THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF WATER

Response Strategy to Bottlenecks of Climate-Resilient Water Resources Management in Tanzania

National Multi-Sectoral Forum on Water Resources Management

March 2024

GLOBAL WATER LEADERSHIP PROGRAMME

Global Water Partnership Southern Africa
Tanzania Water Partnership

Global Water Partnership

FOREWORD

In the face of mounting challenges climate change poses, the imperative for climate-resilient investments in water resources has never been more pronounced. As the impacts of climate change manifest across the globe, Tanzania stands at a crucial crossroads in its pursuit of sustainable development and effective water resource management. In response to these challenges, the National Multi-Sectoral Forum (NMSF) for Water Resources Management in Tanzania has undertaken a comprehensive analysis to identify and address critical bottlenecks that impede the progress of climate-resilient investment in water resources.

This document is a testament to diverse stakeholders' collaborative efforts and unwavering commitment, encompassing government agencies, non-governmental organizations, academic institutions, and private sector entities. The insights and recommendations presented herein result from rigorous dialogue, research, and shared expertise, reflecting a united front in pursuing sustainable solutions.

Addressing the underlying impediments to climate-resilient investment in water resources demands a multi-faceted approach. The NMSF has identified three pivotal bottlenecks among many others that warrant immediate attention and strategic intervention. These bottlenecks include:

First, Lack of Financing for Climate-Resilient Water Resources Investment: Insufficient funding has consistently hindered the implementation of ambitious projects to enhance water resources and climate resilience. The scarcity of financial resources has far-reaching implications, affecting the development of critical infrastructure and impeding the capacity to respond effectively to emerging climate challenges.

Second, Inefficient irrigation water uses and practices: Unsustainable agricultural practices have exacerbated the strain on water resources, undermining their long-term viability. Transforming agricultural methods to align with climate-resilient principles is an urgent imperative to ensure that water resources remain productive and adaptive in the face of changing conditions.

Third, Lack of Sector Coordination: Fragmented efforts and disjointed coordination among various stakeholders have undermined the potential impact of climate-resilient initiatives.

A unified and collaborative approach is essential to harmonize strategies, pool resources, and leverage the collective knowledge required to navigate the complexities of water resource management.

The insights contained within this document are not merely diagnostic; they pave the way for actionable strategies that transcend silos and catalyse holistic change. As the NMSF, we are committed to fostering a dynamic environment where knowledge sharing, innovation, and cross-sectoral partnerships converge to surmount the challenges ahead. Through strategic investment, sustainable practices, and enhanced coordination, we endeavour to steer Tanzania toward a future where its water resources stand resilient in the face of climatic uncertainties.

This work has greatly benefited from substantial financial and technical support provided by the Foreign, Commonwealth & Development Office (FCDO) through the Global Water Leadership Programme (GWL). The programme has been implemented by Global Water Partnership Tanzania, which is a technical supporter to the National Multi-sectoral Forum for Water Resources Management in Tanzania.

Also, we extend our profound gratitude to all stakeholders who have contributed to this endeavour, recognising that the path to climate resilience is one that we must tread together. May this response strategy serve as a compass guiding our collective journey toward a water-secure Tanzania.

Eng. Mwajuma Waziri
Permanent Secretary
Ministry of Water

PREFACE

As the Director of Water Resources at the Ministry of Water, it is my privilege to present this all-encompassing response strategy that the prestigious National Multi-Sectoral Forum has meticulously created (NMSF).

Like several countries, Tanzania is confronted with an increasingly formidable task of protecting its water resources from the consequences of climate change. The NMSF has assumed a leading role in our collaborative effort to achieve sustainable water resource management by doing a comprehensive study, providing strategic insights, and developing implementable solutions. This strategy serves as evidence of the commitment and cooperative nature of a wide range of stakeholders, who are all unified in their efforts through the NMSF.

This response strategy is in accordance with the NMSF Strategic Action Plan (SAP) for the timeframe 2021-2025. The SAP delineates our shared objective and establishes the course towards attaining concrete results; this document serves as a crucial instrument in converting that objective into implementable tactics. The recognition of significant bottlenecks, which encompass budgetary limitations as well as the requirement for improved collaboration across sectors, emphasises the strategic anticipation that underpins this approach. This text transcends its literal nature and serves as a strategic roadmap that directs us towards a more resilient and sustainable water future for Tanzania.

I would like to express my heartfelt gratitude to the committed members of the NMSF who, by engaging in constructive discourse and working together diligently, have consolidated varied viewpoints into a unified and implementable plan of action. Their devotion exemplifies the togetherness necessary to surmount the forthcoming obstacles. I urge all stakeholders, including government agencies, development partners, business sector organisations, and civil society, to adopt the principles stated in this text as we progress through the implementation phase.

Dr. George Lugomela
Director of Water Resources
Ministry of Water

ACKNOWLEDGEMENT

Our heartfelt appreciation goes to the Ministry of Water and other water sector lead ministries for their steadfast commitment to tackling the critical bottlenecks to climate-resilient water resource investment. Your deep insights, unwavering dedication, and intricate understanding of governmental dynamics have played a pivotal role in shaping impactful and integrated strategies with national policies.

We extend a special note of appreciation to the members of the three Task Force teams of the National Multi-Sectoral Forum (NMSF) for their insightful perspectives and industry-specific acumen. Your hands-on experiences, innovative insights, and commitment to sustainable practices have enriched our strategy, ensuring they are theoretically sound and practically feasible.

We thank the Foreign, Commonwealth & Development Office (FCDO) through Global Water Partnership (GWP) for their generous financial and resource support. Their commitment to fostering systems strengthening towards effective water resource management and climate resilience has propelled our efforts forward—their contribution models fruitful collaborations between international organisations and local initiatives. We appreciate the continued support from GWP Tanzania for the visionary leadership in coordinating the NMSF partners.

As we embark on the journey to translate these strategies into tangible actions, let us carry forward the spirit of collaboration, dedication, and shared vision that has united us in this vital endeavour. The challenges ahead are significant, but with the combined expertise of the Government, Development Partners, and Private Sector and the generous support of the Global Water Partnership, we are equipped to steer Tanzania toward a future of climate-resilient water resource management.

Eng. Mbogo Futakamba
Chairperson, National Multisectoral Forum

EXECUTIVE SUMMARY

1. Background

This document is a Response Strategy for the three bottlenecks hindering Tanzania's climate-resilient water resources investment. The Response Strategy was developed by the National Multi-Sectoral Forum (NMSF) in collaboration with stakeholders from the Government, private sectors, non-government organisations, civil society organisations and other institutions supporting the water sector in Tanzania.

In Tanzania, the integrated water resources management paradigm has gained traction over the years, recognizing water's critical role in driving sustainable development and transforming lives. The story of the Response Strategy took advantage of the well-established multi-stakeholder water resources management structures in Tanzania. It followed a systematic procedure that included a stakeholder consultation process to understand the barriers, followed by the formation of working groups from the more significant National Multi-Sectoral Forum for Water Resources Management, working groups analysing and prioritizing the top three barriers, and thorough root-cause-analysis, followed by the development of action plans and finance plans and finally the comprehensive Response Strategy.

2. Bottlenecks

Climate change poses significant challenges to Tanzania's water resources, impacting country's economy, environment, and social well-being. As a country highly dependent on agriculture, hydropower, and natural ecosystems, the effects of climate change are already evident and can potentially exacerbate existing vulnerabilities in the water sector. Compounding the problem are bottlenecks that hinder climate-resilient water resources management.

In December 2022, the National Multi-Sectoral Forum (NMSF) officially established three taskforce teams to assess the critical bottlenecks that hinder progress towards achieving the sector's ambitions and later prioritize the top three for further development of the response strategies. The initial list included more than twelve barriers, that were identified, and only three were prioritised for futher actions. The three prioritised barriers are (i) inadequate Funds to Implement Resilient Water Resources Investments, (ii) inefficient irrigation water uses and practices in Ruvu Sub Basin, and (iii) overlapping legal and regulatory mandates impacting inter-sectoral coordination. Taskforce teams comprised of approximately 10 people each, bringing together people from assorted Ministries (Water, Land, VP's Office Environment Division, Tanzania Forestry Services, National Irrigation Commission, Basin Water Board Directors,), academia, NGO communities, private sector (pipe company, engineering consulting company, water quality company), DPG-WASH Secretariat, AfDB, USAID MUM, IFM collaboratively followed a systematic procedure that

included thorough root-cause-analysis, followed by the development of action plans and finance plans and finally the comprehensive Response Strategy.

This Response Strategy encompasses three-in-one strategies to address three key bottlenecks that hinder climate-resilient water resources investment in Tanzania. Its development aims to prepare the Directorate of Water Resources for the implementation of WSDP Phase three and the Tanzania Water Investment Program (TanWIP). This strategic alignment ensures that the Response Strategy serves as a vital component in fostering an environment conducive for private sector's investment in water resources management and development. The Response Strategy and TanWIP, though developed through distinct processes, work synergistically. The former focuses on overcoming challenges in climate-resilient water resources management and developement, while the latter aims to attract investment. Together, they form a comprehensive approach to tackling core water management issues, paving the way for securing the investments necessary to achieve a water-secure future for Tanzania.

3. Action Plan

An action plan is a detailed, step-by-step outline of specific tasks, activities, and measures to achieve a particular goal or objective. The solution for this response strategy was developed through three critical components of a strategic planning framework: sub-objectives, outputs, and activities. This framework links the activities to their respective bottlenecks, root causes, sub-objectives, and outputs. The broad solutions were developed as sub-objectives, with precise measurable results as outputs. The activities were designed as actionable tasks that can be implemented in a specified period. Table 1 is a summary of the response strategy framework indicating the number of identified root causes as well as solutions for each bottleneck.

Table 1: Summary of Response Strategy Framework

Bottleneck	Root Causes	Sub-objectives	Outputs	Activities
Bottleneck 1	5	10	12	16
Bottleneck 2	8	15	18	56
Bottleneck 3	3	5	6	9
Total	**16**	**30**	**36**	**81**

4. Finance Plan

A financing plan comprise costing the resources required for activities and determining financing options or sources of funds. Table 2 summarises the resource requirements for each bottleneck addressed in this response strategy. The second bottleneck, "inefficient utilisation of water resources in agricultural activities a case of Ruvu Basin", has a resources requirement estimated to cost TZS 462.9 billion, equivalent to 86.2% of the total cost of the response strategy. The first bottleneck, "inadequate funds to implement climate-resilient water resources investment," has a resource requirement estimated to cost TZS 72.0 billion, equivalent to 13.4% of the total cost of the response strategy. The third bottleneck, "overlapping legal and regulatory mandates impacting inter-sectorial coordination," has the least resources requirement estimated to cost TZS 2.0 billion, equivalent to 0.4% of the total cost of the response strategy.

Table 2: Resources required to address the bottlenecks in response strategy (Millions TZS)

Bottleneck	Financial	In-kind	Total	% Total
Bottleneck 1	68,636.5	3,431.83	72,068.33	13.4%
Bottleneck 2	458,525.6	4,437.77	462,963.37	86.2%
Bottleneck 3	1,976.85	98.84	2,075.69	0.4%
Grand Total	529,138,950,000	7,968,437,500	537,107,387,500	100.0%

The primary financing strategy combines financial resources from the Government of Tanzania and development partners. Two sources from the Government of Tanzania are considered as a potential for funding the Response Strategy i.e annual budget allocation and funds from the National Water Fund (NWF). It should be noted that the funds from the Government of Tanzania will also include climate financing through the Ministry of Finance (MoF), Vice President's Office (VPO) and other ministries, including the President's Office Regional Administration and Local Government (PORALG).

5. Implementation Arrangement

The implementation framework of the Response Strategy comprises three levels of institutions: first, financing options (covered in detail in chapter six), implementation institutions, and supporting institutions. All three levels of implementation get resources and support from the private sector.

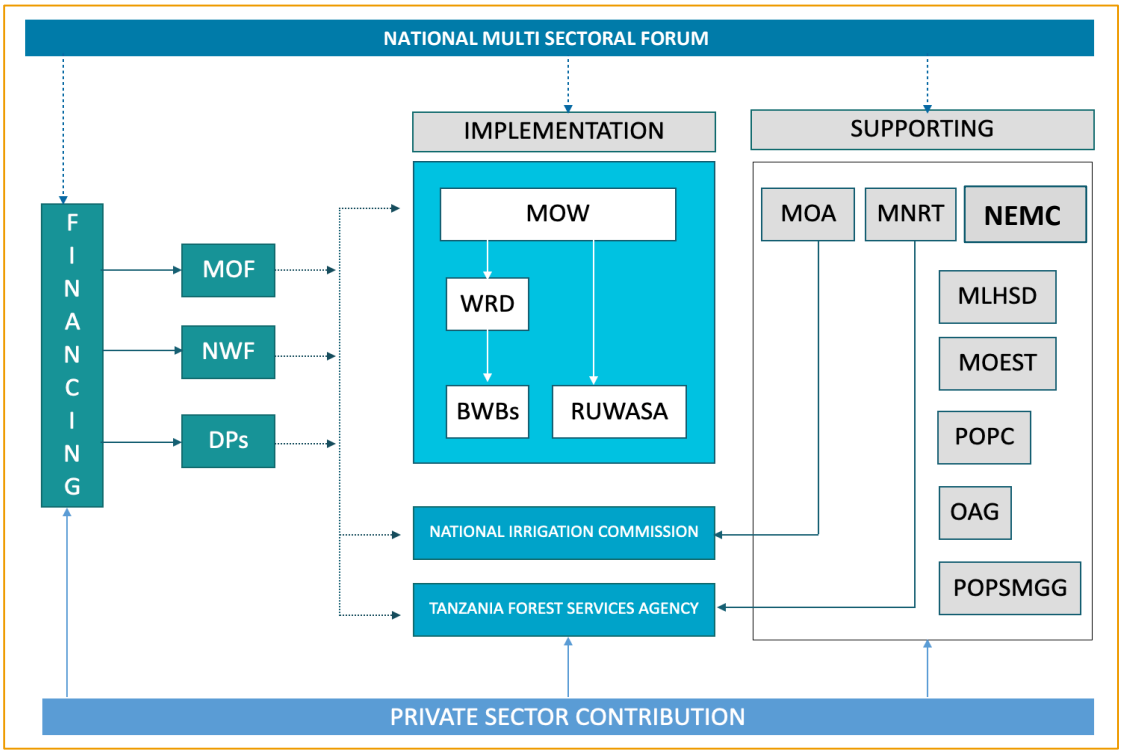

Figure 1: Implementation arrangement for the response strategy

The National Multi-Sectoral Forum (NMSF) for Water Resources Management in Tanzania serves as a crucial framework for coordinating collaborative endeavours aimed at implementing the response strategy that addresses obstacles to investing in water resources in a climate-resilient manner. Within the larger frameworks of the Tanzania Water Investment Programme (TanWIP) and the Water Sector Development Programme (WSDP), the NMSF Response Strategy assumes a key position in this regard:

- **Alignment with Tanzania Water Investment Programme (TanWIP):** The Response Strategy is intricately aligned with the Tanzania Water Investment Programme (TanWIP), supporting its overarching goal to reduce the investment gap within the water sector. The strategy's activities are closely aligned with key focus areas of TanWIP, underscoring their synergistic relationship. This alignment ensures that the objectives achieved through the Response Strategy not only contribute to the success of TanWIP but also can be effectively monitored through the existing AIP Scorecard process. The strategy activities, plays a pivotal role in establishing the necessary conditions for private investment by addressing barriers to climate-resilient water management. These efforts run parallel to TanWIP's objective of attracting private investment, together forming a unified approach to addressing core water management issues for a water-secure future in Tanzania.
- **Integration with Water Sector Development Programme (WSDP):** The Response Strategy is intricately aligned with the Water Sector Development Program (WSDP) III in Tanzania, forming a cohesive framework for sustainable water management.

Central to this alignment is the Strategy's focus on bolstering climate-resilient water resource management, directly supporting WSDP III objectives of enhancing the resilience and sustainability of the water sector. The Strategy emphasizes institutional strengthening and capacity building, mirroring WSDP's emphasis on fortifying water sector institutions. It further complements WSDP's goals through initiatives aimed at community engagement, essential for inclusive water governance. Additionally, the Strategy's focus on infrastructure development and efficient water resource management aligns with WSDP's infrastructure and conservation goals. By fostering policy alignment and encouraging private sector investment, the Strategy enriches WSDP Phase Three's broader aim of diversified funding and innovative water management solutions, ensuring a comprehensive approach to achieving a water-secure future for Tanzania.

Key Functions of the NMSF in Implementation:

1. **Coordination and Collaboration**: The NMSF acts as a central coordinating body, fostering collaboration among diverse stakeholders including government agencies, development partners, private sector entities, and civil society. This collaboration ensures a holistic and integrated approach to implementing the response strategy.
2. **Monitoring and Evaluation**: The NMSF takes a lead role in establishing robust monitoring and evaluation mechanisms. By doing so, it ensures that the implementation progress aligns with set targets and adapts to evolving challenges and opportunities.
3. **Advocacy and Resource Mobilisation**: Through active engagement, the NMSF advocates for the resource needs outlined in the response strategy. It serves as a conduit for resource mobilization, engaging with both domestic and international stakeholders to secure the necessary financial and technical support.
4. **Capacity Building**: Recognising the importance of institutional capacity, the NMSF facilitates capacity-building initiatives to empower stakeholders at various levels, fostering a conducive environment for the successful execution of the response strategy.

In the dynamic landscape of water resource management in Tanzania, the National Multi-Sectoral Forum emerges as a linchpin in the successful implementation of the response strategy. By aligning with the TanWIP and WSDP, the NMSF positions itself as a catalyst for transformative change, ensuring a resilient and sustainable water future for the nation. Through effective coordination, collaboration, and advocacy, the NMSF will play a pivotal role in translating strategy into action, thereby contributing to the broader vision of water sector development in Tanzania.

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ABBREVIATIONS AND ACRONYMS

ABB	Activities-Based Budgeting
BMSF	Basin Multi-Sectoral Forum
BWB	Basin Water Board
CSO	Civil Society Organisation
DPG	Development Partners Group
DWR	Division of Water Resources Management
EDCF	Economic Development Corporation Fund
EWURA	Energy and Water Utilities Regulatory Authority
FCDO	Foreign, Commonwealth & Development Office
GIS	Geographical Information System
GWL	Global Water Leadership Programme
GWP	Global Water Partnership
IWRM	Integrated Water Resources Management
JSWR	Joint Sector Water Review
MCM	Million Cubic Meter
MLHHSD	Ministry of Lands, Housing and Human Settlements Development
MoA	Ministry of Agriculture
MoEST	Ministry of Education, Science and Technology
MoF	Ministry of Finance
MoW	Ministry of Water
MTEF	Medium-Term Expenditure Framework
NAWAPO	National Water Policy
NEMC	National Environmental Management Council
NGO	Non-Government Organisation
NIRC	National Irrigation Commission
NMSF	National Multi-Sectoral Forum
NWF	National Water Fund
OAG	Office of Attorney General
PO-PC	President's Office, Planning Commission
POPSMGG	President's Office Public Service Management and Good Governance
PORALG	President's Office Regional Administration and Local Government
RCA	Root Cause Analysis
RUWASA	Rural Water Supply and Sanitation Agency

SCWC	Sub Catchment Water Committee
SDG	Sustainable Development Goal
TDV	Tanzania Development Vision
TFS	Tanzania Forestry Services Agency
TZS	Tanzanian shilling
USD	United States Dollar
VPO	Vice President's Office
WASH	Water Sanitation and Hygiene
WPM	Water Point Mapping
WQM	Water Quality Management
WRIS	Water Resource Information System
WRM	Water Resources Management
WSDP	Water Sector Development Programme
WUA	Water User Association
WUG	Water User Group

CHAPTER ONE: INTRODUCTION

1.1. BACKGROUND

Water is life, a fundamental resource underpinning every facet of our social, economic, and environmental landscape. In Tanzania, the integrated water resources management paradigm has gained traction over the years, recognizing water's critical role in driving sustainable development and transforming lives. Sustainable and climate-resilient WASH services depend on good water governance and management to improve water security and reduce preventable deaths from water born diseases because of poor water quality. WASH services require enough water in quantity and quality while harmonizing water abstraction from the water sources for other uses. Under this thinking, this Response Strategy seeks to address barriers that hinder progress towards attaining a water-secure Tanzania. This response strategy addresses the obstacles by providing a list of actions that need to be implemented to eliminate the barriers. It also has an embedded finance plan, thus making the response strategy more plausible and implementable.

This response strategy is developed at a time when the country is recovering from impacts caused by the COVID-19 Pandemic coupled with the effects of climate change and resulting economic instability conditions. This situation makes it very crucial to ensure the country's vision of becoming a middle-income economy country as well as the commitment to UN Global Sustainable Development Goals are attained promptly.

The Water Resources Management Act (2009) establishes and strengthens national and basin-level water resource institutions, including the National Water Board (NWB), Basin Water Boards (BWBs), Catchment/Subcatchment - Water Committees (CWCs), and Water User Associations (WUA). It also provides the overarching framework for water resources management (The United Republic of Tanzania, Water Resources Management Act, 2009). However, considering the extensive array of stakeholders in the water resources management ecosystem and the need for greater stakeholder participation beyond the NWB, BWBs, CWCs, and WUAs, the government published in GN 187, The Water Resources Management (Procedure for Nomination of Board Members) Regulations 2010 on 21/5/2010 and Amendment Regulations 2020 in regulation in GN 56 of January 31st, 2020, which permits greater stakeholder participation via a Catchment Multi-Sectoral Forum (CMS) and a Basin Multisectoral Forum (BMSF) and a National Multi-Sectoral Forum (NMSF) at the basin and national levels, respectively (Ministry of Water, 2020).

