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THE UNITED REPUBLIC OF TANZANIA
NATIONAL AUDIT OFFICE

PERFORMANCE AUDIT REPORT ON THE MANAGEMENT OF FLOODS

CONTROLLER AND AUDITOR GENERAL
MARCH 2025

About the National Audit Office

Mandate

The statutory mandate and responsibilities of the Controller and Auditor-General are provided for under Article 143 of the Constitution of the United Republic of Tanzania of 1977 and in Section 10 (1) of the Public Audit Act, Cap 418.

NAOT Vision, Mission & Motto

Vision

A credible and modern Supreme Audit Institution with high-quality audit services for enhancing public confidence.

mission

To provide high-quality audit services through modernization of functions that enhances accountability and transparency in the management of public resources.

Motto

Modernizing External Audit for Stronger Public Confidence

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Core Values

Independence and Objectivity: We are an impartial public institution, independently offering high-quality audit services to our clients in an unbiased manner.

Professional competence: We deliver high quality audit services based on appropriate professional knowledge, skills, and best practices.

Integrity: We observe and maintain high ethical standards and rules of law in the delivery of audit services.

Creativity and Innovation: We encourage, create and innovate value-adding ideas for the improvement of audit services.

Results-Oriented: We focus on achievements of reliable, timely, accurate, useful, and clear performance targets.

Team Work Spirit: We value and work together with internal and external stakeholders.

PREFACE

Pursuant to Section 28 of the Public Audit Act, Cap 418, I am mandated to conduct a Performance Audit (Value-for-Money Audit) to establish the economy, efficiency and effectiveness of any expenditure or use of resources in the Ministries, Departments and Agencies (MDAs), Local Government Authorities (LGAs) and Public Authorities and Other Bodies which involves enquiring, examining, investigating and reporting, as deemed necessary under the circumstances.

I have the honour to submit to Her Excellency, the President of the United Republic of Tanzania, Hon. Dr. Samia Suluhu Hassan, and through her to the National Assembly of the United Republic of Tanzania, the Performance Audit Report on the Management of Floods.

The report contains findings, conclusions, and recommendations directed to the Prime Minister's Office (PMO) and the President's Office - Regional Administration and Local Government (PO-RALG). PMO and PO-RALG had the opportunity to review the report and provide comments, and I sincerely acknowledge that their inputs were constructive and valuable.

My Office will carry out a follow-up at an appropriate time regarding action taken in implementing the recommendations given in this report.

I would like to thank my staff for their commitment to preparing this report. I also acknowledge the audited entities for their cooperation with my Office, which facilitated the timely completion of the audit.

Charles E. Kichere
Controller and Auditor General
United Republic of Tanzania
March 2025

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LIST OF ACRONYMS AND ABBREVIATIONS

AFIS	:	Advanced Fire Information System
BWBs	:	Basin Water Boards
CC	:	City Council
COP-19	:	United Nations Climate Change Conference
CSOs	:	Civil Society Organizations
DC	:	District Council
DEPRP		Disaster Emergency Preparedness and Response Plan
DMC	:	Disaster Management Committees
DMA	:	Disaster Management Act
DMD	:	Disaster Management Division
DRF	:	Disaster Response Functions
DRR	:	Disaster Risk Reduction
DRRS	:	Disaster Risk Reduction Strategies
EOC	:	Emergency Operations Centre
EOCs	:	Emergency Operations Centres
EOCC	:	Emergency Operations and Communication Centre
EM_DAT	:	Emergency Events Database
EPRP	:	Emergency Preparedness and Response Plans
EWS		Early Warning System
FAO	:	Food and Agriculture Organization
FCDO	:	Foreign, Commonwealth & Development Office
FIRMS	:	Fire Information for Rescue Management System
GDP		Gross Domestic Product
GIS	:	Geographic Information Systems
GST	:	Geological Survey of Tanzania
Ha	:	Hectares
INTOSAI	:	International Organization of Supreme Audit Institutions
ISSAIs	:	International Standards of Supreme Audit Institutions
LGAs	:	Local Government Authorities
MC	:	Municipal Council
MDAs	:	Ministries, Departments, and Agencies
M&E		Monitoring and Evaluation
MGR	:	Mitre Gauge Railway
MoW	:	Ministry of Water
MTEF		Medium Term Expenditure Framework
NAPA	:	National Adaptation Plan of Action
NDEPRP	:	National Disaster Emergency Preparedness and Response Plan

NDMF	:	National Disaster Management Fund
NDMS	:	National Disaster Management Strategy
NGOs	:	Non-Governmental Organizations
OH		One Health
PMO	:	Prime Minister's Office
PMO-DMD	:	Prime Minister's Office - Disaster Management Division
PO-RALG	:	President's Office-Regional Administration and Local Government
RAS	:	Regional Administrative Secretary
SDG	:	Sustainable Development Goal
SGR	:	Standard Gauge Railway
SOPs	:	Standard Operating Procedures
SWMMP	:	Stormwater Management Master Plans
TANROADS	:	Tanzania National Roads Agency
TARURA	:	Tanzania Rural and Urban Roads Agency
TMA	:	Tanzania Meteorological Authority
TZS	:	Tanzanian Shilling
TRCS	:	Tanzania Red Cross Society
UNDP	:	United Nations Development Programme
UNICEF	:	United Nations International Children's Emergency Fund
USD	:	United States Dollar
WFP	:	World Food Programme
WHO	:	World Health Organization
WB	:	World Bank
WRMR	:	Water Resources Management Regulations

DEFINITION OF TERMS

Affected	:	People who are either directly or indirectly affected by a hazardous event
Capacity	:	Collective strengths, attributes, and resources within an organisation, community, or society used to manage and reduce disaster risks while enhancing resilience
Disaster	:	A serious disruption to the functioning of a community that exceeds its capacity to cope using its own resources leading to external assistance due to human, material, economic, and environmental losses and impacts.
Disaster Risk Assessment	:	It is an approach, either qualitative or quantitative, to assess disaster risk by analysing potential hazards and evaluating exposure and vulnerability that could affect people, property, services, livelihoods, and the environment.
Disaster Risk Reduction	:	Involves the people and institutions engaged in preparedness, mitigation and prevention activities associated with extreme events.
Early Warning System	:	An integrated system for hazard monitoring, forecasting, risk assessment, communication, and preparedness that helps individuals, communities, governments, and businesses take timely action to reduce disaster risks before hazardous events occur.
Flood Management	:	Strategies and practices aimed at reducing the impact of flooding, including prevention, preparedness, response, and recovery efforts.
Flood Mitigation	:	Actions taken to reduce the severity and impact of floods, such as constructing levees and floodwalls or improving drainage systems.
Flood Preparedness	:	The knowledge and skills developed by governments, organisations, communities, and individuals to effectively anticipate, respond to, and recover from disasters.
Flood Recovery Measures	:	Are measures to help restore the livelihoods, assets and production levels of emergency-affected communities, to rebuild essential infrastructure, productive capacities, institutions and services destroyed or rendered non-operational by a disaster

Flood Recovery	:	The process of rebuilding and restoring communities after a flood includes both physical infrastructure and community support systems.
Flood Response	:	Actions taken directly before, during or immediately after a disaster to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.
Flood Response	:	Actions taken during and immediately after a flood event, including emergency services, rescue operations, and public communication.
Flood Risk Assessment	:	The process of evaluating the potential impact of flooding on a community or area, including identifying vulnerable assets and estimating potential damages.
Floodplain	:	The flat area surrounding a river that is prone to flooding, typically consisting of sediments deposited by floodwaters.
Floodplain Zoning	:	Land-use planning strategy that restricts development in flood-prone areas to minimize risks and damages during flooding events.
Hazard	:	Process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation.
Vulnerability	:	Conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards?

EXECUTIVE SUMMARY

Background of the Audit

The Tanzania Meteorological Authority (TMA) reported that Tanzania has experienced frequent heavy rains and floods since 2010. Its trend supports the World Bank's prediction that projected increased costs of climate-related hazards. The floods in Tanzania have destroyed roads, bridges, homes, crops, and people's lives.

Two main factors motivated the conduct of this audit by the Controller and Auditor General: the eminent effects of flooding events and support for achieving national and international goals in minimising flood effects. The main objective of the Audit was to assess whether the Prime Minister's Office (PMO) and the President's Office-Regional Administration and Local Government (PO-RALG), through Local Government Authorities (LGAs), effectively manage flood disasters to minimise the associated social, economic, and environmental impacts.

The audit came up with various findings, conclusions, and recommendations, as explained below:

Main Audit Findings

Existence of Flood Impacts in the Country

Flood disasters have serious consequences that must not be underestimated. According to the Emergency Operation and Communication Centre Section (EOCC) disaster database, the recent occurrence of floods across the country caused by the onset of El Nino rains has resulted in 130 deaths in 2023/24, equivalent to an increase of 103% from 64 deaths in 2020/21. This rise is attributed to nationwide El Nino-driven floods (October 2023–March 2024) and a mudslide in Hanang' District, Manyara Region, which caused 89 fatalities. Likewise, the damage to crops increased by 67%, from 1,795 hectares in 2020/21 to 5,381 in 2023/24. Livestock decreased significantly from 710 to 120. Also, there were reports of infrastructure damage, such as roads and bridges. For instance, in 2023, the El Niño rains in the Dar es Salaam region damaged road networks of about 146.08 km.

Despite the early warnings issued by the Tanzania Meteorological Authority concerning the need for proactive preparation due to the arrival of El Nino rain, there was still insufficient preparation to respond to that early

warning, particularly for ensuring timely evacuation of victims in flood-prone areas, leading to 130 deaths. PMO-DMD, PO-RALG, and LGAs did not invest much in providing awareness to responsible communities in preparation for flood events.

Inadequate Planning for Flood Preparedness in the Country

Both PMO-DMD and PO-RALG through LGAs did not set out sufficient preparation for minimising the effects of flooding events. In terms of funding, the disbursement of funds for flood preparedness activities at PMO-DMD was at 25% only, equivalent to TZS 500 million in funds received. PMO-DMD allocated the funds for preparatory operations; however, at the LGA level, no particular budget was set for flood preparedness activities. This indicates that little attention was dedicated to flood preparedness activities. Because of this, PMO-DMD did not acquire sufficient search, rescue, and evacuation equipment and tools as part of its flood preparedness measures.

Apart from budgeting inefficiency, capacity building for flood preparedness was inadequate. In 2023/2024, PMO-DMD managed to conduct training covering staff from about 50% of all regions of the country. The training primarily targeted disaster coordinators at RAS and LGAs, leaving lower-level coordinators at wards and village levels, who are mostly affected by floods. All LGAs were unable to offer such preparation training due to a lack of budget for disaster-related activities. The lack of such training and capacity-building programs has a negative impact, including the inability of LGAs to establish flood response teams, and it has left the flood-related victims unaware of what they should do due to a lack of awareness of basic steps to take in the event of a flood. As a result, there has been endless loss of life and damage to properties and the environment due to the frequent recurrence of floods.

Inadequate Monitoring of the Implementation of Stormwater Management Master Plans as a Proactive Measure for Flood Prevention

The audit findings showed that the planning and implementation of storm water management master plans (SWMMPs) as a proactive measure for flood prevention was not effective because of weak collaborative linkages between DMD and LGAs. As a result, none of the LGAs visited had an actual plan for managing surface runoff water, conducted regular reviews of its

stormwater management measures, or developed and implemented localised stormwater management guidelines and plans.

On the other hand, the audit noted the presence of inadequate collaboration between DMD, LGAs, and Basin Water Boards in the development of rainwater harvesting technologies to reduce stormwater runoffs. For example, it was found that, due to inadequate coordination, construction activities for the major construction projects such as SGR were not well monitored. In some areas, for instance, Kilosa District, the construction of SGR has led to the blockage of stormwater channels that feed stormwater into rivers, causing more flooding in the surrounding communities.

Inadequate collaboration between DMD, LGAs, and Basin Water Boards has partly contributed to some gaps that were observed in the LGAs; for example, the audit found that none of the visited LGAs had mapped their flood-prone areas, made physical demarcations, or installed safety precautions to limit human settlement and activities in their areas.

Inadequate Flood Prevention, Response and Emergence Recovery Measures

The audit noted that PMO-DMD inadequately manages flood prevention, response and recovery despite the rise in its expenditure from TZS 0.029 billion in 2020/21 to TZS 19.584 billion in 2023/24. The audit revealed that the PMO-DMD had inadequate capacity to develop disaster scenarios and projections of its funds for worst-case situations. Additionally, it has not effectively leveraged lessons learned from past disasters to mobilise funds for preparedness. Improved forecasting could enable the PMO-DMD to raise funds or establish a collection system from multiple stakeholders during normal times, thereby reducing the need for urgent acquisition of funds to meet emergent expenditures in the event of unexpected disasters.

Also, the audit noted that there was ineffective reporting and decision-making structure at all levels regarding the early warning and emergence response. This was contributed by the absence of EOCC infrastructure at lower levels, ineffective emergency coordination and communication management at all levels, and insufficient mobilisation of resources for recovery, loss and damaged properties and infrastructures.

Furthermore, the audit observed that enforcement and quality control during post-flood rebuilding efforts were ineffective. This was highlighted by inadequate adoption of best practices such as willingness to coexist with floods by utilising floodplains for flood-compatible activities such as agriculture and fishing and construction of flood control structures which help to mitigate flood damages.

Ineffective Coordination, Monitoring, and Evaluation of Flood Management Activities Carried out by the PMO-DMD in Collaboration with PO-RALG and LGAs

The audit noted that PMO-DMD lacked key performance indicators to measure their performance in relation to flood management. This is because their plans had general activities. Hence, there were no records of previous flood event plans from 2020/21-2023/24. Also, the audit noted insufficient follow-ups on issues identified while monitoring flood management activities. The PMO-DMD, PO-RALG and LGAs did not effectively oversee the implementation of flood management efforts in highly affected areas. This lack of comprehensive monitoring across the country resulted in inadequate responses to flood events, such as the mud floods in Hanang' District.

Audit Conclusion

The Audit Team acknowledges the work done by the Government through the Prime Minister's Office (PMO) and the President's Office - Regional Administration and Local Government Authorities (PO-RALG) towards the management of Floods in the country. Despite the efforts made by the PMO on the management of disasters in the country, the audit concludes that the Office in collaboration with the President's Office-Regional Administration and Local Government (PO-RALG) through Local Government Authorities (LGAs) have not adequately and effectively managed flood incidences to minimise the associated social, economic and environmental impacts.

Audit Recommendations

Recommendations to the Prime Minister's Office (PMO)

The Prime Minister's Office is urged to:

1. Set adequate funds for flood mitigation and preparedness activities and strengthen support for local government authorities (LGAs), Ministries, Departments and Agencies (MDAs) in budgeting for mitigation, preparedness, response and recovery to minimize loss of life and property damage;

2. Coordinate with the Ministry of Finance to establish a specific budget code for Disaster Management Activities to support LGAs and MDAs; and

3. Develop storm-water management plans collaboratively with relevant ministries and Basin Water Boards and align local and regional water management strategies to enhance flood resilience.

Recommendations to the President's Office - Regional Administration and Local Government Authorities (PO-RALG)

In collaboration with PMO, the President's Office - Regional Administration and Local Government (PO-RALG) through LGAs is urged to:

1. Ensure that Local Government Authorities (LGAs) prepare and implement Storm Water Management Master Plans (SWMPs) by integrating them into their respective Master Plans and Town Planning Schemes;

2. Ensure that LGAs identify, demarcate, and prohibit areas prone to disasters from being used for socioeconomic activities; and

CHAPTER ONE

INTRODUCTION

1.1 Background of the Audit

World Health Organization identifies floods as the most frequent type of natural disaster, which occurs when an overflow of water submerges land that is usually dry. This occurs due to water accumulation caused by heavy rainfall, rapid snowmelt, or a storm surge from a tropical cyclone or tsunami in coastal areas[1]. Flooding is one of the most destructive natural hazards that threatens the community's ability to function. Flooding can have long- and short-term detrimental effects on the environment, economic, social, and infrastructural systems, individuals, and families. The effects of floods continue to cause disruptions to vulnerable groups, livelihoods, and local institutions. It affects individuals disproportionately based on their socio-economic status, with low-income households being affected significantly more in relation to other income groups[2]. Records suggest that floods are becoming more severe and frequent and are expected to intensify due to climate change[3].

According to the Emergency Events Database (EM_DAT[4]), floods cause 40% of all disasters worldwide and have been the leading natural hazard causing severe disasters over the last two decades (1997-2017). The proportional occurrence percentage of global disasters shows that Floods account for 40% of all disasters, followed by pandemic diseases (34%), earthquakes (9%), droughts (6%), and storms (6%[5]). According to the World Bank's 2019 policy statement for Tanzania, the national costs of climate-related hazards were estimated to be 1% of the National GDP. Because of the increasing extent of climate change impacts, costs are estimated to grow to 2-3% of GDP by the end of 2030.

[1] https://www.who.int/health-topics/floods#tab=tab_1
[2] Esther Tetteh, Achieving the SDG Goal 11: Flood mitigation and adaptation strategies in Iowa, 2021
[3]The impacts on and implications for cities in East Africa, with a case study of Dar es Salaam report, 2020
[4] Emergency Events Database (EM_DAT), contains essential core data on the occurrence and effects of over 22,000 mass disasters in the world from 1900 to the present day
[5] The National Disaster Management Strategy (NDMS) 2022-2027, 2022

The Tanzania Meteorological Authority (TMA) reported that Tanzania has experienced frequent heavy rains and floods since 2010. This trend supports the World Bank's prediction that the costs of climate-related hazards will increase. The floods in Tanzania have destroyed roads, bridges, homes, crops, and people's lives.

By the 2080s, according to climate model projections, "mean annual and seasonal temperatures for East Africa will increase by 3.2°C, and by 2100, the region will see an increase in mean annual rainfall of up to 18–28 per cent. Precipitation is projected to become more volatile, and flooding is expected to increase in frequency and severity[6]. Climate change has resulted in increased extreme rain events. As such, climate change mitigation and adaptation should be integrated into stormwater management measures. Stormwater management measures are essential for minimising flood risks, particularly given the unpredictability of weather patterns due to climate change.

The Prime Minister's Office, in collaboration with other stakeholders, has been taking measures to address disaster risks, including the development of the National Disaster Management Policy, National Operational Guidelines for Disaster Management, and Disaster Management Act and its Regulations[7].

1.2 Motivation of the Audit

The audit on the management of floods was motivated by the following factors:

a) Negative Impact of Floods on People's Lives

The severe El-Nino cycle in late 2023 brought floods and landslides in several regions and resulted in the deaths of at least 155 people, destroying thousands of homes. The outpouring of heavy rains continued and increased in intensity through the year 2024, further exacerbating the flooding crisis. In the statement to the Parliament on April 25, 2024, the Prime Minister

[6] World Bank, Transforming Tanzania's Cities: Harnessing Urbanization for Competitiveness, Resilience, and Liveability, 2021
7 The National Disaster Management Strategy (NDMS) 2022-2027, 2022.

announced that over 200,000 people and 51,000 households had been affected by rains and flooding since January 2024[8].

The reported number of deaths was 155, and 236 persons were severely injured due to flooding. In that report, the Prime Minister warned of continuous rain and that people must migrate to higher land. According to preliminary assessments, Dar es Salaam, Pwani, and Morogoro regions were the most affected by flood events. Similarly, floods have occurred in the Mbeya, Lindi, Katavi, Kilimanjaro and Arusha regions as of November-December 2023[9].

b) Loss of Food Security and Lack of Health Services in Flooded Regions

The flood events damaged farms, livestock, and other economic infrastructures in all areas affected by the floods. The damage has affected the majority of the population who rely on small-scale farming, with the destruction of farms and crops severely impacting their livelihoods. The government, together with stakeholders such as the World Food Programme (WFP), United Nations International Children's Emergency Fund (UNICEF) and the Tanzania Red Cross Society (TRCS), have been working together to provide food aid to those affected. However, the demand for food relief has surged unexpectedly due to the unpredictable and increasingly frequent occurrence of floods[10].

For instance, a total of 17,621 hectares were damaged in Morogoro Region, while 12,177 hectares were affected in Pwani Region. Similarly, several healthcare centres in the Rufiji and Kibiti Districts of the Pwani Region were flooded, including the Mohoro and Tumbi B healthcare centres. The floods engulfed even the temporary camps that were established to help the victims. The flooding at these two centres disrupted the quality of health services to the community and has increased the risk of waterborne diseases, including malaria and cholera[11] , due to water logging.

8 Operation Update Report, IFRC, April 2024

9 Operation Update report, IFRC, April 2024

[10] Operation Update report, IFRC, April 2024

[11] Operation Update report, IFRC, April 2024

c) Destruction of Regional and National Infrastructures

In addition to the loss of food security and the impact on health services in flooded regions, the strong El-Nino cycle event in late 2023 caused landslides and severe floods in some parts of the country, resulting in a complete or partial collapse of major infrastructure, including road networks and railway portions. The damages were found to be severe in the Dar es Salaam, Lindi, and Mtwara regions, where bridges overflowed and some were destroyed due to floods[12]. In response, the government budgeted TZS 66 billion as emergency funds to rectify all affected roads within the country.[13]

d) Supporting the Achievement of Sustainable Development Goal 11 and Targets to be Achieved by 2030

Goal 11 and Target 11.5 for Sustainable Development Goals by 2030 aims to reduce the number of deaths, people impacted, and direct economic losses caused by disasters, including water-related disasters (floods), with a focus on protecting the poor and people in vulnerable situations[14]. Auditing efforts in this area are crucial for achieving SDG 11, as they help ensure that necessary measures are being implemented effectively to mitigate the impacts of disasters and protect those mostly at risk.

e) Supporting the Achievement of the Warsaw International Mechanism for Loss and Damage as Agreed at the COP28 Meeting

Member Countries of the United Nations Climate Change Conference, often known as the "Conference of Parties" (COP), during their nineteenth summit (COP-19), they established the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts. The aim was to address the issue of loss and damage associated with the impacts of climate change, especially extreme events (floods) and slow-onset disasters, in developing countries that are particularly vulnerable to the negative effects of climate change[15].

[12] https://www.mow.go.tz/news/mawasiliano-ya-barabara-ya-dar-lindi-kurejea-ndani-ya-saa-72-bashungwa ,accessed on 15th June 2024

[13] https://www.tanroads.go.tz/news/read?id=334 , accessed on 15th June 2024

[14] The sustainable development Goals Extended report (11 Sustainable Cities and Communities), 2023

[15] https://unfccc.int/topics/adaptation-and-resilience/workstreams/loss-and-damage/warsaw-international-mechanism accessed on 20th June 2024

The Warsaw International Mechanism enhances knowledge and understanding of comprehensive risk management to address loss and damage, strengthen dialogue and coordination, enhance action and finance, and build capacity for addressing issues of loss and damage associated with floods[16].

Auditing efforts in this area will help to ensure that strategies and resources are effectively used to protect vulnerable populations from the adverse effects of climate change in the country.

