on the dangers of illegal water abstraction and non-compliance with permit conditions.</p>	<ul style="list-style-type: none"> <li>➤ LRBWB staff time</li> <li>➤ Staff travel allowances</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB Reports</li> </ul>	<p>monitoring trips</p> <ul style="list-style-type: none"> <li>➤ LRBWB has adequate funds and staff for awareness activities</li> </ul>
<p><b>OUTPUT 4: Environmental flow reserve established for all critical river sections in the basin and fully complied with.</b></p>			
<p><b>Output 4.1:</b> Environmental flow reserve determined for all water resources classes.</p> <p><b>Strategic Action 4.1.1:</b> Undertake basin water resources classification.</p> <p><b>Strategic Action 4.1.2:</b> Conduct detailed EFA to determine environmental flow reserve for all water resources classes.</p>	<ul style="list-style-type: none"> <li>➤ LRBWB Staff time</li> <li>➤ Consultancy Services</li> <li>➤ Consultancy Services</li> <li>➤ LGA staff time</li> <li>➤ LRBWB Staff time</li> <li>➤ WUA Staff time</li> </ul>	<ul style="list-style-type: none"> <li>➤ Consultancy Reports</li> <li>➤ LRBWB Reports</li> <li>➤ Consultancy Reports</li> <li>➤ LRBWB Reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ Adequate funds available to pay for Consultancy services for water resources classification.</li> <li>➤ Adequate funds available to pay for Consultancy services for EFA</li> </ul>
<p><b>Output 4.2:</b> Full compliance with environmental flow reserve.</p> <p><b>Strategic Action 4.2.1:</b> Conduct routine field visits to check compliance with environmental flow reserve and apprehend violators.</p> <p><b>Strategic Action 4.2.2:</b> Conduct regular public awareness raising campaigns on the importance of maintaining environmental flow reserve and consequences of</p>	<ul style="list-style-type: none"> <li>➤ LRBWB staff time</li> <li>➤ Staff travel allowances</li> <li>➤ LRBWB staff time</li> <li>➤ Staff travel allowances</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB Reports</li> <li>➤ Quarterly compliance monitoring reports</li> <li>➤ LRBWB Reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB has adequate funds and staff for routine compliance monitoring trips</li> <li>➤ LRBWB has adequate funds and staff for awareness activities</li> </ul>

NARRATIVE	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
violations.			
<b>OUTPUT 5: Integrated watershed management and environmental conservation achieved.</b>			
<p><b>Output 5.1:</b> Vulnerable watersheds protected and basin environmental degradation reversed.</p> <p><b>Strategic Action 5.1.1:</b> Identify, demarcate, and protect watersheds upstream of major water supply sources.</p> <p><b>Strategic Action 5.1.2:</b> Identify, demarcate, and protect important groundwater recharge areas.</p> <p><b>Strategic Action 5.1.3:</b> Provide technical and financial support for catchment afforestation activities in critical watersheds.</p> <p><b>Strategic Action 5.1.4:</b> Provide technical and financial support for wetland restoration and conservation activities in critical watersheds.</p>	<ul style="list-style-type: none"> <li>➤ LGBWB Staff time</li> <li>➤ LGA Staff time</li>   <li>➤ LRBWB Staff time</li> <li>➤ LGA Staff time</li>   <li>➤ LGBWB Staff time</li>   <li>➤ LGBWB Staff time</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB Reports</li>   <li>➤ LRBWB Reports</li>   <li>➤ LRBWB Reports</li>   <li>➤ LRBWB Reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB has adequate funds to protect identified watersheds.</li>   <li>➤ LRBWB has adequate funds to support afforestation activities.</li> <li>➤ Cooperation from local communities to plant trees.</li>   <li>➤ LRBWB has adequate funds to support wetland restoration and conservation activities.</li>   <li>➤ Cooperation from local communities to conserve wetlands.</li> </ul>