The Global Water Partnership's (GWP) Strategy 2020-2025 underscores the critical nature of collaborative efforts in furthering the management and control of water resources to promote equitable and sustainable development. Global strategic workplans of the GWP are founded on the Strategy to facilitate a variety of transformation processes. GWP, via

Global Water Partnership Tanzania, and NMSF Strategic Plan Action helped in the formulation of the Response Strategy (2021-2025).

The development of the Response Strategy took advantage of the well-established multi-stakeholder water resources management structures in Tanzania. It followed a systematic procedure that included a stakeholder consultation process to understand the barriers, followed by the formation of working groups from the more significant National Multi-Sectoral Forum for Water Resources Management, working groups analysing and prioritizing the top three barriers, and thorough root-cause-analysis, followed by the development of action plans and finance plans and finally the comprehensive Response Strategy.

The Global Water Leadership (GWL) Programme played a crucial role in supporting countries to develop response strategies for climate-resilient water resources investment because the primary objective of the GWL is to enhance the capacity of countries to effectively manage their water resources in the face of climate change. By pursuing these objectives, the GWL Programme endeavors to empower countries with the tools, knowledge, and collaborative networks necessary to develop and implement climate-resilient water resource strategies, thereby contributing to sustainable and resilient water futures globally.

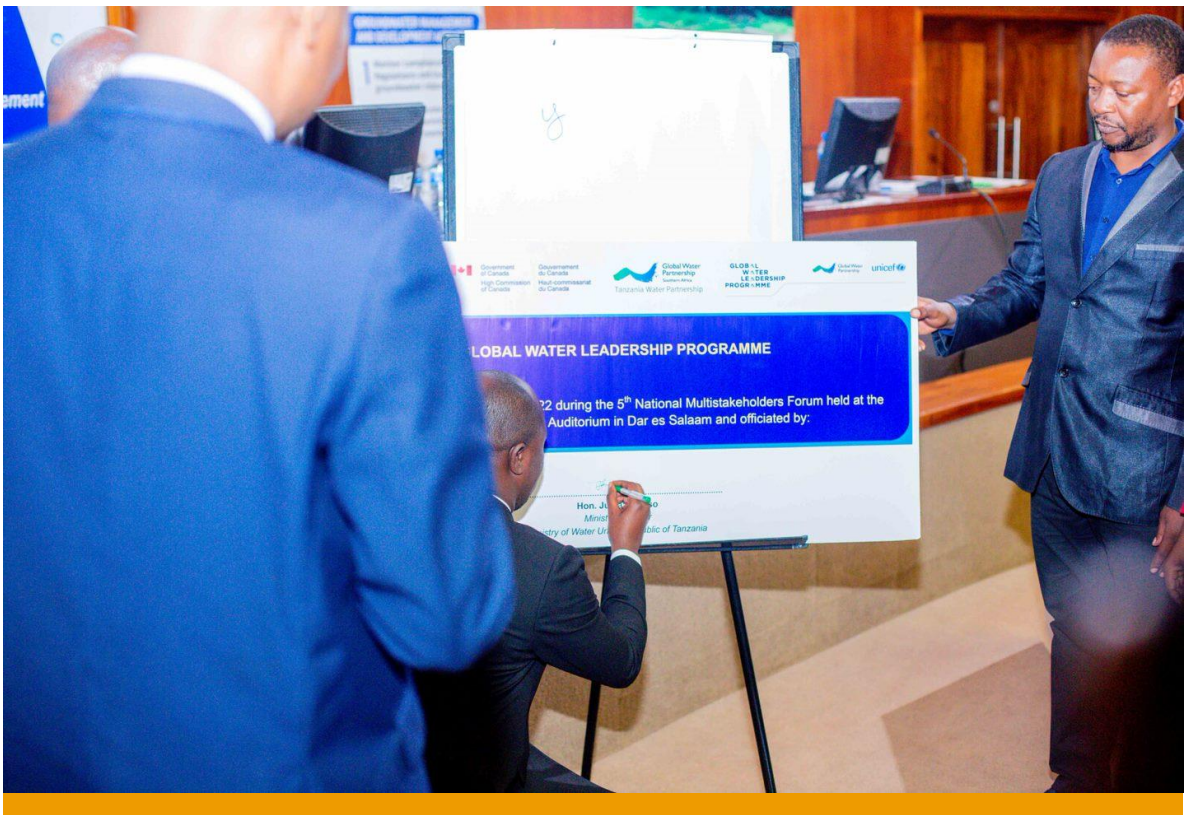


Figure 2: Launching of the Tanzania Global Water Leadership Programme by the Minister of Water Hon Jumaa Hamidu Aweso

1.1.1. Strategy rationale

The Global Water Leadership's flagship product, the government-validated Response Strategy, emerges from an urgent need to tackle critical bottlenecks impeding climate-resilient water management in Tanzania. In the face of escalating climate change impacts, a robust, well-defined strategy is vital for protecting our invaluable water resources. This Response Strategy, aligning with national priorities, aims to navigate and mitigate current and looming challenges through sustainable water resource management.

This Response Strategy is an actionable component of the NMSF Strategic Action Plan (SAP) 2021-2025. It particularly resonates with the SAP's objective of enhancing water sector coordination, with Sub-strategy 6 emphasizing support for Integrated Water Resources Management (IWRM). The implementation of the SAP involves NMSF working groups, each responsible for dissecting a specific barrier, devising action plans, securing funding, and formulating a cohesive response strategy.

National stakeholders have pinpointed three critical bottlenecks to effective, climate-smart water management in Tanzania. First is the challenge of insufficient funding for resilient water resources investments. Budget speeches and National Bureau of Statistics (NBS) data reveal a stark gap in financial allocation towards the water sector, directly affecting its contribution to the economy. Second, there's an inefficiency in irrigation water use and practices, particularly in the Ruvu Sub Basin with the expectation that findings from one of the most water-stressed basins with competing demands between water supply and irrigation, can be applied to the country's other water basins. This is not only a technical issue but also a matter of outdated practices that fail to adapt to changing climatic conditions. Lastly, the overlapping legal and regulatory mandates severely hampering inter-sectoral coordination, as evidenced by policy reviews and stakeholder consultations.

The Response Strategy comprises two integral components: an Action Plan and a Finance Plan. The Action Plan outlines targeted actions and projects to address the identified bottlenecks. However, the effectiveness of the proposed actions hinges on a realistic and achievable Finance Plan. By giving due importance to financial considerations, the Response Strategy ensures that the activities suggested can adequately be funded and implemented. Moreover, the programme's focus on stakeholder capacity building in identifying financing options empowers decision-makers and stakeholders to secure necessary funding for climate resilience water management initiatives, fostering a financially sustainable approach to water resource management.

1.1.2. Scope of the strategy

This Response Strategy addressed a specific part of water resources management, addressing three key bottlenecks that hinder climate-resilient water resources investment in Tanzania Mainland.

1.1.3. Timeframe of the strategy

The Response Strategy was developed for three timeframes: short-term, medium-term, and long-term. The short-term period covers activities that can be implemented in less than 12 months. The activities that can be implemented between one year and three years are categorised as medium-term. The long-term are activities that can be implemented within a period between three and five years. However, as with any strategic plan, this Response Strategy will be reviewed and updated periodically through the National Multisectoral Forum of which is one of the governance structures established by the law in water resources management.

Figure 3: National Multi-Sectoral Forum Working Group Meeting

1.2. OBJECTIVES OF THE STRATEGY

The primary objective of this strategy is to effectively address and overcome the key challenges hindering climate-smart water management in Tanzania. Tailored to target each specific bottleneck, the strategy aims to ensure sustainable water resource management and bolster resilience. Its focus is not only on resolving current issues but also on securing water resources for future generations. By providing actionable and feasible solutions, this strategy seeks to pave the way for a more efficient and sustainable management of water resources.

1.3. METHODOLOGY

This section describes the systematic process used to develop climate-resilient Water Resource Management (WRM) response strategies, aimed at overcoming specific challenges that hinder effective WRM and fostering sustainable practices in Tanzania. The strategy's development began with preliminary activities, which informed the subsequent creation of the response strategy. This involved conducting a stakeholder analysis and initial consultations with a range of stakeholders to identify and prioritize key bottlenecks. Following this, specialized task force teams were formed from the larger NMSF Working Groups. Each team was tasked with addressing a specific bottleneck.

The development process was divided into four distinct phases, spanning 12 months: Root Cause Analysis, Solution Development, Finance Plan Development, and Drafting the Response Strategy. In this methodology section, we detail the steps taken in each phase to formulate structured and actionable response:

- **Phase 1 – Root Cause Analysis:** The Working Groups conducted a rigorous root cause analysis of the identified barriers based on desk research, field work, and groups work sessions. The teams sought to uncover the underlying factors contributing to inadequate climate-resilient WRM using data analysis, stakeholder consultations, and extensive research. The study aimed to understand the challenges and inform subsequent decision-making processes. The insights gained during this phase laid the foundation for developing targeted and practical solutions.
- **Phase 2 – Solutions Development**: Building on the root cause analysis findings, the Working Groups developed actionable solutions tailored to each identified barrier. Collaborative brainstorming sessions and expert inputs were leveraged to explore various approaches and select the most viable strategies. The solutions were designed to promote climate-resilient WRM practices, enhance water resource conservation, and bolster overall resilience. During this phase, the Working Groups fostered cross-sectoral cooperation and synergy, aligning strategies with national priorities.

- **Phase 3 – Finance Plan Development**: Recognizing the critical role of financing in successful strategy implementation, Phase 3 focused on developing realistic and achievable Finance Plans. The Working Groups collaborated with finance experts and relevant stakeholders to explore funding sources, potential partnerships, and innovative financing options. The Finance Plans aimed to ensure adequate funding for the proposed actions outlined in the Response Strategies. By addressing financial considerations, the Working Groups aimed to enhance the chances of successful strategy execution and long-term sustainability.
- **Phase 4 – Response Strategy Finalisation**: The culminating phase involved integrating the Action and Finance Plans into comprehensive Response Strategy drafts. The Working Groups consolidated their findings and recommendations, structuring the documents according to government validation requirements. Thorough reviews and refinements were conducted to ensure alignment with stakeholder expectations, national priorities, and sustainability objectives. The draft Response Strategies emerged as well consolidated actionable documents, providing a roadmap for effective climate-resilient water resources management.

Through the implementation of this methodical approach, certain obstacles have been successfully surmounted and sustainable practises have been promoted in the formulation of climate-resilient water resource management response strategies. The Working Groups devised practical solutions to bolster the resilience of water resources against the impacts of climate change by means of collaborative endeavours, data-centric evaluations, and financial deliberations. Through the development and later implementation of this strategy, a foundation has been laid for efficient water resource management, which eventually contributes to Tanzania's sustainable development objectives and guaranteed water resources for future generations.

Figure 4: National Multi Sectoral Working Group Task Force meeting during the Development of the Response Strategy

1.4. NATIONAL FRAMEWORKS

The response strategy for the three prioritised barriers is intricately linked to other national frameworks, including the National Five-Year Development Plan Phase Three, National Water Policy, National Water Sector Development Strategy, National Climate Change Response Strategy, Water Sector Development Programme Phase Three, and Tanzania Water Investment Programme. This alignment ensures a coordinated and harmonised approach to water resource management, reinforcing the national vision of sustainable development, resilience, and climate adaptation. The integrated efforts between these frameworks enhance the capacity to address water management challenges effectively, paving the way for a more resilient and water-secure future for Tanzania.

1.4.1. National Water Policy (2002)

The response strategy aligns with the National Water Policy 2002, which serves as Tanzania's overarching water resource management policy framework. The National Water Policy provides the strategic direction for sustainable water development, allocation, and utilisation. This Policy seeks to develop a comprehensive framework for sustainable development and management of Tanzania s water resources, in which an effective legal and institutional framework for its implementation will be put in place. The response strategy ensures that its action plans and finance plans are consistent with the principles and objectives outlined in the policy. This alignment ensures that the response strategy complements and reinforces the long-term vision and goals of the National Water Policy, fostering integrated and sustainable water resource management practices.

1.4.2. Five Year Medium Term Strategic Plan 2019/20-2023/24

The response strategy complements the Ministry of Water Five Year Medium Term Strategic Plan 2019/20-2023/24. This sector-specific strategy outlines priority actions and interventions for achieving the sustainable development and management of water resources in Tanzania. The response strategy for the three prioritized barriers aligns with the strategic objectives and targets of the National Water Sector Development Strategy. The main objective of the NWSDS is to develop a coherent, holistic, and integrated strategy for the Water Sector to implement the National Water Policy. This will then allow the on-going sub- sectoral initiatives and projects to be set within the overall strategic and planning framework for the sector, supported through a Sector Wide Approach to Planning (SWAP). By linking to this framework, the response strategy contributes to the overall advancement of the water sector, ensuring a coherent and coordinated approach towards water resource management.

1.4.3. National Water Climate Change Response Strategy (2021-2026)

Given the focus on climate-smart water management, the response strategy is closely tied to the National Climate Change Response Strategy. This climate change framework sets out the nation's objectives and actions to address climate change impacts across various sectors, including water resources. The response strategy's emphasis on resilience, adaptation, and sustainable water practices aligns with the climate change strategy's goals, creating synergy between the two frameworks. By integrating climate considerations, the response strategy strengthens the water sector's ability to cope with the challenges posed by climate change.

1.4.4. Water Sector Development Programme Phase Three (WSDP III) 2022/23 – 2025/26

The response strategy complements the Water Sector Development Programme Phase Three (WSDP III), a development program for the water sector in Tanzania. The WSDP III aims to enhance water resource management, service delivery, and governance. The response strategy for the prioritized barriers integrates with WSDP III by providing targeted solutions to specific bottlenecks identified by stakeholders. This alignment ensures that the response strategy is integrated into the broader water sector development efforts, enhancing water management initiatives' overall impact and effectiveness.

1.4.5. Tanzania Water Investment Programme (2024 – 2030)

The Response Strategy is intricately aligned with the Tanzania Water Investment Programme (TanWIP), supporting its overarching goal to reduce the investment gap within the water sector. The strategy's activities are closely aligned with key focus areas of TanWIP, underscoring their synergistic relationship. This alignment ensures that the objectives achieved through the Response Strategy not only contribute to the success of TanWIP but also can be effectively monitored through the existing AIP Scorecard process. The strategy activities, plays a pivotal role in establishing the necessary conditions for private investment by addressing barriers to climate-resilient water management. These efforts run parallel to TanWIP's objective of attracting private investment, together forming a unified approach to addressing core water management issues for a water-secure future in Tanzania.

CHAPTER TWO: WATER RESOURCES MANAGEMENT

2.1. OVERVIEW OF WATER RESOURCES: A SITUATION ANALYSIS

Tanzania, located in East Africa, is endowed with a diverse and significant array of water resources that play a crucial role in supporting the country's socio-economic development and environmental sustainability. The nation's water resources are primarily categorized into surface and groundwater sources. The vast network of rivers, including the Rufiji, Wami, and Pangani, contribute significantly to surface water availability, fostering the growth of agriculture and supporting the livelihoods of millions of Tanzanians. In addition to rivers, Tanzania is home to several large freshwater lakes, most notably Lake Victoria, Lake Tanganyika, and Lake Nyasa.These lakes serve as vital sources of freshwater supply and support the region's thriving fishing industry. Furthermore, the country's groundwater resources, found in various aquifers, are essential for meeting the water demands of both rural and urban areas, particularly during periods of drought. Although Tanzania is relatively well-endowed with water resources, challenges such as uneven distribution, pollution, and increasing water demand due to population growth and economic development require careful management and conservation strategies to ensure sustainable water availability for current and future generations.

Tanzania's management and utilization of water resources are governed by various policies, laws, and institutions to promote equitable access, environmental protection, and efficient water use. The National Water Policy of Tanzania, formulated in 2002, is a guiding framework for water resource management, emphasizing integrated water resources management (IWRM) principles. Under this policy, the Ministry of Water is responsible for water resource planning, allocation, and regulation. The approach also emphasises the participation of local communities and stakeholders in decision-making processes to ensure the sustainability and inclusivity of water resource management practices. Additionally, the Water Resources Management Act of 2009, which was revised in 2022, provides a legal framework for allocating and protecting water resources, facilitating licensing procedures for water use. Various institutions, such as the Directorate of Water Resources (DWR) and the National Environmental Management Council (NEMC), play essential roles in implementing water management plans and enforcing environmental standards. Despite these measures, challenges like water scarcity in certain regions, inadequate infrastructure, and competing water demands for agriculture, industry, and domestic use continue to pose significant obstacles. Therefore, concerted efforts and effective implementation of water management policies are imperative to safeguard Tanzania's precious water resources and foster sustainable development for the nation.

2.1.1. Status of water resources

According to available data, Tanzania possesses substantial annual renewable water resources estimated at approximately 125,763 million cubic meters (MCM) per year. This volume comprises 104,568 MCM of surface water and 21,195 MCM of groundwater. When considering the population, the estimate translates to an average of 2,105 cubic meters per capita per year. Comparatively, this figure exceeds the globally accepted Water Stress Indicator of 1,700 cubic meters per capita per year, indicating a relatively favourable water availability situation in the country (WSSR 2022).

For effective Water Resources Management, Tanzania is geographically divided into nine hydrological basins, namely Pangani, Wami-Ruvu, Rufiji, Ruvuma and the Southern Coast, Lake Nyasa, Internal Drainage, Lake Rukwa, Lake Tanganyika, and Lake Victoria. Seven basins are shared with neighbouring countries, making them transboundary. These hydrological basins serve as the fundamental planning units for water resource management and development endeavours in Tanzania, allowing for a targeted and integrated approach to utilize and conserve water resources throughout the country sustainably.

2.1.2. Climate change impact

Climate change poses significant challenges to Tanzania's water resources, impacting its economy, environment, and social well-being. As a country highly dependent on agriculture, hydropower, and natural ecosystems, the effects of climate change are already evident and can potentially exacerbate existing vulnerabilities in the water sector. **Table 3** summarises key climate change factors and impact to water resources management and its investment.

Table 3: Climate Change Factors and Impact

Impact	Description
Changing Climatic Patterns	Tanzania has experienced noticeable shifts in climatic patterns over the past few decades. Changes in temperature and precipitation have resulted in altered rainfall patterns, increased frequency of extreme weather events such as droughts and floods, and rising temperatures. These changes directly impact water availability, quality, and distribution, affecting surface and groundwater resources.

Impact	Description
Impact on Water Resources	In the context of Tanzania's National Climate Change Response Strategy (NCCRS) for 2021-2026, the impact of climate change on water resources is both direct and profound, affecting the socio-economic fabric of the country significantly. Key sectors such as agriculture, industry, tourism, fisheries, and energy are heavily reliant on water resources, which are now under increasing threat from climate change. The variability of rainfall patterns coupled with prolonged droughts has exerted intense pressure on the country's water availability. The past decade witnessed severe droughts that led to reduced river flows, resulting in the shrinkage of lakes, declines in water levels in satellite lakes, and decreased capacity in hydropower dams. This shift not only affects perennial rivers, turning some into seasonal rivers, but also leads to the drying up of wetlands. Consequently, water, as a finite and crucial resource, faces augmented pressure due to climate change and variability, alongside challenges such as pollution, over-extraction, and encroachment of water catchments for various land uses like agriculture, urbanization, and industrial development. This scenario exacerbates the scarcity and vulnerability of water resources, adversely impacting vital watershed and recharge areas as well as wetlands, underscoring the urgent need for comprehensive and inclusive strategies to bolster water resilience in the face of climate change
Threats to Ecosystems and Biodiversity	The changing climate significantly threatens Tanzania's diverse ecosystems and unique biodiversity. Alterations in temperature and precipitation patterns disrupt natural habitats, leading to shifts in species distribution and potential loss of biodiversity. This, in turn, affects the ecological balance and ecosystem services these natural environments provide.
Vulnerable Communities and Livelihoods	Climate change disproportionately affects vulnerable communities, including small-scale farmers, pastoralists, and impoverished people. The reliance on rain-fed agriculture and traditional water sources exposes them to increasing climate risks, making it challenging to secure a sustainable livelihood.
Adaptation and Resilience Strategies	Tanzania recognises the urgent need to address the impacts of climate change on its water resources. In collaboration with international partners and stakeholders, the government is working on developing and implementing climate adaptation and resilience strategies. These strategies aim to enhance water resource management, build climate-resilient infrastructure, promote sustainable water use practices, and integrate climate change considerations into policy frameworks.

Impact	Description
Need for Climate-Resilient Water Investments	To effectively address bottlenecks in climate-resilient water resources investment in Tanzania, it is essential to prioritize adaptive measures that improve water availability, storage, and distribution systems. Investing in climate-resilient water infrastructure, water conservation technologies, and capacity-building initiatives will be crucial in safeguarding Tanzania's water resources and enhancing the nation's resilience to the impacts of climate change.

2.1.3. National interventions

At a national level, Tanzania has developed its second National Climate Change Response Strategy (2021) to address the impact and effects on all sectors. The NCCRS was developed under the Vice President's Office, Division of Environment. The strategy guides the country on climate change issues and initiatives for five years (2021-2026) by focusing on enhancing adaptation resilience measures and harnessing mitigation opportunities. As an overall climate change response strategy, the need to develop a more specific response strategy to the water resources climate-resilient investment was paramount. Therefore, a response strategy that addresses bottlenecks to climate-resilient investment in Tanzania contributes to the NCCRS implementation at specific institutions.

2.2. BARRIERS TO WATER RESOURCES

In 2022, the NMSF, with support from GWP Tanzania's Global Water Leadership Programme (through financial support from the Foreign, Commonwealth & Development Office), established three working groups to assess the barriers that hinder progress towards achieving the sector's ambitions and later prioritize top three for further development of the response strategies. The initial list included more than twelve barriers voted for, and only three were selected for further action.