1.3 Audit Design

This part explains the main audit objective, specific audit objectives, audit scope, sampling, data collection and analysis methods, and assessment criteria.

1.3.1 Main Audit Objective

The main objective of this audit was to assess whether the Prime Minister's Office (PMO) and the President's Office-Regional Administration and Local Government (PO-RALG) through Local Government Authorities (LGAs) effectively manage flood incidences to mitigate their social, economic, and environmental impacts.

1.3.2 Specific Audit Objectives

The audit focused on four specific objectives, which aim to assess whether:

(i) Planning for flood preparedness activities is effectively done to include early warning systems for flood risks and taking necessary actions;
(ii) Capacity-building activities are effectively implemented at the National, Regional and Local Government Authorities (LGAs) to impart knowledge to disaster management committees for the effective management of flood events;

[16] https://unfccc.int/topics/adaptation-and-resilience/workstreams/loss-and-damage/warsaw-international-mechanism accessed on 20th June 2024

(iii) There are prevention, response, and emergency recovery measures and timely valuations for loss of life, damaged properties, and infrastructure; and
(iv) PMO effectively monitors and evaluates flood management activities in collaboration with PO-RALG and LGAs to enhance the effective implementation of disaster management efforts.

To address the specific audit objectives mentioned above, the Audit Team developed five (5) audit questions and sub-audit questions presented in **Appendix 2**.

1.3.3 Scope of the Audit

The main audited entities were the Prime Minister's Office (PMO) and the President's Office - Regional Administration and Local Government (PO-RALG) through the LGAs. PMO is mandated to develop, coordinate, and review the implementation of disaster policies, legislation, acts, strategies, programmes, and guidelines related to managing floods. The Prime Minister's Office is also responsible for the overall implementation of the policy coordination of programs, operations, and plans regarding disaster management in the country. The office is also vested with the key function of coordinating national and international collaborations in flood-related disasters.

On the other hand, the PO-RALG plays a role in identifying flood disaster victims and properties, ensuring that provided relief reaches the affected target, and responding to flood disasters in collaboration with stakeholders.

Specifically, the audit focused on the assessment of the planning for flood preparedness activities, capacity building activities, prevention, response, emergency recovery measures, valuations for loss of life, damaged properties, and infrastructure, and PMO collaboration with PO-RALG and LGAs in monitoring and evaluating flood management activities.

Site verification information was collected from the selected regions: Dar es Salaam (Kinondoni MC), Pwani (Rufiji DC), Mbeya (Mbeya CC), Manyara (Hanang' DC), and Morogoro (Kilosa DC).

The audit covered four financial years from 2020/21 to 2023/24. It was also a period when the country experienced heavy rainfall that led to floods and

social and economic effects, as well as loss of lives. Also, the rationale for selecting this period was to assess the performance of the PMO and PO-RALG, which are the institutions responsible for managing flood activities, including preparedness, prevention, response, and recovery measures for floods. The chosen period facilitated the establishment of a trend in the management of floods. This was key to enabling the auditors to understand and draw appropriate conclusions and provide valid recommendations.

1.3.4 Assessment Criteria

To respond to the audit questions, the assessment criteria were drawn from various sources, such as the Regulations on Disaster Management and Strategic Plans and Guidelines, which give the respective audited entities the mandate and guidance to perform their functions regarding flood management.

The criteria were formulated to address the five specific objectives and clustered into three categories: stormwater management, planning for flood preparedness and prevention, and response and recovery measures for floods. These criteria are detailed below:

(a) Planning and Preparedness for Managing Flood Events

Section 4 (2) (p) of the Disaster Management Act No. 6, 2022 stipulates that the Prime Minister's Office, via the Disaster Management Division, is responsible for coordinating and managing early warning systems for flood risks, issuing warning messages, and taking necessary actions. Section 4 (2) (b) of the same Act obliges the Prime Minister's Office, through the Disaster Management Division, to oversee and manage flood control efforts in collaboration with ministries, sectors, and technical committees dedicated to disaster management. Moreover, Section 4 (2) (m) requires the Prime Minister's Office, through the Disaster Management Division, to develop and promote training programmes, research, innovations, public awareness initiatives, and practical community training for flood preparedness.

On the other hand, Section 7 of the Water Resources Management (Control and Management of Storm Water) Regulations, 2018 stipulates key responsibilities for Local Government Authorities (LGAs) in managing stormwater and mitigating flood risks.

Activity 3.5.1(i) of the PMO's approved functions and structure requires the DMD to prepare, coordinate, and monitor disaster preparedness and response plans.

Furthermore, Section 34 of Disaster Management Act No. 6, 2022, requires PMO through DMD to manage national relief funds collected from individuals and donors to prevent, respond, and recover from disaster impacts.

In addition, section 4 (2) (r) of Disaster Management Act No. 6, 2022 requires PMO through DMD to ensure the availability of adequate equipment by collaborating with relevant stakeholders and sectors to deal with disasters.

Moreover, Section 12 (e) of the Disaster Management Act No.6, 2022, requires DMD to prepare persuasive letters explaining the importance of support and cooperation in disaster management and humanitarian aid to obtain resources from donors, development banks, and United Nations organizations.

Section 7(e) of the Water Resources Management (Control and Management of Storm Water) Regulations, 2018, requires LGAs to consult with Basin Water Boards to develop and implement plans for the control and management of stormwater.

Likewise, regulation 6(1) of Disaster Management Regulations 2022 requires the establishment of Emergency Operations Centres (EOCs) at national, regional and district levels to be held under management at the relevant level in collaboration with the main operation centre.

(b) Response to Flood Management Activities

Section 31 (1) of Disaster Management Act No. 6, 2022, requires DMD to prepare capacity-building programs for committees established from national to village level, government institutions, and institutions of various sectors to provide the necessary services and procedures to be considered in disaster management.

Furthermore, section 6 (1) of Disaster Management Act No.6, 2022 requires the Prime Minister to establish flood disaster preventive and preparedness measures, such as the Prime Minister's orders to make people leave flood-prone areas or stay in a safe area during flood events.

Disaster Preparedness and Response Plan, 2022 is required to develop the terms of reference for conducting damage and needs assessment, establish and train damage and needs assessment staff, and compile information on damage to public and private property, the environment, and the accompanying needs of disaster victims.

Part One Section IV(A)–(V) of the National Disaster Communication Strategy 2022, from page 7 to page 22, stipulates procedures on emergency and communication structure at all levels, which includes general concepts with disaster response functions (DRFs), emergency communication strategies at all levels with communication tools and response facilities and resources. It also stipulates operational actions at all levels, i.e., national, regional and district levels. SOPs 5.8 and 6 of Standard Operating Procedures (SOPs) for Emergency Operation and Communication Centre (EOCC), January 2017, require emergency dispatch of the incidence to be determined depending on the nature and magnitude of the impacts. Subsection 4.4 (i)–(ii) of the National Disaster Management Strategy (2022 – 2027) also requires PMO to strengthen disaster response capacity and relief services at all levels with the targets aimed at National and local multi-sectoral disaster rapid response teams and volunteers strengthen, established and capacitated by 2025.

(c) Flood Prevention Activities

Moreover, Sub-section 4 (3) (w) of the Disaster Management Act 2022 requires the PMO-DMD to perform duties related to disaster risk reduction and disaster management.

On the Other hand, Section 3.4(i) of the National Disaster Management Strategy (2022 – 2027) requires the PMO through DMD to prevent and reduce disaster risk and manage it in collaboration with non-governmental actors, including international, regional, and bilateral cooperation.

Furthermore, Section 34(1) of the Disaster Management Act 2022 requires a National Disaster Management Fund. It also required PMO-DMD to set funds for recovery, rehabilitation, reconstruction and physical health for the communities affected by floods.

(d) ***Flood Disaster Recovery Measures for the Livelihoods and Damage to Properties and Infrastructures***

The National Disaster Preparedness and Response Plan of 2022 details the procedure to be followed in the first 72 hours after a disaster.

The Disaster Response Function (DRF) No. 8 (shelter and mass care operations) and No.14 (Transportation) of the National Disaster Preparedness and Response Plan 2022 require the Prime Minister's Office (PMO) to coordinate shelter and mass care operations, secure emergency feeding and shelter sites, and ensure access to essential supplies such as food, clothing, and sanitation for disaster victims, along with addressing special care needs.

Also, subsection 4(2)(u) of the National Disaster Management Act 2022 requires the PMO-DMD to coordinate and manage the rapid and comprehensive assessment of damage and restoration requirements due to the disaster's effects.

Section 4.5 of National Disaster Management Strategy 2022 – 2027 requires PMO-DMD to build back better in recovery, rehabilitation and reconstruction of the damaged and lost infrastructures.

Also, section 5 of the Disaster Management Act No. 6 of 2022 stipulates that there shall be an Emergency Operations and Communication Centre (EOCC) under the PMO-DMD, which will be connected to sector-specific centres.

Moreover, section 4(i) of the Disaster Management Act No. 6 of 2022 requires the PMO-DMD to Establish an information and communication technology system to link disaster stakeholders, track disaster trends, and monitor disaster conditions for timely prevention and response actions.

(e) Monitoring and Evaluation of Flood Management Activities

Sub-sections 7.1 to 7.3 of the National Disaster Management Strategy 2022-2027 require the PMO, in collaboration with other stakeholders, to keep track of the strategy's progress by facilitating a review of the performance of the NDMS implementation both at the input and output levels, using quantitative and qualitative indicators. This includes regular internal

reviews done by all ministries, regions, districts, wards/villages, and entry/exit points.

Moreover, Article 52 of the constitution of the United Republic of Tanzania states that the Prime Minister is responsible for supervising and controlling the activities of sectoral ministries and is the leader of Government Business in the National Assembly.

Furthermore, section 4 (2) (d) of the Disaster Management Act No. 6 of 2022 requires the PMO-DMD to coordinate ministries, departments, agencies, regional secretariats, local government authorities, and the private sectors in implementing disaster management strategies, plans, and guidelines.

On the other hand, sub-section 7.5 of the NDMS 2022-2027 states the output and deliverables of the NDMS's M&E system as progress reports from the monitoring system output, analytical reports of different studies to be undertaken, and updates through client service charter implementation reports.

Conversely, subsections 7.1 to 7.3 of the National Disaster Management Strategy (NDMS) 2022–2027 require stakeholders to establish monitoring and evaluation systems linked to the PMO and national frameworks under the Five-Year Development Plan and Tanzania Long-Term Perspective Plan. With other stakeholders, the PMO-DMD is responsible for tracking strategy progress through performance reviews at input and output levels using quantitative and qualitative indicators, including regular internal reviews across all administrative levels and key entry/exit points.

1.4 Sampling, Data Collection and Analysis Methods

This section describes the methodologies used in sampling, data collection, and data analysis for the audit:

1.4.1 Sampling Techniques

To assess flood management, the audit team employed a purposive sampling method to select regions and LGAs for data collection. The selection of regions and LGAs was based on factors such as urbanisation growth rate, the occurrence of major flood events in the past decade, and the severity of flood impacts on infrastructures. Within each identified region, the LGA

most affected by recent floods and landslides was selected for review, as presented in **Table 1.1.**

Table 1.1: Selected and Visited LGAs

Zone	Selection Criteria			Selected Regions and LGAs
	Urbanisation Growth rate and planning	**Major Flood events in the last 10 Years**	**Flood impact on infrastructure**	
Northern	Arusha Kilimanjaro Manyara (Hanang' TC)	Manyara (Babati TC/Hanang) Kilimanjaro (Moshi MC) Arusha	Manyara (Babati)	Manyara *(Hanang DC)*
Southern	Mtwara (City Council) Iringa Ruvuma Mbeya	Ruvuma Iringa Mbeya (Mbeya DC)	Mbeya (Mbeya DC)	Mbeya *(Mbeya CC)*
Central	Tabora Dodoma	Dodoma (Bahi) Dodoma (Chamwino)	None	Not selected
Western	Kigoma (Ujiji) Mpanda (Katavi	Katavi (Katavi, Mlele) Kigoma (Ujiji)	None	Not Selected
Eastern	DSM (Kinondoni, Ilala & Temeke) Morogoro (Kilosa), Tanga (Korogwe) Lindi (Ruangwa)	DSM (Kinondoni, Ilala & Temeke) Tanga (Korogwe) Morogoro (Kilosa), Lindi (Ruangwa and Kilwa) Pwani (Rufiji DC)	Dar es Salaam (Ilala, Kinondoni)	Dar es Salaam (*Kinondoni MC)* and Morogoro *(Kilosa DC)* Pwani *(Rufiji DC)*
Lake Zone	Mwanza (City Council) Kagera (Bukoba)	Mwanza (Ilemela)	-	Not Selected

Source: PMO - Tanzania Emergency Preparedness Response Plan, Water Sector Status Report, 2024

Based on factors in **Table 1.1**, the selected regions and LGAs were Manyara (Hanang' DC), Dar es Salaam (Kinondoni MC), Pwani (Rufiji DC), Morogoro (Kilosa DC) and Mbeya (Mbeya CC).

1.4.2 Methods of Data Collection

Both qualitative and quantitative data were collected to provide strong and convincing evidence on the performance of PMO and PO-RALG in managing flood disasters in the country. The audit team used different methods to collect information from the audited entities and other stakeholders.

These methods include *Interviews, Documents review and Physical Verifications/Observations,* as detailed below:

(a) Interviews

The Audit Team conducted interviews and discussions with officials from the audited entities. The interview method was used to collect information during the main study phase to respond to the audit questions and provide adequate conclusions against the audit objectives. The interviews allowed the audit team to get a broader understanding of the audit area and identify existing challenges, root causes and eventually, the consequences of those problems and challenges.

Appendix 3 provides a detailed list of individuals and entities interviewed during the main study and the reasons for interviewing them.

(b) Documents Review

Documents were reviewed to obtain appropriate and sufficient information that enabled the audit team to develop clear findings supported by collaborative evidence. The reviewed documents fell within the period under audit, i.e., 2020/21 up to 2023/24. The documents that were reviewed and the reasons for reviewing them are detailed in **Appendix 4.**

(c) Physical Verification/Observation

Physical verifications and observations were conducted on the selected flood-prone regions. During the verification and observation, the audit team assessed the extent to which flood management is implemented in the

selected regions to reduce human life loss and damage to properties and the environment.

1.4.3 Data Analysis Methods

a) Analysis of Qualitative Data

The analysis involved using content analysis techniques to organise and interpret qualitative data from interviews, document reviews, physical verification, and observation. Key steps included:

- Identifying and categorising concepts and facts based on priority;
- Tabulating qualitative data extracted from PMO reports;
- Quantifying recurring concepts or facts, such as repetitive events, and grouping them numerically; and
- Summing or averaging quantified data in spreadsheets to establish relationships between variables and measure PMO-DMD's performance in managing flood activities.

b) Analysis of Quantitative Data

- Quantitative data such as the number of available human resources and funds, and the impact of flood in terms of the quantity of the damaged and recovered properties and infrastructures from PMO-DMD were organised into spreadsheets as point or time series data. Relationships between variables were analysed using averages, percentages, and sums from audit questions;
- Data on disasters, specifically flood event data, were summarised to measure performance in flood management activities;
- Graphs and charts were used to visualise trends and explain findings based on the data on the performance of PMO-DMD in managing flood events; and
- Single-occurrence data which fell in one year or appeared once was presented directly with explanations of the key facts.

1.5 Data Validation Process

The Prime Minister's Office - Disaster Management Department and the President's Office - Regional Administration and Local Government (PO-

RALG) were given the opportunity to go through the draft report, comment on the figures, and present information. The Prime Minister's Office (PMO) and the President's Office - Regional Administration and Local Government (PO-RALG) confirmed the accuracy of the figures used and information presented in **Appendix 1** of the report.

Furthermore, the information was cross-checked and discussed with subject matter experts with backgrounds in disaster management to ensure the validity of the information presented in the Technical Audit Report.

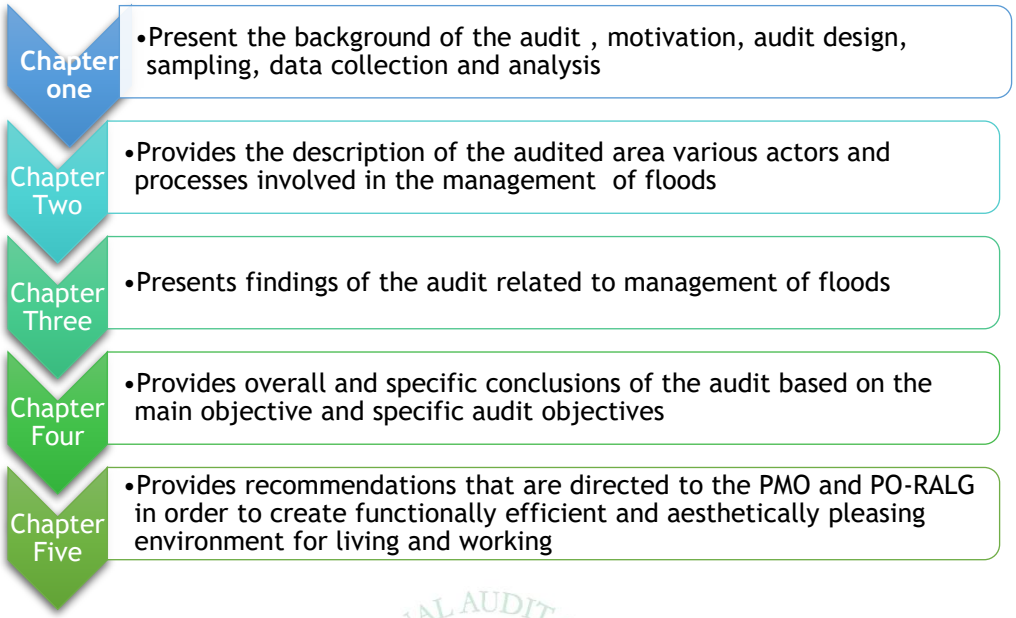
1.6 Standards Used for the Audit

The audit was conducted under the International Standards of Supreme Audit Institutions (ISSAIs) issued by the International Organization of Supreme Audit Institutions (INTOSAI). These standards require the audit to be planned and executed to obtain sufficient and appropriate evidence to provide a reasonable assurance of audit findings and conclusions based on the Audit objectives.

1.7 Structure of the Audit Report

The parts of the report covered are described in **Figure 1.1**:

Figure 1.1: Structure of the Audit Report



CHAPTER TWO

SYSTEM FOR FLOOD MANAGEMENT IN TANZANIA

2.1 Introduction

This Chapter describes the system for managing floods in Tanzania. It presents the policy and legal frameworks governing the system for managing floods in the country and the roles and responsibilities of key players involved. The chapter covers the functions, goals, and strategies for managing floods.

2.2 Policy and Legal Frameworks

This section gives a brief description of policies and legal frameworks that govern the management of disasters in Tanzania.

2.2.1 Governing Policy

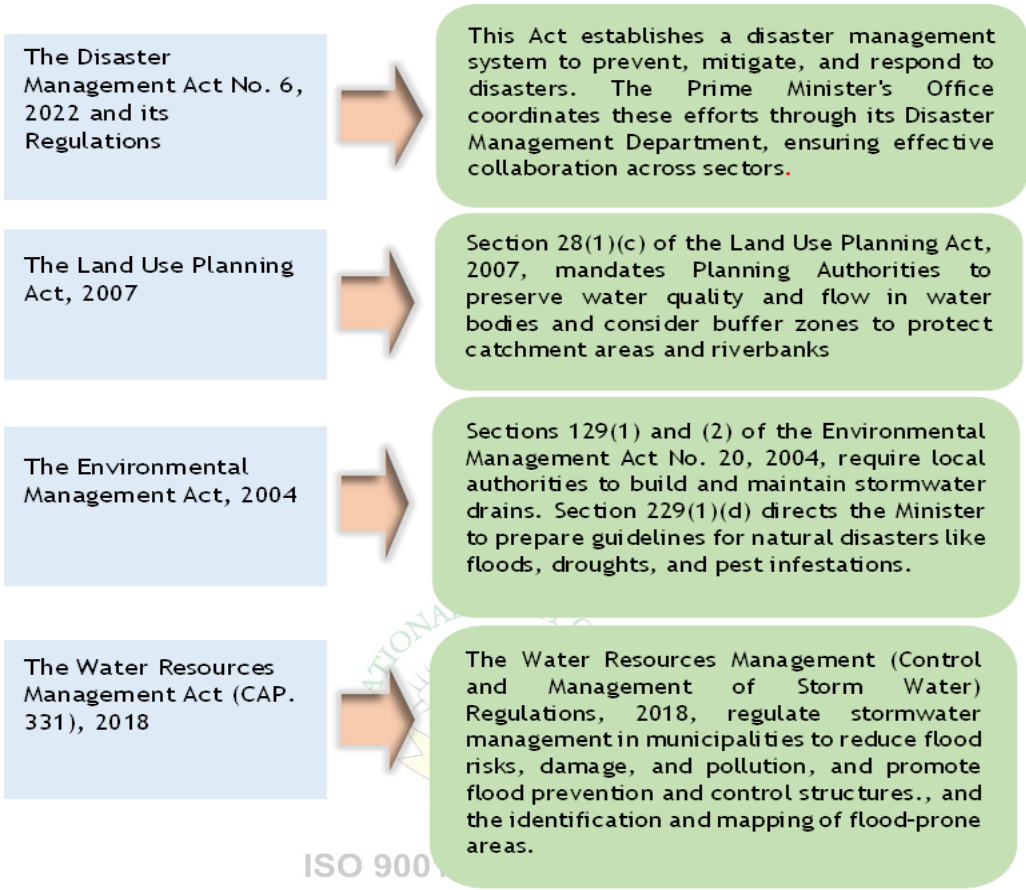
Disaster Management Policy, 2004

This policy ensures safe livelihoods with minimum disaster interruptions to social and economic development issues. It intends to develop adequate capacity for coordination and cooperation among key players at all levels for comprehensive disaster management. Also, the policy ensures public awareness of flood management and promotes research, information generation, and dissemination for disaster management.

2.2.2 Governing Legislation

Flood Management in Tanzania is mainly governed by Disaster Management Act No. 6 of 2022 and its regulations. Other relevant legal instruments include the Land Use Planning Act (2007) - which regulates land use to minimise exposure to flood risks; the Environmental Management Act (2004), which addresses environmental degradation and promotes sustainable land and water management, and the Water Resources Management Act (CAP. 331), 2018 - Ensures proper water resource utilisation and protection against floods. The details of each piece of legislation are discussed below.

Figure 2.1: Governing Legislations for Flood Management in Tanzania



Source: Auditors' Analysis of the Legislations, 2024

2.2.3 Guidelines, Plans, and Strategies for Flood Management

There are several guidelines, plans and strategies governing flood management, as highlighted below in **Table 2.1**.