<p><b>Output 5.2:</b> Point and non-point pollution controlled.</p> <p><b>Strategic Action 5.2.1:</b> Construct appropriate facilities for management and disposal of municipal waste water and solid waste in urban and peri-urban areas.</p> <p><b>Strategic Action 5.2.2:</b> Regulate and control discharge of industrial effluent into water sources.</p> <p><b>Strategic Action 5.2.3:</b> Regulate and control pollution from mining activities.</p>	<ul style="list-style-type: none"> <li>➤ LRBWB Staff time</li> <li>➤ UWSA Staff time</li> <li>➤ Consultants</li>   <li>➤ LRBWB Staff time</li>   <li>➤ LRBWB Staff time</li> <li>➤ LGA Staff time</li>   <li>➤ LRBWB Staff time</li> <li>➤ LGA Staff time</li>   <li>➤ LRBWB Staff time</li> <li>➤ LGA Staff time</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB Reports</li> <li>➤ UWSA Reports</li> <li>➤ Consultant's Reports</li>   <li>➤ LRBWB Reports</li>   <li>➤ LRBWB Reports</li>   <li>➤ LRBWB Reports</li> <li>➤ District Reports</li>   <li>➤ LRBWB Reports</li> <li>➤ District Reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ UWSAs have the necessary funds to construct the facilities.</li>   <li>➤ Cooperation from industries.</li>   <li>➤ Cooperation from miners.</li>   <li>➤ Cooperation from farmers.</li> </ul>

NARRATIVE	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p><b>Strategic Action 5.2.4:</b> Regulate and control pollution from agrochemical use.</p> <p><b>Strategic Action 5.2.5:</b> Support and promote improved sanitation and hygiene in rural households.</p>			<ul style="list-style-type: none"> <li>➤ Cooperation from local communities to adopt improved sanitation practices.</li> </ul>
<b>OUTPUT 6: All basin water resources management institutions established and fully functioning.</b>			
<p><b>Output 6.1:</b> All lower level basin water resources management entities established and fully operational.</p> <p><b>Strategic Action 6.1.1:</b> All basin areas appropriate for establishment of lower level entities identified, local communities sensitized and facilitated in establishment and operation of their entities.</p>	<ul style="list-style-type: none"> <li>➤ DFT Staff time</li> <li>➤ LRBWB Staff time</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB Reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ Local communities willing to participate in water resources management activities.</li> <li>➤ LRBWB has adequate funds and staff to support establishment of lower level basin structures.</li> </ul>
<p><b>Output 6.2:</b> LRBWB approved staff structure fully operational.</p> <p><b>Strategic Action 6.2.1:</b> All vacant positions in approved LRBWB staff structure filled.</p> <p><b>Strategic Action 6.2.2:</b> Routine training of LRBWB staff to improve their performance skills</p>	<ul style="list-style-type: none"> <li>➤ LRBWB Staff time</li> <li>➤ LRBWB Staff time</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB Reports</li> <li>➤ LRBWB Reports</li> <li>➤ Specific Training Reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ LRBWB has adequate funds for staff recruitment.</li> <li>➤ LRBWB has adequate training budget.</li> </ul>

## 9. Annex B: Budget Estimates for IWRMD Plan Implementation

	Rukwa IWRMD PLAN BUDGET ESTIMATES (TShs. Millions)			
	Jul 2015 - Jun 2020	Jul 2020 - Jun 2025	Jul 2025 - Jun 2030	Jul 2030 - Jun 2035
<b>PROGRAM 1: Basin Water Security Enhancement Program</b>				
<b>COMPONENT 1: Water Resources Infrastructure Development</b>				
<i>Strategic Action 1.1.1</i> : Assess potential for and construct surface water storage infrastructure to increase sub-basin water storage capacity.	15,000	10,000	10,000	10,000