The Prioritised Barriers

1. Inadequate funds to implement resilient water resources investments
2. Inefficient irrigation water uses and practices: the case of Ruvu Sub-Basin
3. Overlapping legal and regulatory mandates impacting inter-sectoral coordination

The work to analyse these three barriers and set a platform for developing this Response Strategy was conducted by Task Force teams under the NMSF. The detailed analysis, which forms the situational analysis of water resources management, is provided in Chapter 3 of this report.

2.3. POLICY AND REGULATORY FRAMEWORK

The National Planning Frameworks are guided by the Tanzania Development Vision (TDV) 2025, whose objective is to awaken, coordinate and direct the people's efforts, minds and national resources towards core sectors that enable them to attain the development goals and withstand expected intensive economic competition. TDV aims to achieve a high-quality livelihood for the people, reach good governance through the rule of law, and develop a strong competitive economy. Among the goals are universal access to safe water by 2025 and ensuring that water resources are available sustainably to serve as a driver to both social and economic needs. Also, the Five-Year Development Plan III aims to provide safe, clean, and affordable drinking water to at least 85% of the population in rural areas and 95% in urban areas, attaining 30% sewerage coverage services by 2025.

The National Water Policy 2002 addresses cross-sector interests in water, watershed management and integrated and participatory approaches for water resources planning, management, and development. The policy and strategy documents contain operational targets to be achieved in terms of levels and timescale for improving water resources management and water supply and sanitation service provision. Furthermore, The Water Sector Development Programme focuses on addressing the goals of NAWAPO 2002 to strengthen sector institutions for integrated water resources management and improved access to water supply and sanitation services. This and other strategic initiatives provide the roadmap for implementing interventions in the water sector and chart out targets for improving water supply and sanitation services to rural and urban populations and ensuring the sustainability of water resources. In that matter, NAWAPO (2002) provides guidance and operational directives to all water subsectors to achieve TDV 2025 pillars and targets.

2.3.1. Institutional framework

The Tanzanian National Water Policy (NAWAPO, 2002) outlines the institutional framework for water resources management, as depicted in Figure 2. This National Water Management Framework highlights the extensive involvement of stakeholders at various levels in decision-making, ranging from national-level management to individual water users.

a) **Ministry of Water (led by the Minister of Water)**

The Ministry of Water is the highest governing body in the water sector, typically responsible for formulating national water policies, strategies, and regulations. It oversees all water resource management activities, ensures compliance with national and international water laws, and coordinates with other government departments and stakeholders. The ministry is usually staffed with a range of professionals including policy makers, engineers, environmental scientists, legal experts, and administrative staff.

b) National Water Board

The National Water Board is an advisory board to the Minister on matters related to multi-sectoral coordination in integrated water resources planning and management as well as resolution of national and international water conflicts. The National Water Board consists of the Chairman and other ten members appointed by the Minister from the following sectors (i) agriculture ii) energy; (iii) industry; (iv) forestry; (v) environment; (vi) livestock; (vii) wildlife; (viii) lands; (ix) mining; (x) irrigation; (xi) fisheries; and (xii) infrastructure; (c) one representative from local government administration, (d) three representatives from Basin Water Boards; (e) one representatives of the private sector; and (f) one representative from Non-Government Organisations. By law, one third of the members are supposed to be female.

c) Director of Water Resources

Appointed by the Minister from among public servants, the Director of Water Resources is the advisor to the Government on all matters pertaining to water resources. The Director has the duty to ensure the efficient, effective, and sustainable economical management and supervision of water resources in accordance with the provisions of the Water Resources Act.The director implements policies, manages water resources, and coordinates between different departments and levels of government.

d) Basin Water Board (BWB)

The Basin Water Board, established by the Minister for each water basin, is a crucial entity in water resource management. Operating under the Board's direction, its mandate includes preparing basin water resources management plans, integrating district plans into these, and providing guidelines for the construction and maintenance of water structures. It is also responsible for monitoring and approving these structures, managing data for water resources, and maintaining assessments of water availability and demand. Additionally, the Basin Water Board plays a pivotal role in issuing and revoking water use and discharge permits, maintaining a Water Register, enforcing permits and pollution prevention measures, resolving intra-basin conflicts, and coordinating inter-sectoral water resources management at the basin level. It advises on technical aspects of trans-boundary water issues and appoints chairpersons and members of Catchment and Sub-catchment Committees, while also preparing reports on the state of water resources in its respective

basin. As a body corporate with perpetual succession and a common seal, it possesses the legal capacity to sue and be sued, and to undertake activities in line with its objectives.

e) Catchment Water Committee/Subcatchment Water Committee

Catchment or Sub-catchment Water Committees play a vital role in the integrated management of water resources at the local level. Their primary functions include coordinating and harmonizing the catchment or sub-catchment integrated water resources management plans, ensuring that these plans align with broader regional and national strategies while being tailored to the specific needs and conditions of their local areas. Additionally, these committees are responsible for resolving water resources conflicts within their respective catchments or sub-catchments, a critical task in areas where water resources are scarce or heavily utilized. Beyond these core functions, Catchment Committees also carry out various tasks delegated by the Basin Water Board, acting as key intermediaries in implementing broader water management policies and practices at the grassroots level. These committees are typically composed of local stakeholders, including representatives from local government, community groups, environmental experts, and sometimes members of civil society, ensuring a diverse and inclusive approach to water resource management.

f) Multi-Sectoral Forums (National, Basin, and Catchment)

These forums facilitate the involvement of various stakeholders in water resource management at different levels. They provide a platform for discussion, information exchange, and consensus-building among diverse stakeholders, including government agencies, non-governmental organizations, private sector representatives, and local communities. Participants come from a wide range of sectors and backgrounds, reflecting the diverse interests in water resource management.

g) Water-User Associations (WUA)

Water Users Associations (WUAs) in Tanzania are formed by the agreement of most of a group of water users and serve multiple key purposes. These include managing, distributing, and conserving water from a shared source; acquiring and operating permits under the relevant Act; resolving conflicts among members related to joint water use; collecting water user fees on behalf of the Basin Water Board; and representing interests and values related to water used for public purposes, like environmental conservation or managing a Groundwater Controlled Area. Membership in these associations is open to any user of water from a common stream, regardless of the purpose of use. To form a WUA, water users must prepare and submit a constitution for approval by the Basin Water Board, which also assists in formulating this constitution. Once approved and registered in the Water Register, all water users within the association's area are required to become members and

adhere to its constitution. The WUA is governed by a Management Committee, elected by its members. The Basin Water Board has the authority to provide directions to WUAs for better performance of their functions, including water distribution and management, source protection, and land drainage. This structure ensures that WUAs are effectively managed and aligned with broader water resource management objectives.

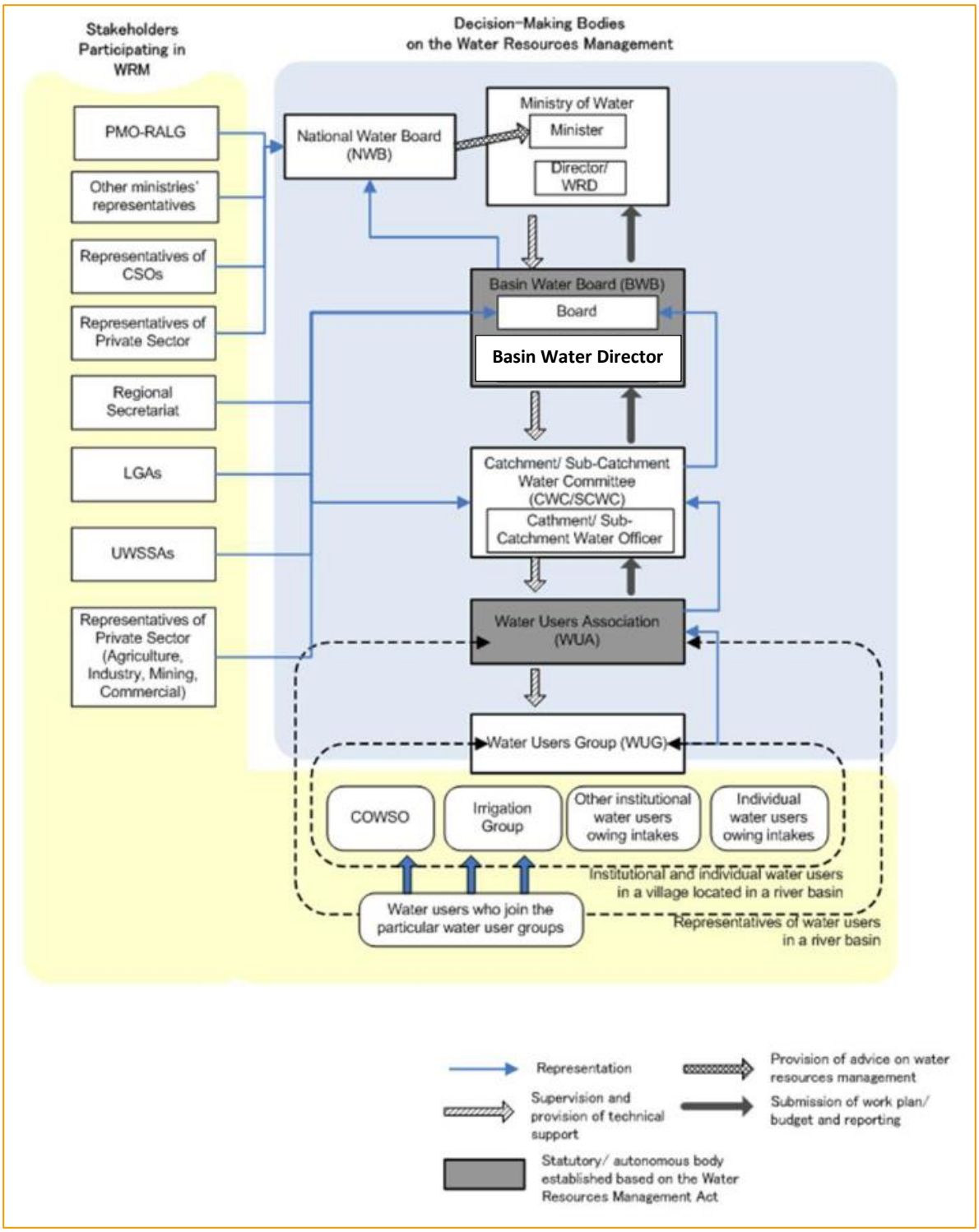


Figure 5: Water Resources Management Institutional Framework

2.3.2. Laws and Policies

The Water Laws were enacted to provide an institutional and legal framework for sustainable management and development of water resources, water supply, and sanitation. The Water Resources Management Act No. 11 (2009) was enacted to provide for an institutional and legal framework for sustainable management and development of water resources; outline principles for water resources management; provide for prevention and control of water pollution; provide for participation of stakeholders and the public in implementation of the National Water Policy (2002). The WRMA establishes IWRM institutions, including the National Water Board, Basin Water Boards, Catchment Committees, and Water User Associations, and supports joint IWRM bodies on shared waters with other countries.

On the other hand, the Water Supply and Sanitation Act No.5 (2019) was enacted to provide for sustainable management, adequate operation and transparent regulation of water supply and sanitation services. The Act establishes Water Supply and Sanitation Authorities, the Rural Water Supply and Sanitation Agency (RUWASA), the National Water Fund (NWF) and Community-Based Water Supply Organisations (CBWSOs). In line with the Water Acts and EWURA Act 2001, the Environmental Management Act No. 20 of 2004 provides for and promotes environmental enhancement, protection, conservation, and management. The Act provides the legal framework necessary for coordinating harmonious and conflicting activities to integrate such activities into an overall sustainable environmental management system by providing critical technical support to Sector Ministries.

2.4. INVESTMENT IN WATER RESOURCES

2.4.1. Investment programme

According to the OECD, a robust enabling environment for water-related investment can be broadly characterised as a set of policies, regulations and institutional arrangements that facilitate investment in activities that contribute to water security. This includes sector-specific policies, regulations, and institutional structures, as well as those relating to the law of the financial sector and capital markets. Similarly, the Sanitation and Water for All (SWA) partnership has recognised five key building blocks of the enabling environment: policies and strategies; institutional arrangements; financing; planning, monitoring, and review; and capacity building.

Tanzania has made significant strides in creating an enabling environment for the water sector through the presence of various frameworks and policies. These frameworks include the National Water Policy and the National Water Sector Development Strategy, which

provide a comprehensive framework for sustainable water management and equitable access to safe water resources for all citizens. The National Climate Change Response Strategy also addresses the challenges climate change poses on water resources and broadly promotes climate-resilient water management practices.

Regarding institutional arrangements, Tanzania has established vital bodies responsible for water sector governance and management. However, policies in and of themselves are ineffective if they are not implemented. Indeed, unfortunately, many water policies remain primarily unimplemented, and inadequate funds are often one of the main reasons good policies fail to be implemented. While not the only financial mechanism available, budget allocations are an essential foundation to ensuring a water policy will be effective. On the other hand, well-established institutional arrangements need finance to execute their roles and responsibilities. Adequate financing remains a challenge for the water sector and particularly more so to the WR sub-sector. While the government allocates funds for water and water related projects and infrastructure development, WRM suffers insufficient allocations and thus there are still significant gaps in funding.

2.4.2. Financing Landscape

Financing is a critical factor in the execution and attaining desired objectives of the planned programme, including the water resources management and development component. The financing landscape involves the financing modalities and sources of funding. According to the WSDP II Final Evaluation Report of 2021, the framework for financing water projects was through Basket and Earmarked Projects. These were adopted aiming at enhancing the performance of the programme targets and objectives. It was also noted that the primary sources of financing for WSDP II were the Development Partners and the Government.

The WSDP II was heavily loaded with water supply and sanitation financing requirements and limited to water resources management and development. According to the Water Sector Status Report (June 2020), the water resource management (WRM) was allocated TZS 212.5 billion (7.9%) compared with TZS 2,694.6 billion. (90.8%) for the water supply and sanitation. Furthermore, regarding budget allocation against WSDP II requirements, WRM was below the WSS in all four years of its implementation. The low level of funds releases also compounded this compared with the budget allocation. For example, the total budget allocation WSDP II was TZS 3,668.8 billion, while the actual release was TZS 1,990.4 billion, equivalent to 54.3%.

However, the emphasis on investing more in water resources management and development was recently noted through WSDP III and TanWIP. WSDP III, to be implemented between 2022/23 and 2025/26, has planned investments of USD 2.1 billion (32.5%) to WRM compared with USD 2.6 billion (40.2%) for WSS. Under the Tanzania Water

Investment Programme (2024-2030), WRM has planned investments of USD 4.57 billion, a significant resource requirement. The annual average investment allocation for WRM was noted to be USD 525.5 million and USD 762.5 million for WSDP III and TanWIP respectively (Figure 3).

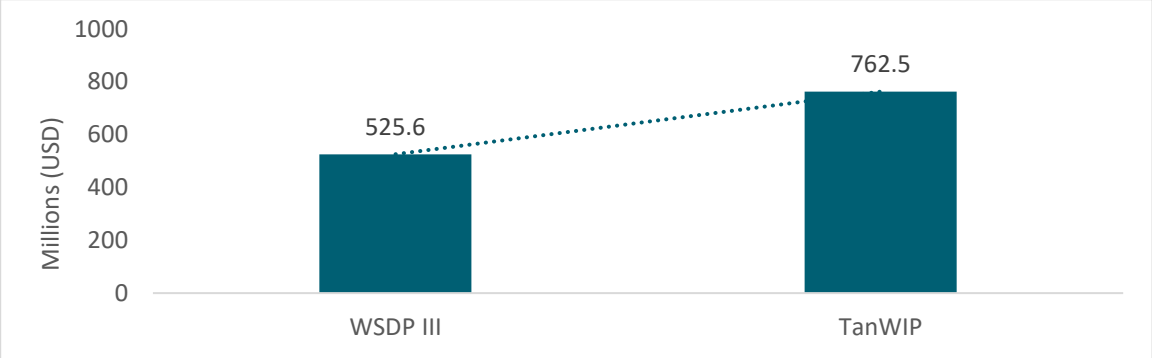


Figure 6: Comparison of annual resource allocation to WRM between WSDP and TanWIP

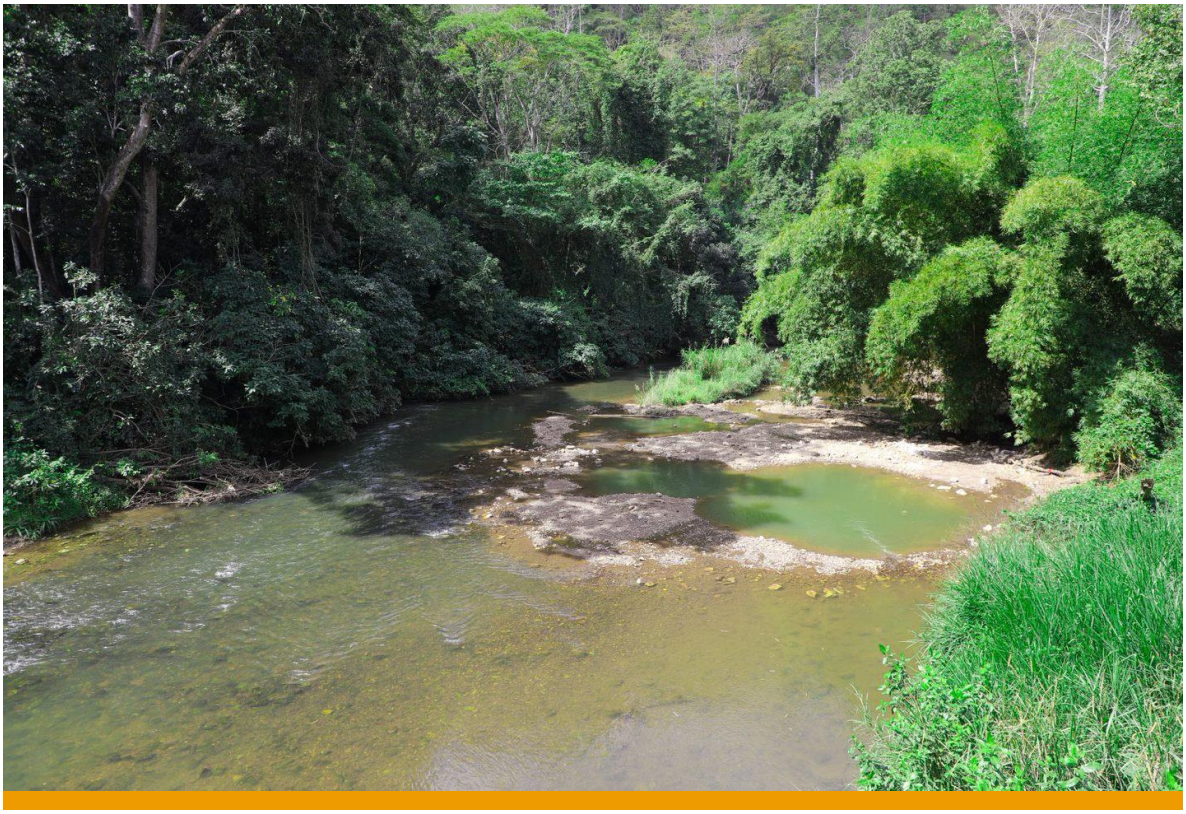
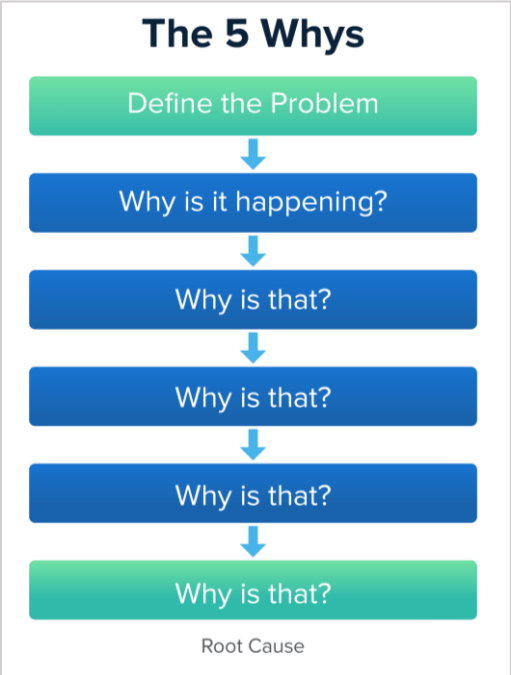


Figure 7: Ruvu River at Kibungo in the Wami/Ruvu Basin, This river is one of the major sources for Dar Es Salaam Water Supply

CHAPTER THREE: ROOT CAUSE ANALYSIS

3.1. INTRODUCTION

Root Cause Analysis (RCA) is a problem-solving methodology used to identify the underlying or fundamental cause of an issue, problem, or event. The main objective of RCA is to go beyond addressing the symptoms of a problem and instead delve into its core causes. By understanding the root causes, organizations can develop practical solutions to prevent recurrence and improve processes. Root Cause Analysis is widely used in various fields, including engineering, manufacturing, healthcare, aviation, and information technology, to name a few. It helps organizations improve their problem-solving capabilities, enhance the quality of their products or services, and prevent future issues, leading to increased efficiency and customer satisfaction.



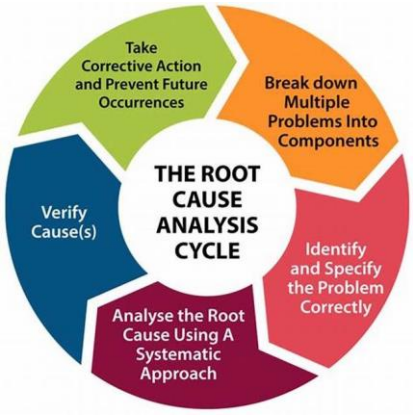
Root Cause Analysis (RCA) employs several techniques to identify the underlying causes of a problem. Here are some commonly used RCA techniques: These can be used individually or in combination depending on the complexity of the problem and the resources available. The goal is to systematically analyze the issue and identify the root causes to implement effective and lasting solutions.