Table 2.1: Guidelines, Plans and Strategies for Flood Management

Names of the Guidelines and plans	Purpose
The Guidelines for Management of Environmental Emergencies, 2014	Provides management guidance for environmental emergencies, including detailed responses to natural disasters like floods.
The National Operational Guidelines for Disaster Management, 2014	The main goal of the National Operational Guideline for Disaster Management is to reduce the impact of natural and man-made hazards and create a safer, resilient, and sustainable society through effective disaster preparedness, prevention, mitigation, response, and management.
The Five-Year National Development Plan III (2020/2021-2025/2026)	It aims to promote resilience to climate variability and natural disasters by protecting the environment, ensuring proper land use and water management, and mitigating environmental disasters like flooding and drought.
The National Disaster Management Strategy (2022-2027)	The strategy aims to create a disaster risk-sensitive and responsive society for sustainable development.
National Disaster Emergency Preparedness and Response Plan (NDEPRP), 2022	The NDEPRP is a multi-hazard plan outlining actions for responding to emergencies or major disasters, aiming to coordinate resources and services for effective response.
National Adaptation Plan of Action (NAPA) (2007)	The National Adaptation Plan of Action (NAPA) was created to address climate change impacts on agriculture, water, health, and energy sectors. Its main objectives are identifying urgent adaptation activities and raising public awareness of climate change impacts and adaptation efforts.
National Climate Change Strategy (2021-2026)	The National Climate Change Strategy was developed to address the negative impacts of climate change on society, the economy, and the environment. Its purpose is to enable effective adaptation and mitigation efforts.

Source: Auditors' Analysis of the Various Guidelines and Plans, 2024

2.3 Roles and Responsibilities of Key Actors in Flood Management

2.3.1 Roles of Key Actors

This section details the key actors' roles in managing floods in the country.

(a) Prime Minister's Office Through Disaster Management Division (PMO-DMD)

The Prime Minister's Office, through the Disaster Management Division (DMD), is responsible for coordinating disaster preparedness and management of civic contingencies (relief) and rescuing the nation from disasters and emergencies by performing the following functions as stipulated in the Disaster Management Act of 2022 Section 4(2):

i) To coordinate disaster preparedness and responsiveness in the Country;
ii) To carry out rapid damage needs assessment and recovery activities;
iii) To mobilise resources and administer distribution and utilisation of funds and relief supplies;
iv) To manage emergency operations and communication centre; and
v) To create public awareness of disasters.

The division is divided into four sections performing various activities, and each section is led by the Assistant Director, as highlighted in **Table 2.2**.

Table 2.2: DMD Sections and their Activities

Section	Activities
Operations and Coordination Section	Prepare, coordinate, and implement disaster preparedness and response plans; monitor their implementation; coordinate stakeholders; develop resource mobilisation strategies; solicit and manage funds and relief supplies; conduct post-disaster trauma support; and account for all funds, goods, and services provided for disaster relief.
Disaster Research Section	Conduct research in disaster-prone areas, develop mitigation strategies, coordinate disaster preparedness with stakeholders, assess damage and needs, maintain data for forecasting and early warnings, provide hazard mapping, follow global disaster management research, and raise public awareness on disasters.
Emergency Operation and Communication Centre Section (EOCC)	Receive, analyse, and disseminate disaster emergency information; provide early warnings; assess and monitor situations; manage national disaster operations; develop protocols for emergency management; coordinate operational centres; and disseminate disaster-related information.
One Health Section	Coordinate inter-sectoral cooperation for One Health (OH) operations and non-communicable diseases, including policy development and review. Oversee epidemics, pest infestations, antimicrobial resistance (AMR), food security, biosafety, and aflatoxin. Facilitate coordination among OH ministries, departments, agencies, and the private sector. Assist with resource solicitation, data sharing, and response systems, including rapid response teams and after-action reviews. Manage cross-border prevention and response, ensure public health risk management, and promote collaboration between Tanzania Mainland and Zanzibar and with local disaster committees.

***Source*:** Prime Minister's Office Organisation Structure, 2024

(b) President's Office – Regional Administration and Local Government (PO-RALG)

The Ministry is responsible for overseeing Local Government Authorities (LGAs) by creating an enabling environment for the implementation of the decentralisation policy, and associated laws, guidelines, and standards and

management of rural and urban development. This framework aims to enhance the capacity of the regions and local government authorities to deliver improved services to citizens and combat poverty. Additionally, PO-RALG is responsible for managing floods through:

i) Monitoring and evaluating the maintenance and development of urban and rural infrastructure in LGAs through the Infrastructure Development section; and
ii) Coordinating regional disaster-related activities through the planning and coordination section.

(c) National Steering Committee for Disaster Management

The National Disaster Management Steering Committee oversees disaster management and humanitarian services, approves the Disaster Management and Continuity of Services Plans, mobilises resources to strengthen national disaster management, and advises on declaring national disaster situations.

(d) National Technical Committee for Disaster Management

The National Disaster Management Technical Committee advises the National Disaster Management Steering Committee on strengthening disaster management, implementing its directives, and ensuring integration of disaster risk reduction into government policies and programs. It also aids in resource mobilization, advises on the National Disaster Management Fund's requirements, prepares the Disaster Management and Continuity of Services Plans, and promotes innovative national disaster management strategies and the use of information and communication technology.

(e) National Stakeholders Platform for Disaster Management

The National Stakeholders Platform for Disaster Management advises the National Disaster Management Technical Committee by integrating disaster risk reduction into national policies and development plans, supporting climate change and development goals, and fostering national dialogues on disaster management priorities. It contributes to the annual disaster situation report, advocates for resource mobilization from donors and organizations, and assists in acquiring essential disaster management data for planning and budgeting.

(f) Institutions for Flood Forecasting and Provision of Early Warnings

The Flood Forecasting and provision of early warnings is mainly done by the Tanzania Meteorological Agency and the Basin Water Boards (BWBs). This is because forecasting and early warnings require meteorological and hydrological data. Therefore, TMA regulates and coordinates meteorological activities, providing weather forecasts and climate services for the safety of life and property to various users of meteorological conditions and issuing severe weather-related warnings and advisories to ensure a single authoritative voice in this regard. The Basin Water Boards are responsible for the management, protection, development, and allocation of all water resources within their respective basins in the country.

(g) Regional Steering Committee for Disaster Management

The Committee directs and coordinates regional disaster management, oversees the Regional Disaster Management Experts Committee, and promotes resource mobilization. It approves disaster management and continuity plans, aligns with national plans, recommends impact reduction measures, and sets regional management priorities.

(h) Regional Technical Committee for Disaster Management

The committee advises the Regional Disaster Management Advisory Committee, coordinates disaster risk reduction and emergency management, and mobilizes regional resources. It prepares the Regional Disaster Risk Reduction Strategy, integrates the early warning system, and sets up a regional disaster data system. Additionally, it provides guidance on National Disaster Management Fund estimates, coordinates district plans, maintains disaster records, interprets early warnings, and develops a regional disaster profile.

(i) District Steering Committee for Disaster Management

The committee manages district disaster issues, oversees the District Technical Committee, mobilizes resources, sets priorities, approves disaster plans, and proposes impact reduction measures to the Regional Disaster Management Advisory Committee.

(j) City, Municipal, Town and District Technical Committee for Disaster Management

The city, Municipality, Town, or District Disaster Management Technical Committee is responsible for coordinating disaster management and emergency services, including resource mobilization, risk assessment, and integrating disaster risk reduction into development plans. It prepares and implements risk reduction strategies, conducts training, provides resource estimates, and establishes early warning and data management systems. The committee also maintains records of disaster events, interprets early warning information, and prepares disaster profiles for their respective areas.

(k) Ward Disaster Management Committee

The Ward Disaster Management Committee coordinates disaster management and emergency operations, mobilizes resources, implements disaster management plans, and disseminates early warning information. It also identifies potential disasters, maps vulnerable areas, takes preventive measures, and prepares disaster risk reduction strategies and emergency response plans for the Ward.

(l) Village Committee for Disaster Management

The Village Disaster Management Committee coordinates disaster management activities, disseminates early warning information, mobilizes resources, and educates the community on disaster prevention, mitigation, preparedness, and response. It identifies potential disasters and maps the vulnerable areas.

(m) Communities

Communities are frequently the first to respond to disasters and are often directly impacted. They play a vital role in ensuring adherence to land use plans, raising awareness about potential disaster risks, ensuring compliance with the guidance provided by the PMO-DMD during early warning alerts, and promptly reporting any signs of impending disasters to the Local Government Areas (LGAs). Their proactive involvement is essential for effective disaster preparedness and response.

2.3.2 Other Stakeholders and their Responsibilities

This section details the roles of other key stakeholders in the management of floods. It covers the Civil Society Organizations (CSOs), Tanzania Red Cross Society (TRCS), United Nations and International Organizations, Non-Governmental Organizations (NGOs), Media, Private Sector, Academic and Research Institutions as elaborated in **Table 2.3.**

Table 2.3: Roles of the Other Stakeholders in the Flood Management

Key Stakeholders	Roles
Civil Society Organizations (CSOs)	Civil Society Organizations play a crucial role in disaster management by developing and implementing community-based disaster response and recovery programs. These programs often integrate multiple phases of disaster management, such as response, recovery, and mitigation, to enhance community resilience.
Tanzania Red-Cross Society (TRCS)	The Tanzania Red Cross Society (TRCS) is a voluntary humanitarian organization that assists in disasters and health emergencies. It focuses on strengthening community preparedness and promoting activities to prevent and mitigate the effects of hazards.
United Nations and International Organizations	These organizations provide expertise, funding, and logistical support for flood preparedness, response, and recovery. They help in developing early warning systems, conduct risk assessments, and implement flood mitigation projects. Agencies like UNDP, FAO, WHO, WFP, and UNICEF often work with the government to build capacity and strengthen community resilience.
Non-Governmental Organizations (NGOs)	NGOs play a key role in flood management through community-based initiatives, raising awareness, providing emergency relief, and supporting recovery efforts. They also focus on long-term strategies like building flood-resistant infrastructure and promoting sustainable land-use practices.
Media	The media plays a crucial role in disseminating early warnings and educating the public about flood risks and safety measures, helping to prepare communities, reducing panic, and coordinating responses.
Private Sector	The private sector contributes to flood management by investing in resilient infrastructure, providing financial and logistical support during emergencies, and engaging

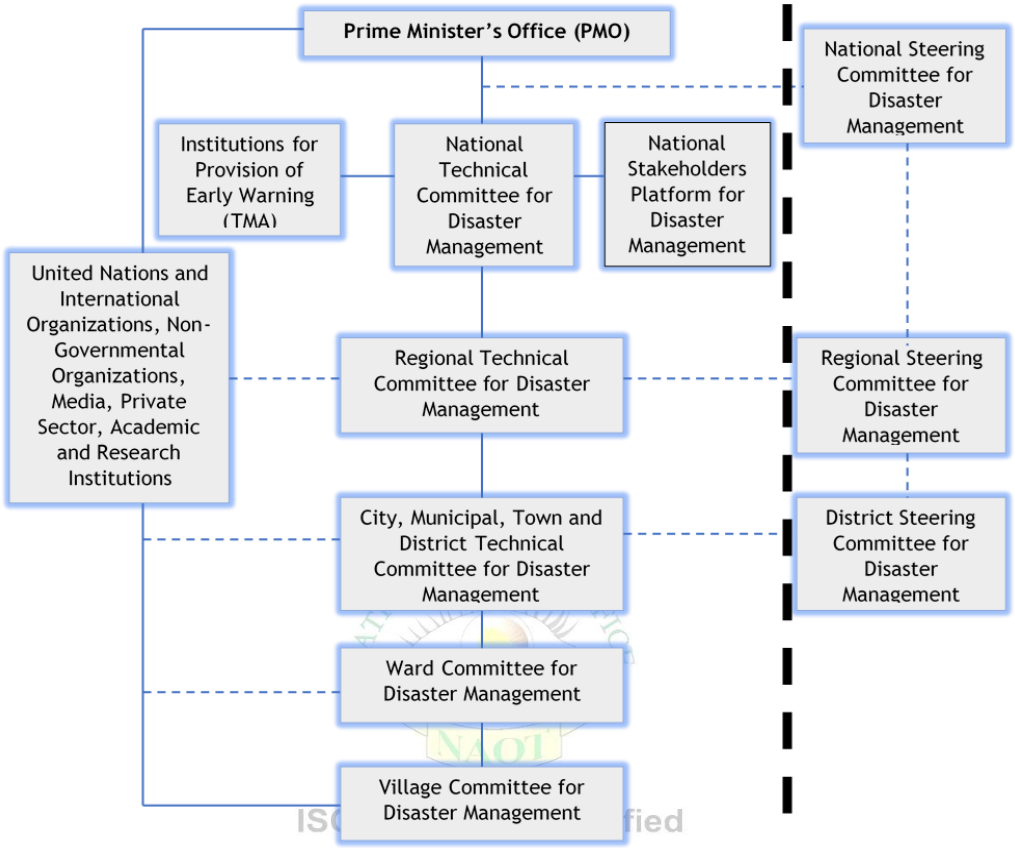
Key Stakeholders	Roles
	in public-private partnerships to improve disaster preparedness and response.
Academic and Research Institutions	These institutions research flood patterns, climate change impacts, and management strategies. They develop predictive models, assess vulnerabilities, and provide recommendations to policymakers, helping improve flood risk planning in Tanzania.

Source: Auditors' Analysis of Disaster Management Act, 2024

2.4 Institutional Set-up for the Management of Floods in the Country

The flood management activities are set up in a decentralised manner as depicted in **Figure 2.2.**

Figure 2.2: Institutional Set-up for the Management of Floods in the Country

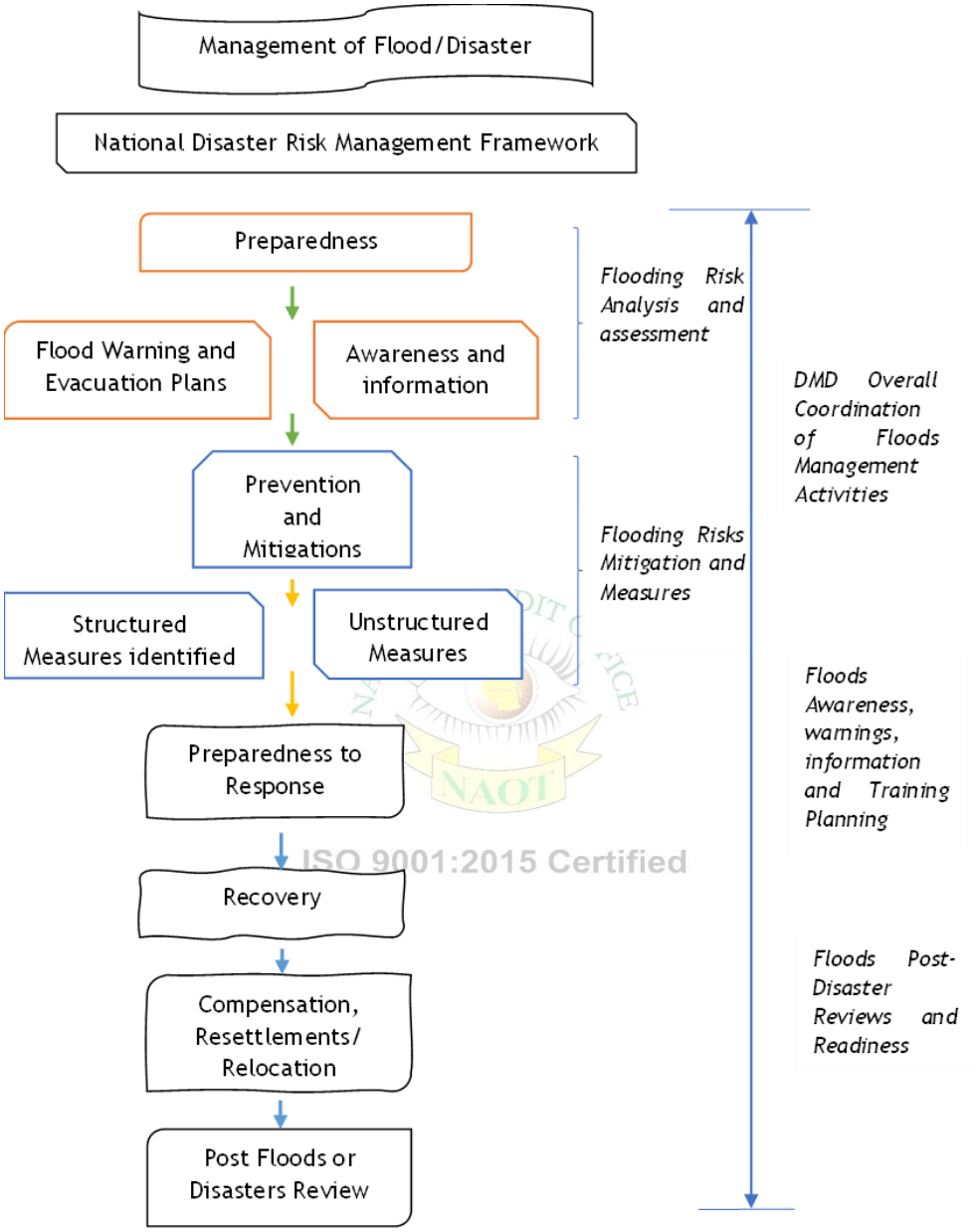


***Source*:** Auditors' Analysis of 2024 from Disaster Management Act of 2022

2.5 Key Processes, Activities and Responsible Entities in the Management of Floods

The National Disaster Management Policy (2004) outlines four key stages for flood control: preparedness, prevention, mitigation, recovery, and evacuation. **Figure 2.3** illustrates the procedures involved in managing flood control measures connected to these key stages of the disaster management cycle.

Figure 2.3: Flood Management Process



Source: Auditors' Analysis of 2024 from National Operational Guidelines for Disaster Management of 2014

Each stage in the process of flood management as shown in **Figure 2.3 is** further elaborated below:

2.5.1 Stages of Managing Floods

(a) Preparedness

PMO-DMD, LGAs, and stakeholders manage disaster preparedness and equip communities to protect lives, property, and the environment. This includes provision of early warnings and training, facilitation of communication, preparation of evacuation plans, and resource mobilisation for flood control.

(b) Prevention and Mitigation

The sector ministries and LGAs are supposed to incorporate flood control prevention and mitigation measures into their plans and adhere to relevant laws during implementation. These efforts should be informed by hazard identification, vulnerability assessments, and capacity evaluations to gauge disaster risk. Additionally, structural flood control measures require the stabilisation of rivers by constructing dams, detention reservoirs, floodways, and levees, which serve multiple purposes, besides conservation, including water supply, irrigation, and hydropower generation.

(c) Response

PMO is supposed to coordinate resources from other stakeholders for an effective response to flood events. The response involves activities from the detection of a flooding disaster to the stabilisation of the situation afterwards. Quick responses are vital for evacuating potential victims and saving lives and property. Also, LGAs, through Disaster Management Committees, play a vital role in responding to flood events as they deal directly with affected people and properties.

(d) Recovery

The PMO-DMD and LGAs, through their Disaster Management Committees, are responsible for mobilizing resources for recovery and addressing the damage caused by the flood to properties and infrastructure, as well as the loss of lives. The recovery activities also include activities at the beginning and after the flooding disaster's impact has stabilized and everything has

been returned to normal. The immediate objective of the recovery phase is to restore the physical infrastructure for basic public utility services.

(e) Post Disaster Review

The PMO-DMD, LGAs, through their Disaster Management Committees, sector ministries and agencies, are required to evaluate the implementation of available flood control measures after a disaster occurs. In addition to the procedures mentioned above, some other key steps are highlighted below:

i. Floods Risk Assessment

This process involves assessing the nature and extent of the likelihood of flood risks by examining current vulnerabilities that could potentially threaten community welfare, damage properties, disrupt services, and destroy the environment on which they depend[17].

ii. Flood Risk Mitigation

Prior actions are essential for reducing flood impacts on life and property. Flood risk mitigation aims to prevent disasters or lessen their severity through:

- Strengthening buildings and infrastructure with appropriate codes and protective structures like dams;
- Directing new developments away from flood-prone areas via zoning regulations; and
- Maintaining natural features to absorb and reduce flooding impacts

2.5.2 Disaster Management Training Plan

The PMO is also responsible for preparing a Disaster Management Training Plan. The Disaster Management Training Plan is designed to meet national, regional, and international needs. It provides training materials and programs to support government departments and agencies in enhancing their flood-related capabilities.

[17] Tanzania Emergency Preparedness and Response Plan (TEPRP, 2012)

2.5.3 Coordination of Activities Related to Disaster Management

The Prime Minister's Office (PMO) is responsible for coordinating disaster management activities at both national and local levels. Also, the Disaster Management Division (DMD) fosters collaboration among stakeholders, including government bodies, agencies, and local authorities, in all aspects of flood-related disaster management. The National Operational Guidelines for Disaster Management emphasises the importance of coordinating flood measures across all administrative levels and sectors to ensure a comprehensive approach to disaster management.

2.6 Resources for Flood Management in the Country

This section details the resources allocated to the Prime Minister's Office - Disaster Management Division for Floods Management.

2.6.1 Financial Arrangements for the Disaster Management at Prime Minister's Office

PMO receives financial resources from the government each financial year for its operations, inclusive of disaster management and flood management as part of disaster management. The analysis of fund allocation for the financial years 2020/21 to 2023/24 is shown in **Table 2.4.**

Table 2.4: Allocated Fund at PMO in Billions TZS(2020/21-2023/24)

Year	Approved Budget (TZS Billion)	Amount released (TZS Billion)	Actual expenditure (TZS Billion)	Released Amount in percent
2020/21	46.359	27.686	27.686	59.72%
2021/22	25.454	24.258	24.258	95.30%
2022/23	26.213	16.214	16.214	61.85%
2023/24	29.940	59.954	59.954	200.2%

Source: Auditors' Analysis on The Medium-Term Expenditure Framework (MTEF), 2024

Table 2.4 indicates funds that were allocated from the Financial Year 2020/21 to 2023/24. In 2020/21, TZS 46.359 billion were approved, out of which 27.686 billion were released and spent, equivalent to 59.72% of the approved budgets. In 2021/22, TZS 25.454 billion were approved, while the released and spent amount was TZS 24.258 billion were released and spent,

equivalent to 95.30% of the approved budget. In 2022/23, TZS 26.213 billion were approved, and TZS 16.214 billion were released. PMO spent TZS 16.214 billion out of TZS 26.213 billion, equivalent to 61.85% of the approved budget. The approved budget for the Financial Year 2023/24 was TZS 29.940 billion. However, the office received a total amount of TZS 59.954 billion, equal to 200.2%. The Audit Team further analysed the planned and spent funds specifically for the Disaster Management Division, as presented in **Table 2.5**.