<i>Strategic Action 1.1.2</i> : Assess potential for and construct inter-basin water transfer schemes to increase sub-basin water supply capacity.	10,000	10,000	10,000	10,000
<i>Strategic Action 1.1.3</i> : Assess potential for and construct medium to large scale groundwater supply schemes to increase sub-basin water supply capacity.	-	-	1,000	4,000
<b>COMPONENT 2: Climate Change Assessment and Adaptation Study</b>				
<i>Strategic Action 1.2.1</i> : Conduct detailed climate change impact assessment study for the basin and develop a comprehensive basin-wide climate change mitigation and adaptation strategy and plan	500	-	-	-
<i>Strategic Action 1.2.2</i> : Develop a basin flood and drought forecasting and early warning system	1,000	-	-	-
<b>COMPONENT 3: Technical Support for Water Use Efficiency Improvement</b>				
<i>Strategic Action 1.3.1</i> : Provide technical assistance to Irrigation associations in planning and upgrading of irrigation water supply infrastructure and monitor water use efficiency improvements.	400	400	400	400
<i>Strategic Action 1.3.2</i> : Provide technical assistance and monitor water use efficiency improvements in Urban Water Supply Authorities	200	200	200	200
<b>Program 1 Sub-total</b>	<b>27,100</b>	<b>20,600</b>	<b>21,600</b>	<b>24,600</b>
<b>PROGRAM 2: Basin Environmental Flow Reserve Compliance Program</b>				
<i>Strategic Action 2.1</i> : Basin-wide classification of water resources and establishment of resources quality objectives	500	-	-	500
<i>Strategic Action 2.2</i> : Conduct basin-wide environmental flow assessments and determine the environmental flow reserve to be used in water allocation decisions.	2,040	-	-	2,040
<i>Strategic Action 2.3</i> : Conduct routine field visits to check compliance with environmental flow reserve and apprehend violators.	800	800	800	800
<i>Strategic Action 2.4</i> : Conduct regular public awareness raising campaigns on the importance of maintaining environmental flow reserve and consequences of violations.	800	800	800	800
<b>Program 2 Sub-total</b>	<b>4,140</b>	<b>1,600</b>	<b>1,600</b>	<b>4,140</b>
<b>PROGRAM 3: Water Resources Monitoring and Assessment Program</b>				
<b>COMPONENT 1: Strengthen water resources monitoring network</b>				
<i>Strategic Action 3.1.1</i> : Rehabilitate and expand surface water resources monitoring network to cover all important basin watersheds.	3,200	1,000	1,000	1,000
<i>Strategic Action 3.1.2</i> : Establish network of groundwater level monitoring boreholes to cover all major basin aquifers.	4,200	-	1,000	1,000
<i>Strategic Action 3.1.3</i> : Establish additional water quality sampling sites to cover all important pollution prone basin areas.	100	-	-	100
<i>Strategic Action 3.1.4</i> : Conduct routine and consistent network visits for data collection and equipment maintenance.	800	800	800	800
<i>Strategic Action 3.1.5</i> : Conduct routine training for technicians and gage readers to ensure collection of reliable data and proper maintenance of monitoring equipment.	200	200	200	200

	Rukwa IWRMD PLAN BUDGET ESTIMATES (TShs. Millions)			
	Jul 2015 - Jun 2020	Jul 2020 - Jun 2025	Jul 2025 - Jun 2030	Jul 2030 - Jun 2035
<b>COMPONENT 2: Strengthen water resources assessment capacity</b>				
<i>Strategic Action 3.2.1</i> : Establish comprehensive central database for the basin based on the Rukwa DSS information management system.	40	-	40	-
<i>Strategic Action 3.2.2</i> : Transfer all historical data into Rukwa DSS database to create a central unified database for the basin.	-	-	-	-
<i>Strategic Action 3.2.3</i> : Conduct routine training for data entry staff to ensure proper maintenance of the database.	200	200	200	200
<i>Strategic Action 3.2.4</i> : Conduct basin-wide groundwater resources assessment and mapping	-	500	-	-