Root Cause Analysis (RCA) typically involves a series of steps to identify and address a problem's root causes systematically. The specific steps may vary depending on the chosen RCA technique and the complexity of the problem, but here is a general outline of the RCA process. The Root Cause Analysis process is iterative, and multiple iterations may be required to understand the problem and its underlying causes fully. It's crucial to involve relevant stakeholders, subject matter experts, and individuals with different perspectives during the process to gain a comprehensive understanding of the issue.

The most important aspect of a Root Cause Analysis is to develop a proposed plan of action to reduce the chance that this problem or event would happen again. When the root cause has been identified, the teams create a list of solutions to address the issues and commit to the solutions that will have the most impact. Solutions or actions should be immediate whenever possible.

3.2. RCA METHODOLOGY

This section provides details of how root cause analysis was employed to identify the root causes, underlying causes, and immediate causes of the three bottlenecks to the climate-resilient investment in water resources to identify the leading causes and effects. Taskforce teams with diverse and relevant stakeholders, subject matter experts, and individuals with different perspectives were involved in the exercise of root-cause-analysis to gain a comprehensive understanding of the issues. Due to different complexity and nature of the three bottlenecks each of the taskforce teams selected a desired Root Cause Analysis approach to conduct an in-depth assessment and investigate the main reasons for each identified bottleneck. The reference is made to the three separate Root Cause Analysis (RCA) reports prepared by the three task force teams of the National Multi-Stakeholders Forum which are annexed in this strategy.



3.3. ROOT CAUSE ANALYSIS OF BOTTLENECKS

This section presents a comprehensive Root Cause Analysis for the three identified bottlenecks. Detailed reports on each bottleneck are included as annexes. For convenient access, QR codes linked to these reports are provided on the back cover.

3.3.1. Root Cause Analysis of Bottleneck One: Inadequate funds for implementing resilient water resources investments

Investment in resilient water resources infrastructure and institutional reform is required to address the continuing water management gaps that threaten economic growth. Unfortunately, such activities have been partially implemented due to financing challenges. Inadequate funding to implement resilient water projects (water resources, supply, and sanitation) has been cited as a significant problem. This problem has been noted particularly in implementing WSDP II despite a general call to avail more funds for water resources management to attain water security and avert a threat of catchment degradation. Efforts to lure additional funds are hampered by inadequate information regarding the constraining factors. Against this backdrop, the root-cause-analysis study was designed to fill the knowledge gap. The analytical think piece helped to pinpoint further specific issues that need to be addressed to unlock the flow of funds. Root-Cause-analysis process has

been the greatest input in stimulating debate and building up a case for additional funds for water resources management.

WRM subsector is challenged by staff shortage, low levels of funding, and low absorption of funds, resulting in the overall underperformance of WRM targets. The subsector was unable to carry out several activities planned under WSDP II, including gazettement of sub-catchments (achieved 3 out of 56 planned), establishment of new WUAs (reached 44 out of the 170 planned), installation of observation/monitoring wells and data loggers (achieved 18 out of the planned 150); rehabilitation of monitoring boreholes (performed two (2) out of the 120 planned); and failed to maintain its monitoring and weather stations resulting to an overall decline in numbers as a result of inability to investment in maintenance of existing stations, acts of vandalism, and the low pace of new installations (USAID WSDP II evaluation, 2021).

WRM subsector activities required USD 804 million in the second phase (WSDP II). Total funds committed for the WRM subsector during the second phase amounted to about USD 129 million (16% of needs), resulting in the subsector's failure to meet most performance targets. The entire sector received annual allocations averaging EURO 271 million (equivalent to 0.5% of Tanzania's GDP or 2% of the national budget). While annual spending averaged EURO 152 million in WSDP II (57% of the yearly budget), less than 8% was allocated to the WRM subsector (GoT's WSSR, 2020).

The low level of understanding of the stakeholders on water resources management is yet another hurdle attributed to the insufficient allocation of funds. A lack of specific indicators for water resources management accentuates this problem. National and or global indicators for water development focus on water supply alone, paying virtually no attention to water resources management. This has made the Governments, stakeholders, and the entire global community focus exclusively on the water supply and neglect that the latter is derived from effective and efficient water resources management. A low level of understanding mimics a low political will to allocate adequate funds.

Another factor contributing to inadequate resource management allocation to water resources is low motivation and incentive to prepare fundable proposals. This problem may be accentuated by the low capacity to organise projects seeking funding from different financiers; lack of information about the available financing options is compounding the problem. Effective coordination would have helped to address this problem through sharing of human resources and capacity building.

Five root causes were developed to address the first bottleneck based on analytical work and evidence collated by the task force team. Table 4 summarises the root causes linked to the symptoms and evidence researche and reported.

Table 4: Root Cause Analysis of Bottleneck One

Root Cause	Symptoms identified	Evidence data and facts
• 1.1. Limited financial resources.	• Significant gaps in budget allocations. • Activities not carried out by responsible institutions. • Deterioration of infrastrucrures. • High demand for new infrastructures. • Lack of commitment to Private Sector Participation.	• The number of funds received from the proposed WSDP II allocations was skewed with an unfavourable bias for the water resources management component. By December 2021, WRM had received only 7% of the proposed allocation (AWSSR, 2021).
• 1.2. Inadequate prioritization of water resources management.	• Ineffective coordination and planning between water-using sectors. • Frequent changes to Government priorities between Sectors and Sub-sectors.	• Reliable information on total water allocated/withdrawn by sectors is lacking. What is available is the ratio of water production to demand. One to two-thirds of the need is unmet in district capitals, including townships and regional centres. Drivers for rising water demand include population growth, increasing the need for agricultural activities and expanding industrial and commercial activities (EWURA, 2021).
• 1.3. Limited technical capacity.	• Basin Water Boards have limited capacity to discharge their duties. • Low motivation and incentives to write/prepare fundable proposals. • Lack of access to innovative funds like climate change funds. • Public institutions like UWSSAs continue to depend on Government grants.	• Build institutional capacity on preparing bankable projects and responsive to climate change Fund requirements, including preparation of an action plan MoFP, 2021).

Root Cause	Symptoms identified	Evidence data and facts
• 1.4. Limited understanding of the importance of water resources among stakeholders.	• Limited data for Integrated Water Resources Management and Development. • Limited budget over the years. • Lack of training and awareness campaigns for political leaders and decision-makers at the national level.	• Analytical findings suggest that the low level of understanding of the stakeholders on water resources management is yet another hurdle attributed to the insufficient allocation of funds. A lack of specific indicators for water resources management accentuates this problem. National and or global indicators for water development focus on water supply alone, paying virtually no attention to water resources management.
• 1.5. Climate change impacts.	• Rivers, wetlands, and catchment areas are drying up. • Water stress level increasing. • Conflicts on water supply are increasing.	• Some perennial rivers have changed to seasonal rivers, and some wetlands have dried up. Water is under pressure because of increasing climate change and variability, degradation due to pollution, over-abstraction, and encroachment of water catchments. The scarcity and vulnerability negatively impact important watershed and recharge areas and wetlands (NCCRS, 2021).

Figure 8: An aerial view of the Tulo Kongwa Irrigation system. The system is unlined, a sign of inefficiency.

3.3.2. Root Cause Analysis of Bottleneck Two: Inefficient irrigation water uses and practices: the case of Ruvu Sub-Basin

Agriculture is the world's largest single user of freshwater resources, accounting for about 70% of all withdrawals. Tanzania's area under irrigated agriculture is currently 727,280.6 Ha in all nine river and lake basins. However, population growth, economic growth, and environmental damage have all led to a rapid rise in water needs, resulting in high pressure on water resources and tensions in water and related sectors. The Wami/ Ruvu basin was identified as one of the most water-stressed basins in Tanzania, with competing demands between water supply and irrigation (Ministry of Water, 2020, pg 32). NMSF stakeholders thought it wise to use this basin as a case study with the expectation that findings from one of the most water-stressed sub - basins in Tanzania, can be applied to the country's other water basins.

Population growth, economic growth, and environmental damage have all led to a rapid rise in water needs. On the other hand, the water supply sources either remain the same or are decreasing due to an increase in the environmental degradation and pollution of the water sources, which results in accessing water, especially during the low flows (i.e., dry season), to fall short in many places. Imbalances of water between supply and demand cause high pressure on water resources, leading to tensions and conflicts among water sectors and excessive environmental impacts (URT 2019). Despite grappling with water scarcity issues, the government is committed to expanding the nation's irrigation coverage from 727,280.6 hectares in the fiscal year 2021–2022 to 1,200,000 hectares by 2025. This decision is informed by Tanzania's unique situation, where the challenge is more of economic water scarcity rather than physical. The country possesses a substantial water reserve, averaging 2,330 cubic meters per person per year, surpassing the global Falkenmark Water Stress Indicator threshold of 1,700 cubic meters per person per year.

Eight root causes were developed to address the second bottleneck based on analytical work and evidence collated by the task force team. Table 5 summarises the root causes linked to the hypothesised symptoms and evidence researched reported.

Table 5: Root Cause Analysis of Bottleneck Two

Root Cause	Symptoms identified	Evidence data and facts
2.1. Climatic changes in rainfall patterns, higher temperatures, and more frequent droughts lead to reduced water availability,	• Farming communities face financial challenges, food insecurity, and increased migration as people seek better opportunities in other regions. • Water availability for irrigation and other agricultural needs was significantly reduced.	Despite the rich water resources, which are influenced by high rainfall intensity estimated between 800 to 2000 mm (Ngondo et al., 2022), the Upper Ruvu catchment is yet threatened by climate change and variability, resulting in unrealizable rainfall patterns, posing greater effects to social – economic development including irrigation.

Root Cause	Symptoms identified	Evidence data and facts
affecting agricultural productivity.	• Reduced crop yields and harvest failures. • Proliferation of pests and diseases that affect crops and livestock.	
2.2. Inadequate enforcement of laws in water resources management.	• Illegal abstraction of water from sources. • Water users extract more than permitted or allocated, leading to over-pumping groundwater or excessive withdrawals from surface water sources. • Discharge of pollutants into water bodies. This includes industrial effluents, agricultural runoff with pesticides and fertilizers, and untreated sewage, causing contamination and degradation of water quality. • Illegal diversions of water from rivers, streams, or irrigation canals. Unauthorized water diversions can harm downstream users and ecosystems. • Unauthorized draining or filling of wetlands, resulting in habitat loss and increased flood risk.	It was noted that the scheme leadership were aware and informed about the need to clean, and in fact, their existing by-laws have a provision for cleaning and maintenance of the scheme by all user group. Unfortunately, the enforcement seems minimal due to, among others, a limited strong moral compass, where decisions align with the values, principles, and set regulations.
2.3. Poor agricultural practices and improper farming techniques lead to wasteful water usage.	• Standing water or puddles. • No provision for return flow. • Soil compaction. • Uneven crop growth.	The irrigation inefficiency, which affects water use efficiency, was found to be low, with literature indicating that furrow irrigation has a low water use efficiency of 5 to 10 Kg/m3. The team witnessed several poorly designed and operated irrigation infrastructure that are mainly open earthen ditches, with filled sediments and vegetation, which then affect the thorough distribution and increases the risk of puddles, leading to increased evaporation and water loss.

Root Cause	Symptoms identified	Evidence data and facts
2.4. Population and rapid urbanization suffocate water sources, leading to the non-availability of water for agricultural activities.	• Water bodies and aquatic ecosystems can suffer from habitat degradation and reduced biodiversity due to pollution, altered flow patterns, and habitat destruction. • Increased disputes among water users lead to conflicts and tension between agricultural, industrial, and domestic water users. • Unequal distribution of water resources, favouring powerful or politically connected stakeholders while neglecting the needs of marginalized or vulnerable communities.	According to the JICA study, by the year 2011, the basin had 25,000 Ha under irrigation that used at least 5.46 billion m3/year of water, which is projected to expand to 58,000 Ha by the year 2035, causing the water demand to rise to 12.68 billion m3/year.
2.5. Lack of awareness among farmers about the importance of water conservation and sustainable practices leads to wasteful water usage.	• Poor operational and maintenance of irrigation schemes. • Over-extraction of groundwater or excessive use of surface water for irrigation. This can deplete water sources and exacerbate water scarcity. • Lack of rainwater harvesting and techniques.	Many small-scale farmers in the Upper Ruvu catchment heavily rely on the Ruvu and Mvuha rivers as a water source for irrigation. The dominating farming system in the areas is entirely irrigated agriculture with traditional irrigation systems, including flood irrigation and unlined canals, with little or no control over the water supply (Team Field Visits).
2.6. Inadequate and outdated irrigation infrastructure leading to inefficient water abstraction and usage.	• Lack of sluice gates. • There is no provision for returning water to the main source.	Most traditional schemes are characterized by poor infrastructure, poor water management and low yields (MoWI, 2009). Water use efficiency estimates range from less than 15% to 30% (World Bank, 2004).
2.7. Inadequate technical capacity among Water User Groups and extension services in water use and management.	• Traditional agricultural irrigation practices. • Unlined distribution canals.	The Upper Ruvu catchment, particularly along the Mvuha/Ruvu river, has two irrigation schemes: (i) the Mbalangwe irrigation scheme and (ii) the Tulo Kongwa irrigation scheme. These schemes are mainly for paddy farming but differ in terms of infrastructures as well as capacity of water supply and irrigable area (Team Field Visits).

Root Cause	Symptoms identified	Evidence data and facts
2.8. Inadequate monitoring of water resources and use.	• Illegal abstraction of water from main sources.	Irrigation associations are solely responsible for managing and maintaining irrigation schemes at the local level. The National Irrigation Act of 2013 requires the National Irrigation Commission to work with local government authorities to establish irrigators' associations, which are responsible for creating awareness about water conservation, maintaining irrigation schemes, and ensuring efficient and cost-effective water use to maximize crop production. These irrigators' associations are also required to develop plans to operate and maintain irrigation schemes at the end of every cropping season. However, the implementation of these plans is insufficiently carried out.

3.3.3. Root Cause Analysis of Bottleneck Three: Overlapping legal and regulatory mandates impacting inter-sectoral coordination

Sustaining water resources has been the focus globally, and this has been reflected in various country initiatives and, more so, bearing in mind the need for water security and to keep track of SDG 2030. The efforts are well streamlined from top-level government officials down to the community level through overhauling and revamping existing legal and institutional frameworks/structures. Despite the developments of the world's classic policy and legal framework and its established institutional settings in line with the IWRM framework, feedback from the practitioners has pointed out challenges in its implementation. The sub-sector is inadequately resourced, leading to poor performance, which includes but is not limited to challenges in coordination implementing IWRM plans and fragmented participation of stakeholders, leading to challenges in legal compliance. Competing demands exacerbate these challenges because of population growth, climate change, and the demand to sustain life and economic development. Table 6 summarises root cause analysis on bottleneck three.

Table 6: Root Cause Analysis of Bottleneck Three

Root Cause	Symptoms identified	Evidence data and facts
3.1. Fragmented implementation of institutional Framework for Water Resources Management.	• Different agencies and stakeholders involved in water management work independently without proper coordination. • Absence of comprehensive and integrated water resource planning.	Affected communities at Msimbazi River in Dar es Salaam have reported pollution to responsible authorities at the National Environment Management Council (NEMC),

Root Cause	Symptoms identified	Evidence data and facts
	• Inconsistent management practices can contribute to the overuse and depletion of water resources, leading to water scarcity in certain areas and reduced water quality in others. • The lack of standardized data collection and monitoring systems makes it challenging to assess water availability and usage accurately. • Inability to adapt water management practices to the impacts of climate change, such as changes in precipitation patterns and increased frequency of extreme weather events. • Neglect involving all relevant stakeholders, including local communities, NGOs, and industries, which can result in overlooking important perspectives and expertise.	Ilala Municipal Council and the Wami Ruvu Basin Water Office on several occasions since 2005. A formal report was submitted to the Directorate of Water Resources, the Basin Water Board and NEMC, and a presentation in the presence of the Minster of Water at the Joint Water Sector Review 2014 resulted in a public commitment to address the problem. Despite these reports, pollution of the Msimbazi continues. The Wildlife Act and the EMA establish wetland reserves and wetland areas for conservation and protection. While defining the Wetland, the two legislations include water sources; the actions which may be allowed by these legislations may sometimes be prohibited by the WRMA, 2009 thus becoming both contradictory and confusing for compliance purposes.
3.2. Overlapping Sectoral Mandates and Integrity of Practitioners.	• Conflicting mandates and objectives lead to inconsistent policies and regulations for water use and management. • Duplication of efforts and resources, wasting time and money that could have been better utilized elsewhere. • Lack of sharing of essential information and expertise. • Biased resource allocation, where certain sectors receive preferential treatment, leaving others with inadequate access to water resources. • Slow down or halt the development of crucial water infrastructure projects due to disputes over jurisdiction and responsibilities. • Open the door to corruption, favouritism, and unethical practices in water resources management,	In areas such as Mzakwe (Makutupora Groundwater Controlled Area), which is already gazetted and compensation paid out, you still get instances of new Certificate of Occupancy being issued within the reserved areas. One ongoing court case in Mzakwe, extracted from the Wami/Ruvu Basin. Though Basin Water Boards issue the licensing, they also monitor compliance. NEMC also has a monitoring function, including penalizing offenders; monitoring and enforcement are not effectively coordinated. The Forest Act also allows collecting levies from water users under their jurisdiction to

Root Cause	Symptoms identified	Evidence data and facts
	leading to the misallocation of resources and potential environmental harm. • It is challenging to hold specific parties accountable for their actions or decisions.	protect natural forests. To the water user who pays the Water User fee to BWB, this is confusing when asked to pay another levy for the same purpose to the Forestry Authorities. Implementing the 60-meter buffer zone (from rivers, lakes, or reservoir banks) differs from one authority to the other.
3.3. Limited Financial and Human Resources.	• Delays or the inability to invest in essential water infrastructure projects, such as dams, reservoirs, water treatment plants, and irrigation systems. • Inability to implement proper water conservation and management practices, leading to water scarcity and a decline in water quality. • Wasteful and inefficient water consumption practices in various sectors. • Impact the ability to gather and analyze data related to water resources, making it challenging to make informed decisions. • Difficult to implement strategies to adapt to climate change impacts on water availability and distribution. • Lack of trained personnel with the expertise to manage and implement effective water management strategies. • Inadequate investments in research and innovation for more sustainable water management practices. • It is challenging to collaborate across various sectors and agencies. • Inadequate access to clean and safe water for marginalized communities exacerbates social inequalities. • Difficulties in maintaining and upgrading existing water infrastructure led to decreased efficiency and effectiveness.	Funds from the proposed WSDP II allocations are skewed by December 2021; the water resources management component received only 7% of the proposed allocation. Discharges from industries and DAWASCO cause pollution because of a lack of investment in treatment and regulatory oversight.

CHAPTER FOUR: ACTION PLANS

4.1. INTRODUCTION

This Chapter covers the action plans of the response strategy document as solutions for the water resources management of three bottlenecks identified in Tanzania. Creating action plans for addressing bottlenecks in climate-resilient investment in water resources requires a comprehensive approach involving multiple stakeholders and a focus on overcoming specific challenges. Addressing bottlenecks in climate-resilient investment in water resources requires a well-thought-out action plan that involves various stakeholders and focuses on specific strategies. Therefore, of the work done on situational analysis of water resources management and presented in Chapter Two (Status of Water Resources Management in Tanzania) and Chapter Three (Root Cause Analysis), a structured approach was adopted to develop solutions to the three bottlenecks. The solutions were developed as an action plan for each bottleneck. The components of the action plans are discussed in the sub-chapter below.

4.2. SUMMARY OF ACTION PLANS

An action plan is a detailed, step-by-step outline of specific tasks, activities, and measures to achieve a particular goal or objective. It serves as a roadmap that guides individuals, teams, or organizations through implementing a project or strategy effectively and efficiently. An action plan is a detailed plan outlining actions needed to reach one or more goals. Alternatively, it can be defined as a "sequence of steps that must be taken, or activities that must be performed well, for a strategy to succeed.

The solution for this response strategy was developed through three critical components of a strategic planning framework: sub-objectives, outputs, and activities. This framework links the activities to their respective bottlenecks, root causes, sub-objectives, and outputs. The broad solutions were developed as sub-objectives, with precise, measurable results as outputs. The activities were designed as actionable tasks that can be implemented in a specified period.

An activity is a specific action, task, or event that someone engages in or performs. It can be a physical or mental action, done individually or in a group. An activity can be structured or unstructured and have a specific purpose or goal; in the context of this response, the strategy is to eliminate, reduce or correct the three identified bottlenecks. Table 7 summarises the response strategy framework with several solutions linked to each bottleneck and root cause.

Table 7: Summary of Response Strategy Framework

Bottleneck	Root Causes	Sub-objectives	Outputs	Activities
Bottleneck 1	5	10	12	16
Bottleneck 2	8	15	18	56
Bottleneck 3	3	5	6	9
Total	16	30	36	81

4.3. ACTION PLAN TO BOTTLENECK ONE

The solutions as an action plan for bottleneck one "**inadequate funds to implement climate-resilient water resources investment**" are provided in Table 8. The solutions focus on addressing the identified challenge of inadequate funds for investment in climate-smart water resources in the country.