Table 2.5: Allocation of Funds in the Disaster Management Division (DMD) in Billions TZS (2020/21-2023/24)

Financial Year	Budget Amount (TZS. Billion) (a)	Amount Released (TZS. Billion) (b)	Variation (TZS. Billion) (%) (c)=b-a	Percent of Variation (c/a) *100
2020/21	2.23	0.52	1.71	76.68%
2021/22	2.40	2.38	0.02	0.83 %
2022/23	0.53	0.44	0.09	16.91%
2023/24	14.32	13.76	0.56	3.91%

Source: Auditors' Analysis on The Medium-Term Expenditure Framework (MTEF) and Progress Reports for the Financial Year 2020/21-2023/24, 2024

Table 2.5 shows that in the Financial Year 2020/21, only 0.52 billion was released from a budget of TZS 2.23 billion, leading to a significant deficiency of 76.68%. The budget improved greatly in 2021/22, when TZS 2.38 billion was released from a budget of TZS 2.40 billion, creating a very small variation of just 0.83%. In 2022/23, the variation was moderate at 16.91%, with TZS 0.44 billion released from a budget of TZS 0.53 billion. However, in 2023/24, the budget increased to TZS 14.32 billion, and TZS 13.76 billion was released, resulting in a much smaller variation of 3.91%. The increase in the budget for the 2023/24 financial year was primarily driven by the early alert of the El Niño season.

Additionally, the significant rise in expenditures was attributed to response and recovery efforts following the widespread El Niño rains across various regions of the country and the mud flood event in Hanang' District, Manyara Region.

2.6.2 Human Resources at the Disaster Management Division, PMO

To execute effectively the intended functions, the Prime Minister's Office (PMO), through the Disaster Management Division (DMD), needs to have the optimal staffing mix required to facilitate the management of floods in the country. **Table 2.6** shows staffing levels in the Disaster Management Division (DMD) from the financial year 2020/21 to 2023/24.

Table 2.6: Staffing Levels in the Disaster Management Division from the Financial Year 2020/21 to 2023/24

Section	Required Staff (a)	Existing Staff (b)	Staff Needs (c)=a-b	Percentage of variation (c/a) *100
Disaster Research	14	3	11	79%
Operation and Coordination	23	7	16	70%
Emergency Operation and Communication Centre	15	2	13	87%
One Health	19	2	17	89%
Total	**71**	**14**	**57**	**-**

Source: Auditors' Analysis of Staffing Level at the Prime Minister's Office - Disaster Management Division, 2024

Table 2.6 shows that as of the Financial Year 2023/24, the number of existing staff was 14, with a deficit of 57 staff in PMO-DMD. There was a high requirement in one health section with a deficit of 89% and a relatively low deficit of 70% in the operation and coordination section.

CHAPTER THREE

AUDIT FINDINGS

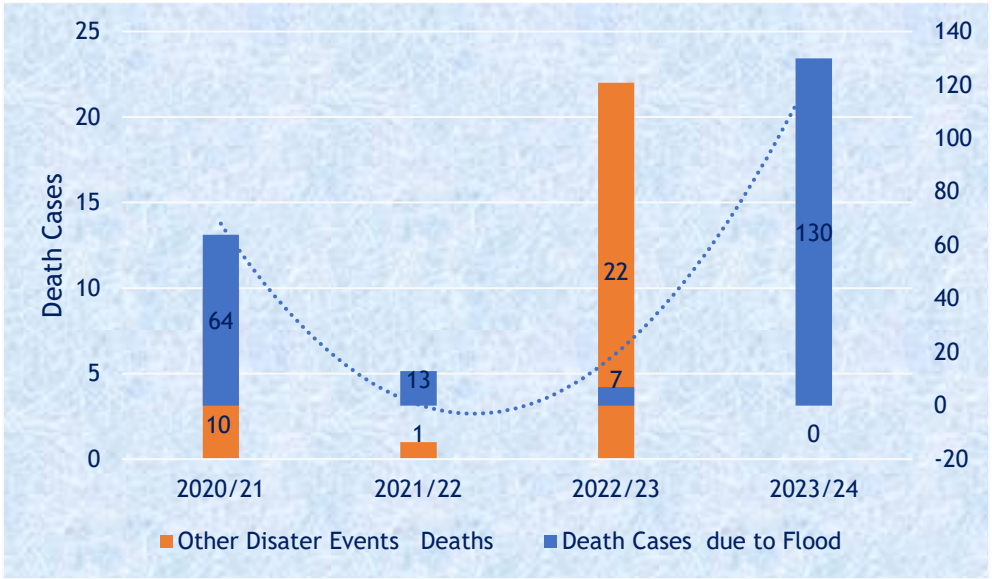
3.1 Introduction

This chapter presents the audit findings on the performance of the Prime Minister's Office in managing flood-related activities across the country through the Disaster Management Department and LGAs, respectively. The findings are linked to specific objectives that aimed to evaluate flood management measures, including planning, preparedness, response, prevention, and recovery measures. The findings are provided and discussed in the following sections.

3.2 Magnitude of the Flood Disasters and their Impacts on the Country

Floods are associated with several negative impacts, including loss of life, property damage, environmental degradation, crop destruction, and loss of livestock. For example, based on the reviewed flood statistics from 2020/21 to 2023/24, floods have had varying direct impacts on death. The audit compared the total number of deaths caused by flood events with those caused by other disaster incidents, such as fires (both natural and human-induced), cyclones, strong winds, and landslides, for the financial years 2020/21 to 2023/24. The results of this comparison are presented in **Figure 3.1.**

Figure 3.1: A trend of Death Cases Due to Flood Events



Source: Disaster Data Base and Report on the Coordination and Management of Disaster 2020/21 to 2023/24

Figure 3.1 shows that there was a total of 74 Deaths from different disaster events, including floods in 2020/21, 14 deaths in 2021/22, and 29 deaths in 2022/23. The Figure further shows that in 2023/24, there were a total of 130 deaths due to flood disasters only. It can also be seen that the number of deaths due to floods increased from 64 in the Financial Year 2020/21 to 130 in the Financial Year 2023/24. During the interviews, PMO-DMD officials explained that the increased number of deaths was due to increased flood events from the El Nino rains, which occurred from October 2023 to March 2024 throughout the country and the mudslide disaster in Hanang', which killed 89 people.

Despite the recorded increase in the number of deaths from floods by 66 in 2023/24, equivalent to 103% as compared to 2020/21, which was 64 death cases, PMO, in collaboration with PO-RALG and LGAs, did not implement preventive measures such as restriction of human activities in flood-prone areas to reduce the effects of floods in the future. As a result, the occurrence of a mud flood event in 2024 resulted in many losses of life.

Various reasons were provided by the PMO and LGA officials for the significant increase in flood-related deaths. One of the causes was inadequate awareness and a slow response from communities living in flood-

prone areas during search and evacuation efforts. Another reason was insufficient coordination effort among key stakeholders responsible for flood-related search and rescue. Moreover, inadequate coordination by PMO-DMD in collaboration with PO-RALG to ensure that LGAs implement mitigation and preparedness measures at local levels, including land use planning and management, which involves a restriction on development activities along and within flood-prone areas, contributed significantly to the increase of floods related deaths in the visited areas.

Apart from the loss of lives, the audit assessed other impacts, including the destruction of buildings, crops, livestock, road infrastructure, and others. The results of the analysis and the number of damaged properties for the financial years 2022/23 to 2023/24 are shown in **Table 3.1.**

Table 3.1: Loss of Properties and Environmental Damage from Floods

Financial Year	Type and number of affected properties			
	No of Buildings	Crops (Ha)	Livestock	No. of Roads (Km)
2020/21	10,299	1,795	710	38
2021/22	2,208	1	306,358	-
2022/23	975	7,899	603	33
2023/24	9,353	5,381	120	1

Source: Disaster Data Base and Report on the Coordination and Management of Disaster 2020/21 to 2023/24

Table 3.1 shows a slight decrease in damaged buildings from 10,299 in 2020/21 to 9,353 in 2023/24. However, damaged crops increased by 67%, from 1,795 hectares in 2020/21 to 5,381 in 2023/24. Livestock deaths decreased significantly from 710 to 120, and surprisingly, the Table shows that only one kilometre of road damage was reported in 2023/24.

Although these are formal data, the audit is of the view that there is inaccurate and conflicting data on the estimated length of damaged roads and other infrastructure and damaged properties. For instance, an audit review of the Assessment Report on the impacts of the El Niño rains in 2023 for the Dar es Salaam region revealed that the total length of damaged road networks was 146.08 km, which includes 83.06 km of earth roads and 63.02 km of gravel roads. The destruction of road infrastructures has contributed to the increase in road accidents and the loss of lives and property.

Generally, the increase in flood disasters and their impacts on people's lives and property are attributed to the following factors:

3.3 Inadequate Planning and Implementation of Flood Preparedness Activities in the Country

The audit noted that there was inadequate planning for flood preparedness in the country, as explained below.

3.3.1 Inadequate Planning and Budgeting by LGAs for Funding Flood Preparedness Activities Within their Jurisdiction

Based on the review of six visited LGA's budgets and MTEFs from 2020/21 to 2023/24, it was noted that only one LGA, equivalent to 16.67%, allocated funds for disaster management activities. The remaining five LGAs, equivalent to 83.33%, did not allocate resources for flood prevention and preparedness activities.

The audit further noted that only Rufiji District Council allocated TZS 60 million and TZS 10 million for disaster preparedness in the financial years 2022/23 and 2023/24, respectively. The other five LGAs, including Hanang' DC, Kilosa DC, Kinondoni MC, Rufiji DC, and Mbeya CC, did not allocate any funds for disaster coordination activities, as shown in **Table 3.2.**

Table 3.2: Inadequate Allocation of Fund for Disaster Coordination in the Visited LGAs

Financial Year	Budget Allocation per each LGA				
	Rufiji DC	Kinondoni MC	Hanang' DC	Mbeya CC	Kilosa DC
2020/21	No allocation	No allocation	No allocation	No allocation	No allocation
2021/22	No allocation	No allocation	No allocation	No allocation	No allocation
2022/23	60,000,000	No allocation	No allocation	No allocation	No allocation
2023/24	10,000,000	No allocation	No allocation	No allocation	No allocation

Source: Auditors' Analysis of Budget Allocations in the Visited LGAs for Flood Management, 2024

Table 3.2 highlights the limited budget allocations for disaster coordination activities, with only Rufiji District Council allocating funds during the financial years of 2022/23 and 2023/24, while the other LGAs did not allocate any funds including the funds for flood preparedness activities such as conduct training and public awareness.

Lack of funds for disaster preparedness can be attributed to the fact that Local Government Authorities (LGAs) have no specific budget codes for disaster management activities. The PMO-DMD's Officials explained that LGAs were required to implement the directives as stated in sub-section 31 (2)(a) of the Disaster Management Act No. 6 2022. It was further pointed out that PO-RLAG reminded LGAs to include disaster management activities (Mitigation, Preparedness, Response and Recovery) in their budget and plans during capacity-building sessions. However, there was no evidence to confirm the inclusion of disaster activities in LGA plans.

Furthermore, the absence of instructions from the Ministry of Finance through the Plans and Budget Guidelines for specific budget codes dedicated to disaster management activities has been a challenge for the LGAs in allocating disaster funds, especially the funds for disaster preparedness and prevention.

The site visit during an audit in six LGAs it was observed that only Rufiji and Kibiti councils, through their disaster management committees, managed to conduct training at council and ward levels for the financial year 2023/24 by using their own revenue source. The inability of LGAs to allocate funds for disaster management activities, particularly in communities within flood-prone areas, resulted in inadequate public awareness and practical training in flood preparedness and prevention. This gap contributed to the continued severe impacts of floods, including loss of lives and damage to farms, properties, and infrastructure such as crops, roads, and buildings.

3.3.2 Inadequate Capacity Building for Flood Preparedness Activities

Apart from the capacity-building programs and training interventions financed by the LGAs using their revenue sources, the audit also assessed the Capacity Building for Flood Preparedness Activities coordinated by PMO -DMD.

The assessment was done based on a review of progress reports and interviews with PMO-DMD officials. It was noted that there was different capacity-building training that took place from the Financial Years 2020/21 to 2023/24. **Table 3.3** summarises the capacity-building and disaster awareness activities conducted.

Table 3.3: Details of the Training for Capacity Building at the Regional Level

Financial Year	No. Regions	Participants	Training Report	Contents
2023/24	14	Disaster Management Committees (DMC) from 14 regions (Dar es Salaam, Pwani, Morogoro, Tanga, Shinyanga, Simiyu, Kagera, Kigoma, Mwanza, Geita, Mara, Kilimanjaro, Manyara na Arusha	Reports available	Disaster risk management for Regional DMC.
2022/23	2	30	Not Available	Disaster risk management and response training.
2022/23	3	Not specified.	Not Available	Disaster management committee discussions and training.
2021/22	Nation-wide (via media platforms)	Not specified.	Not Available	Seasonal rainfall forecasts, disaster states, and public preparedness through radio and TV.
2020/21	3	Not specified.	Not Available	Disaster risk management for Regional Disaster Management Committees.

Source: Auditors' Analysis of the Progress Reports at the PMO-DMD for the Financial Years 2020/21 to 2023/24, 2024

The analysis of **Table 3.3** Shows existing gaps and inconsistencies in the implementation and documentation of training activities over the years. In 2023/24, capacity-building training was conducted for regional Disaster Management Committees in 14 regions. The Table shows that in 2022/23, two training sessions involving 30 participants and three disaster management meetings were conducted. However, no reports or participant details were provided to confirm these activities.

Similarly, the nationwide public awareness programme was carried out in 2021/22 through various media platforms such as TV, radio, and social media. The audit further noted that the regional training sessions conducted in 2020/21 lacked essential data, including participant details and supporting reports for the training conducted at the regional level, as well as coverage and estimates of the people reached through other media platforms. The status of capacity-building training for Steering and Technical Committees at the District level is summarised in **Table 3.4.**

Table 3.4: Details of the Capacity Building Training at the District Level

Financial Year	No. LGAs	Contents	Participants	Training Report
2023/24	5 (4 in Tanga: Kilindi, Korogwe, Mkinga, Handeni; 1 in Kigoma: Uvinza)	Disaster risk management for District Disaster Management Committees.	District Disaster Management Committees from 5 LGAs.	Not Available
2022/23	3 (Korogwe, Meru, Kinondoni)	Community disaster reduction awareness.	300 participants from 3 LGAs	Report available for Meru-Arusha only and without attendance
2021/22	9 District Committees	Disaster risk management for District Disaster Management Committees.	Not specified.	Not Available
2020/21	1 (Kilosa)	Community disaster risk reduction and participation.	110 participants from Kilosa District.	Not Available

Source: Auditors' Analysis of the Progress Reports at the PMO-DMD for the Financial Years 2020/21 to 2023/24, 2024

Table 3.4 indicates that**, i**n 2023/24, capacity-building training was conducted in five LGAs (4 in Tanga and 1 in Kigoma) involving District Disaster Management Committees. In 2022/23, community training took place in three LGAs (Korogwe, Meru, and Kinondoni) with 300 participants (100 per LGA), while capacity-building training for district committees was held in nine LGAs, although the number of participants was not specified. In 2020/21, community awareness training in Kilosa involved 110 participants, focusing on disaster risk reduction and participation, generally, apart from having general information about the training and capacity-building activities conducted. The audit noted that PMO-DMD lacks a proper documentation system and requires the development of detailed training reports. This shortcoming undermines accountability for the funds utilised in training and hampers effective follow-ups on the implementation of the feedback obtained during these training sessions.

The review of PMO-DMD disaster management files revealed that no training or capacity-building programs were conducted for MDAs directly handling flood disasters, such as those of the Ministry of Water, the Ministry responsible for Environmental Management, and so on. Instead, training was only provided to national steering and technical committees at regional and district levels, depending on resource availability and accessibility. For example, in the Financial Year 2023/ 2024, capacity-building sessions were held for 14 regions, with representatives from each region and district.

Interviewed PMO-DMD officials pointed out that, each year, they plan to cover four regions for capacity-building training on annual disaster preparedness and mitigation to regional and district committees.

However, a review of the training program contents revealed that none of the conducted training sessions covered critical aspects such as methods for assessments of damage and loss during and after flood events and how to respond to early warnings, especially in lower levels such as Ward and Village Disaster Management Committees. This gap affected their knowledge and awareness of their legal responsibilities under the Disaster Management Policy (2004) and Act No. 6 (2022) at the Village level. The lack of adequate training and awareness programmes has left flood-prone communities without the necessary skills or response teams, leading to

ongoing loss of lives and damage to property and the environment during floods.

3.3.3 Inadequate Establishment of EOCC and Flood Response Teams at Regional Levels

The interviews conducted with PMO-DMD officials revealed that the flood early warning system at the national level consisted of different agencies, including TMA, Ministry of Water, Water Basin Boards (9 River Basin) and PMO (EOCC). At the regional level, flood early warning consists of EOCCs who coordinate with national agencies to disseminate early warnings within their regions.

Based on the reviewed disaster management files, the deficiency related to Early warning communication was largely due to the absence of the established Emergency Operations and Communication Centre (EOCC) across regions in the country. Currently, there are two Emergency Operations and Communications Centres (EOCC), one being located at the PMO headquarters and the second one at Dar es Salaam. As a result, most early warning operations remain highly centralised at the PMO headquarters in Dodoma to oversee activities across the country.

Also, the audit review of the letter with reference No. 1/KA.116/589/01 dated 16th August 2024 noted that PMO-DMD initiated the establishment of EOCs in 15 regions: Arusha, Mwanza, Mbeya, Kigoma, Rukwa, Songwe, Kilimanjaro, Katavi, Mtwara, Iringa, Ruvuma, Tanga, Dodoma, Mara and Kagera. During the audit period, it was noted that none of the regions had commenced operations, and they were waiting for PMO-DMD to conduct capacity-building on how to operate those centres. Based on interviews with PMO-DMD officials, capacity-building activities will be funded by FCDO through WFP starting from February 2025.

The absence of EOCCs and flood response teams has resulted in limited capacity within disaster management committees to monitor and take early actions against flood events.

Additionally, interviews with PMO-DMD officials revealed that communication for issuing early warnings was observed to be made electronically, specifically through electronic mail and direct phone

communications for issuing early warnings to LGAs, MDAs, and other relevant stakeholders.

However, the audit noted that PMO-DMD lacks a feedback and monitoring mechanism to verify whether the disseminated early warning information has been shared with lower levels, such as wards, villages, and community levels, and appropriate measures have been taken as directed.

The absence of feedback and monitoring mechanisms has led to inadequate implementation of the issued directives under early warnings, especially in communities living in flood-prone areas, leaving them unprepared and facing severe consequences such as loss of lives and damage to houses, buildings, and crops.

3.3.4 Inadequate Flood Forecasting and Early Warning Systems

Flood forecasting and early warning systems (EWS) are critical tools for minimising the impacts of floods on communities, infrastructure, and economies. The audit noted that EOCC uses the MYDEWETRA system, which allows for the direct sharing of information in real time from the TMA and MoW systems. Additionally, EOCC also receives real-time data from other platforms, including e-Station, Ventusky, Windy, AFIS (Advanced Fire Information System), and FIRMS (Fire Information for Rescue Management System).

These systems provide alerts, enabling authorities and the public to take preventive actions, such as evacuations or securing infrastructure. However, during the audit, it was still found that flood forecasting and early warning systems were inadequately coordinated, as elaborated below.

(a) Inadequate Flood Forecasting

Based on the assessed risk levels, the PMO-DMD prepares early warning flood bulletins, which are then communicated to the general public to inform them of the likelihood of flood occurrences. Despite developed forecasting systems, there is a shortage of technical staff in the EOCC centre to enhance efficiency and effectiveness in information processing.

To address this, efforts have been made to expand the staff base, with two technical personnel from TMA and Basin Water Boards to be stationed in

EOCC for direct links with their systems. This would facilitate the timely provision of data to the EOCC and improve early warning analysis. However, at the time of the audit, the request to the Public Service Recruitment Secretariat for additional staff had not been implemented.

(b) Inadequate Early Warning Information-sharing Systems

As explained in the previous section, PMO-DMD receives early warning information from the Tanzania Meteorological Authority (TMA) and the Ministry of Water through the Water Basin Boards. It then disseminates this information by sending letters to the Regional Administrative Secretaries (RAS) to take appropriate action in areas where severe weather is expected. The audit team assessed the timeline of early warning information dissemination and receipt at different levels based on the date the early warning was issued. The result is presented in **Table 3.5.**

Table 3.5: Early Warning Information Systems for Financial Years 2023/24

Issued Early warning	Date the Early Warning was Issued	Remarks
The expected severe weather conditions for the five days starting from January 30 to February 02, 2024.	30 January, 2024	There was no evidence of the receipt dates or acknowledgement of the letters, nor any indication of action taken for the issued early warning at the Regional, District, Ward, and Village levels.
The expected severe weather conditions for the five days starting from January 21 to March 25, 2024.	21 March, 2024	
Severe Weather Forecast for 12 to 14 April 2024	10 April, 2024	
Severe Weather Forecast for 14 to 18 April 2024	14 April, 2024	
Severe Weather Warning from 1 to 3 September 2024.	01 September, 2024	

Source: Auditors' Analysis of Preliminary Warning Letters and Bulletins from PMO-DMD, 2024

Table 3.5 shows that while early warnings for severe weather conditions were issued for specific dates in 2024 to the Regional Administrative Secretary (RAS), there was a lack of feedback letters showing receipt of

issued early warnings and action taken to mitigate the forecasted events, especially in lower levels such as district, ward, and village levels.

Inadequate tracking and follow-up of early warning communications affect local responses and raise concerns about the efficiency of reporting systems in ensuring timely preparedness and action.

Based on the observed conditions regarding the performance of early warning information management, the audit noted that most of these gaps were attributed to the following factors.

(i) The Absence of a System by PMO-DMD to Track the Dissemination and Implementation of Early Warning Information at Lower Levels

Interviews with the PMO-DMD officials indicated that early warning information is shared via email with the respective recipients, and the PMO-DMD confirms receipt by making follow-up calls. However, the PMO-DMD lacks a mechanism to verify whether the disseminated early warning information has been shared with lower levels, such as wards, villages, and community levels.

Based on the reviewed report on Capacity Building Training for Disaster Management Committees at the Ward and Village Levels, as well as Community Education on Disaster Preparedness and Early Warning in Rufiji and Kibiti Districts, the conclusion drawn indicates that reliance on Mobile Network Operators to provide wireless communication services, including voice, text, and data, was ineffective. This is especially the case in rural areas of these Districts due to the lack of network coverage.

ii) Lack of Budget Allocations for Disaster Management

Interviews with PMO-DMD officials and disaster coordinators in the visited LGAs revealed that there was no specific section dedicated to disaster coordination, including preparedness. This limits their ability to effectively disseminate information and implement measures to prepare for and respond to potential impacts. A review of the Guidelines for the Preparation of Plans and Budgets from the Financial Year 2020/21 to 2023/24 revealed the absence of a specific budget code for disaster coordination and preparedness activities. This gap hampered the allocation of adequate resources for flood management at the LGAs.

3.3.5 Inadequate Public Awareness of Flood Preparedness

An audit review of DMD's annual progress reports showed that DMD conducted public awareness and training for the community through radio and television programs, social media, International Disaster Risk Reduction Day (13 October), and Saba Saba and Nanenane exhibitions each year.