<i>Strategic Action 3.2.5</i> : Conduct basin-wide water quality baseline survey	100	-	-	-
<i>Strategic Action 3.2.6</i> : Conduct routine water resources assessments using Rukwa DSS and disseminate periodic reports to stakeholders	100	100	100	100
<b>Program 3 Sub-total</b>	<b>8,940</b>	<b>2,800</b>	<b>3,340</b>	<b>3,400</b>
<b>PROGRAM 4: Water Permit Enforcement and Compliance Monitoring Program</b>				
<i>Strategic Action 4.1</i> : Conduct annual basin-wide water use surveys to locate, verify, map, register and regularize all water withdrawals, waste water discharges and hydraulic infrastructure.	1,000	1,000	1,000	1,000
<i>Strategic Action 4.2</i> : Conduct routine processing of new water permit applications and renewals.	200	200	200	200
<i>Strategic Action 4.3</i> : Establish comprehensive water permit database based on the Rukwa DSS information management system.	40	-	40	-
<i>Strategic Action 4.4</i> : Develop technical tools for evaluation of water permit applications and compliance monitoring	100	-	-	-
<i>Strategic Action 4.5</i> : Undertake routine update of the water permit database.	-	-	-	-
<i>Strategic Action 4.6</i> : Conduct routine field visits to check compliance with permit conditions and apprehend illegal water users.	800	800	800	800
<i>Strategic Action 4.7</i> : Conduct regular public awareness raising campaigns on the dangers of illegal water abstraction and non-compliance with permit conditions.	800	800	800	800
<b>Program 4 Sub-total</b>	<b>2,940</b>	<b>2,800</b>	<b>2,840</b>	<b>2,800</b>
<b>PROGRAM 5: Integrated Watershed Management and Environmental Conservation Program</b>				
<i>Strategic Action 5.1</i> : Identify, demarcate, and protect watersheds upstream of major water supply sources	1,000	1,000	1,000	1,000
<i>Strategic Action 5.2</i> : Identify, demarcate, and protect important groundwater recharge areas.	1,000	1,000	1,000	1,000
<i>Strategic Action 5.3</i> : Provide technical and financial support for catchment afforestation activities in critical watersheds	2,000	2,000	2,000	2,000
<i>Strategic Action 5.4</i> : Provide technical and financial support for wetland restoration and conservation activities in critical watersheds	500	500	500	500
<i>Strategic Action 5.5</i> : Construct appropriate facilities for management and disposal of municipal waste water and solid waste in urban and peri-urban areas	-	-	-	-
<i>Strategic Action 5.6</i> : Regulate and control discharge of industrial effluent into water sources.	100	100	100	100
<i>Strategic Action 5.7</i> : Regulate and control pollution from mining activities.	500	500	500	500
<i>Strategic Action 5.8</i> : Regulate and control pollution from agrochemical use.	200	200	200	200
<i>Strategic Action 5.9</i> : Support and promote improved sanitation and hygiene in rural households.	-	-	-	-
<b>Program 5 Sub-total</b>	<b>5,300</b>	<b>5,300</b>	<b>5,300</b>	<b>5,300</b>
<i>Strategic Action 6.1</i> : All basin areas appropriate for establishment of lower level water resources management entities identified and local communities engaged and sensitized on the importance and process of establishment of the structures.	240	-	-	-
<i>Strategic Action 6.2</i> : Local communities facilitated in establishment of the appropriate lower level structures and sensitized and trained on their sustainable operations.	4,000	4,000	4,000	4,000
<i>Strategic Action 6.3</i> : All vacant positions in approved LRBWB staff structure filled.	-	-	-	-
<i>Strategic Action 6.4</i> : Conduct training needs assessment and provide routine training to BWB staff to ensure effective and timely implementation of planned activities	1,000	1,000	1,000	1,000
<b>Program 5 Sub-total</b>	<b>5,240</b>	<b>5,000</b>	<b>5,000</b>	<b>5,000</b>
<b>GRAND TOTAL</b>	<b>53,660</b>	<b>38,100</b>	<b>39,680</b>	<b>45,240</b>