Table 8: Action Plan for Bottleneck One

Root Cause/Sub-objective	Outputs	Activities	Lead	Contributor	TANWIP Focus Area
1.1. Limited financial resources					
1.11. Competence and capability of WRM Division and BWB to mobilize funds established.	1.111. Assessment reports available	1.111. To assess the Directorate of Water Resources capacity in undertaking its mandates	MoW	MoW Partners and Sector Ministries	3.2
		1.112. To assess Basin Water Boards' capacity to accomplish their mandate (collecting and mobilizing funds).	WRD	MoW	
1.12. Resources to implement capacity-building plans determined.	1.121. Resources need assessment reports available.	1.121. To undertake resources needs assessment to implement Basins' Capacity Building Plans.	WRD	MoW	3.2
		1.122. To address the observed capacity gaps of DWR and BWBs	MoW		

1.13. Database for water resources management key stakeholders developed.	1.131. A Water Resources Management stakeholders mapping report is available.	1.131. To map out key water resources management stakeholders to enhance the planning and implementation of WSDP III.	WRD	MoW	3.2
1.2. Inadequate prioritization of water resources management					
1.21. Understanding the economic value of water resources to the Government and other stakeholders enhanced.	1.211. Awareness creation reports are available/prepared.	1.211. To create awareness of the economic importance of water to the Government and other stakeholders, ministries, Parliament (budget and water committees), and BWBs	WRD	MoW	2.1
	1.212. Study report/s on the economic value of water in Basins available	1.212. To scale up the study of the economic value of water to all Basins by analyzing all potential economic activities.	WRD	MoW	
1.22. Trends and patterns of water expenditures in the public sector established.	1.221. Study report/s on trends and patterns of water expenditures in the public sector are available.	1.221.To conduct a public expenditure review on the water sector every three years.	MoW	MoF	3.3
1.3. Limited technical capacity					
1.31 Skills in accessing funds (local and international) for climate-resilient water resource investment enhanced.	1.311. Increased submissions to local and international fund sources	1.311. To create awareness among water resources management staff (MoW - WR Division and BWBs) on availability and how to access funds: training on funds mobilization.	WRD	MoW	3.3 & 4.1

1.32. Technical capacity for programming, planning and implementation of water resources projects enhanced	1.321. Training reports and Improved score in the AIP Scorecard indicator 1.17	1.321. To train WRM staff (MoW - WR Division and BWBs) on programming, planning and implementing water resources conservation and protection projects.	WRD	MoW	3.2
	1.322. Assessment reports.	1.322. To assess the implementation status of IWRMDs plans among stakeholders (e.g., Fisheries and Irrigation sectors, etc.).	WRD	MoW	2.1
1.4. Limited understanding of the importance of water resources among stakeholders					
1.41. Wider stakeholders understand the importance of water resources.	1.411. Awareness campaign reports.	1.411. To devise awareness campaigns to the public and corporations on the importance of water resources (Engage marketing and communication firms).	WRD	MoW	2.1
1.5. Climate change impacts					
1.51. Resources for Community adaptation to climate change mobilized	1.511. Several projects developed.	1.511. To create alternative livelihood projects to lessen the adverse effects of hydrological droughts (In collaboration with stakeholders)	WRD	MoW	1.4
		1.512. To develop projects for ecosystem restoration	WRD	MoW	4.2
		1.513. To develop projects for water storage (flood control infrastructures).	WRD	MoW	4.1

1.52. Information on Weather variation is timely disseminated to key stakeholders.	1.521. Early warning systems are in place.	1.521. To install early warning systems (Floods and droughts).	WRD	MoW	4.1

4.4. ACTION PLAN TO BOTTLENECK TWO

The solution as an action plan for bottleneck two is provided in Table 9. The bottleneck was formulated as "**inefficient utilization of water resources in agricultural activities a case study of Ruvu Basin**". The solutions focus on addressing the identified challenge of inefficient utilization of water resources in agricultural activities with emphasis on water basins using the case study of Ruvu Basin.

Table 9: Action Plan for Bottleneck Two

Root Cause /Sub-objective	Outputs	Activities	Lead	Contributor	TANWIP Focus Area
2.1. Climatic changes in rainfall patterns, higher temperatures, and more frequent droughts lead to reduced water availability, affecting agricultural productivity.					
2.11. Adaptation Technology for rainwater harvesting and increased water storage capacity in the country enhanced.	2.111. Water storage capacity increased.	2.111. Carry out a baseline survey on existing water storage capacity and condition.	MoW		2.1
		2.112. Identify suitable sites for dam construction	MoW		
		2.113. Carry out feasibility studies and detailed designs for dams' construction.	MoW		
		2.114. Carry out ESIA for the selected potential sites for dam construction.	MoW		
		2.115. Rehabilitate malfunctioning existing storage infrastructures.	MoW		
		2.116. Construct new water storage dams.	MoW		

Root Cause /Sub-objective	Outputs	Activities	Lead	Contributor	TANWIP Focus Area
2.12. Requirement for return flows enforced.	2.121. Irrigated water returned to the source (rivers, dams, lakes)	2.121. Raise awareness on the importance of return flows to the water sources.	MoW	NIRC	Currently missing
		2.122. Identify irrigation schemes with or without return flow infrastructure.	MoW	NIRC	
		2.123. Monitor compliance and penalize non-compliance of return flows to the water sources.	MoW	NIRC	
		2.145. Install return flow infrastructures to identified irrigation schemes.	MoW	NIRC	
2.13. Rehabilitation and restoration of the degraded vegetation cover in water catchment areas.	2.131. Degraded vegetation cover in water catchment areas rehabilitated and restored.	2.131. Identify degraded water catchment areas.	MoW		4.2
		2.132. Raising of recommended tree seedlings.	MoW	TFS	
		2.133. Review/develop tree planting in degraded water sources guidelines.	MoW	TFS	
		2.134. Enrichment tree planting in degraded areas.	MoW	TFS	
		2.135. Monitoring of planted trees in water source catchment protected area.	MoW	TFS	
2.14. Conjunctive	2.141. Groundwater	2.141. Groundwater development in	MoW	MoA	2.1

Root Cause /Sub-objective	Outputs	Activities	Lead	Contributor	TANWIP Focus Area
use of groundwater promoted.	use in agriculture activities promoted	identified potential zones			
		2.142. Create awareness of the use of groundwater	MoW	MoA	
2.2. Inadequate enforcement in water resources management.					
2.21. The enforcement capacity of Basin Water Boards strengthened.	2.211. The enforcement capacity of Basin Water Boards strengthened.	2.211.Purchase of enforcement gears.	MoW		Currently missing
		2.212. Identify violators and raise awareness about existing laws and regulations.	MoW		
	2.212. Water Laws and Regulations enforced	2.213. Strengthen and extend the enforcement unit at the Ward Level.	MoW		
		2.214. Purchase tools and equipment for enhancement of Law enforcement.	MoW		
2.22. Formation and strengthening of the Water Users Association.	2.221. Water Users Associations formulated and strengthened.	2.221. Establish new and strengthen existing Water User Associations.	RUWASA	MoW	2.1
	2.231. Support from High-level decision makers attained in water resources management.	2.231. Raise awareness of the potential social, economic, and political consequences of insufficient water resources.	MoW		
		2.232. Facilitate field trips for learning best practices in Water Resources Management.	MoW	MoW	

Root Cause /Sub-objective	Outputs	Activities	Lead	Contributor	TANWIP Focus Area
2.3. Poor agricultural practices and improper farming techniques lead to wasteful water usage.					
2.31. Best agricultural practices and farming techniques were promoted and adopted.	2.311. Best agricultural practices and farming techniques adopted.	2.311. Identify the best agricultural technologies available from peer farmers.	MoW		2.1
		2.312. Establish the applicability of each identified technology and its limitations.	MoW	MoA	
2.4. Population and rapid urbanization suffocate water sources, leading to the non-availability of water for agricultural activities.					
2.41. Holistic application of land use plan promoted.	2.411. Integrated Land Use Management and Village Land Use Management Plans are developed and implemented in targeted areas, ensuring optimal land allocation to generate critical environmental and development benefits.	2.411. Identify and map degraded land along the Wami/Ruvu Basin.	MoW	MLHSD	2.1
		2.412. Carry out capacity building in land use planning.	MoW	MLHSD	
		2.413. Review and update existing land use plans in targeted districts and villages.	MoW	MLHSD	
		2.414. Develop Integrated Land Use Management Plans (ILUMPS) in identified areas.	MoW	MLHSD	
		2.415. Capacity needs assessment for planning, monitoring and ongoing implementation of District and Village Land Use Management Plans.	MoW	MLHSD	
		2.416. Facilitate gazettement of	MoW	MLHSD	

Root Cause /Sub-objective	Outputs	Activities	Lead	Contributor	TANWIP Focus Area
		developed land use plans.			
2.5. Lack of awareness among farmers about the importance of water conservation and sustainable practices leads to wasteful water usage.					
2.51. Awareness among farmers about the importance of water conservation and sustainable water use was raised.	2.511. Awareness among farmers about the importance of water conservation and sustainable water use improved. 2.512. Quantity and quality of water improved.	2.511. Develop conservation material for primary schools.	MoW	MOEST	
		2.512. Train environmental school clubs on water source conservation.	MoW	MOEST	
		2.513. Conduct awareness meetings for farmers and livestock keepers on water source conservation.	MoW		
2.6. Inadequate and outdated irrigation infrastructure leading to inefficient water abstraction and usage.					
2.61. Adequate irrigation infrastructure for effective water use is provided.	2.611. Irrigation infrastructure for effective water use was constructed.	2.611. Introduce appropriate and efficient irrigation infrastructure for target communities.	NIRC	MoW	2.2
		2.612. Design and construct adequate irrigation infrastructure that minimizes water demands and maximizes productivity in affordable investment and operation costs.	NIRC	MoW	
		2.613. Maintenance and management of irrigation schemes. Use	NIRC	MoW	

Root Cause /Sub-objective	Outputs	Activities	Lead	Contributor	TANWIP Focus Area
		professional personnel for operating and maintaining the irrigation infrastructure.			
	2.612. Outdated irrigation infrastructure for effective water use rehabilitated.	2.614. Assess the existing irrigation infrastructure to identify the most ineffective components of the designs.	NIRC	MoW	
		2.615. Repair and upgrade the identified components such as canals, pumps, gates, and pipelines to meet optimal functionality, reducing water losses.	NIRC	MoW	
		2.616. Install modern water measurement and control systems to improve monitoring and regulation of water usage to ensure efficient distribution to farms and minimise wastage.	WRD	MoW	
		2.617. Conduct training programs for local farmers, technicians, and irrigation system operators on water conservation techniques, proper irrigation practices, and maintenance procedures to maximize the effectiveness of the rehabilitated infrastructure.	MoW	NIRC	
		2.618 Incentivize the use and integration of modern irrigation technologies like drip	NIRC	MoW	

Root Cause /Sub-objective	Outputs	Activities	Lead	Contributor	TANWIP Focus Area
		irrigation, sprinkler systems, and precision agriculture techniques			
2.62. Best irrigation technology adopted.	2.621. Modern and effective irrigation technology has been adapted and used.	2.621. Map potential irrigated areas in the Wami/Ruvu Basin	MoW	NIRC	
		2.622. Assess the status (condition) of the irrigation infrastructure from the intake to the fields.	MoW	NIRC	
		2.623. Develop Guidelines for water resource abstraction that will be used to Quantify the amount of water being abstracted from the weir/source and reaching the fields.	MoW		
		2.624. Capacity building of irrigators associations, i.e., training, necessary equipment	MoW	NIRC	
2.7. Inadequate technical capacity among Water User Groups and extension services in water use and management.					
2.71. Technical capacity among Water User Groups enhanced.	2.711. Technical capacity among Water User Groups in water use and management enhanced.	2.711. Conduct training needs assessment for Water User Groups.	RUWASA	MoW	Currently missing
		2.712. Prepare training and Capacity development program.	RUWASA	MoW	
		2.713. Implement training and capacity development programs.	MoW	RUWASA	
		2.714. Strengthen/Enhance	MoW	UTUMISHI	

Root Cause /Sub-objective	Outputs	Activities	Lead	Contributor	TANWIP Focus Area
		capacity building for the Coordination Unit.			
		2.715. Strengthen/Enhance the platform for knowledge and innovation-sharing practices.	MoW		
2.72. There exists an adequate number of trained extension officers in water use and management.	2.721. The number of trained extension officers in water management increased.	2.721. Conduct training needs assessment of Extension Officers in Water Resources Management.	MoW	MoA	
		2.722. Prepare and conduct training programs.	MoW	MoA	
2.8. Inadequate monitoring of water resources and use.					
2.81. Use of appropriate technology for minizing water losses and monitoring of water abstraction and distribution promoted.	2.811. Technology for monitoring of water abstraction and distribution facilitated and applied.	2.811. Construct modern irrigation water reservoirs with minimum water losses and that regulate water distribution on irrigation schemes.	MoW	NIRC	2.1
		2.812. Install and monitor water abstraction and distribution technologies by energy producers, industries, and other users	MoW	Sector Ministries	

4.5. ACTION PLAN TO BOTTLENECK THREE

The solution as an action plan for bottleneck two is provided in Table 10. Bottleneck three was formulated as "**overlapping legal and regulatory mandates impacting inter-sectoral coordination in water resources management**". The solutions focus on addressing the identified challenge of the regulatory framework at a national level. The solution to this bottleneck target is to set a conducive coordination mechanism to ensure that multi-

agencies involved in water resources management function coherently and consistently to optimise the development and protection using available resources.

Table 10: Action Plan for Bottleneck Three

Root Cause / Sub-objective	Outputs	Activities	Lead	Contributor	TANWIP Focus Area
3.1. Fragmented implementation of institutional Framework for Water Resources Management					
3.11. Legal frameworks review process initiated.	3.111. Approved consent	3.111. To consult Key stakeholders	MoW	Sector Ministries	In Annex for 3.1 (institutional strengthening)
	3.112.Gaps identified and addressed	3.112. Conduct policy, legal and institutional framework review	MoW	Attorney General	
		3.113. Operationalize the revised legal frameworks	MoW	Sector Ministries	
3.12. Instrument for guiding effective and practical sectoral coordination and mainstreaming IWRM established	3.121.Mechanism for effective and practical sectoral coordination and mainstreaming IWRM established	3.121. Operationalize new instruments, including the IWRM Checklist for different sectors	MoW	Sector Ministries	
3.2. Overlapping Sectoral Mandates and Integrity of Practitioners					
3.21. The existing Code of Ethics and Conduct for the Public Service in Tanzania reviewed and revised.	3.211. Recommendations on areas of revision to the Code of Ethics and Conduct	3.211. To assess the adequacy of the Code of Ethics and Conduct under the current context 3.212 Revise the Code of Ethics and Conduct accordingly	MoW	POPSMGG	3.1
3.22. Awareness of the creation of Roles and Responsibilities established	3.221. A financed Awareness program	3.221. Develop and advocate for the implementation of an awareness Program to the	MoW	POPSMGG	

Root Cause / Sub-objective	Outputs	Activities	Lead	Contributor	TANWIP Focus Area
		Code of Ethics and Conduct			
3.3. Limited Financial and Human Resources					
3.31. Other sector's resources for improved IWRM governance leveraged	3.311. Assigning minimum contribution from other sectors (agriculture, forestry, tourism, mining, energy,) per basin	3.311. establish minimum contribution to basin boards from other sectors	MoW	PO-PC	3.1
		3.312. To engage relevant stakeholders	MoW	MoF	
		3.313. Develop checklist IWRM planning and budgeting	MoW	POPC and POPSMGG	
3.32 Enhance delivery of National Water Fund resources for WRM	3.321 Review and streamline Basin Boards access to NWF	3.321 Review NWF application requirements for Basin Boards	MoW		
	3.322 Strengthen coordination of utilities investments on WRM	3.322 Review process for utilities investment in WRM	MoW		

CHAPTER FIVE: COSTING OF ACTIVITIES

5.1. COSTING APPROACH

The Action Plans component of the Response Strategy, structured as a series of activities, provides the underlying information to determine the resources required to implement the strategy. Determining the resources is called costing and is the first component of a finance plan. The first step in developing a financial plan is clearly outlining the costs that must be paid. This is called 'costing' in economics. It is essential to capture both financial and in-kind costs. Financial costs need to be paid for, often in addition to current budgets – as a result, they need to be explicit and well-detailed. In-kind costs are often overlooked, although some funding proposals require the specification of in-kind contributions. Therefore, efforts should be made to try and quantify the time needed by different personnel to implement some of the activities identified. These are important to include because, without these inputs, the activity may not be completed successfully. Costs need to be estimated financially when an in-kind contribution, or if the monetary values are unknown, is in physical units.

5.1.1. Adopted approach

The technique adopted for developing resources required for a response strategy is Activity-Based Budgeting (ABB). Activity-based budgeting is a powerful tool to optimise spending and achieve targets of an intended institution or system broadly. ABB as a budgeting tool is familiar in Tanzania; it has been used since adopting the medium-term expenditure framework (MTEF) in 2003/04. All public sector institutions in Tanzania are using ABB as a tool within the MTEF to prepare their budget for a cycle of three years.

5.1.2. Costing assumptions

The main cost assumptions for the activities are covered under two types of resources required to implement the response strategy: financial and in-kind. The basic assumptions are described below:

- **Financial resources**: Financial resources are those monetary values that should be paid in cash to implement the activities of the response strategy. The assumptions include all monetary values were estimated using Tanzanian shilling (TZS), resources for each activity were broken down into quantity of inputs required, unit cost, estimated cost, timing of expenditure, and frequency of payment. The timing of financial cost has been established in three categories: short-term (less than one year, medium-term (between one and three years), and long-term (more than three years). As a strategy, long-term timing has been set at a maximum of five years. In

terms of establishing payment frequency, an array of time was included from once-off to annual.

- **In-kind resources**: In-kind resources are non-monetary inputs used during the implementation of activities for which no cash is paid. This means the use of resources of the institutions that implement the response strategy is an in-kind contribution to the response strategy. An in-kind contribution is in the form of time of personnel spent on the activities, materials consumed not paid in cash, and assets utilised and not paid in cash, for example, vehicles, printers, computer systems, office spaces and others. All these in-kind contributions become part of the total resources required to implement the response strategy. However, establishing the monetary values of these in-kind contributions becomes a challenge in costing activities. To establish a reasonable cost estimate, an assumption was made to charge between 1% and 5% of financial cost as in-kind contributions to specific identified activities.

5.2. SUMMARY OF COSTING

The resources required to implement the developed response strategy are estimated to be TZS 537.1 billion (equivalent to USD 214.8 million). This estimated cost includes in-kind contribution of TZS 7.97 billion (USD 3.1 million) and financial cost of TZS 529.1 billion (USD 211.6 million) for the three bottlenecks addressed in this response strategy document. The total resource requirement spans five years and depends on implementing individual activities with different timing.

The resources required for response strategy are equivalent to 3.3% of resources estimated to implement WSDP III, and equivalent to 10.2% of resources required to implement water resources management within WSDP III. A summary of resources required (cost estimate) for each activity in this response strategy is provided in Appendix B (Financial Plan) at the end of this document.

5.3. COSTING BY BOTTLENECKS

Table 11 summarises the resource requirements by bottlenecks addressed in this response strategy document. The second bottleneck, “inefficient utilisation of water resources in agricultural activities a case of Ruvu Basin,” has a resource requirement estimated to cost TZS 462.9 billion, equivalent to 86.2% of the total cost of the response strategy. The first bottleneck, “inadequate funds to implement climate-resilient water resources investment,” has a resource requirement estimated to cost TZS 72.0 billion, equivalent to 13.4% of the total cost of the response strategy. The third bottleneck, “overlapping legal and regulatory

mandates impacting inter-sectorial coordination," has the least resources requirement estimated to cost TZS 2.0 billion, equivalent to 0.4% of the total cost of the response strategy.

Table 11: Resources required by bottlenecks

Bottleneck	Financial	In-kind	Total	% Total
Bottleneck 1	68,636,500,000	3,431,825,000	72,068,325,000	13.4%
Bottleneck 2	458,525,600,000	4,437,770,000	462,963,370,000	86.2%
Bottleneck 3	1,976,850,000	98,842,500	2,075,692,500	0.4%
Grand Total	529,138,950,000	7,968,437,500	537,107,387,500	100.0%

5.4. COSTING ANALYSIS

Costing analysis provides in-depth information on the resources required to implement the response strategy. The cost analysis is presented under the following major headings:

- Resources by root causes.
- Resources by timing.
- Resource by frequency.

5.4.1. Resources by Root Causes

The estimated cost to address bottleneck one is TZS 72.0 billion over five years. Table 12 summarises the estimated cost of resources requirement for the root causes of bottleneck one. Three out of five bottlenecks have significant resource requirements, namely climate change impact (68.3%), limited financial resources (14.3%), and inadequate prioritization of water resources management (11.8%). The estimated cost indicates that to address bottleneck one, mobilization of adequate financial resources for water resources management is paramount and will build capacity to address challenges brought by climate change.

Table 12: Resources required for root causes of bottleneck one

Root Cause		Cost (TZS)	%
1.1	Limited financial resources	10,339,350,000	14.3%

1.2	Inadequate prioritization of water resources management	8,469,825,000	11.8%
1.3	Limited technical capacity	1,887,900,000	2.6%
1.4	Limited understanding of the importance of water resources	2,178,750,000	3.0%
1.5	Climate change impact	49,192,500,000	68.3%
	Total	72,068,325,000	100.0%

Over five years, the estimated cost to address bottleneck two is TZS 483.0 billion. Table 13 summarises the estimated cost of resources requirement for the root causes of bottleneck two. Two out of eight root causes have significant resource requirements, namely climate change impact (50.8%) and inadequate monitoring of water resources and use (44.3%). The estimated cost indicates that addressing monitoring and enforcement of water resources management will require 46.8% of total resources to address bottleneck two.