However, the audit noted that there were no assessments conducted by DMD to evaluate the number of people reached and the effectiveness of conducted training in reducing the effects of flood events. In addition, the audit noted that there was no prior set number of people to be educated and trained as performance indicators. The absence of a prior target resulted in failure to evaluate the adequacy of provided awareness campaigns and training.

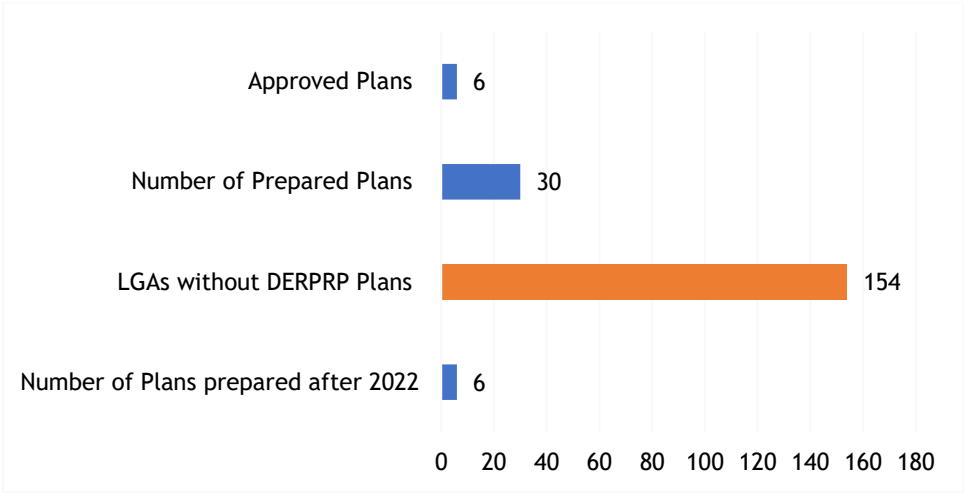
In addition, during an audit site visit in the Dar es Salaam, Pwani, Morogoro, and Manyara regions, it was noted that disaster management committees did not conduct public awareness for flood preparedness in flood-prone communities during the past four years covered in this audit. Coordination activities were conducted on an ad hoc basis, typically as a reaction after a flood incident had occurred.

Generally, the failure to conduct flood preparedness and prevention training was due to inadequate resource mobilization and insufficient funding. The audit found that, only 25% of disaster management funds are allocated for preparedness. There was also a staffing shortage, with 80% of DMD staff needs unmet. Additionally, there were no rapid flood response teams in flood-prone areas, except for one established in Dar es Salaam.

3.3.6 Inadequate Preparation of Emergency Plans as a Proactive Measure to Get Prepared for Flood Events

A review of Annual Progress Reports from 2020/21 to 2023/24 indicated that LGAs were directed to prepare Disaster Emergency Preparedness and Response Plans (DEPRP) for the anticipated flood events. However, the Audit noted that only 30 DEPRPs had been prepared and approved, and the remaining 154 LGAs did not prepare DEPRPs for the forecasted flood events, as shown in **Figure 3.2.**

Figure 3.2: Preparation and Approval of the Disaster Emergency Preparedness and Response Plans (DEPRP)



Source: Auditors' Analysis from LGAs' DERPRP, 2024

Figure 3.2 shows that 30 out of 184 LGAs, equivalent to 16%, managed to prepare disaster emergency preparedness and response plans (DERPRPs). This suggests that 84% of LGAs did not prepare their DEPRPs. Among prepared preparedness plans, only 6 out of 30 plans were prepared in 2022 after the enactment of the Disaster Management Act. Specifically, only the LGAs of Ilemela MC, Hanang' DC, Rufiji DC, Hai, Kinondoni MC, and Kyela DC have prepared disaster emergency preparedness and response plans aligning with the Disaster Management Act 2022.

The audit team reviewed the availed Disaster Emergency Preparedness and Response Plan (DEPRP) and noted that out of 30 approved DERPRPs, only 6 DERPRPs included key features such as proposed evacuation Routes, Temporary Shelters, and Communication Strategies to Manage the Impact of Floods during Emergencies.

The inadequate preparation of emergency plans was attributed to a lack of close oversight of flood preparedness activities. For instance, during the audit site visits, it was noted that for all the visited LGAs, no one had a specific budget code for disaster management activities, including flood preparedness, in the approved budget. In addition, more efforts in flood management remained focused primarily on response and recovery after flood events rather than on proactive planning.

3.3.7 Inadequate Restriction of Human Activities in Flood Prone Areas

The audit site visits observed the continuation of human activities in flood-prone areas, including those related to farming, education, and health services. This indicates that there is no adequate control over human activities and encroachment in flood-prone areas.

Furthermore, the audit found that in all five visited regions, there were no LGAs that established physical demarcations such as fences, beacons, or warning boards to limit human activities in these areas. In addition, there was no documented evidence that LGAs conducted frequent patrols to monitor, control, and manage human activities, including settlement building and farming in flood-prone areas. The interviewed LGA officials said that, verbal warnings are normally given during community meetings, but little effort is taken to follow up on those warnings.

Based on the observation made during the site visit at Rufiji DC, Kinondoni MC, Mbeya CC, Kilosa DC and Hanang DC, no LGAs had any document or form of restriction order nor close monitoring of human activities in areas with recurring flood events. The audit observed Kilosa district's dominance of onion farming activities along upstream sections of Mkondoa river banks, which attributed to river siltation and river depth reduction, resulting in flooding in the downstream areas.

Also, the audit site visits observed the continuation of human activities, including farming, education services, and health services, at Gendabi village (Hanang district) despite the occurrence of mud floods and landslides in less than 10 months. Likewise, there has been established a human settlement and vegetable farming within a 60m river reserve area in the Msimbazi River, Kinondoni, and Rufiji River, Rufiji.

On the other hand, the audit review of disaster management correspondences noted that town planning and urbanization development were not adequately controlled to ensure human activities were not taking place in flood-prone areas. Also, the audit noted that there is a failure to mainstream disaster risk management as an integral part of decision-making when it comes to the establishment of land use and development plans, zones, and issuing building permits.

Furthermore, the audit noted that PMO-DMD had taken a more reactive approach, focusing on rescuing people and preventing human activity after flood events rather than coordinating with LGAs to restrict human activities in flood-prone areas before the occurrence of flooding events. The reactive approach of flood management has resulted in various undesired impacts, such as deaths, damage to properties, damage to the environment and so on, as it has been illustrated in **Photos 3.1 (a)** to **(c).**

Photos 3.1(a)-(c) showing the Flood Impacts on Visited LGAs

Photo 3.1 (a): Shows restoration and continuation of human activities in Gendabi village, which is a mud flood and landslide-prone area *(caption by Auditors on 21st September 2024)*

Photo 3.1 (b): Showing established settlements at river edges along the Nyakasangwe river in Boko ward in Kinondoni Municipality *(Caption by Auditors in July 2024).*

Photo 3.1 (c): showing an established Settlement within a flood-prone area in the lower part of Muhoro Ward in Rufiji District 3along Rufiji River *(Caption by Auditors in July 2024)*

3.3.8 Inadequate Need Assessment of Equipment and Tools for Search, Rescue and Evacuation in Floods Preparedness Plans

Audit interviews with PMO-DMD officials, along with a review of disaster management correspondence files from 2020/21-2023/24, revealed that the PMO-DMD had no current clear picture of the readily available equipment for flood rescue operations such as helicopters, speedboats, life jackets, and rescue boots. This was because there were no updated capacity assessment reports on standby and available equipment for emergency response in the country. The report on the last assessment on the availability of search, rescue and evacuation equipment was conducted in 2022 and was reviewed during the audit. It was noted that the report did not establish a comprehensive list of required resources or a clear acquisition method. Specifically, it did not define the specific requirements for search and rescue tools and equipment.

At the LGA level, all six visited LGAs had prepared Disaster Emergency Preparedness and Response Plans (DEPRP) and Disaster Risk Reduction Strategies (DRRS). While these documents identified locations where some equipment could be accessed in their areas, they did not define specific estimated quantity requirements to ensure that these resources were adequate and accessible when needed. Another issue noted in the LGAs was the lack of a clear plan for the regular assessment of the condition of these equipment. This situation could undermine their preparedness and ability to respond effectively to emergencies.

Apart from the identified inadequacy in the needs assessment of equipment and tools for search, rescue, and evacuation in flood preparedness, the Audit Team noted that the information from the Impact Assessment Reports submitted to the PMO-DMD by the visited LGAs was insufficient. This was evident from the reviewed reports of recent disaster events, including the landslides in Hanang and Mbeya, as well as floods in Kilosa, Kinondoni, and Rufiji. These reports lacked actionable recommendations for establishing a framework to monitor, evaluate, and enhance preparedness regarding search, rescue, and evacuation equipment.

Furthermore, a review of the annual action plans at both the LGA and regional levels showed no consideration of past disaster experiences in their

plans. This indicates a lack of preparedness, which could lead to failure in responding effectively in the event of similar floods or landslide disasters.

3.4 Inadequate Monitoring of the Planning and Implementation of Stormwater Management Master Plans (SWMMPs) as a Proactive Measure for Flood Prevention

The audit team expected PMO-DMD to coordinate with PO-RALG through LGAs to manage the stormwater by controlling and directing rainwater runoff to minimise its impact on the environment and infrastructure. Intervention in stormwater management could have reduced risks and problems associated with floods to a great extent. It was revealed that stormwater management was inadequate, leading to water contamination and increased flooding. The audit also found weaknesses in addressing these issues linked to several causes, as discussed in the following sub-sections.

3.4.1 Ineffective Identification, Mapping, Demarcation and Protection of Flood Prone Areas

The identification, mapping, demarcation and protection of flood-prone areas are key components in the management of flood risks. Effective collaboration between the PMO-DMD and other sectoral ministries, particularly PO-RALG, is important to ensure proper monitoring of these areas to mitigate flood risks effectively and protect the existing vulnerable communities.

However, the audit team noted gaps in the identification, mapping, demarcation, and protection of flood-prone areas by the PMO-DMD in collaboration with other sectoral ministries and agencies.

Interviews with the officials from the PMO-DMD highlighted that there is an increasing establishment of new settlements in both rural and urban areas without adequate consideration of flood-related hazards and flood-prone zones. It was further elaborated that, the identification, mapping, demarcation and protection of flood hazard-related areas are currently underway in collaboration with the sectoral ministries, non-government organisations and agencies, though the component has not been incorporated in the annual plans in some of the LGAs.

During the interviews with officials from the PMO-DMD, it was noted that the Ministry of Finance had initiated fiscal measures to enhance disaster preparedness. These measures include ensuring that activities such as identifying, mapping, demarcating, and protecting flood-prone areas are integrated into the annual budget and planning processes (Disaster Fiscal Implications). However, a review of the budget guidelines for the financial years 2020/21 to 2023/24 revealed that disaster preparedness items, codes and components were not included in the annual budget preparation and planning at the Local Government Authorities (LGAs).

Inadequate identification and mapping of areas prone to hazardous flood incidences/events was due to the following factors.

(a) Inadequate Preparation of the Disaster Emergency Preparedness and Response Plans

PMO-DMD, in collaboration with Disaster Committees in the LGAs, has managed to develop Disaster Emergency Preparedness and Response Plans (EPRP), as well as strategies for Disaster Risk Reduction (DRR) in local authorities that were identified as being at higher risk of flood disasters. These plans and strategies were developed following an assessment of disaster risks, vulnerability, and response capacity. The development of the aforementioned plans and strategies was carried out alongside the identification of disaster-prone areas, including those vulnerable to floods.

The Audit Team noted that 30 out of 184 Local Government Authorities (LGAs) in Tanzania Mainland, representing 16%, have developed Disaster Emergency Preparedness and Response Plans (EPRPs) and strategies for Disaster Risk Reduction (DRR). Similarly, it was found that only 6 of these 31 EPRPs were prepared following the implementation of the Disaster Management Act of 2022. Among the five LGAs covered in this audit, four LGAs, including the Kilosa DC, Kinondoni MC, Rufiji DC and Hanang DC, managed to have EPRP and disaster Risk Reduction Strategies, while Mbeya DC did not have the plan and strategy. The preparation of these plans involved members of the Disaster Management Committees to ensure a shared understanding and to strengthen their implementation[18].

[18] Report of the Parliamentary Committee on Administration, Constitution, and Legal Affairs on how the government is prepared to respond to disasters and the

Table 3.6 shows the performance of five visited LGAs in mapping, demarcation and protection of flood-prone areas within their jurisdiction.

Table 3.6: Identification, Mapping, Demarcation and Protection of Flood-prone Areas in the Visited LGAs

Local Government Authority (LGA)	Status			
	Identification	Mapping	Demarcation	Protection
Dar es salaam (Kinondoni Municipality)	✓	Mapping of disaster, i.e., flood-prone areas to be prepared by June 2028	×	×
Pwani (Rufiji DC)	✓	Mapping of disaster, i.e., flood-prone areas to be prepared by June 2027	×	
Morogoro (Kilosa DC)	✓	×	×	×
Manyara (Hanang DC)	✓	Mapping of disaster, i.e., flood-prone areas to be prepared by June 2029	×	×
Mbeya (Mbeya DC)	✓	×	×	×

Source: Auditors' Analysis of the EPRP and DRR Strategies of the Visited LGAs, 2024

From **Table 3.6,** it was observed that, identification of the areas prone to floods has been conducted in all visited LGAs, i.e., Kinondoni in Dar es Salaam, Rufiji in Pwani, Mbeya DC in Mbeya Region, Kilosa in Morogoro, and Hanang in Manyara Regions. Also, mapping for areas that are prone to flood disasters has been scheduled to be completed in 2027, 2028, and 2029 in Rufiji, Kinondoni and Hanang LGAs, respectively, while no milestones for mapping areas prone to floods have been indicated in the EPRP prepared by Mbeya DC and Kilosa LGAs. None of the visited LGAs have managed to

disaster management and coordination system for preventing and reducing the impact of disasters, 2024.

demarcate and protect the identified flood-prone areas. (***Refer to section 3.3.7*** of this report for similar observations).

The Audit Team noted that the identification of disaster-prone areas, particularly floods, was inadequate. Interviews with LGAs and a review of their Impact Assessment Reports showed that identification relied mainly on field observations. This approach neglected the use of more robust scientific methods, such as Geographic Information Systems (GIS) and hydrological surveys, which could provide a more comprehensive analysis of flood-prone areas. The identification process done using unscientific and poor techniques may lack precision and fail to capture critical data necessary for effective disaster risk management. Employing advanced techniques in these processes is crucial as it enhances the accuracy of flood risk assessments, facilitates better planning, and ultimately improves the community's resilience to flood disasters.

The letter with Ref. CA.82/108/03/120, dated September 19, 2023, regarding the implementation of the national emergency plan for addressing the impacts of El Niño, indicates that the Prime Minister's Office instructed sector ministries, including the Ministry of Lands, to develop an emergency national plan to mitigate El Niño impacts. Following directives from the emergency meeting of the Disaster Management Experts Committee, one of the tasks assigned to the Ministry of Lands was to identify, map, and manage hazardous lands. This was to be done through regional land officers, focusing on areas vulnerable to flooding. It also included reserving areas according to Master Plans and detailed layout proposals for regions likely to be affected by El Niño.

Despite the efforts of the PMO-DMD and various sectoral ministries, there has been lack of action in enforcing land-use regulations designed to prevent encroachment into flood-prone areas. A review of the Preliminary Impact Assessment Reports on flooding, submitted to the Prime Minister's Office from various LGAs across the country, indicated that floods are often intensified by the presence of residences and houses in flood-prone areas and waterways.

Furthermore, inadequate preparedness for disaster emergencies was attributed to the omission of disaster preparedness components—

particularly the identification, mapping, demarcation, and protection of flood-prone areas—from the annual budgets and plans of the LGAs.

Through the review of implementation reports for disaster management, including flood disaster management, it was noted that disaster prevention and preparedness receive little attention. In contrast, significant funds are mobilized and used for flood response, which could otherwise be allocated to flood preparedness. For example, Out of TZS 13.76 billion expenditure of PMO-DMD in the last Financial Year, only TZS 370.442 million, equal to 2.69%, was used for disaster preparedness. Also, LGAs have no budget for this activity at all. However, the cost of responding to and recovering from disasters has been significant, as preparedness activities are not included in the annual budget. For example, in Hanang' in 2023, over TZS 10.927 billion was spent on reconstructing collapsed housing units, restoring affected water and electricity services, and repairing damaged road infrastructure.

(b) Insufficient Coordination in Mapping and Managing Flood-Prone Areas

The audit found that the Prime Minister's Office - Disaster Management Division (PMO-DMD) did not sufficiently coordinate the mapping and managing the flood-prone areas in collaboration with the sector ministries such as the Ministry of Lands, Housing, and Human Settlements Development, the Ministry of Water (MoW) through Basin Water Boards (BWBs) and others. This lack of collaboration has hindered the effective identification, monitoring, and management of regions vulnerable to flooding, thereby impacting the ability to implement timely and coordinated disaster risk reduction measures.

In addition, a review of the hydrological report from the Ministry of Water (MoW) ***(Appendix 5)*** indicated that the Wami Ruvu Basin mapped 41 flood-prone areas. However, the Basin has achieved only 10% of its goals in the construction and rehabilitation of prevention infrastructure, such as dams and 5% in the construction of retention structures. According to the basin's progress report, various feasibility studies for flood control structures have been completed, and recommendations have been made for the construction of more infrastructures. However, the Basin Water Board has been facing financial challenges in implementing the proposed infrastructure and climate resilience projects.

On the other hand, the audit, through a review of the Rufiji Basin implementation reports, noted that the Basin had implemented a flood management plan for 15 flood-prone areas, with activities such as the installation of hydrometers in various parts of the basin, which was complete at 60% at the time of the audit. However, challenges still persist, including limited funding, lack of technical expertise, and community resistance due to unawareness in managing flood disasters and land-use conflicts, particularly the practice of farming or grazing cattle in protected areas. The audit further noted that some areas in this Basin, such as the Kilombero Valley and Ifakara Town, remain highly vulnerable and require focused community sensitization and the installation of reliable early warning systems.

In addition, the audit found that flood-prone areas in basins such as Lake Nyasa, Lake Rukwa, Lake Tanganyika, and Lake Victoria have not been adequately identified and mapped. These basins face flood management challenges, and most of their plans were still under development at the time of this audit in November 2023. For example, the installation of modern hydrometers was at various stages across the basins, but other critical aspects of disaster preparedness, such as community awareness, disaster-related financing mechanisms, and the lack of modern equipment, were not reported. The basin report indicates that towns like Kanoni and those along the Mara River in Lake Victoria are at immediate risk of flooding.

The failure to coordinate between PMO-DMD, Basin water Boards and LGAs in the identification, mapping, demarcation, and protection of these vulnerable zones has exposed communities to frequent flooding, leading to continued property damage, displacement and higher public spending on disaster relief.

3.4.2 Absence of Stormwater Management Master Plan (SWMMP) for Effective Management of Stormwater Runoffs

Intervention in stormwater management could have reduced risks and problems associated with floods to a great extent. The good practices require that PMO, in coordination with sectoral ministries, agencies and stakeholders through the Disaster Management Division (DMD), develops a stormwater management Master Plan (SWMMP) as part of the effort to manage stormwater runoff, mitigate flooding risks, reduce pollution, and

protect water quality in local water bodies[19]. The development, dissemination, and implementation of such a plan by the PMO-DMD could be critical for ensuring long-term resilience against stormwater-related challenges.

However, through interviews and a review of the progress and implementation reports, it was found that, PMO-DMD did not develop and share with relevant sectors, including the President's Office-Regional Administration and Local Government (PO-RALG), Ministry of Water, Vice President's Office-, Local Government Authorities and Municipalities, and private sector stakeholders a comprehensive Stormwater Management Master Plan (SWMMP). Due to that reason, there are no key strategies for managing stormwater runoffs, mitigating flood risks, and enhancing water quality. Also, PMO-DMD lacks specific measures such as periodic reviews and improvements of the stormwater infrastructures, green stormwater solutions, and pollution control initiatives.

The absence of the SWMMP has prevented the adoption of appropriate remedial measures when floods happen, especially in prone areas, and has led to increased pollution in local water bodies, degradation of water quality and other undesirable impacts. These issues affect public health and safety and increase the cost of future disaster response and water treatment efforts.

For example, based on the Assessment Report of the Impacts of the Rainy Season Associated with the El Niño Phenomenon in Dar es Salaam, of November 2023 the Dar es Salaam region experienced significant impacts, including 14 fatalities, 17 injuries, and the destruction of 2,916 buildings. Major rivers overflowed, causing widespread damage to homes and affecting five primary and four secondary schools. Key infrastructures were also impacted, with 146.08 km of roads, drainage channels, and 130.25 acres of food crops destroyed. Additionally, 120 livestock were lost, including 80 chickens and 40 pigs.

Also, based on the Report on the Implementation of Measures to Respond and Restore Conditions Following the Impacts of Landslide Disasters in

[19] Stormwater Management Master Plan and Flooding Strategy: Town of Innisfail - Municipal Class Environmental Assessment, 2023.

Hanang District, Manyara Region, July 2024, a total of 261 houses were affected. Among these, 95 were completely destroyed, 49 were partially damaged, and 117 were surrounded by mud. The mudslide disaster also destroyed 754.875 acres of farmland and disrupted 742 small- and large-scale businesses. Additionally, key infrastructures for water supplies, road networks, and electricity networks were heavily damaged.

In addition, based on the Report on the Implementation of Disaster Response Activities in Rufiji District for the Period of January - March 2024, in Rufiji, about 28,374.74 acres of crops were damaged or destroyed, affecting 1,338 households. In addition, the disaster led to the collapse of 628 buildings.

3.4.3 Inadequate Reviews of Stormwater Management Measures

The review of the progress and implementation reports and interview with the officials from the PMO-DMD highlighted that the division has not coordinated well with LGAs in conducting regular reviews on the stormwater management measures. This has limited its ability to evaluate if available measures were resilient and effective in addressing unexpected flood incidents. It was also noted that the PMO-DMD did not have an established schedule for reviewing stormwater management measures despite significant weather events in the country.

The review of the preliminary impact assessment reports on flood incidences of 2023/24 that were submitted to the PMO-DMD from Kinondoni MC indicated that the existing road drainage systems, culverts, ditches, and rivers did not have the sufficient capacity to manage the high volume of water. Also, the same scenario of inadequate capacity of culverts, ditches, and river water was reported from Kilosa DC that flood water has resulted in collapsing bridges and culverts and leading to water overflow and subsequent flooding in residential areas.

Furthermore, based on the reviewed assessment report covering the audit scope from the financial years 2020/21 to 2023/24, it was noted that the preliminary impact assessment reports for flood incidents were based on real-time rainfall data, and they did not include up-to-date climatic projections or simulations of extreme weather events, limiting their usefulness in assessing the resilience of the infrastructures. This was

evidenced during the heavy rains that were received in the last months of the 2023/24 rainy season. Such rains resulted in the occurrence of floods due to the overflow of rivers, which broke their banks or changed their direction, leading to significant damage to residential areas and electrical and road infrastructures, as depicted in **Photos 3.2 (a)** and **(b).**

Photos 3.2(a)-(b): Typical Appearance of Buildings, Roads, and Electrical Infrastructures

Photo 3.2(a): Stormwater carrying solid wastes leading to blockage of the waterway under the bridge caused by illegal dumping of solid wastes along the river banks.
(Caption: Auditors' Analysis of the Floods Impact Assessment Reports of the Effects of El Nino in Dar es Salaam July 2024)

Photo 3.2(b): Residential buildings, roads, and electrical infrastructures were invaded by flood waters caused by water overflow over the river banks along the flood-prone areas of Muhoro Ward in the Rufiji District along the Rufiji River.
(Caption by Auditors at July 2024)

Management and Development of Stormwater Infrastructures

The Audit Team found that PO-LARG, through LGAs, has not collaborated with PMO-DMD in undertaking various measures and projects for stormwater management, particularly in the most frequently affected areas, such as the Msimbazi Basin, in the Dar es Salaam region, currently managed under

the Msimbazi Basin Development Project[20]. Stormwater and sanitation infrastructures in Dar es Salaam City are poorly managed. Generally, Dar es Salaam City has limited stormwater drainage systems, although it is among the most frequently flooded and affected areas in the Country. The audit noted that more than 50% of the stormwater drainage systems in Dar es Salaam are in poor condition, and many are blocked by solid waste and siltation[21].

With regard to combating stormwater and flooding impacts, the audit noted that the efforts were unevenly distributed. This is due to the fact that several measures were directed to Dar es Salaam City's valleys at the expense of the other river valleys that are equally affected by flood waters, such as the Mkondoa River in Kilosa District, the Upper Kilombero River in Kilombero District, and the Rufiji River in Rufiji District. The intervention gaps in stormwater and flood management can be observed in **Table 3.7**, which shows stormwater management programs across the visited Local Government Authorities (LGAs).

[20] Flood Management Feasibility Study for The Msimbazi Middle Catchment Area, 2021
[21] Tanzania Urban Resilience Program, 2021

Table 3.7: Major Projects for Stormwater Management Measures in the Visited LGAs

Visited LGAs	Measures (Stormwater Project)	Name of the Stormwater Project	Value
Hanang DC	No	-	-
Rufiji DC	No	-	-
Kinondoni MC	Yes	Construction of Flood Control and Storm Water Drainage Systems in Kinondoni Municipality	
		groundwater recharge water treatment and reduce erosion	USD 256 Million
		Flood management for the Msimbazi Middle Catchment Area[22].	USD 114 Million.
Mbeya DC	No	-	-
Kilosa DC	No	-	-

Source: Auditors' Analysis of the DMDP Phase 2 - Environmental and Social Management Framework, 2023 and Feasibility Study Report for The Msimbazi Middle Catchment Area, 2024.

Table 3.7 summarizes stormwater projects across five visited Local Government Authorities (LGAs). Only Kinondoni Municipality has active initiatives, including two major projects: a USD 256 million project on flood control and stormwater drainage system to enhance urban resilience to climate change and a USD 114 million project on flood management effort for the Msimbazi Middle Catchment Area. In contrast, Hanang DC, Rufiji DC, Mbeya DC, and Kilosa DC reported no stormwater management projects, highlighting a critical gap in disaster preparedness interventions in flood-prone areas.

The ineffective stormwater management approaches in these river valleys have resulted in rapid erosion of the river banks, sand siltation, and rising the river bed, especially in the lower parts of the river, which in turn creates floodplains as indicated in **Photos 3.3(a)** to **(f).**

[22] The Msimbazi Basin Development Project - Environmental and Social Management Framework (ESMF) Draft Report, 2021.

Photos 3.3(a)-(f): Effects of Ineffective Stormwater Management Measures

Photos 3.3(a): Banks erosion of the Tenge River due to the high speed of stormwater runoffs at Kigogo Ward in Kinondoni Municipality.
(Caption by Auditors in July 2024)

Photos 3.3(b): River bank erosion exposing the residential building to the risk of collapsing along the Nyakasangwe river at Boko ward in Kinondoni Municipality.
(Caption by Auditors in July 2024)

Photos 3.3(c): Sand Sedimentation and siltation resulted in raising of the river bed and causing the overflow on the river banks at Mkondoa River in Kilosa District.
(Caption by Auditors in September 2024)

Photos 3.3(d): Residential areas invaded with water in the lower part of Muhoro Ward in the Rufiji District along the Rufiji River.
(Caption by Auditors as of July 2024)

Photos 3.3(e): Box culvert under the Standard Gauge Railway (SGR) ridge for discharging stormwater from one side to another along the Standard Gauge Railway (SGR) ridge in Kilosa district.
(Caption by Auditors in September 2024)

Photos 3.3(f): The other side of the box culvert where there is no continuation of the flood water discharge channel under the Mitre Gauge Railway (MGR) ridge, resulting in accumulation of flood waters affecting the neighbouring areas along the Standard Gauge Railway (SGR) ridge in Kilosa District
(Caption by Auditors in September 2024)

The ineffective stormwater management in the district indicated above appears to stem from a lack of dedicated resources for stormwater management reviews and insufficient prioritization of climate resilience aspects in their plans.

As a result of the irregular and ineffective reviews, several stormwater management measures have not been implemented to handle unexpected flood incidents. This has resulted in infrastructure failure, property damage, and potential harm to local communities, especially during rainy seasons.

3.4.4 Non-development and Implementation of Localised Stormwater Management Guidelines and Plans

Stormwater management guidelines and plans are important for addressing the specific stormwater challenges in different areas. The PMO-DMD plays a key role in coordinating with LGAs and Basin Water Boards to ensure that these plans are developed and aligned with the broader Stormwater

Management Master Plan (SWMMP), providing tailored solutions to mitigate local flood risks and protect water resources.

The audit team found that the localized Stormwater Management Master Plan and guidelines have not adequately been developed in the LGAs. Interviews with the officials from the visited LGAs indicated that management of stormwater is mainly undertaken by agencies like Tanzania Rural and Urban Regulatory Agency (TARURA) and Tanzania National Roads Agency (TANROADS) by developing plans and guidelines and construction of non-structural stormwater management measures based on the stormwater behaviour of the respective areas for flood mitigation purposes.

Furthermore, the Audit Team found that stormwater management measures at building, plot and neighbourhood levels are exercised individually depending on household income, with no common stormwater management plan to manage runoff at the neighbourhood or the valley level[23]. Plot owners adopt such measures to safeguard their assets against impacts of stormwater runoffs such as soil erosion and pluvial floods.

Individualised efforts are attributed to the absence of a centralized stormwater management master plan to enable LGAs to formulate local SWMMP that will be adopted individually at building, plot and neighbourhood levels.

A major challenge identified is the lack of technical expertise and non-allocation of resources in flood preparedness, including the development of stormwater plans for flood mitigation. In addition, the audit noted that there is insufficient coordination between LGAs and Basin Water Boards, as it was further noted that, collaboration with Basin Water Boards has generally been ineffective in areas where flood risk is high. Basin Water Boards were supposed to provide valuable input on hydrological data, water quality issues, and basin-specific concerns, which could have been integrated into localized plans. Instead, the Basin Water Boards are much more concerned with protecting the sources of river catchment than managing stormwater. This has led to fragmented approaches to stormwater management.

[23] Needs and Options for Stormwater Quantity and Quality Management, 2019

The failure to develop and implement localized stormwater management plans based on the centralized SWMMP poses risks, including continued flooding in vulnerable areas and water quality degradation. Without a coordinated approach between LGAs and Basin Water Boards, regional water management efforts may be compromised, leading to fragmented and less effective flood mitigation measures.

3.4.5 PMO, in Collaboration with Basin Water Boards, has not Effectively Promoted Rainwater Harvesting Technologies to Reduce Stormwater Runoff

Rainwater harvesting is critical for managing stormwater runoff, reducing flood risks, and promoting sustainable water use. By capturing and utilizing rainwater, it is possible to alleviate pressure on stormwater systems and mitigate the environmental impacts of excessive runoff. The audit is of the view that, although PMO-DMD is not directly involved in infrastructure-related activities, it has the responsibility of ensuring adequate coordination between PMO, the Basin Water Boards, and LGAs in promoting rainwater harvesting technologies as one of the flood control measures.

A review of the Strategic Plan of the Ministry of Water (MoW) concerning the Construction and Repair of Water Dams in the Country, 2023 indicated that for the Financial Years 2022/23-2025/26, the Ministry of Water, through Basin Water Boards planned to undertake various projects for the construction and rehabilitation of Water Dams i.e., Multipurpose dams and Charco Dams to enhance the reliability and availability of sufficient water for various economic, social, and environmental sustainability activities, to protect roads and railways infrastructures from being eroded by water during heavy rainfall and, to address disasters caused by climate change, such as droughts and floods. (**Appendix 6).**

Additionally, a review of the hydrological data from the Ministry of Water (MoW) revealed that, through the Basin Water Boards, the Ministry planned the construction of several multipurpose dams for the financial years 2020/21 to 2023/24. These dams aimed to mitigate flooding effects, among other objectives.

Table 3.8 shows the availability of multipurpose dams across the nation as managed by the Ministry of Water through Basin Water Boards for the financial year from 2020/21 to 2023/24.

Table 3.8: Availability of Major Multipurpose Dams Managed at The National Level

Financial Year	Total Number of Planned Multipurpose Dams	Total Number of Available Multipurpose Dams	Total Number of Unavailable Multipurpose Dams	Percentage of Unavailable Number of Multipurpose Dams
2020/21	120	-	120	100%
2021/22	120	8	112	93%
2022/23	120	10	110	92%
2023/24	120	12	108	90%

***Source*:** Auditors' Analysis of the Hydrological Data from the Ministry of Water, 2024

Table 3.8 shows that there has been a gradual decrease in the gap for multipurpose dams to be constructed across the country. The audit noted that in each financial year, two new multipurpose dams were constructed in different areas across the country.

However, the audit noted that with the deficit of 90% of multipurpose dams by the financial year 2023/24 it would take approximately more than 50 financial years to reach the full targeted number of multipurpose dams across the country unless necessary and immediate actions are taken to increase mobilization of resources for the implementation of dam's construction projects.

Table 3.9 shows the availability of small multipurpose dams in visited LGAs for financial years 2020/21 to 2023/24 as managed by the Ministry of Water under Basin Water Boards**.**

Table 3.9: Availability of Small Multipurpose Dams Managed at the LGAs Between 2020/21 and 2023/24

Name of the Small-Scale dam	Total number of planned multipurpose dams (A)	Total number of available multipurpose dams (B)	Number of non-constructed multipurpose dams (A-B)	Deficiency of multipurpose dams (%)
Kinondoni MC	-	-	-	-
Rufiji	9	3	6	67%
Kilosa	5	0	5	100%
Hanang'	3	0	3	100%
Mbeya CC	8	0	8	100%

Source: Auditors' Analysis of the Hydrological Data from the Ministry of Water, 2024

From **Table 3.9**, the audit noted that no LGA had reached the targeted number of multipurpose dams to reduce flooding effects. The findings showed that only Rufiji, among all five district councils that were visited, had at least managed to reach 33% of the targeted number of multipurpose dams. The other LGAs did not manage to construct even a single multipurpose dam. The audit found that the LGAs failed to implement dam construction plans because they did not have sufficient budgets.

Moreover, a review of the hydrological data from the Ministry of Water (MoW) indicated plans to implement various Charco dam construction projects for rainwater harvesting and flood control, as shown in **Table 3.10.**

However, an audit review of the Ministry's Strategic Plan for the Construction and Repair of Water Dams in the Country (2023) revealed that from financial years 2022/23 to 2025/26, most of the Charco dams were either constructed or planned to be constructed in arid regions, where drought prevails, with the goal of mitigating water shortages during dry seasons. This focus put less priority to the areas prone to flooding, where flood control measures were urgent.

Table 3.10 presents the Charco dam projects constructed across various regions.

Table 3.10: Availability of Charco Dams Managed at the National Level

Financial Year	Total Number of Planned Charco Dams (A)	Total Number of Available Charco Dams (B)	Number of Non-constructed Charco Dams C=(A-B)	Deficit of Charco Dams (C/A) (%)
2020/21	50	0	50	100%
2021/22	75	2	73	97%
2022/23	120	6	114	95%
2023/24	180	12	168	93%

Source: Auditors' Analysis of the Hydrological Data from the Ministry of Water, 2024

Table 3.10 shows that there has been a gradual decrease in the construction gap for charco dams across the country. The audit noted that in each financial year, there was a gradual increase in the number of constructed charco dams in different areas across the country.

However, the audit noted that the number of constructed charco dams was still very low compared to the demand. The audit noted that the deficit of these dams up to the financial year 2023/24 was 93%.

Furthermore, during visits to the Local Government Authorities (LGAs), it was observed that only the Rufiji District Council had one operational Charco dam, holding a total water volume of 46,998 m^3. However, in other visited LGAs, such as Kinondoni Municipal Council (MC), Kilosa, Hanang, and Mbeya City Council (CC)—areas most affected by floodwaters, these dams were not available. This suggests that there is inadequate development of rainwater harvesting and flood control infrastructures in these areas.

In addition, the Ministry developed a nine-month plan, from November 2023 to July 2024, to construct Charco dams (rainwater ponds) to support economic activities and enhance resilience against climate change, particularly drought, in regions with low rainfall. It was noted that the five visited LGAs which were covered in this audit did not benefit from these projects because they are not located in dry areas. **(Appendix 6).**

Furthermore, despite efforts by the Basin Water Boards to build retention and detention water dams aimed at flood prevention, there has been insufficient management of these dams by Basin Water Boards in

collaboration with the Local Government Authorities (LGAs) to meet the intended goals and outcomes of minimizing flood effects. The audit site visit in Kilosa DC noted that Kidete dam along the Mkondoa River was partially constructed and a retention pond along Ng'ombe River in Kinondoni Municipality was not well maintained, which reduced capacity to perform their intended function and resulted in the continuation of flood effects within the areas.

Also, preliminary impact assessments report on floods incidents submitted to the Prime Minister's Office from various LGAs indicated that agricultural, livestock and other economic activities along the banks of the dams, dykes and within water reservoirs designed to manage stormwater runoffs have notably contributed to siltation, leading to a reduction in water depth in the reservoirs as depicted in **Photos 3.4 (a)** to **(d).**

Photos 3.4(a)-(d): Typical Appearance of the Abandoned Kidete Dam Project and Dyke along the River Mkondoa

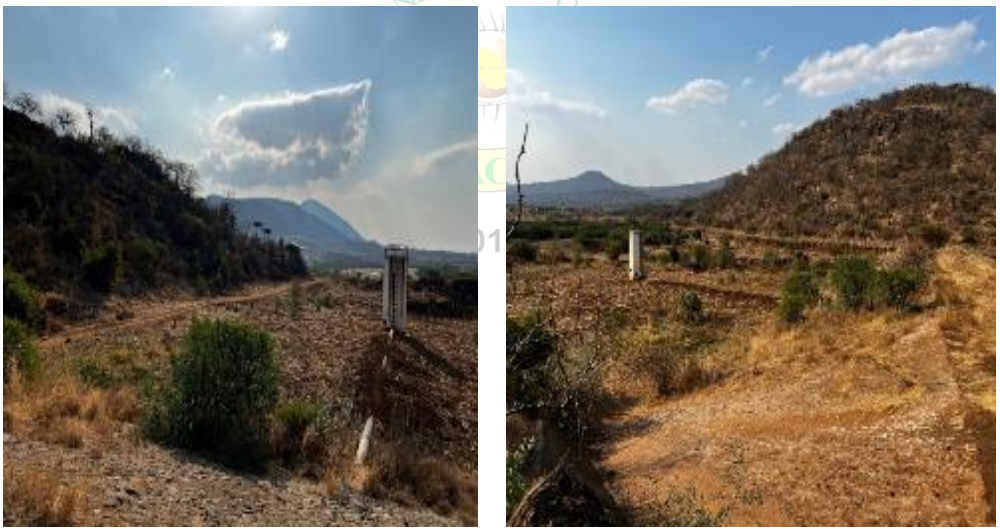


Photo 3.4(a): The abandoned Kidete Dam project was undertaken to harvest rainwater to reduce the stormwater runoffs in the Mkondoa River at Kidete Ward in Kilosa District to mitigate effects from floods and serve other purposes, including irrigation schemes.
***(Caption** by auditors in September 2024)*

Photo 3.4(b): Retaining ridges made of stones constructed to uphold river stormwater are continuously eroded by the speed of the surface runoffs at Kidete Ward in Kilosa District.
(Caption by auditors in September 2024)

Photo 3.4(c): The dyke which was built to control flood waters along the Mkondoa River in Kilosa District.
(Caption by auditors in September 2024)

Photo 3.4(d): The dyke has been eroded on its banks due to agricultural and livestock activities undertaken therein in Kilosa District.
(Caption by auditors in September 2024)

The Audit Team also conducted an investigation to determine the effectiveness of coordination between PMO and Basin Water Board (BWB) in promoting rainwater harvesting. The findings revealed that there is ineffective coordination between the two authorities in promoting the monitoring and evaluation of rainwater harvesting activities.

After reviewing the annual action plans for financial year 2020/21-2023/24, the audit team noted that PMO-DMD did not work well with the Basin Water Boards to develop a clear system for monitoring and evaluation of their work in promoting rainwater harvesting. This system could have helped to assess

how well the Basin Water Boards promoted rainwater harvesting and how effective the dams were in reducing stormwater runoffs, especially with the increased rainfall caused by climate change. Climate Change is likely to affect the location, type, and magnitude of flooding in both urban and rural areas. As a result, it is necessary to include climate change considerations in the design of new flood management structures or the assessment of existing structures by enlarging existing spillways to accommodate potentially more intense precipitations and, thus, possibly larger floods in the near future[24].

Interviews with the PMO-DMD officials and review of the progress/implementation reports from the financial year 2021/21 to 2023/24 showed that despite the significant efforts and investments made in rainwater harvesting infrastructure by the Ministry of Water through Basin Water Boards (BWBs), the PMO-DMD has not established a mechanism to measure and track the progress and impact of these activities in reducing stormwater runoff.

It was also noted that the interventions are primarily reactive, occurring only during the likelihood of disaster events, such as periods of high rainfall or El Niño seasons, rather than being part of a proactive, year-round strategy for flood management.

This hinders the ability to monitor and evaluate the capacity of constructed dams and other flood control measures to address the challenges posed by increased rainfall, particularly in light of changing climate patterns. Without such a framework, it is difficult to determine whether the implemented measures adequately reduce runoff, improve water retention, and mitigate flood risks in affected areas. This gap in monitoring also limits the ability to make informed adjustments and improvements to the existing strategies, ultimately affecting the long-term sustainability and effectiveness of flood control efforts.

A review of the hydrological data from the Ministry of Water (MoW) revealed that most of the rainfall water remains as surface runoff, with a small percentage harvested in constructed dams, as shown in **Table 3.11**.

[24] A Guide for USAID Project Managers - Flood Management Incorporating Climate Change Adaptation in Infrastructure Planning and Design, 2015

Table 3.11: Status of Rainwater Harvesting as Part of Flood Control Measures

Financial Year	Estimated Annual Quantity of Rainwater (m^3)	Estimated Amount of Rainwater Harvested (m^3)	Estimated Water Left as Runoff from Rainfall (m^3)	Percentage of Variation
2020/21	-	-	-	-
2021/22	404,780,000	-	-	-
2022/23	594,780,000	-	-	-
2023/24	694,240,461	99,460,461	594,780,000	85.7%

Source: Auditors' Analysis of the Hydrological Data from the Ministry of Water, 2024

Table 3.11 presents data on rainwater harvesting as part of flood control measures, revealing gaps in earlier years (2020/21 to 2022/23), where both the quantities of estimated rainwater harvested and runoff were not recorded. Also, the audit noted that the harvested rainfall water was only 14.3%, leaving 85.7% of rainfall as runoff water, which resulted in flooding. Failure to harvest large quantities of rainfall water was attributed to an insufficient number of constructed multipurpose dams with a deficit of 90%, as shown in **Table 3.8**. Also, ineffective monitoring of the measures to promote rainwater harvesting technologies has resulted in low investment in stormwater runoff reduction, especially in flood-prone areas. Without sufficient uptake of rainwater harvesting, communities remain vulnerable to localized flooding.

3.5 Inadequate Coordination of Disaster Management Activities at all Levels

The Disaster Management Department (DMD) within the Prime Minister's Office (PMO) is responsible for coordinating disaster management activities. Among its duties, the DMD conducts capacity-building activities for Local Government Authorities (LGAs), assisting them in developing and maintaining geological maps which are used to identify areas prone to flooding and landslides, maintaining land-use plans, and ensuring that LGAs effectively prohibit development activities in areas with high flood risks. However, through document reviews, interviews, and physical verifications, the Audit Team noted the following weaknesses in relation to disaster management:

3.5.1 Lack of Flood Hazard Maps that Identify Areas Prone to Land/mudslides in the Country

From interviews conducted with officials responsible for disaster management in the LGAs and review of disaster management documents from 2020/21 to 2023/24, none of the five visited LGAs had specific geological maps identifying areas prone to land or mudslides.

The absence of flood hazard maps that show flood-prone areas in the LGAs was partly due to the inadequate involvement of the key stakeholders during the preparation of land-use plans. For example, experts from the Ministry of Lands, Vice President's Office, Ministry of Water, PMO staff specialized in disaster management, and the general community were not adequately involved.

This indicates that PMO-DMD and POLARG did not effectively coordinate flood disaster management through the LGAs. As a result, flood disaster issues were not well integrated into land use planning, leading to the inability to identify and demarcate flood-prone areas.

The absence of flood hazard maps identifying areas prone to landslides in the LGAs has led to continued severe impacts, including damage to infrastructure, loss of lives, and distortion of economic development across the country. This is because flood hazard maps are crucial for guiding preparedness, as they enable proactive measures such as the demarcation of watercourses, which help to mitigate the adverse effects.

3.5.2 Inadequate Adherence to Land-use Plans by the LGAs to Protect Flood-prone Areas

As the main government institution coordinating disaster-management activities, the PMO is required to collaborate with other sector ministries responsible for land use to ensure that LGAs adhere to their land-use plans. This cooperation is essential to protect flood-prone areas and prevent construction in flood-sensitive zones. Regulation 5(e) of the Water Resources Management Act of 2018 mandates that basin water boards, in collaboration with other relevant authorities, are responsible for demolishing or removing structures that pose a risk of causing floods or flood damage. Accordingly, the PMO, utilizing information from these water

boards, is also responsible for monitoring LGAs' compliance with their land-use plans.