Table 13: Resources required for causes of bottleneck two

Root Cause		Cost (TZS)	%
2.1	Climatic changes in rainfall patterns, high temperatures, and more frequent	235,359,114,000	50.8%
2.2	Inadequate enforcement in water resources management	11,389,943,500	2.5%
2.3	Poor agricultural practices and improper farming techniques	278,950,000	0.1%
2.4	Population and rapid urbanization suffocate water resources	1,214,450,000	0.3%
2.5	Lack of awareness among farmers about the importance of water resources	680,900,000	0.1%
2.6	Inadequate and outdated irrigation infrastructure	3,806,142,500	0.8%
2.7	Inadequate technical capacity among Water User Groups and Extension Officers	5,122,565,000	1.1%
2.8	Inadequate monitoring of water resources and use	205,111,305,000	44.3%
	Total	462,963,370,000	100.0%

Over five years, the estimated cost to address bottleneck three is TZS 2.07 billion. Table 14 summarises the estimated cost of resources requirement for the root causes of bottleneck three. The three root causes for bottleneck three resource requirements were estimated at 80.8% for fragmented implementation of the institutional framework, 11.6% for

overlapping sectorial mandates and integrity of practitioners, and 7.6% for limited financial and human resources in water resources management.

Table 14: Resources required for root causes of bottleneck three

Root Cause		Cost (TZS)	%
1.1	Fragmented implementation of the institutional framework for Water Resources Management	1,677,375,000	80.8%
1.2	Overlapping sectorial mandates and integrity of practitioners	241,500,000	11.6%
1.3	Limited Financial and Human Resources in Water Resources Management	156,817,500	7.6%
	Total	2,075,692,500	100.0%

5.4.2. Resources by Timing

The resources estimated to implement the response strategy were classified under three timeframes: short-term (less than one year), medium-term (between one and three years), and long-term (over three years). The strategy's cost estimate shows that the majority (85.4%) are targeted to be implemented over three years up to five years, while 7.7% and 6.8% are for implementation within the short-term and medium-term, respectively. Table 15 shows the summary of the cost estimate by timing of expenditure.

Table 15: Resources required by the timing of cash expenditure

Timing	Cost	%
Long-term (> 3 years)	458,953,125,000	85.4%
Medium-term (1-3 years)	41,575,127,000	7.7%
Short-term (<1 year)	36,579,135,500	6.8%
Grand Total	537,107,387,500	100.0%

5.3.3. Resources by Frequency

Table 16 summarises resources required to implement the response strategy by frequency of cash funding. Frequency refers to how costs are incurred in a period within one year. The activities of the response strategy were categorised based on the frequency of cash disbursement. Significant classifications are bi-annual (75.6%), annual (8.4%), one-off

(5.8%), and quarterly (5.3%). The financial modality in Tanzania is based on funds disbursement quarterly. Hence, implementing this response strategy will follow the same public sector financial processes and frequency in cash disbursement.

Table 16: Resources required by frequency of cash funding

Frequency	EstimateCost	% Total
Annual	45,070,597,000	8.4%
Bi-annual	405,980,105,000	75.6%
Monthly	1,190,000,000	0.2%
One-off	31,133,000,500	5.8%
Periodic	12,962,390,000	2.4%
Quarterly	28,695,750,000	5.3%
Regular	12,075,545,000	2.2%
Grand Total	537,107,387,500	100.0%

CHAPTER SIX: FINANCING OPTIONS

6.1. INTRODUCTION

6.1.1. Identifying Sources

While preparing this Response Strategy, it was essential to identify the full range of finance sources likely to be drawn on in the Action Plans. This involved mapping different water resources sector stakeholders and financiers and their existing contributions to the sector and available government programmes that may be utilised. The purpose is to identify the current main water sector financiers, especially for systems strengthening activities, since the stakeholders have highlighted these as bottlenecks but traditionally attract less funding. The financing options and sources were identified under Tanzania's existing and expected financing framework. The detailed mapping of each source of finance to each activity under the Action Plans is presented in Appendix D of this Response Strategy. The rest of the chapter covers the details of financing options and how they are considered potential in financing this Response Strategy in three short-term, medium-term, and long-term periods.

6.1.2. Financing Framework

Tanzania has a broad and detailed regulatory framework for financing water resources management investment activities as developed in the Response Strategy. The critical documents on regulatory framework categorised under legal acts, policies and plans, and guidelines are provided in Table 17 below. The financing from the Government of Tanzania is through the Medium-Term Expenditure Framework (MTEF), a three-year cycle budget prepared each year. MTEF for the Government of Tanzania is based on strategic plans of the institutions supported by the Sector Development Plans, as guided by the annual budget guidelines. Therefore, an implementing agency for this Response Strategy must include the activities in the yearly MTEF to be funded by the Government.

Table 17: Regulatory Framework Documents

Legal Acts	Policies and Plans	Guidelines
• The Government Loans, Guarantees and Grants Act (1974). • Public Private Partnership Act (R.E 2018). • The Banking and Financial Institutions Act (2006). • Finance Acts.	• National Five-Year Development Plan III (2021). • Financial Sector Development Master Plan (2020-2030). • Alternative Project Financing	• Guideline for Project for Project Plan and Negotiations for Raising Loans, Issuing Guarantees and Receiving Grants (2020). • Guideline for Developing and Financing Income Generating Infrastructure Investment (2021).

	• Water Sector Development Programme III (2023). • Tanzania Water Investment Programme (2023). • National Water Policy (2002).	• Public Investment Management – Operational Manual (2022).

6.2. FINANCING FLOWS

Figure 4 shows the expected financing flows for implementing this Response Strategy. The funds will be mobilised from four primary sources of the Government: Ministry of Finance, Climate Change Fund, National Water Fund, and Development Partners. Climate Change Fund is expected to be mobilised by three accredited institutions, i.e., the Ministry of Finance (MoF), Vice President's Office (VPO), and President's Office Regional Administration and Local Government (PORALG). The funds will be allocated to implementors of the Response Strategy through two main channels, i.e., the Ministry of Finance (MoF) and the National Water Fund (NWF).

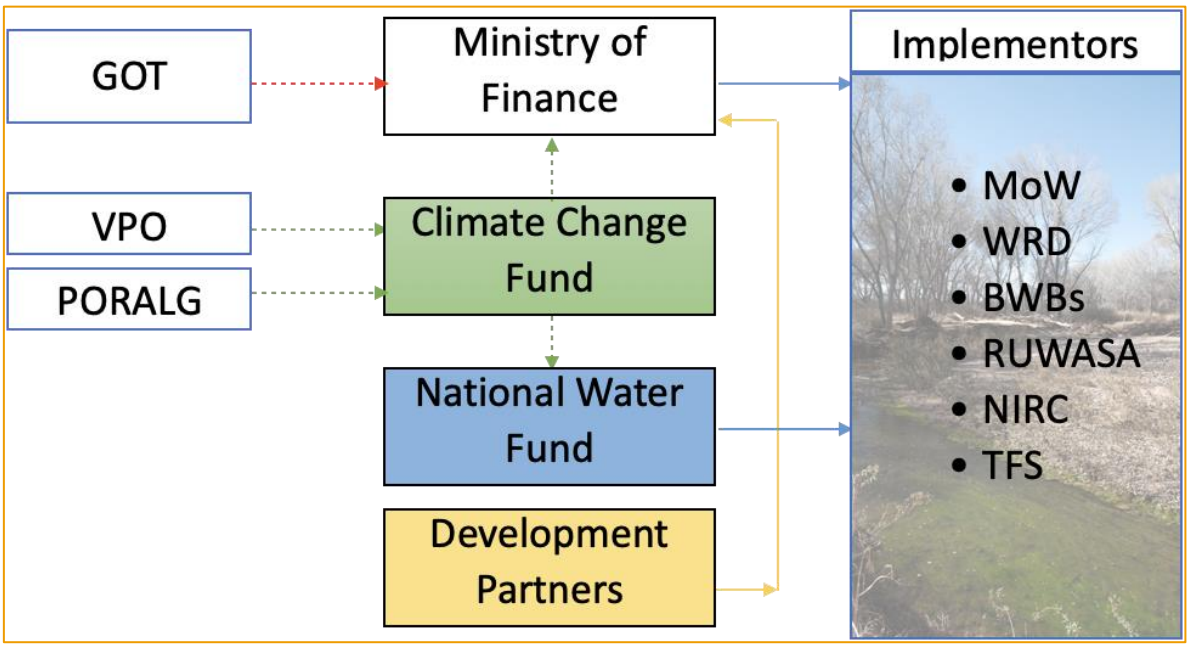


Figure 9: Financing flow for the response strategy

6.3. FINANCING SOURCES

Four primary financing sources were identified to fund the implementation of this Response Strategy from short-term to long-term. Several financing options were explored and determined, and their limitations exclude them from potential Response Strategy sources. For example, funds from Basins Water Boards (BWBs) were excluded due to inadequate funding for their operations in their respective areas. Various studies, including COWI (2019), reported that BWBs have been financially constrained to implement their activities in nine basins in Tanzania. The institutions that could explore alternative financing are the BWBs; however, their inadequate funds collection makes them challenging to consider. The four identified financing sources are:

- Ministry of Finance.
- Climate Change Fund.
- National Water Fund.
- Development Partners.

6.3.1. Ministry of Finance

The Ministry of Finance (MoF) is a government ministry of Tanzania. It manages the overall revenue, expenditure, and financing of the Government of the United Republic of Tanzania (URT). It provides the Government with advice on the broad financial affairs of Tanzania in support of its economic and social objectives. The funds to all other ministries and institutions are channelled from the Ministry of Finance. The Ministry of Finance will allocate resources to implement the Response Strategy through the WSDP III. Also, the Ministry of Finance is one of the first institutions to be accredited to mobilise the Climate Change Fund; hence, activities identified to be funded by this fund will be supported. The MoF will also receive the Climate Change Fund mobilised by two other institutions: the Vice President's Office (VPO) and the President's Office Regional Administration and Local Government (PORALG).

6.3.2. Climate Change Fund

The second source of financing for the Response Strategy will be from the Climate Change Fund (including the Green Fund). The Climate Change Fund is currently presented with a high potential to leverage sources for financing interventions geared towards addressing environmental and climate change challenges. During the implementation of FYDP III, a total of USD 304 million (equivalent to TZS 705.28 billion) will be mobilised. Mobilisation of financial resources from the Climate Change Fund requires skills to prepare responsive project documents that meet the set criteria. The Government is finalising the accreditation process for the Green Climate Fund (VPO, MoF, PORALG). Also, the Ministry of Finance (MoF) is strengthening its External Finance Department for mobilising the Climate Change Fund. The unit responsible for Climate Change finance is also tasked with sensitizing other MDAs and the private sector. Therefore, through the Ministry of Water in collaboration with the Ministry of Finance, significant resources are expected to be tapped from the Climate

Change Fund to implement the action plans in this Response Strategy in the medium-term and long term.

6.3.3. National Water Fund

The third source of funds for the Response Strategy will be from National Water Fund (NWF). NWF is an established agency responsible for mobilising resources, providing investment support for water services, and managing catchment areas serving water supply abstractions. The agency has been selected by the Water Supply and Sanitation Act No. 5 of 2019, which became effective on 01 July 2019. NWF mandates give it a potential financing source for the water resources Action Plans, including these identified activities documented in this Response Strategy.

6.3.4. Development Partners

The fourth source of financing for the Response Strategy will be funds from Development Partners. The Development Partners (donors) support the Government in financing development projects and programmes through various mechanisms, including Bilateral (Paris Club and Non-Paris Club) and Multi-laterals. The long-term financiers among the development partners have supported the implementation of the Water Sector Development Programme II (WSDP II). They are expected to continue supporting the Water Sector Development Programme III (WSDP III). This response strategy that addresses three bottlenecks in climate-resilient water resources investment is a small part of the water resources management within the broad WSDP III. Therefore, some of the activities in the Response Strategy are expected to be financed by the Development Partners.

6.4. FINANCING STRATEGY

The primary financing strategy combines financial resources from the Government of Tanzania and development partners. Two sources from the Government of Tanzania are considered potential to fund the Response Strategy: annual budget allocation and the National Water Fund (NWF) funds. It should be noted that the funds from the Government of Tanzania will also include climate change funds through the Ministry of Finance (MoF), Vice President's Office (VPO) and other ministries, including the President's Office Regional Administration and Local Government (PORALG).

The rest of the finance sources were identified as "OTHER", meaning it was impossible to link specific financiers directly; hence, activities likely to be supported identified a list of potential financiers (including the Government of Tanzania) (see Figure 5). Appendix B (Financial Plan) of this document provides a detailed breakdown of activities as a source of funds.

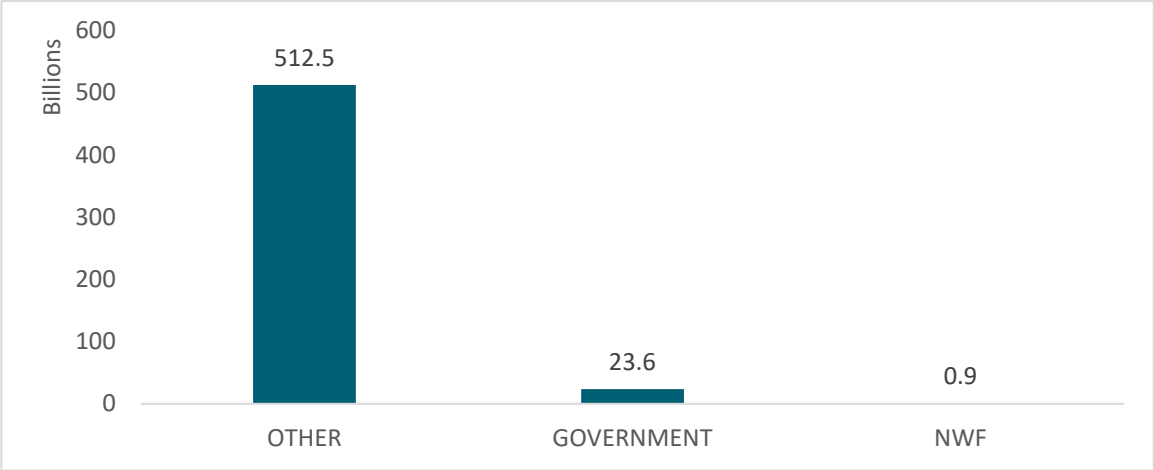


Figure 10: Financing Strategy for the Response Strategy

Figure 11: Aerial Photograph of Tulo Kongwa Irrigation schemes in Morogoro

CHAPTER SEVEN: IMPLEMENTATION ARRANGEMENT

7.1. INTRODUCTION

Chapter seven covers implementation arrangements for the response strategy outlined in previous chapters. This Response Strategy will be implemented using existing government structures of the water sector lead ministries. The implementation arrangement has three components: the approval process, the implementation institutions, and the monitoring and evaluation of the Response Strategy (Figure 6).

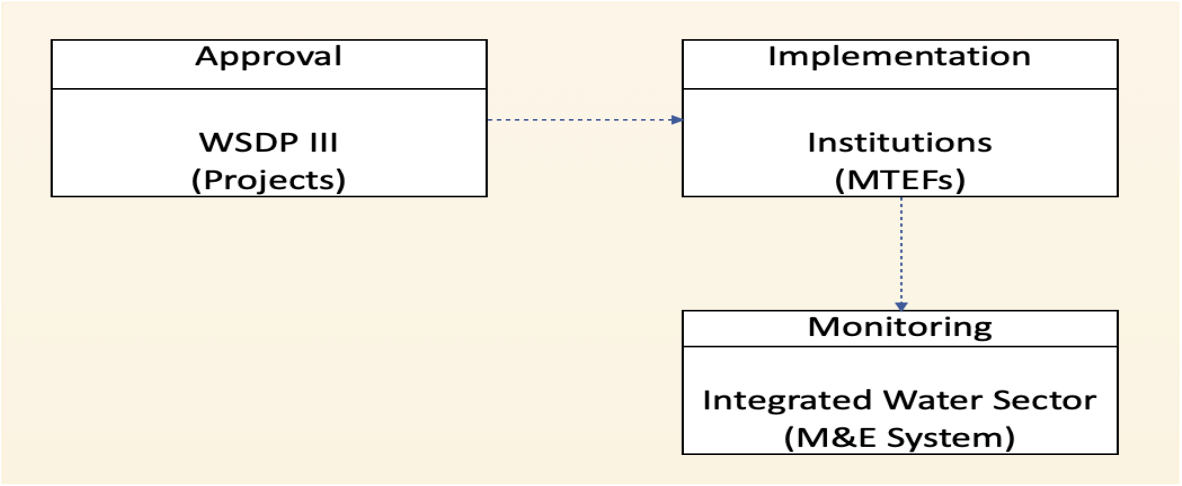


Figure 12: Implementation Components

7.2. APPROVAL PROCESS

This Response Strategy was prepared by the National Multi-Sectoral Forum (NMSF) within the ambit of development support to the water sector, specifically water resources management. The Ministry of Water coordinates the implementation of strategies and activities within the water sector. The NMSF expects that the Response Strategy contribute towards water resources management; it requires approval by the Government through the Ministry of Water to be integrated into the Water Sector Development Programme III (WSDP III) and its related projects. The interventions, strategies, and activities will form part of implementable actions within the ambit of WSDP III. Therefore, the initial implementation action is the approval process by the Government through the Ministry of Water after submission by the NMSF to the National Water Board.

7.3. MAIN PROGRAMME

The National Multi-Sectoral Forum (NMSF) envisaged that this Response Strategy will be implemented within the existing Water Sector Development Programme III (WSDP III). WSDP, operating since 2007, is the most extensive national water programme running in Africa today. It has a twenty-year vision encompasses rural and urban water supply and sanitation, water resources management, and measures to develop sector capacity. WSDP is founded on a sector-wide approach to planning (SWAp), which incorporates structures for joint government-development partner dialogue and financing mechanisms, including budget support administered via a basket fund, plus additional 'earmarked' funding allocated by several development partners (DPs) outside of the basket to support special projects in selected locations.

The design and implementation of WSDP III follows a multi-sectoral SWAP approach involving several stakeholders in planning, implementing, and financing investments from different sources, including government, development partners and the private sector.

The Ministry of Water coordinates WSDP, the leading vehicle for implementing all water sector projects in Tanzania under the Sector Wide Approach to Planning (SWAP). The functions under the current instrument include rural and urban water services, water resource development, water infrastructure development, water sources protection and conservation, drilling and dam construction, river basin development, and water laboratories. The overall sector coordination is attained through a dialogue mechanism, which allows the Ministry of Water and Development Partners to assess progress in program implementation.

7.4. IMPLEMENTORS

The Action Plans of this Response Strategy were developed with a clear assignment of responsibility for each activity to specific institutions for implementation (lead). Their involvement will depend on the relevance of their mandates and the capacity to handle the earmarked activities of the Response Strategy. In addition, other supporting institutions were identified as some activities extending beyond the water sector lead ministries. This sub-chapter covers the implementation framework and a detailed description of the implementation institutions, both lead and supporting.

7.4.1. Implementation Framework

The Response Strategy's implementation framework comprises three level institutions: financing options (covered in chapter six), implementation institutions, and supporting

institutions (Figure 7). All three levels of implementation get resources and support from the private sector.

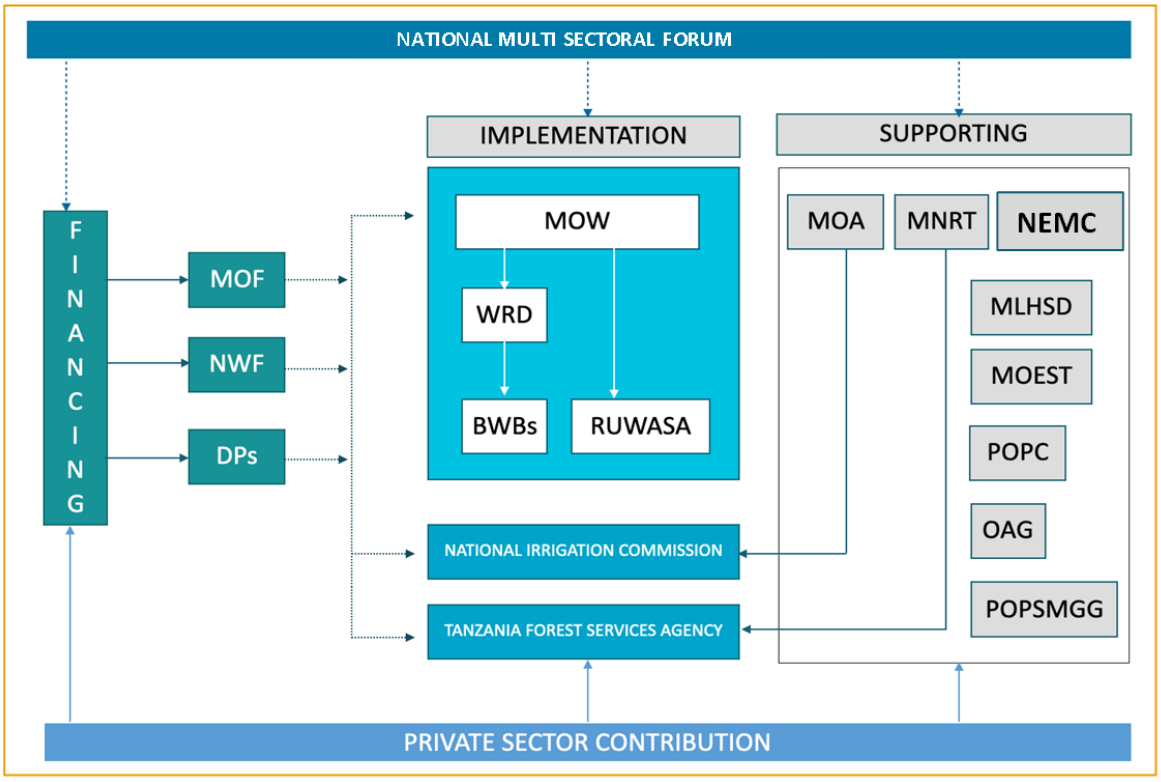


Figure 13: Implementation framework for the response strategy

The National Multi-Sectoral Forum (NMSF) in Tanzania serves as a crucial framework for coordinating collaborative endeavours aimed at implementing the response plan that addresses obstacles to investing in water resources in a climate-resilient manner. Within the larger frameworks of the Tanzania Water Investment Programme (TanWIP) and the Water Sector Development Programme (WSDP), the NMSF assumes a key position in this regard:

- **Alignment with Tanzania Water Investment Programme (TanWIP):** The TanWIP functions as the comprehensive structure that directs investments within the water industry. Acknowledging the importance of strategic congruence, the NMSF guarantees a smooth integration of the response plan with the goals and priorities outlined in the TanWIP. The organization's actions promote a cohesive strategy for attaining sustainable water resource management and enhance the efficiency and efficacy of investments connected to water.
- **Integration with Water Sector Development Programme (WSDP):** The WSDP serves as a fundamental component of all-encompassing sector development, incorporating enhancements to institutions, infrastructure, and policy. As a major coordinating organisation, the NMSF is responsible for ensuring that the response

plan is consistent with the WSDP's guiding principles and goals. By means of this coordination, the NMSF stimulates synergistic effects that augment the effectiveness of the response approach as well as the wider sector development endeavours.