The field visits by the Audit Team to all five LGAs revealed unregulated construction by residents in flood-prone areas. The audit noted that residents have returned and reconstructed or maintained their houses in flood-prone or severely affected areas despite suffering the damage caused by previous flooding. The incidences of residents returning to flood-prone areas were observed in Rufiji, Kinondoni, Kilosa, Hanang, and Mbeya Rural. For example, in Itezi Street in Mbeya, a street which was severely impacted by landslides, people began to build new houses just a few weeks after the massive landslides that caused significant damage. **Photos 3.5 (a)** to **(b)** depict some of the observed ongoing construction works in the flood-prone areas in Itezi Mbeya.

Photos 3.5(a)-(b) Showing ongoing construction activities at Itezi in Mbeya.

Photo 3.5 (a): showing uncompensated residential houses close to mudslides at Itezi-Mbeya *(Caption by Auditors in September 2024)*

Photo 3.5(b): showing ongoing construction works in the flood-prone area by the Itezi dwellers in Mbeya Region *(Caption by Auditors in September 2024)*

The presence of such development activities in risk areas indicates that the LGAs did not adequately adhere to the land-use plans designed to protect flood-prone areas and prevent construction in these vulnerable zones.

3.5.3 Ineffective Coordination of Information-sharing Practices, GIS-based Data Collection Systems and Implementations of Flood Disaster Directives

Effective coordination of information sharing, GIS-based data collection, and the implementation of flood disaster directives is essential for minimizing flood damage and improving disaster response. The following sub-sections detail weaknesses in coordination of these components across all levels of government and local authorities, focusing on ensuring seamless data flow, timely response, and optimal resource allocation.

(a) Ineffective Implementation of Flood Disaster Directives Across All Levels of Government and Local Authorities

A review of the PMO implementation reports, correspondent files and interviews with the officials from PMO-DMD indicated that the PMO-DMD has managed to share the information with government ministries, departments and agencies (MDA's), and local government authorities (LGAs) from time-to-time concerning early warning after receiving reports of adverse weather forecasts data from the Tanzania Meteorological Authority (TMA) as indicated in the **Table 3.13.**

Table 3.13: Status of The Monitoring and Follow-up of The Issued Directives

S/No.	Directives issued	Entity(ies)	Implementation status by MDAs and LGAs	Follow up on the issued directives by PMO-DMD
1.	The PMO-DMD issued an early warning directive, along with actionable steps for relevant stakeholders, in response to rainfall forecasts and Tropical Cyclone Jobo warnings provided by the Tanzania Meteorological	The directive was sent to all sectoral Ministries, Departments, Agencies, Regions and Local Government Authorities.	No implementation reports were prepared concerning the issued directive	No monitoring and follow-up reports were prepared showing the extent of the implementation of the issued directive

S/No.	Directives issued	Entity(ies)	Implementation status by MDAs and LGAs	Follow up on the issued directives by PMO-DMD
	Authority for the 2020/21 season.			
2.	The PMO issued the National El Nino Contingency Plan and Anticipatory Action.	National Technical Committee for Disaster Management	Implementation report (*Action Review Report*) was prepared based on the Contingency Plan	The Action Review Report was prepared following a discussion among PMO-DMD, MDAs, and LGAs on achievements, challenges, and required actions. However, there was no monitoring report or mechanism established by the PMO-DMD to track the implementation of the agreed-upon actions from the review meeting.
3.	Development and implementation of the National El Nino Contingency Plan and Anticipatory Action for the period of September 2023 to June 2024	Sectoral ministries, departments, agencies, regions and local government authorities	Flood disaster risk preparedness and response plans and strategies were prepared and submitted to the PMO-DMD.	

Source: Auditors' Analysis of the PMO-DMD Progress Reports, 2024

Table 3.13 outlines directives issued by the PMO-DMD, their implementation status, and follow-up actions. The first directive, issued in response to the 2020/21 rainfall and Tropical Cyclone Jobo forecasts, was sent to relevant MDAs, Regions, and LGAs but lacked implementation reports and follow-up, leaving its effectiveness unaddressed. The second and third directives regarding the implementation of the National El Nino Contingency Plan were executed, and an Action Review Report was prepared following discussions with MDAs and LGAs. However, there was no monitoring report for PMO-DMD to track its implementation. This can limit the PMO-DMD's ability to assess and coordinate the implementation of actions agreed upon during review meetings. The ineffective implementation of flood disaster directives at all government levels can be attributed to:

(a) Inadequate Quality of Directive Issued to Respective Stakeholders

Through a review of directives issued to the stakeholders, the audit noted that the directives generally lacked clear warnings regarding the extent of the potential damages and loss, which led to a lack of urgency in addressing the issue. As a result, there was insufficient preparation of an action plan to effectively deal with the situation when it occurred, making it difficult to measure the effectiveness of their implementation.

(b) Inadequate Information-sharing Practices for Flood Disasters Across All Levels of Government and Local Authorities

Deficiency in Information sharing was noted at all levels of government. It was found that inadequate information sharing was largely caused by the absence of the Emergency Operations and Communication Centres (EOCC) at lower levels. Up to the time of this audit, there were only two Emergency Operations and Communications Centres (EOCC) in the country, one located at the PMO headquarters and another one at Dar es Salaam. Although the existing centre at PMO is well equipped to receive and distribute incidents and threat notifications through various communication methods such as landline and cellular phones, satellite phones, warning systems, radios, web platforms, email, WhatsApp, and Telegram, the audit noted that the centre did not fully comply with its primary function. The mode of communication and dissemination of directives was ineffective at lower levels, such as wards and villages, due to the absence of a feedback mechanism to report the implementation performance of given directives.

One of the shortcomings of the EOCC, as pointed out by PMO-DMD officials in interviews, was the shortage of trained and competent staff. The centre currently has 6 staff members who are not permanent PMO employees but were outsourced from other government institutions. Generally, according to staffing level records, PMO has two (2) permanent employees out of 15 required staff to run the EOCC. This is equivalent to a deficit of 86.67%.

Based on interviews with PMO officials, the EOCC is overly centralised, with no similar centres at the regional and LGA levels to ensure the smooth flow of information. A notable incompatibility gap was identified in the area of receiving and reporting disaster-related data, particularly between the systems of the PMO and the Tanzania Meteorological Authority and those

systems at LGAs and RAS. The only communication methods by LGAs and RAS were telephone and email.

In addition, the audit noted that to address this gap, the PMO attempted to establish Emergency Operations and Communications Centres (EOCCs) at the regional level in 15 regions. This was confirmed through a reviewed letter issued by the PMO-DMD (Ref. No. 1/KA.1 1 6/589/01) dated 16 August 2024, requesting the establishment of EOCCs in 15 regions. However, there was no positive response from the regional secretariats, with only the Kilimanjaro region positively responding through a letter (Ref. No. FA.65/133/01L/61) dated 2 September 2024. The RAS Kilimanjaro expressed their readiness to establish the EOCC, if close support and technical guidance are provided from the PMO on how to install the disaster monitoring systems.

The lack of a modern Emergency Operations and Communications Centre in the country has contributed to communication barriers and coordination challenges before and during disaster events. The presence of unreliable systems for sharing important data and information has hindered key stakeholders' ability to make informed decisions, ultimately impacting the effectiveness of flood disaster management in the country.

(c) Absence of Geographical Information System (GIS) for Data Collection on Geological Movements

The audit found that the PMO-DMD, in coordination with the Geological Survey of Tanzania (GST), lacked a GIS-based risk mapping system to collect data on geological movements. The interviewed PMO-DMD officials indicated that insufficient funds to install the required measuring equipment was the main reasons that hindered the development of a GIS system for measuring and monitoring geological movements. The absence of a GIS system for measuring and monitoring geological movements resulted in unpredicted landslide events, which resulted in the loss of lives and damage to households, crops and livestock as occurred in Kawatere Mountain in Mbeya DC and Gendabi Mountain in Hanang DC.

3.6 Inadequate Flood Prevention, Response and Emergence Recovery Measures

As it was pointed out earlier in this report that, PMO, through DMD, has the responsibility to prevent, respond and recover the loss resulting from damaged infrastructures and properties. However, through a review of documents, interviews, and physical verification conducted for the visited regions, the audit noted inadequate performance in the management of flood prevention, response, and emergency recovery measures, as described in the following subsections.

3.6.1 Inadequate Assessment of Loss and Damage of Infrastructures, Properties and Public Utilities

The audit noted that the PMO, in collaboration with PO-RALG, ineffectively assessed the loss and damages of properties, infrastructures, and public utilities caused by the flood in the country. This was evidenced through a review of the assessment reports of disaster events from 2020/21 to 2023/24. **Table 3.14** presents information regarding the damage and loss from disaster events in the country for the past four financial years.

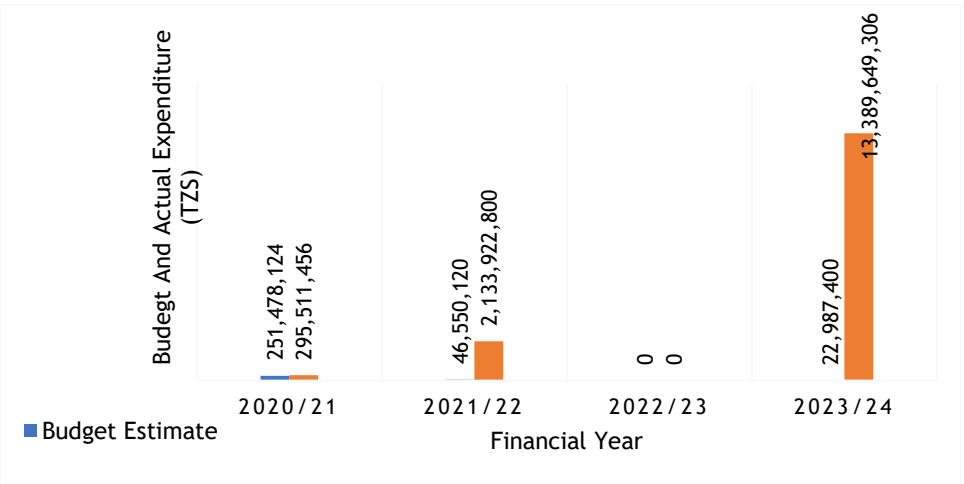
Table 3.14: Damaged and Lost Properties, Lives, Infrastructure, Crops and Environmental

Financial Year	No of Buildings	No. Crops Acre	No. Livestock	No. of Roads (Km)	Estimated Costs recovery (TZS)
2020/21	10,299	1,795	710	38	No estimate
2021/22	2,208	1	306,358	-	No estimate
2022/23	975	7,899	603	33	No estimate
2023/24	9,353	5,381	120	1	No estimate
Total	**22,835**	**15,076**	**307,791**	**72**	No estimate

Source: Auditors' Analysis of Disaster Event Assessment Reports 2020/21 -2023/24

Based on **Table 3.14**, there was no estimated cost for the recovery of all damaged and lost properties, lives, infrastructure, crops, and the environment. The audit noted that, PMO - DMD data for the past four financial years from Financial Year 2023/24 spent a Total of TZS 321,015,644 as relief funds and compassion. However, further analysis from a reviewed Annual Progress Reports from 2020/21 to 2023/24 showed that the actual expenditure did not reflect the budget estimate, as presented in **Figure 3.3**.

Figure 3.3: Expenditure on Relief for the Victims vs. Actual Estimated Cost



Source: Auditors' Analysis from Disaster Events Data and Annual Progress Reports 2020/21 to 2023/24

Figure 3.3 reflects the increase in expenditure from TZS 295,511,456 in 2020/21 to TZS 13,389,649,306 in 2023/24. The increase in 2023/24 was due to the El Niño events, which affected the entire country.

From the visited LGAs, the audit noted that LGAs conducted their own assessment of the damage and loss of properties, infrastructure, and the environment. Despite being hit by the El Nino disaster in 2023/24, the Kilosa District Council did not conduct an assessment as presented in **Table 3.15**.

Table 3.15: Estimated Costs for Restoration of Damaged Properties and Road Infrastructures.

Region	LGAs	Estimated Costs TZS
Dar es Salaam	Kinondoni MC	5,388,758,466.40
Pwani	Rufiji DC	4,562,269,891.08
Mbeya	Mbeya CC	36,277,000
Manyara	Hanang' DC	5,126,804,000
Morogoro	Kilosa DC	-

Source: Auditor's Analysis from LGAs Loss and Damage Assessment Reports, 2024

Table 3.15 shows that for the year 2024, PMO-DMP through LGAs was able to undertake a complete assessment of loss and damage to properties, lives, infrastructure, crops, and the environment in Manyara (Hanang DC) for the landslide disaster and Pwani (Rufiji DC) for the flood-related disaster and Morogoro (Kilosa DC). On the other hand, partial assessments were conducted in Dar es Salaam (Kinondoni MC) for flood-related disasters and in Mbeya (Mbeya CC) for landslide-related disasters. Even though the El Nino events affected and covered the whole country, the flood assessment was only done in four regions, as shown in **Table 3.15.**

One of the reasons for not carrying out such assessments in other regions was insufficient coordination and capacity building by the PMO to RAS and LGA officials. As a result, the PMO was unable to use RAS or LGA personnel because they were not qualified to conduct the assessment. This led to increased workload and created more bottlenecks for PMO-DMD because all decisions for this activity were centralised and directly handled by PMO-DMD Headquarters. While the workload was increasing, PMO-DMD experienced a staff shortage of 80%. This also contributed to the ineffective assessment of damage and loss of property, infrastructure, and public utilities.

The review of the assessment reports showed that assessments conducted were also limited in reporting issues related to search and rescue during operations, and little was covered on post-flood events and the extent of recovery of damage and loss. The reports also cover the budget issues and the value of required compensation for damaged and lost properties in the affected communities. However, the report's main recommendations were only linked to addressing the root causes and mitigation measures that had to be taken.

Because issues of compensation were unclear to the victims, in combination with weak enforcement by LGAs and the presence of un-demarcated areas prone to risk areas, the audit team observed the community of people living in the affected areas resuming their normal lives, including renovating and constructing of new houses in such prone to risk areas. **Photos 3.6 (a)** to **(c)** provide the physical observation captured during the site visit.

Photos 3.6(a) –(c): Observed Flood Effects on Visited LGAs

Photo 3.6 (a): Landslide remains at the top of ongoing constructions (caption by auditors 18 Sept 2024)

Photo 3.6 (b): Cracked remaining portion of the landslide as a hazardous portion *(photo caption by auditors 18 Sept 2024)*

Photo 3.6 (c): Ongoing Construction at the Bottom of the Hill in Mbeya City Council (*caption by auditors on 18 September 2024)*

Based on the interviews held with LGA officials responsible for the coordination of disaster management, inadequate assessment and preparation of compensation among the victims was due to a lack of budget for that activity at LGAs. Such activity is normally financed directly by the PMO –DMD. Since there was no funding for the activity, the assessment was not completed. However, the audit is of the view that the ongoing constructions in the areas prone to hazardous events, as was observed at Rufiji DC, Mbeya CC, Kinondoni MC, Kilosa DC, and Hanang DC were due to weak law enforcement and demarcations by the respective LGAs. In addition, the audit found that a lack of awareness among community members of the impact of disasters contributed to this problem. Due to continued habitations and human activities in areas that have been demarcated as prone to hazardous floods and prohibited for future development and economic activities, the government will continue to spend money on search and rescue.

Further analysis showed that the ineffective assessment was attributed to the following factors:

Inadequate Capacity to Conduct the Assessment of Damage and Loss

The interviewed officials in all visited LGAs showed that, the Disaster Coordinating units were not adequately capacitated, mainly in terms of supporting staff, finance, tools, time to do the work and equipment. Because of that, these units are limited in assessing the damaged and lost properties, infrastructures, and utilities in their area of jurisdiction. It was

further noted that the coordinators in LGAs are normally assigned other core activities instead of assessments of disaster impacts.

3.6.2 Resource Mobilisation for Flood Recovery Support of Losses and Damage to Infrastructure and Properties

Based on the Annual Progress Report and MTEF from 2020/21 -2023/24, the Audit Team noted that, PMO, through DMD, managed to budget for the support of the communities affected by the disasters. Despite the provision of budgets for the support of affected communities, the Audit Team noted the following weaknesses:

(a) Lack of Utilisation Report of Humanitarian Aid and Relief Funds/Supplies Worth TZS 15,819,083,562

For accountability regarding the funds that were spent, the PMO-DMD was expected to prepare a detailed report indicating how the funds were used, particularly the money released to the respective affected LGAs to combat the flood disaster in their areas. However, the audit noted that PMO-DMD lacked utilisation reports on the funds released to the respective affected LGAs from disasters, specifically floods. The interviews held with officials from PMO-DMD and a review of the annual progress reports indicated that, a total of TZS 15,819,083,562 out of TZS 18,056,644,514 planned budget was spent for humanitarian and relief activities for the affected communities within four Financial Years as presented in **Table 3.16.**

Table 3.16: Budget Allocated for Humanitarian Relief Activities

Financial Year	Budget for Support of Affected Communities (TZS)	Expenditure TZS	Humanitarian and Relief Funds Beneficiaries
2020/21	2,000,000,000	295,511,456	3 Regions and 3 LGA
2021/22	2,158,505,500	2,133,922,800	4 Regions and 4 LGAs
2022/23	-	-	No activity
2023/24	13,898,139,014	13,389,649,306	10 Regions and 22 LGAs
Total	**18,056,644,514**	**15,819,083,562**	

Source: MTEF and Annual Progress Report 2020/21-2023/24

It can be seen in **Table 3.16** that, for the past four financial years, between 2020/21 and 2023/24, a total of TZS 15,819,083,562 out of the planned TZS

18,056,644,514 equivalent to 88% spent for the humanitarian and support of the affected communities. In 2020/21, TZS 295 million out of TZS 2 billion was spent, benefiting three (3) regions and 3 Local Government Authorities (LGAs), while in 2021/22, the allocation rose to TZS 2.16 billion, out of which TZS 2.13 billion was spent in supporting four (4) regions and 4 LGAs. In the Financial Year 2022/23, no activities, funds allocation or expenditure were reported. Conversely, in 2023/24, there was a significant increase, with TZS 13.9 billion allocated and TZS 13.39 billion spent circa 96%, providing humanitarian aid to 10 regions and 22 LGAs.

Unrealistic Need Assessment for the Damage and Loss of Properties and Infrastructures

Further analysis of disparities between the estimated damages and the relief funds provided for the humanitarian aid is shown in **Figure 3.3**. Based on the analysis of information from **Figure 3.3**, it can be deduced that many affected communities living in flood-prone areas were not adequately relieved to enable their quick recovery. This indicates that PMO-DMD did not conduct a thorough assessment of the damage and losses caused by disaster events.

Based on an interview with officials at PMO-DMD, there were no good mechanisms for ensuring smooth and continual fund collection, such as the establishment of projects and businesses, including buying shares or putting idle money in fixed deposits, and so on. The officials further noted that the only source of funds is the contribution from stakeholders, which is normally done reactively depending on the occurrence of disaster events. Generally, the audit noted inadequate capacity in funds mobilisation for disaster management, which was due to the following:

Inadequate Harmonisation of Stakeholders Contributions for the Disaster Management Funds

The Audit Team noted that, PMO lacked a clear target of funds for disaster management contributed by stakeholders. PMO also lacked strategies for the harmonisation and awareness to ensure funds are contributed and deposited in the Disaster Management Fund for disaster management activities. The contribution to disaster management has been in an ad hock manner and is offered only during disaster events. The extent to which the

stakeholders contribute to disaster management funds is shown in **Table 3.17**.

Table 3.17: Contributions for the Disaster Management Activities from the Stakeholders

Financial Year	MDAs (TZS)	Private Sector (TZS)	Individuals (TZS)	Other Countries (TZS)	Total in (TZS)
2020/21	550,000	600,000	0.00	0.00	1,150,000
2021/22	2,015,733,799.92	0	0.00	0.00	2,015,733,800
2022/23	3,350,671,266.58	0	0	0	3,350,671,267
2023/24	5,953,740,778.72	0.00	137,796,167	64,654,950	6,156,191,897
Total	11,320,695,845	600,000	137,796,168	64,654,950	11,523,746,963
Contribution in (%)	98	0.01	1	1	

Source: Financial Statements, Cashbooks and General Ledger of the National Disaster Management Fund from the Financial Year 2020/21 to 2023/24.

Table 3.17 shows the contributions from different key stakeholders to the National Disaster Fund. For three financial years from 2020/2021 to 2022/2023, there have been no contributions from individuals, other countries, or the private sector. Based on the interviews and reviewed PMO-DMD financial plans, the audit noted that PMO-DMD did not have robust strategies to search for financiers. Also, in 2023/24, during the El Nino events, PMO-DMD received a high amount of funds from all four key stakeholders. This means that DMD dealt with emergencies more reactively, with less emphasis on preparing and implementing strategies and plans and being proactive.

The analysis has shown that the public sector, which includes all MDAs' contributions, stood at 98% of all total contributed funds for the past four financial years. On the other hand, the private sector stood at 0.01%, individuals 1% of the contribution and other friendly countries 1% of the total contribution for the past four financial years. It was found through interviews with PMO officials that low contributions from non-governmental stakeholders were mainly attributed to a lack of effective fund mobilisation strategies and framework and low awareness of the importance of the contribution to the disaster management fund.

3.6.3 Ineffective Reporting and Decision-Making Structure at All Levels

Review of the Organisation Structure of 19 July 2022, The National Disaster Communication Strategy of 2022, the Annual Progress Report from 2020/21 to 2023/24 and interviews held with PMO and LGAs' staff, the audit revealed the presence of gaps in reporting and decision-making structures for the early warning and emergency responses. The gaps related to reporting were attributed to the following factors:

(a) Lack of EOCC Infrastructures at a Lower Level

The audit noted that the early warning and emergency response communication is based on phone and radio calls. This was attributed to the absence of EOCC facilities at a lower level. The absence of communication facilities hinders the time-to-time monitoring of hazardous events and timely despatch of warnings at sector, region and district levels. This was acknowledged during interviews with PMO officials, who pointed out that they have already started negotiations with Vodacom to see the possibility of using it as part of the early warning media for the community to fast-track the information dispatching process.

(b) Ineffective Emergency Coordination and Communication Management at all Levels

An audit site visit and interview with PMO-DMD noted that EOCC has established a situation room that monitors and tracks various hazards, including floods, and provides early warning information. However, the audit noted that the disaster management information system that integrates different stakeholders on early warning, hazard monitoring, hazard reporting and feedback provision from the local to the national level was not established and was still in the development stage during the audit period.

3.6.4 Ineffective Enforcement and Quality Control During Post-Flood Rebuilding and Adoption of Best Practices to Mitigate Flood Risks

A review of the Progress Reports from 2020/21 to 20232/24, revealed that PMO inadequately builds back better after flood events. Only one (Hanang DC) out of five visited LGAs received recovery rehabilitation and the

construction of houses for the affected communities. Moreover, PMO has not adopted the best practices for flood management and control in areas that are likely to have recurrent floods.