Key Functions of the NMSF in Implementation:

1. **Coordination and Collaboration**: The NMSF acts as a central coordinating body, fostering collaboration among diverse stakeholders including government agencies, development partners, private sector entities, and civil society. This collaboration ensures a holistic and integrated approach to implementing the response strategy.
2. **Monitoring and Evaluation**: The NMSF takes a lead role in establishing robust monitoring and evaluation mechanisms. This will ensure that the implementation progress aligns with set targets and adapts to evolving challenges and opportunities.
3. **Advocacy and Resource Mobilisation**: Through active engagement, the NMSF advocates for the resource needs outlined in the response strategy. It serves as a conduit for resource mobilization, engaging with both domestic and international stakeholders to secure the necessary financial and technical support.
4. **Capacity Building**: Recognising the importance of institutional capacity, the NMSF facilitates capacity-building initiatives to empower stakeholders at various levels, fostering a conducive environment for the successful execution of the response strategy.

In the dynamic landscape of water resource management in Tanzania, the National Multi-Sectoral Forum emerges as a linchpin in the successful implementation of the response strategy. By aligning with the TanWIP and WSDP, the NMSF positions itself as a catalyst for transformative change, ensuring a resilient and sustainable water future for the nation. Through effective coordination, collaboration, and advocacy, the NMSF will play a pivotal role in translating strategy into action, thereby contributing to the broader vision of water sector development in Tanzania.

7.4.2. Implementation Institutions

During the development of this Response Strategy, specific institutions were earmarked as lead implementors of the activities. The list and description of these institutions are provided below:

Ministry of Water: The Ministry of Water (MoW) is the leading institution, an arm of the Government of Tanzania at the national level. Subsidiary legislation No 19, made under Article 55 of the Constitution of the United Republic of Tanzania (1977), the instrument to

establish the Office of the Minister of Water (MoW), was signed on 23rd April 2021 and Gazetted on 7th May 2021 (GN No 384). The Ministry of Water is the national government ministry responsible for national water policy and strategy formulation (and ensuring these are implemented), the formulation of guidelines and regulations, the coordination of integrated water resources management, the provision of water supply and sanitation services, and for determining a mechanism for appeals from all levels of the institutional framework.

Water Resource Division: The Water Resource Division (WRD) is one of the three core divisions within the Ministry of Water. The main objective of the WRD is to oversee the sustainable management and development of water resources in the country. Essential functions include facilitating the development, management and use of the nation's water resources per the national water policy and strategies; collecting hydrological, hydrogeological and hydro-meteorological information and disseminating it to other Government institutions and the public at large; building the capacity of Regional Secretariats and Local Government Authorities in water resources management; and provide technical support and supervise the operations of the Basin Water Offices.

Basin Water Boards: The Basin Water Boards (BWBs) are established under S.22 of the Water Resources Management Act No. 11 of 2009. Currently, there are nine BWBs in Tanzania covering all countries. Water resources management is a multi-sectoral activity involving many players. One of the fundamental principles in managing water resources is to ensure the participation of all users or their representatives in planning, management, and policy implementation at all levels. The involvement of all stakeholders is an integral part of the institutional framework for water management in the basin. The Water Resources Management Act provides the roles and responsibilities for the Basin Water Boards, Water User Associations and Catchment/Sub-Catchment Committees. These entities are centres for water use-related conflict resolution.

Rural Water Supply and Sanitation Authority: The Water Supply and Sanitation Act No.5 of 2019, among other things, established The Rural Water Supply and Sanitation Agency (RUWASA). According to the Water Supply and Sanitation Act No. 5 of 2019, RUWASA is mandated to ensure rural communities in Tanzania's mainland access clean and safe water supply services.

National Irrigation Commission: The National Irrigation Commission (NIRC) was established under Section 3 of the National Irrigation Act No. 4 of 2013 as an Independent Department of the Government under the Ministry responsible for irrigation. The Commission is a corporate body, and the Director General manages its day-to-day activities under the guidance of the Governing Board of ten members. The Commission is mandated to coordinate promotional and regulatory functions in the development of the irrigation sector. Promoting irrigation practices, developing, and managing irrigation and drainage

infrastructure considering Integrated Water Resources Management to enhance water use efficiency for increased and sustainable agricultural production and productivity to ensure food security, poverty reduction and national economic development.

Tanzania Forest Services Agency: Tanzania Forest Service (TFS) is a semi-autonomous government Executive Agency whose establishment is supported by the Executive Agency Act (Cap. 245 Revised Edition 2009), the National Forest and Beekeeping Policies adopted in March 1998 and administered through The Forest Act (No. 14 of 2002) and Beekeeping Act (No. 15 of 2002) which provides the legal framework for the management of forests and bee resources. TFS is mandated to manage national forest and bee resources sustainably by ensuring a sustainable supply of various forest and bee products and services, a stable ecosystem and maintaining biological diversity.

7.4.3. Supporting Institutions

In addition to implementation institutions, several supporting institutions were identified in implementing the Response Strategy. Some institutions are among the water sector lead ministries, and others are not within the water sector lead ministries. The description and supporting role of these institutions are provided in Table 18. It is the responsibility of the Ministry of Water to ensure smooth coordination with these institutions during the implementation of activities of the Response Strategy.

Table 18: Supporting Institutions in Response Strategy

Institution	Mandates	Supporting Role
Ministry of Agriculture	The Ministry of Agriculture in Tanzania is a government agency overseeing agricultural policies, programs, and activities within the country. Its primary objective is to promote and support the growth and development of the agricultural sector. Also, MoA is a parent ministry of the National Irrigation Commission (NIRC).	Identified activities related to agriculture and irrigation water use.
Ministry of Natural Resources and Tourism	The Ministry of Natural Resources and Tourism (MNRT) in Tanzania is a government agency responsible for the management, conservation, and sustainable utilisation of the country's natural resources and promoting tourism. Also, MNRT is a parent ministry of the Tanzania Forest Services Agency (TFS).	Identified water source protection and conservation activities, including forest and tree planting.
Ministry of Land, Housing, and Human Settlement Development	The Ministry of Land, Housing, and Human Settlement Development (MLHHSD) oversees matters related to land administration, housing, and urban development within the country.	Identified activities related to land management and interaction with water resources protection and conservation.

Institution	Mandates	Supporting Role
Ministry of Education, Science and Technology	The Ministry of Education, Science, and Technology (MOEST) oversees education, science, and technology-related matters within the country.	Identified activities related to education on water resources management in the curriculum.
President's Office Planning Commission	The President's Office, Planning Commission (POPC) is responsible for coordinating and overseeing the planning and development initiatives of the country.	Identified activities related to the planning of resources and, budget allocation and budget tools.
President's Office Public Service Management and Good Governance	The President's Office, Public Service Management and Good Governance (PO-PSMGG) in Tanzania is a government agency responsible for overseeing the management of public services, promoting good governance practices, and ensuring effective and efficient service delivery within the country.	Identified activities related to capacity building, human resources deployment, and code of ethics for the public institutions' employees.
Office of Attorney General	The Office of the Attorney General in Tanzania is a government institution responsible for providing legal advice to the government, representing the government in legal matters, and ensuring the rule of law is upheld within the country. The Attorney General is the principal legal advisor to the government and serves as the state's chief legal officer. The office is tasked with various legal functions that help maintain legal order, protect government interests, and promote justice.	Identified activities related to development, amendment, and awareness of legalisation.

7.5. MONITORING AND EVALUATION

There will be a two-part monitoring and evaluation system for this Response Strategy: the existing Government M&E systems and the support from NMSF to oversee the implementation and achievement as intended. This sun-chapter provided a high-level description of M&E systems of Government through ministries and NMSF.

7.5.1. Ministerial System

The institutional arrangement for monitoring and evaluation (M&E) practices in the Government of Tanzania occurs at national, sector and institutional levels. At the national level, the M&E system consists of high-level committees, institutions at the central and local government, technical teams, and networks in government. There are two committees: the Inter-Ministerial Technical Committee and the Planning, Budgeting, Monitoring, Evaluation and Reporting Sub-committee of Central Institutions. These committees are critical in

providing the vision and strategic direction of the government M&E agenda, advising the higher administrative and political authorities on the national, sector and institutional M&E roadmap and making critical decisions on strengthening and sustaining the national M&E system.

- The M&E system for the WSDP III considers the existing national frameworks for monitoring and evaluating progress in FYDP III, Ministerial M&E systems and Integrated Water Sector M&E Systems. The following intervention areas are covered: Monitoring and Evaluation System, Programme Monitoring and Evaluation, Performance Review and Reports, Evaluations, and Data Systems.
- The MoW has developed the IWSMES based on the M&E Systems Framework for Tanzania public service institutions created by the President's Office, Public Service Management and Good Governance. The Framework clarifies what constitutes an M&E system, identifies key players and their roles in strengthening M&E functions across public sector institutions and guides the design, development, and implementation of M&E systems. The Ministry of Water approved the Integrated Water Sector M&E System to ensure that relationships between processes, inputs, outputs, outcomes, and impacts are periodically monitored and reported. The System is cascaded down to water sector departments, divisions, units, and institutions falling under the sector. It aggregates data and information from all key players in the sector, links M&E Systems of water sector institutions and interfaces with the National M&E System. The programme will use this system to ensure regular feedback on the performance of projects to different players.

7.5.2. National Forum Role

Following the development of the Response Strategy by the National-Multi-Sectoral Forum (NMSF), the support for monitoring and evaluation in its achievement is paramount. The key features of the role of NMSF in monitoring and evaluation of this Response Strategy include:

- Response Strategy Indicators: The NMSF will develop Response Strategy indicators to be incorporated into WSDP III indicators aligned and incorporated into the Integrated Water Sector and FYDP III M&E systems (Figure 8).
- Monitoring Responsibility: NMSF, through its Secretariat and Steering Board, will have responsibilities to monitor the implementation of the Response Strategy by supporting or initiating rapid budget analysis, review of water resources management reports, and review of information generated from integrated water sector monitoring and evaluation system (IWSMES). Figure 9 depicts the NMSF in monitoring and evaluation.

- Evaluation Responsibility: NMSF, through its Secretariat and Steering Board, will have responsibilities to support or initiate activities related to evaluating this Response Strategy. These initiatives include public expenditure reviews of water resources management, integrated water resources management research studies, and specific evaluation studies for integrated water resources management.

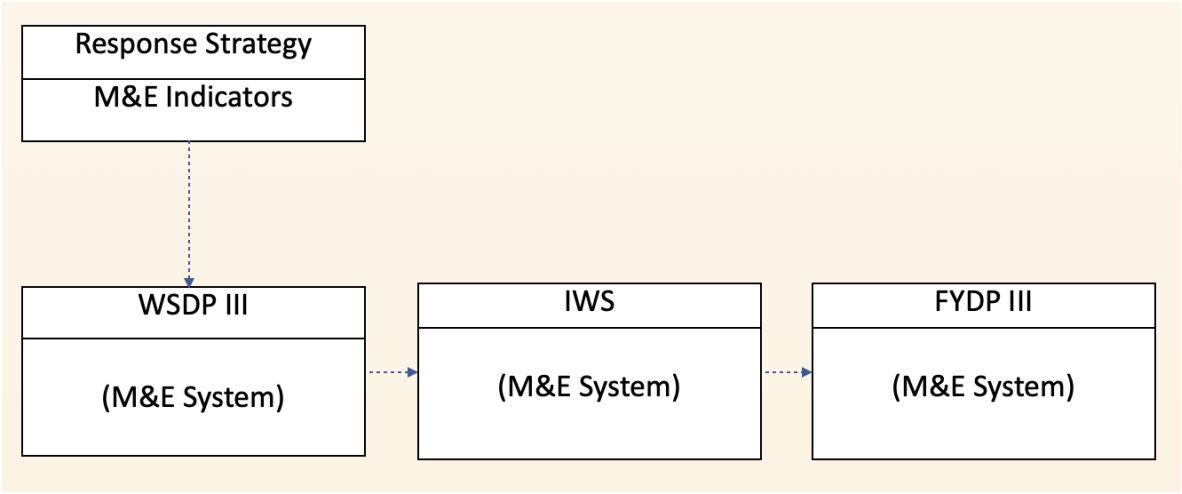


Figure 14: Response strategy indicators in M&E Systems

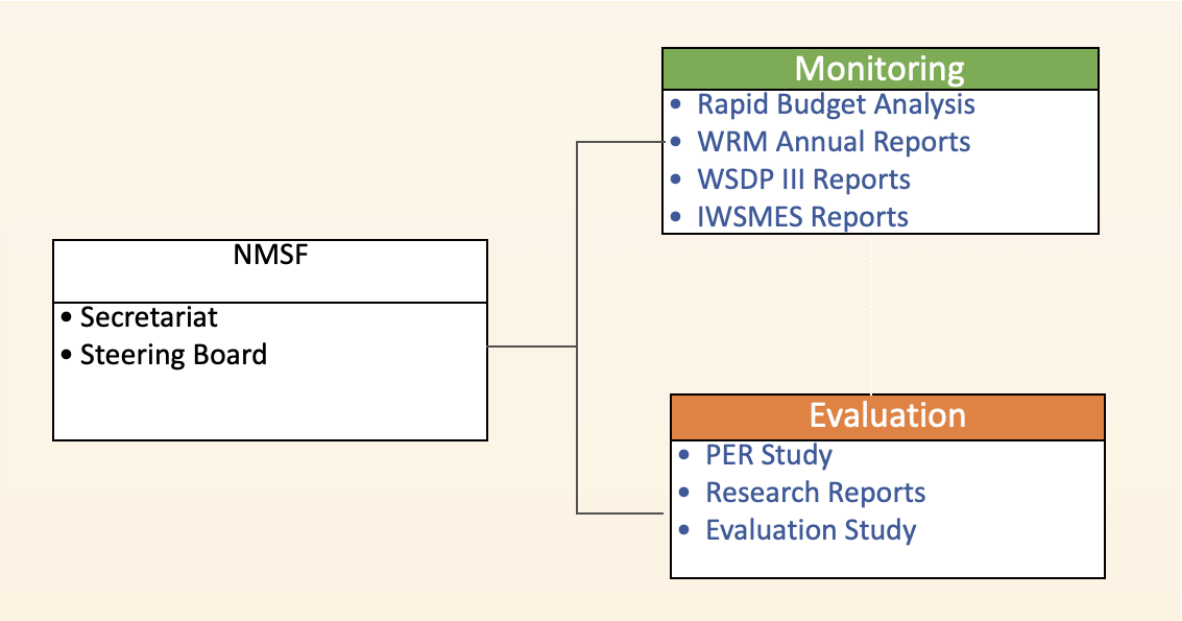


Figure 15: NMSF M&E Oversight

CHAPTER EIGHT: APPENDICES

Appendix A: **References**

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Appendix B: Financing Plan

This appendix has three financial plans:

- Finance Plan of Bottleneck 1: Inadequate Funds for Implementing Resilient Water Resources Invetments.
- Finance Plan of Bottleneck 2: Inefficient irrigation water uses and practices: the case of Ruvu Sub-Basin.
- Finance Plan of Bottleneck 3: Overlapping legal and regulatory mandates impacting inter-sectoral coordination in water resources management.

Finance Plan of Bottleneck 1: Inadequate funds to implement climate-resilient water resources investment									
Activities	Estimated Cost	Timing	Frequency	Potential Sources	Level of Certainty	Receiving	Passing	Importance Level	Action to Secure Fund
1.111. To assess the Directorate of Water Resources capacity in undertaking its mandates	154,350,000	SHORT-TERM	ONE-OFF	GERMANY-GIZ, USAID	HIGH	MoW	MoF	HIGH	CONCEPT NOTE
1.112. To assess Basin Water Boards' capacity to accomplish their mandate (collecting and mobilizing funds).	1,261,575,000	SHORT-TERM	ONE-OFF	AFDB, WB	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, PROJECT PROPOSAL
1.121. To undertake resources needs assessment to implement Basins' Capacity Building Plans.	1,261,575,000	SHORT-TERM	ONE-OFF	GERMANY-GIZ, USAID	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, PROJECT PROPOSAL
1.122. To address the observed capacity gaps of Water Resources Division and Basin Water Boards	6,825,000,000	LONG-TERM	ANNUAL	AFDB, WB	HIGH	MoW	MoF	MEDIUM	PROJECT PROPOSAL

Finance Plan of Bottleneck 1: Inadequate funds to implement climate-resilient water resources investment									
Activities	Estimated Cost	Timing	Frequency	Potential Sources	Level of Certainty	Receiving	Passing	Importance Level	Action to Secure Fund
1.131. To map out key water resources management stakeholders to enhance planning and implementation of WSDP III.	836,850,000	SHORT-TERM	ONE-OFF	NATIONAL WATER FUND	MEDIUM	MoW	MoF	HIGH	CONCEPT NOTE
1.211. To create awareness on the economic value of water to the Government and other stakeholders.	1,393,350,000	SHORT-TERM	ONE-OFF	GERMANY-GIZ, USAID, GWP-TZ	MEDIUM	MoW	MoF	HIGH	CONCEPT NOTE, PROJECT PROPOSAL
1.212. To scale up the study of the economic value of water to all Basins by analyzing all potential economic activities.	6,580,350,000	SHORT-TERM	ONE-OFF	CRDB, FAO, GWP-TZ	MEDIUM	MoW	MoF	MEDIUM	CONCEPT NOTE, PROJECT PROPOSAL
1.221.To conduct public expenditure review on the water sector every three years.	496,125,000	MEDIUM-TERM	ONE-OFF	UNICEF, WB	MEDIUM	MoW	MoF	MEDIUM	CONCEPT NOTE, PROJECT PROPOSAL

Finance Plan of Bottleneck 1: Inadequate funds to implement climate-resilient water resources investment									
Activities	Estimated Cost	Timing	Frequency	Potential Sources	Level of Certainty	Receiving	Passing	Importance Level	Action to Secure Fund
1.311. To create awareness to water resources management staff (MoW - WR Division and BWBs) on availability and how to access funds: training on funds mobilization.	1,551,375,000	SHORT-TERM	ONE-OFF	GERMANY-GIZ, WB, JICA	MEDIUM	MoW	MoF	HIGH	CONCEPT NOTE, PROJECT PROPOSAL
1.321. To train WRM staff (MoW - WR Division and BWBs) on programming, planning and implementation of water resources conservation and protection projects.	186,375,000	MEDIUM-TERM	ONE-OFF	GERMANY-GIZ, WWF, USAID	MEDIUM	MoW	MoF	HIGH	CONCEPT NOTE, PROJECT PROPOSAL
1.322. To assess the implementation status of IWRMDs plans among stakeholders (e.g., Fisheries and	150,150,000	MEDIUM-TERM	ONE-OFF	NATIONAL WATER FUND	MEDIUM	MoW	MoF	HIGH	CONCEPT NOTE

Finance Plan of Bottleneck 1: Inadequate funds to implement climate-resilient water resources investment									
Activities	Estimated Cost	Timing	Frequency	Potential Sources	Level of Certainty	Receiving	Passing	Importance Level	Action to Secure Fund
Irrigation sectors, etc.).									
1.411. To devise awareness campaign to the public and corporates on the importance of water resources (Engage marketing and communication firms).	2,178,750,000	MEDIUM-TERM	ANNUAL	WB, UNEP, AfDB	MEDIUM	MoW	MoF	HIGH	CONCEPT NOTE, PROJECT PROPOSAL
1.511. To develop alternative livelihood projects to lessen adverse effects of hydrological droughts (In collaboration with stakeholders)	20,175,750,000	MEDIUM-TERM	QUATERLY	GEF, GCF, LDCF, ADAPTION FUND (AfDB, UNEP, FAO, WWF, UNDP)	MEDIUM	MoW	MoF	MEDIUM	CONCEPT NOTE, PROJECT PROPOSAL
1.512. To develop projects for ecosystem restoration	1,328,250,000	SHORT-TERM	ONE-OFF	GEF, GCF, LDCF, ADAPTION FUND (AfDB,	MEDIUM	MoW	MoF	HIGH	CONCEPT NOTE, PROJECT PROPOSAL

Finance Plan of Bottleneck 1: Inadequate funds to implement climate-resilient water resources investment									
Activities	Estimated Cost	Timing	Frequency	Potential Sources	Level of Certainty	Receiving	Passing	Importance Level	Action to Secure Fund
				UNEP, FAO, WWF, UNDP)					
1.513. To develop projects for water storage (flood regulation infrastructures).	24,990,000,000	LONG-TERM	ANNUAL	GEF, GCF, LDCF, ADAPTION FUND (AfDB, UNEP, FAO, WWF, UNDP)	MEDIUM	MoW	MoF	MEDIUM	FEASIBILITY STUDY, PROJECT PROPOSAL
1.521. To install early warning systems (Floods and droughts).	2,698,500,000	SHORT-TERM	ONE-OFF	GOVERNMENT, NWF, DPs	MEDIUM	MoW	MoF	HIGH	CONCEPT NOTE, PROJECT PROPOSAL

Finance Plan of Bottleneck 2: Inefficient irrigation water uses and practices: the case of Ruvu Sub-Basin									
Activities	Estimated Cost	Timing	Frequency	Sources	Certainty	Receiving	Passing	Importance	Action
2.111. Carry out baseline survey on existing water storage capacity and condition.	300,000,000	SHORT-TERM	ONE-OFF	GOT	HIGH	MoW	MoF	HIGH	GOT, BUDGET
2.112.Identify suitable sites for dams' construction	1,640,000,000	SHORT-TERM	ONE-OFF	GOT	HIGH	MoW	MoF	HIGH	GOT, BUDGET
2.113.Carry out feasibility studies and detailed design for dams' construction.	10,289,375,000	MEDIUM-TERM	PERIODIC	GOT, CLIMATE FUND, AFDB, AFD	HIGH	MoW	MoF	HIGH	CONCEPT NOTE
2.114. Carryout ESIA for the selected potential sites for dams' construction.	10,339,370,000	SHORT-TERM	REGULAR	GOT, CLIMATE FUND, AFDB, WB, AFD	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, FEASIBILITY STUDY, DETAILED DESIGN
2.115. Rehabilitate malfunctioning existing storage infrastructures.	535,500,000	MEDIUM-TERM	PERIODIC	GOT	HIGH	MoW	MoF	HIGH	BUDGET

Finance Plan of Bottleneck 2: Inefficient irrigation water uses and practices: the case of Ruvu Sub-Basin									
Activities	Estimated Cost	Timing	Frequency	Sources	Certainty	Receiving	Passing	Importance	Action
2.116. Construct new water storage dams.	202,273,205,000	LONG-TERM	BI-ANNUAL	GOT, CLIMATE FUND, AFDB, WB, AFD, BADEA	HIGH	MoW	MoF	HIGH	FEASIBILITY STUDIES, DETAILED DESIGNS, ESIA RAP REPORTS
2.121.Raise awareness on the importance of return flows to the water sources.	116,150,000	SHORT-TERM	REGULAR	GIZ, KFW, USAID, NGOs, CSOs	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.122.Identify irrigation schemes with or without return flows infrastructure.	151,500,000	SHORT-TERM	ONE-OFF	GIZ, KFW, USAID, NGOs, CSOs	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.123.Monitor compliance of return flows to the water sources.	428,000,000	LONG-TERM	PERIODIC	GOT	HIGH	MoW	MoF	HIGH	BUDGET
2.124.Install return flows infrastructures to identified irrigation schemes.	1,760,430,000	LONG-TERM	ANNUAL	GOT, CLIMATE FUND, NGOs, CSOs, WfP, UNDP, GEF	HIGH	MoW	MoF	HIGH	BUDGET

Finance Plan of Bottleneck 2: Inefficient irrigation water uses and practices: the case of Ruvu Sub-Basin									
Activities	Estimated Cost	Timing	Frequency	Sources	Certainty	Receiving	Passing	Importance	Action
2.131.Identify degraded water catchment areas.	297,500,000	SHORT-TERM	MONTHLY	GOT, NGOs, CSOs, CLIMATE FUND, TAFF, SNV, WWF, AFD, NWF	HIGH	MoW	MoF	HIGH	BUDGET
2.132.Raising of recommended trees seedling.	2,730,000,000	LONG-TERM	ANNUAL	GOT, NGOs, CSOs, CLIMATE FUND, TAFF, SNV, WWF, AFD, NWF	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.133.Review/develop of tree planting in degraded water sources guideline.	89,880,000	SHORT-TERM	ONE-OFF	GOT, NGOs, CSOs, CLIMATE FUND, TAFF, SNV, WWF, AFD, NWF	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.134.Enrichment tree planting in degraded areas.	2,146,452,000	MEDIUM-TERM	ANNUAL	GOT, NGOs, CSOs, CLIMATE FUND, TAFF, SNV,	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET

Finance Plan of Bottleneck 2: Inefficient irrigation water uses and practices: the case of Ruvu Sub-Basin									
Activities	Estimated Cost	Timing	Frequency	Sources	Certainty	Receiving	Passing	Importance	Action
				WWF, AFD, NWF					
2.135.Monitoring of planted tree in water source catchment protected area.	360,500,000	LONG-TERM	REGULAR	GOT	HIGH	MoW	MoF	HIGH	BUDGET
2.141. Groundwater development on identified potential zones	1,712,152,000	SHORT-TERM	ONE-OFF	GOT, KFW, GIZ, WB, AFDB, NWF	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.142. Create awareness on the use of ground water	189,100,000	LONG-TERM	ANNUAL	GOT, NGOs, CSOs, WATERAID, NORWEGIAN AID, WfP	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.211.Purchase of enforcement gears.	360,570,000	MEDIUM-TERM	ANNUAL	GOT, NGOs, CSOs, WATERAID, NORWEGIAN AID, WfP	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.212.Identify violators and raising awareness about existing laws and regulations.	597,415,000	MEDIUM-TERM	PERIODIC	GOT, NGOs, CSOs, WATERAID, NORWEGIAN AID, WfP	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET

Finance Plan of Bottleneck 2: Inefficient irrigation water uses and practices: the case of Ruvu Sub-Basin									
Activities	Estimated Cost	Timing	Frequency	Sources	Certainty	Receiving	Passing	Importance	Action
2.213.Strenthen and extend enforcement unit to the Ward Level.	7,620,000,000	LONG-TERM	QUARTERLY	GOT	HIGH	MoW	MoF	HIGH	BUDGET
2.214.Purchase tools and equipment for enhancement of law enforcement.	1,680,000,000	LONG-TERM	ONE-OFF	GOT, GIZ, NGOs, CSOs, USAID, WORLD VISION	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.221.Establish new and strengthen existing Water User Associations.	636,300,000	SHORT-TERM	ONE-OFF	GOT, GIZ, NGOs, CSOs, USAID, WORLD VISION	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.231.Raise awareness of the potential social, economic, and political consequences of insufficient water resources.	339,208,500	SHORT-TERM	ONE-OFF	GOT, WB, NGOs, CSOs, UNDP, CLIMATE FUND	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.232.Facilitate field trips for learning best practices in	156,450,000	SHORT-TERM	ONE-OFF	GIZ, WforP	MEDIUM	MoW	MoF	MEDIUM	CONCEPT NOTE, BUDGET

Finance Plan of Bottleneck 2: Inefficient irrigation water uses and practices: the case of Ruvu Sub-Basin									
Activities	Estimated Cost	Timing	Frequency	Sources	Certainty	Receiving	Passing	Importance	Action
Water Resources Management.									
2.311.Identify the best agricultural technologies available from peer farmers.	84,525,000	SHORT-TERM	ONE-OFF	GOT, WB, FAO, AFDB, AFD, CLIMATE FUND, TADB	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.312. Establish applicability of each identified technology and its limitations	194,425,000	SHORT-TERM	ONE-OFF	GOT, WB, FAO, AFDB, AFD, CLIMATE FUND, TADB	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.411.Identify and map degraded land along Wami/Ruvu Basin.	132,300,000	SHORT-TERM	ONE-OFF	GOT, WB, FAO, AFDB, AFD, CLIMATE FUND, TADB, NGOs, CSOs	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.412.Carry out capacity building in land use planning.	280,275,000	SHORT-TERM	ONE-OFF	GOT, WB, UNDP, CLIMATE FUND, FAO	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET

Finance Plan of Bottleneck 2: Inefficient irrigation water uses and practices: the case of Ruvu Sub-Basin									
Activities	Estimated Cost	Timing	Frequency	Sources	Certainty	Receiving	Passing	Importance	Action
2.413. Review and update existing land use plans in targeted districts and villages.	168,525,000	SHORT-TERM	ONE-OFF	GOT, WB, UNDP, CLIMATE FUND, FAO	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.414. Develop Integrated Land Use Management Plans (ILUMPS) in identified areas.	166,950,000	SHORT-TERM	ONE-OFF	GOT, WB, AFDB, UNDP, UNHABITAT, CLIMATE FUND, FAO, NGOs, CSOs	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.415. Capacity needs assessment for planning, monitoring and ongoing implementation of District Plans and Village Land Use Management Plans.	121,400,000	SHORT-TERM	ONE-OFF	GOT	HIGH	MoW	MoF	HIGH	BUDGET
2.416. Facilitate gazettement of developed land use plans.	345,000,000	SHORT-TERM	REGULAR	GOT	HIGH	MoW	MoF	HIGH	BUDGET

Finance Plan of Bottleneck 2: Inefficient irrigation water uses and practices: the case of Ruvu Sub-Basin									
Activities	Estimated Cost	Timing	Frequency	Sources	Certainty	Receiving	Passing	Importance	Action
2.511.Develop conservation material for primary schools.	174,825,000	SHORT-TERM	ONE-OFF	GIZ	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.512.Train environmental school clubs on water sources conservation.	94,500,000	LONG-TERM	PERIODIC	GIZ, WforP	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.513.Conduct awareness meetings to farmers and livestock keepers on water sources conservation.	411,575,000	LONG-TERM	PERIODIC	GIZ, USAID, WWF	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.611. Introduce appropriate and efficient irrigation infrastructure for target communities.	114,975,000	MEDIUM-TERM	ONE-OFF	NIRC, FAO, DFID	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.612. Design and construct effective irrigation infrastructure that minimizes water demands and maximize the	626,200,000	MEDIUM-TERM	ONE-OFF	GOT, NIRC, FAO, DFID	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET

Finance Plan of Bottleneck 2: Inefficient irrigation water uses and practices: the case of Ruvu Sub-Basin									
Activities	Estimated Cost	Timing	Frequency	Sources	Certainty	Receiving	Passing	Importance	Action
productivity in affordable investment ad operation costs.									
2.613. Maintenance and management of irrigation schemes. Use professional personnel for operating and maintaining the irrigation infrastructure.	486,000,000	LONG-TERM	MONTHLY	GOT	HIGH	MoW	MoF	HIGH	BUDGET
2.614. Assess the existing irrigation infrastructure, to identify the most ineffective components of the designs.	138,000,000	SHORT-TERM	MONTHLY	GOT	HIGH	MoW	MoF	HIGH	BUDGET
2.615. Repair and upgrade the identified components such as canals, pumps, gates, and pipelines to meet optimal	370,000,000	SHORT-TERM	ONE-OFF	GOT	HIGH	MoW	MoF	HIGH	BUDGET

Finance Plan of Bottleneck 2: Inefficient irrigation water uses and practices: the case of Ruvu Sub-Basin									
Activities	Estimated Cost	Timing	Frequency	Sources	Certainty	Receiving	Passing	Importance	Action
functionality, reducing water losses.									
2.616. Install modern water measurement and control systems to improve monitoring and regulation of water usage to ensure efficient distribution to farms and minimizing wastage.	393,142,500	SHORT-TERM	ONE-OFF	GOT, WB, AFDB, DFID	HIGH	MoW	MoF	HIGH	BUDGET
2.617. Conduct training programs to local farmers, technicians, and irrigation system operators on water conservation techniques, proper irrigation practices, and maintenance procedures to maximize the effectiveness of the	227,250,000	SHORT-TERM	ONE-OFF	GOT, GIZ, USAID, NGOs, CSOs	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET

Finance Plan of Bottleneck 2: Inefficient irrigation water uses and practices: the case of Ruvu Sub-Basin									
Activities	Estimated Cost	Timing	Frequency	Sources	Certainty	Receiving	Passing	Importance	Action
rehabilitated infrastructure.									
2.618 Promote and encourage the use and integration of modern irrigation technologies like drip irrigation, sprinkler systems, and precision agriculture techniques	176,575,000	MEDIUM -TERM	PERIODIC	GOT, BADEA, FAO, JICA, KOICA	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.621. Map potential irrigated areas in Wami-Ruvu Basin	268,500,000	SHORT-TERM	MONTHLY	GOT	HIGH	MoW	MoF	HIGH	BUDGET
2.622. Assess the status (condition) of the irrigation infrastructure from the intake to the fields.	47,000,000	SHORT-TERM	ONE-OFF	GOT	HIGH	MoW	MoF	HIGH	BUDGET
2.623. Develop Guidelines for water resource abstraction that will be used to Quantify the	181,000,000	SHORT-TERM	ONE-OFF	GOT	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET

Finance Plan of Bottleneck 2: Inefficient irrigation water uses and practices: the case of Ruvu Sub-Basin									
Activities	Estimated Cost	Timing	Frequency	Sources	Certainty	Receiving	Passing	Importance	Action
amount of water being abstracted from the weir/source and that reaching the fields.									
2.624. Capacity building of irrigators associations i.e., training, necessary equipment	777,500,000	LONG-TERM	ONE-OFF	GOT, UNDP, FAO, CSOs, NGOs	HIGH	MoW	MoF	HIGH	BUDGET
2.711.Conduct Training need assessment for Water User Groups.	158,350,000	SHORT-TERM	ONE-OFF	GOT, GIZ	HIGH	MoW	MoF	HIGH	BUDGET
2.712. Prepare training and Capacity development program.	111,300,000	SHORT-TERM	ANNUAL	GOT, GIZ, USAID, WforP, WATERAID	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.713. Implement training and capacity development program.	1,940,715,000	LONG-TERM	ANNUAL	GOT, GIZ, USAID, WforP, WATERAID	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET

Finance Plan of Bottleneck 2: Inefficient irrigation water uses and practices: the case of Ruvu Sub-Basin									
Activities	Estimated Cost	Timing	Frequency	Sources	Certainty	Receiving	Passing	Importance	Action
2.714. Strengthen/Enhance capacity building for Coordination Unit.	1,820,000,000	LONG-TERM	ONE-OFF	GOT	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.715. Strengthen/Enhance platform for knowledge and innovation sharing practices.	232,500,000	SHORT-TERM	REGULAR	GOT	HIGH	MoW	MoF	HIGH	BUDGET
2.721. Conduct training need assessment of Extension Officers in Water Resources Management.	84,525,000	LONG-TERM	REGULAR	GOT, USAID, WforP, WATERAID	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.722. Prepare and conduct training programs.	775,175,000	LONG-TERM	ANNUAL	GOT, USAID, WforP, WATERAID	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET
2.811. Construct modern irrigation water reservoirs that regulate water distributions on irrigation schemes.	203,706,900,000	LONG-TERM	BI-ANNUAL	WB, BADEA, KFW, ADB, TADB, AFDB, CRDB	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET

Finance Plan of Bottleneck 2: Inefficient irrigation water uses and practices: the case of Ruvu Sub-Basin									
Activities	Estimated Cost	Timing	Frequency	Sources	Certainty	Receiving	Passing	Importance	Action
2.812. Install and monitor water abstraction and distribution by energy producers, industries, and other users	1,404,405,000	MEDIUM -TERM	ANNUAL	GOT, KFW, USAID	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, BUDGET

Finance Plan of Bottleneck 3: Overlapping legal and regulatory mandates impacting inter-sectoral coordination in water resources management									
Activities	Estimated Cost	Timing	Frequency	Sources	Certainty	Receiving	Passing	Importance	Action
3.111. To consult Key stakeholders	83,580,000	SHORT-TERM	ONE-OFF	GOT, GIZ, MUM, USAID, SWM	HIGH	WRD	MoW	HIGH	CONCEPT NOTE, PROJECT PROPOSAL
3.112. Conduct policy, legal and institutional frameworks review	248,745,000	SHORT-TERM	ONE-OFF	GOT, UNDP, GEF, GWP	HIGH	WRD	MoW	HIGH	CONCEPT NOTE, PROJECT PROPOSAL
3.113. Operationalize the revised legal frameworks	915,600,000	MEDIUM-TERM	ONE-OFF	GOT, GIZ, GWP, UNHCR, WB	HIGH	MoW	MoF	HIGH	MTEF BUDGET
3.121. Operationalize established instrument including IWRM Checklist for different sectors	429,450,000	MEDIUM-TERM	PERIODIC	GOT, USAID, GIZ, WATER AID	HIGH	WRD	MoW	HIGH	CONCEPT NOTE, PROJECT PROPOSAL
3.211. To assess adequacy Code of Ethics and Conduct under the current context	136,500,000	MEDIUM-TERM	ONE-OFF	GOT, USAID, GIZ, GWP, NORAD	HIGH	MoW	MoF	HIGH	CONCEPT NOTE, PROJECT PROPOSAL, BUDGET MTEF

Finance Plan of Bottleneck 3: Overlapping legal and regulatory mandates impacting inter-sectoral coordination in water resources management									
Activities	Estimated Cost	Timing	Frequency	Sources	Certainty	Receiving	Passing	Importance	Action
3.221. Develop and advocate for implementation of an awareness Program to the Code of Ethics and Conduct	105,000,000	MEDIUM-TERM	ONE-OFF	GOT, USAID, GIZ, GWP, NORAD	HIGH	WRD	MoW	HIGH	CONCEPT NOTE, PROJECT PROPOSAL, BUDGET MTEF
3.311. Conduct survey on sectoral financial and human resource allocation	66,465,000	MEDIUM-TERM	ONE-OFF	GOT, BELGIUM, SNV, GIZ, EU, GCF	HIGH	WRD	MoW	HIGH	CONCEPT NOTE, PROJECT PROPOSAL
3.312. To engage relevant stakeholders	42,420,000	MEDIUM-TERM	ONE-OFF	BELGIUM, SNV, GIZ, EU, GCF, GWP	HIGH	WRD	MoW	HIGH	CONCEPT NOTE, PROJECT PROPOSAL
3.313 Develop checklist IWRM planning and budgeting	47,932,500	MEDIUM-TERM	ONE-OFF	GOT, CLIMATE CHANGE FUND	HIGH	WRD	MoW	HIGH	CONCEPT NOTE, PROJECT PROPOSAL, BUDGET MTEF

GLOBAL WATER LEADERSHIP PROGRAMME

Global Water Partnership

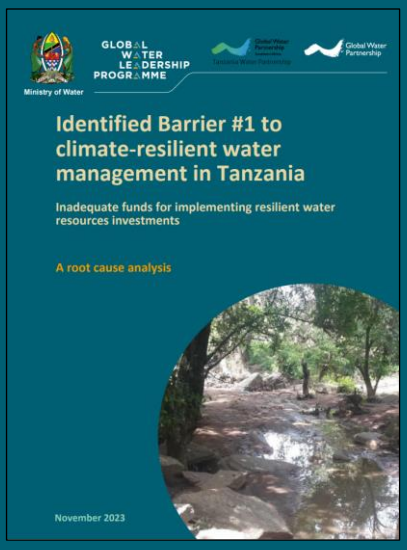
unicef

Response Strategy to Bottlenecks of the Climate-Resilient Water Resources Investment in Tanzania

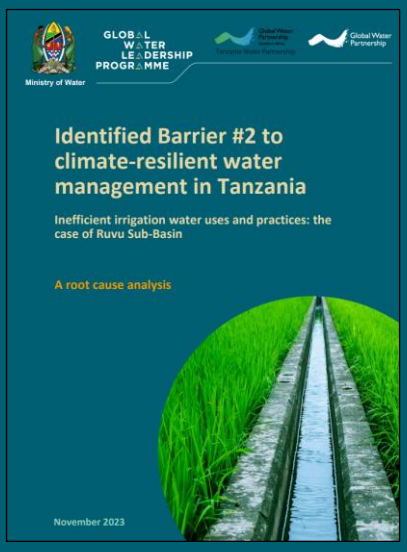
VOLUME II – FINANCING PLAN

National Multi-Sectoral Forum
September 2023

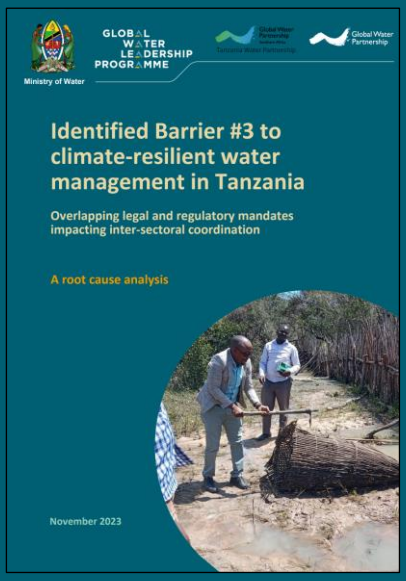
Access the Root Cause Analysis Report to Barrier Number One: Inadequate Funds for Implementing Resilient Water Resources Invetsments.



Access the Root Cause Analysis Report to Barrier Number Two: Inefficient irrigation water uses and practise: the case of Ruvu Sub-Basin.



Access the Root Cause Analysis Report to Barrier Number Three: Overlapping legal and regulatory mandates impacting intersectoral coordination.



gwp.org/en/global-water-leadership-programme

https://www.gwptz.org/

About the Global Water Leadership (GWL) Programme

Effective and equitable water management is becoming increasingly complex, and increasingly important, as climate change impacts add new uncertainty to policy decisions and financial investments. The Global Water Leadership in a Changing Climate programme (GWL) is working intensely in ten countries, bringing together key stakeholders and decision makers from two water management pillars – water resources and water and sanitation – to develop holistic, integrated policies and plans to enhance national water and climate resilience. The programme is funded by the UK Foreign, Commonwealth and Development Office (FCDO) and implemented by Global Water Partnership (GWP), the United Nations Children's Fund (UNICEF), the Sanitation and Water for All Partnership (SWA) and the World Health Organization/UNICEF Joint Monitoring Programme (JMP). In Tanzania the programme has been implemented by Global Water Partnership Tanzania.

Global Water Partnership Tanzania (GWP-TZ), PO Box 32334, Dar es Salaam, Tanzania Mikocheni B, 196 Rose Garden Road
Email: info@gwptz.org

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