However, the Audit Team noted that PMO focused on reducing risks and responding to the flood disaster instead of considering it as an opportunity to learn the best practices, which include;

- a willingness to live with floods,
- a desire to utilise the floodplain,
- a need to control floods, a need to control flood damages, and
- a need to manage risks.

These aspects could have been considered by designing a friendly environment. However, the audit team also noted that PMOs prepared themselves on two aspects: preparedness and response. Hence, an opportunity to utilise the flood plain in collaboration with other sector ministries was not captured.

The analysis of opportunities also did not consider the benefits of floods, such as irrigation activities that can be done using the fertile floodplains. Among the challenges in the strategy was inadequate resources to promote flood control resilience. By applying best practices and considering flood as an opportunity, there could be advantages in increasing the economy in the country and minimising funds used for rescue and recovery as well as loss of lives.

3.7 Ineffective Coordination, Monitoring, and Evaluation of Flood Management Activities Conducted by the PMO-DMD in Collaboration with PO-RALG and LGAs

As it was explained earlier, the PMO coordinates all disaster management issues in the country, including preparedness measures and responses. PMO-DMD has designed the M&E framework to track progress and assess the implementation of the National Disaster Management Strategy (NDMS), which lies with the PMO working in close collaboration with other stakeholders. However, the Audit Team, through a review of documents, site visits to the selected LGAs and interviews with officials, noted the following shortcomings:

3.7.1 Inadequate Planning for Monitoring of Flood Management Activities

(a) Performance of Flood Monitoring Management by TARURA and TANROADS

Review of action plans between 2020/21 and 2023/24, noted that TARURA did not identify major flood-prone areas for which several temporary and long-term interventions were to be introduced. However, based on the interview with PMO-DMD, the information was shared with them for feedback and inclusion in their database of flood-prone areas, which can be shared with other actors responsible for monitoring water levels, including the Basin Water Board, as well as for conducting inspections of the interventions implemented by TARURA. The audit also collected information from each TARURA district Office in all LGAs covered in this audit. The result is presented in **Table 3.18.**

Table 3.18: Availability and Performance of Stormwater Drains in the TARURA Infrastructure

TARURA' s office	Required length of stormwater drainage channels (m)	Total length of available stormwater drainage channels (m)	Percentage of Stormwater Drains Discharging Generated Stormwater (cum)	Estimated Annual Stormwater Volume Accommodated by Drains (cum)	Estimated Gap of un-Drained Storm water in (cum)
Kinondoni	39,930	28,930	72.45%	57,860	15,940
Rufiji	6,500	67,500	21.8%	4,253	3,325
Kilosa	3,451	1,183	34.28%	3,353	2,204
Hanang'	12,000	-	-	-	-
Mbeya	105,500	74,9700	0.6%	2,734,560	2,718,153

Source: Auditors' Analysis Based on the TARURA Documents, 2024

Table 3.18 shows inadequate coverage of stormwater drainage, with Mbeya DC having the largest gap and Kilosa DC having the smallest. This highlights a general trend where most LGAs lack the sufficient stormwater drainage channels needed to manage all stormwater. From **Table 3.18**, the efficiency in terms of the percentage of stormwater drains discharging generated

stormwater is low, ranging from 0.6% in Mbeya DC to 72.45% in Kinondoni MC.

This suggests that existing drainage systems are either not fully functional or not properly maintained. Based on interviews with TANROADS officials, there is a lack of accurate data on the estimated annual stormwater volume accommodated by drains, affecting their planning and monitoring. As a result, the capacity required for stormwater management may have been underestimated, contributing to increased flooding risks.

Based on the responses from officials the audit noted that TARURA did not adequately incorporate climate change factors into its hydrology studies and designs. This has led to underestimation of the number of hydraulic structures required or installation of structures of inadequate sizes. The lack of climate change considerations in the design of stormwater drainage systems compromises the resilience of the infrastructure. Given the increasing unpredictability of weather patterns, this oversight could result in drainage systems that are not future-proofed and unable to withstand the impacts of more intense rainfalls or storms.

Appendix 7 outlines the flood-prone areas within roads managed by TANROADS and highlights interventions and monitoring by the PMO-DMD to mitigate floods and their impacts on the communities. While some sections of the network have been mapped, a comprehensive national overview remains absent. The data showed that the Rukwa region lacked a flood management plan despite identifying two flood-prone areas.

Also, the audit noted that up to 2023/24, only 47 areas were identified as major flood-prone areas, for which temporary and long-term interventions were introduced. The audit noted that in the year 2023/24, PMO-DMD had only inspected TANROADS intervention on only one region (Dar es Salaam), which is equivalent to 20% out of five regions with identified flood-prone areas. This indicated ineffective monitoring by PMO-DMD to ensure taken interventions were corrective and appropriate.

The availability of stormwater drains in the TANROADS infrastructure for the selected Regions and LGAs is presented in **Table 3.19.**

Table 3.19: Availability of Stormwater Drains in the TANROADS Infrastructure

TANROADS Regional Office and the responsible Local Government Authority (LGA)	Required length of stormwater drainage channels (m)	Total length of available stormwater drainage channels (m)	Required length of stormwater drains (m)	Percentage of stormwater drainage required (%)	Percentage of Stormwater Drains Discharging Generated Stormwater
Dar es Salaam (Kinondoni)	338,987	203,392.20	135,594.80	40%	60%
Pwani (Rufiji)	6000	700	5,300.00	88%	70%
Morogoro (kilosa)	2000	500	1,500.00	75%	90%
Manyara (Hanang')	1000	500	500.00	50%	90%
Mbeya (Mbeya DC)	9870	650	9,220.00	93%	6.60%

Source: Auditors' Analysis Based on the TANROADS Documents, 2024

Table 3.19 shows inadequate coverage of stormwater drainage, with the Mbeya region having the largest gap of 93% and the Dar es Salaam region having the smallest gap of 40%. This highlights a general trend where most LGAs lack the sufficient stormwater drainage channels needed to manage all stormwater. Also, from **Table 3.19**, the efficiency in terms of the percentage of stormwater drains discharging generated stormwater ranges from the lowest (6.6%) in the Mbeya region to the highest (90%) in the Morogoro and Manyara regions. The audit is of the view that the existing drainage systems were either not fully functional or not properly maintained to ensure their full functionality.

Based on interviews with TANROADS officials, there was a lack of accurate data on the estimated annual stormwater volumes, which has affected the planning and monitoring of stormwater infrastructures. As a result, the capacity of these structures in stormwater management may have been underestimated, contributing to increased flooding risks.

Also, based on the letter with Ref. No. CB.159/528/01/61 from TANROADS, the audit noted that TANROADS did not adequately incorporate climate change factors into its hydrology studies and designs. This inefficiency may have led to an underestimation of the number of hydraulic structures required or inadequacy of their sizes. The lack of climate change

considerations in the design of stormwater drainage systems compromised the resilience of the infrastructure against extreme weather conditions. Moreover, given the increased unpredictability of weather patterns, the non-inclusion of climate change factors in the design of drainage systems resulted in drainage systems' failure to withstand the impacts of intense rainfall or water storms.

(b) Performance of Flood Monitoring Management Activities in the Visited Regions and LGAs

From the conducted interviews with the disaster management officials, it was noted that all visited regions did not have flood monitoring plans and reports on monitoring of flood management activities. The officials further explained that their offices were not allocated funds for flood management. However, the audit found that some of the visited LGAs allocated funds for disaster management, which covered all disaster events that occurred in their areas.

Also, site visits on 5 visited districts revealed that only two (2) had flood monitoring plans for 2023/24. **Table 3.20** below shows the visited districts and their plan for monitoring flood events for the respective years. Districts without a plan for monitoring flood events have been indicated with (x) for the respective year, and those with a contingency plan for monitoring flood events have been indicated with (✓).

Table 3.20: Planning for Monitoring of Flood Management Activities by Districts

District	2020/21	2021/22	2022/23	2023/24
Mbeya Urban -Itezi	x	x	x	x
Hanang	x	x	x	✓
Kilosa	x	x	x	x
Kinondoni	x	x	x	✓
Rufiji-Muhoro	x	x	x	x

Source: Auditors' Analysis on the Monitoring Plans for Flood Management Activities, 2024

Table 3.20 shows that none of the LGA had a contingency plan for monitoring flood events from the financial years 2020/2021 to 2022/2023. The lack of plans for monitoring flood events at the district level indicates unpreparedness for the risks that come with the floods in their areas. In addition, all five (5) sampled districts did not have reports of planning for

monitoring flood management activities for the years 2020/21 to 2022/23. The findings further showed that for the year 2023/24, all five (5) districts had flood events, but only Hanang and Kinondoni districts had flood planning and monitoring reports. The absence of planning reports for flood monitoring activities is an indication that the visited district councils are not well prepared for the flood events. Lack of preparedness for flood events at the district level is disastrous as it may lead to the failure to prevent loss of lives, damage to property and infrastructures, and the country's economy in general, which may happen due to poor management of floods.

3.7.2 Ineffective Monitoring of the Implementation of Flood Management Activities

The audit found that PMO had only one document on monitoring and evaluation for the year 2023/24. The document covers monitoring and evaluation of the measures taken to reduce the impact of El Nino rainfall according to the TMA weather predictions. Also, the report only covers three (3) regions: Pwani, Morogoro, and Dar es Salaam.

PMO did not have monitoring and evaluation reports on flood management that covered the entire country due to the fact that its priority was not on the less affected regions. However, flood impacts in Itezi, Mbeya and Hanang', Manyara in the year 2024 are a reminder to PMO that monitoring and evaluation of flood management activities should be conducted in all regions in the country in collaboration with the respective sectoral ministries.

Monitoring and evaluation of flood management for all regions in the country will create readiness for dealing with the flood impacts from the most prone flood regions to the least flood regions. The lesser the impacts of floods in the regions, the lesser the damage to infrastructure, people's lives, and the country's economy.

3.7.3 Inadequate Follow-up on the Issues Identified during the Monitoring of Flood Management Activities

A review of the PMO's 2023 flood management report, which focused on monitoring and evaluation (M&E) of preparedness for the El Nino rains,

revealed that the report did not include results for the review of previous flood incidents which happened in the country. Although the report adequately addressed preparedness projections for future events, it was important to include a follow-up on lessons learned from past floods.

The lack of follow-up on past flood incidents limits the ability to learn from previous events and build a more informed, proactive approach to flood management. The findings presented in previous sections of this report indicate that the PMO-DMD lacked baseline data such as financial costs, the number of people affected, or infrastructure damage from the previous flood events. This absence of important data hinders the development of more effective response strategies for future events.

Without evaluating previous flood events, flood management will remain reactive, triggered only by forecasts of severe weather or heavy rains, rather than being part of an ongoing, proactive strategy by the Government.

CHAPTER FOUR

AUDIT CONCLUSION

4.1 Introduction

This chapter provides the conclusion of the audit. The conclusions are made based on the overall and specific audit objectives presented in chapter one of this report. The general and specific conclusions are given below.

4.2 General Audit Conclusion

The Audit Team acknowledges the work done by the Government through the Prime Minister's Office (PMO) and President's Office Regional Administration and Local Government Authorities (PO-RALG) towards the management of Floods in the country. Despite the efforts made in the management of disasters in the country, the audit concludes that, The Prime Minister's Office (PMO), in collaboration with the President's Office-Regional Administration and Local Government (PO-RALG) through Local Government Authorities (LGAs), have not effectively managed flood incidences to minimise the associated social, economic and environmental impacts.

Neither PMO nor PO-RALG effectively plans for flood preparedness, early warning, and capacity building at all levels, resulting in inadequate preventive, responses, emergency recovery strategies, and damage and loss assessment.

Moreover, flood management activities are not adequately monitored and evaluated to develop appropriate lessons and update areas for more improvements. This resulted in repetitive failure to minimise the impact of flood events such as loss of lives, environmental degradation and damage to properties, infrastructure and public utilities.

4. 3 Specific Audit Conclusions

The following are specific conclusions:

4.3.1 Inadequate Planning for Flood Preparedness in the Country

The audit concludes that PMO puts the budget to finance mitigation and preparedness activities, where 25% of the total budget of the National Disaster Management Fund is for mitigation and preparedness and 75% for response & recovery. The limited budget affected PMO-DMD's capacity to conduct flood preparedness activities, such as capacity building at all levels of government and MDAs and the establishment of EOC centres at the regional level. Moreover, PMO has not ensured that the response capacity, through the Fire and Rescue Force, is adequate and that adequate facilities, equipment, and shelters are provided for evacuated victims. As a result, PMO depend on borrowing important tools from different stakeholders, leading to untimely responses to flood events, leading to increased magnitude of their impact on communities.

4.3.2 Inadequate Monitoring of the Planning and Implementation of Stormwater Management Plans as Flood Prevention Measure

PMO, in collaboration with LGAs, has not adequately implemented the stormwater intervention as a preventive measure to flood events. The identification, mapping, demarcation, and protection of areas prone to floods were ineffective despite the mapping being made to four out of five visited LGAs. Despite the efforts by the PMO-DMD and various sectoral ministries to ensure stormwater is well managed, there has been a lack of commitment to enforcing land-use regulations designed to prevent encroachment into flood-prone areas.

Moreover, the observed absence of localised stormwater management plans that are aligned with the centralised SWMMP poses significant risks, including ongoing flooding in vulnerable areas and the deterioration of water quality. The observed coordination gap between local authorities and Basin Water Boards concerning stormwater management will undermine regional water source management, resulting in fragmented and less effective flood mitigation efforts. The plans could have contained the strategies for harvesting rainwater to reduce flood risks and promote sustainable water use. Furthermore, the aim of constructing charco dams (rainwater ponds) is not to reduce flood risk but instead to support economic activities and enhance resilience against climate change, particularly drought, in regions with low rainfall. On the contrary, no effort

was made by PMO to coordinate and strategize water harvesting for proactive measures to minimise flood impacts.

4.3.3 Inadequate Mobilisation of Resources for Flood Prevention, Responses and Emergence Recovery Measures for the Loss and Damage

The audit concludes that the mobilised resources were not adequate enough to facilitate flood prevention, and support response and emergency recovery measures for the losses and damages. The audit found that strategies and guidelines for the mobilisation of resources for disaster management were lacking. The inadequate capacity to mobilize resources resulted in inadequate contributions of funds from stakeholders for disaster management. Among the reasons for inadequate contributions was a lack of awareness of the existence, role and responsibility of the Disaster Management Funds and a lack of procedures for disaster risk management. For instance, the contribution of the public sector, including all MDAs, stood at 98%, the private sector at 0.01%, and individuals at 1% of all total contributed funds for the past four financial years.

On the other hand, both PMO and PO-RALG ineffectively assessed flood damage. The assessments were limited to a few regions, focusing on rescue efforts but neglecting post-flood recovery and compensation for affected communities. Weak enforcement of mitigation measures and the lack of demarcated risk areas led to continued construction in vulnerable zones. Inadequate tools and human resources were pointed out as among the reasons for the inadequate assessments, particularly for landslides. This resulted in the preparation of assessment reports, which were missing some important information, such as budgets for compensation and recovery.

Furthermore, the audit concludes that the early warning and emergency response structures were ineffective due to the absence of essential infrastructure at lower levels, inadequate communication systems, and overreliance on external donations for recovery. These factors delayed the monitoring and response to hazardous events and hindered timely recovery efforts. Additionally, PMO's post-flood rebuilding did not adhere to best practices, with insufficient quality control and missed opportunities to utilise floodplains for economic activities. The focus remained on immediate disaster response rather than long-term resilience, highlighting

the need for better planning, resource allocation, and adoption of best practices to mitigate future risks.

4.3.4 Ineffective Coordination, Monitoring, and Evaluation of the Flood Management Activities Carried Out by the PMO-DMD and LGAs

PMO did not have comprehensive planning and monitoring strategies for flood management, specifically in coordination with the ministries, regions, and districts. This deficiency in preparedness and oversight has resulted in keen vulnerability to flood risks, leading to severe consequences for lives, infrastructure, and the economy. Urgent action will be needed to prioritise flood management, implement effective monitoring systems, and establish contingency plans to mitigate future flood impacts. In addition, monitoring of issued directives at all levels was observed to be inadequate. As a result, there is inadequate reporting on the disaster management activities.

CHAPTER FIVE

AUDIT RECOMMENDATIONS

5.1 Introduction

This chapter presents recommendations directed to the Prime Minister's Office (PMO) and the President's Office - Regional Administration and Local Government (PO-RALG) on what should be done to improve the management of floods in the country.

The National Audit Office believes that these recommendations must be fully implemented to improve the management of floods in the country. The recommendations focus on improvement in the prevention of flood events, planning for preparedness, flood prevention, and flood response and recovery measures to ensure adequate flood management in the country.

5.2 Recommendations to the Audited Entities

5.2.1 Recommendations to the Prime Minister's Office (PMO)

The Prime Minister's Office is urged to:

1. Set adequate funds for flood mitigation and preparedness activities and strengthen support for local government authorities (LGAs), Ministries, Departments and Agencies (MDAs) in budgeting for mitigation, preparedness, response and recovery to minimize loss of life and property damage;

2. Coordinate with the Ministry of Finance to establish a specific budget code for Disaster Management Activities to support LGAs and MDAs;

3. Enhance capacity building and training in flood-prone areas and engage stakeholders effectively during flood preparedness, prevention, and recovery;

4. Mobilise essential equipment for effective flood response, Coordinate the establishment of Regional and Sectoral Emergency Operations Centres (EOCs) with rapid response teams, and strengthen coordination among agencies for efficient disaster management;

5. Update flood prediction models regularly, improve early warning dissemination, monitor human activities in flood-prone areas, and enhance inter-agency coordination for effective flood management;

6. Institutionalise disaster risk reduction (DRR) in development policies and programmes and develop a monitoring and evaluation tool to assess programme impacts and measure community resilience over time;

7. Develop stormwater management plans collaboratively with relevant ministries and Basin Water Boards and align local and regional water management strategies to enhance flood resilience;

8. Strengthen frameworks for rainwater harvesting, increase public awareness campaigns on its benefits, and collaborate with community organisations and local governments for implementation;

9. In collaboration with relevant ministries and stakeholders, develop resource mobilization strategies, conduct comprehensive needs and damage assessments, and adopt best practices for prevention and mitigation, preparedness, response, and recovery; and

10. Coordinate the establishment of disaster management posts (employment cadre) (Disaster Management professional) at Ward, District, Regional and National levels.

5.2.2 Recommendations to the President's Office - Regional Administration and Local Government Authorities (PO-RALG)

In collaboration with PMO-DMD, the President's Office - Regional Administration and Local Government (PO-RALG) through LGAs is urged to:

1. Coordinate with the Ministry of Finance to establish a specific budget code for Disaster Management Activities;

2. Establish Regional and Sectoral Emergency Operations Centres (EOCs) and Rapid Response Teams in all Regions;

3. Ensure that Local Government Authorities (LGAs) prepare and implement Storm Water Management Master Plans (SWMPs) by integrating them into their respective Master Plans and Town Planning Schemes;

4. Ensure that LGAs identify, demarcate, and protect areas prone to disasters from being used for socioeconomic activities; and

5. Ensure that LGAs plan and budget for disaster management activities covering disaster mitigation, preparedness, response and recovery.

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APPENDICES

Appendix 1: Responses from the Audited Entities

This part provides details on the overall responses from the audited entities and the responses for the comments, action to be taken and implementation timeline for each of the issued recommendations.

Appendix 1(a): Responses from the Management of the Prime Minister's Office (PMO)

General Comment

The report provides a comprehensive evaluation of the current flood management practices, highlighting key areas of strength as well as areas needing improvement. The findings underscore the importance of enhancing coordination among stakeholders, strengthening early warning systems, and ensuring better resource allocation for flood response and mitigation. In response to the audit, the PMO has acknowledged the recommendations made and has committed to taking them into account in order to improve its flood management strategies. The PMO focuses on implementing these recommendations to enhance its preparedness, response capacity, and long-term resilience to flood-related disasters in the country.

Specific Comments

S/N	Recommendation	Comments from PMO	Planned Action(s)	Implementation Timeline(s)
The Prime Minister's Office is urged to:				
1.	Set adequate funds for flood mitigation and preparedness activities and strengthen support for local government authorities (LGAs), Ministries, Departments and Agencies (MDAs) in budgeting for	PMO supports setting a defined budget allocation for flood mitigation and preparedness and strengthening LGAs' capacity in budget planning	• Provide guidelines to LGAs on incorporating flood mitigation and preparedness into annual budgets	2025/2026

S/N	Recommendation	Comments from PMO	Planned Action(s)	Implementation Timeline(s)
	mitigation, preparedness, response and recovery to minimize loss of life and property damage;			
2.	To coordinate with the Ministry of Finance to establish a specific budget code for Disaster Management Activities in order to support LGAs and MDAs;	A specific budget code will streamline fund allocation at LGAs and MDAs.	• Conduct discussions with the Ministry of Finance regarding the establishment of a specific budget code for budget allocation at LGAs and MDAs. • Coordinate with the Ministry of Finance on the review of budget guidelines to incorporate disaster management budget allocation at LGAs and MDAs.	2025/2026
3.	Enhance capacity building and training in flood-prone areas and engage stakeholders effectively during flood preparedness,	PMO emphasizes the importance of training programs and stakeholder engagement for disaster management	• Identify flood-prone areas and key stakeholders • Review training modules to include flood risk reduction	2025/26 – 2026/27

S/N	Recommendation	Comments from PMO	Planned Action(s)	Implementation Timeline(s)
	prevention, and recovery;		• Conduct workshops and simulation exercises	
4.	Mobilize essential equipment for effective flood response, Coordinate the establishment of Regional and Sectoral Emergency Operations Centers (EOCs) with rapid response teams, and strengthen coordination among agencies for efficient disaster management;	• Regional and Sectoral Emergency Operations Centers (EOCs) and Regional Response teams are critical for disaster preparedness and response activities • As well as the availability of resources are critical for disaster response efficiency	• Establish Regional EOCs and Regional Emergency Response Teams • Conduct training for Regional EOCs and Regional Emergency Response Teams • Conduct an Inventory of current search and rescue equipment, identify gaps, and coordinate with the stakeholders on the availability of critical equipment for disaster response efficiency • Capacitate zonal warehouses with essential humanitarian relief items for effective flood response	2025-2027

S/N	Recommendation	Comments from PMO	Planned Action(s)	Implementation Timeline(s)
5.	Update flood prediction models regularly, improve early warning dissemination, monitor human activities in flood-prone areas, and enhance inter-agency coordination for effective flood management;	PMO acknowledges the need for improved early Warning Dissemination and enhanced inter-agency coordination for better disaster response	• Enhance the dissemination of early warning alerts to the community • Continue to Upgrade flood prediction systems using modern technology • Develop a Disaster Management Information System for enhancing inter-agency coordination	2025-2027
6.	Institutionalize disaster risk reduction (DRR) in development policies and programmes and develop a monitoring and evaluation tool to assess programme impacts and measure community resilience over time;	DRR integration is critical for sustainable development and resilience building	• Develop and pilot a DRR monitoring and evaluation tool (Within Disaster Management Information System) • Train stakeholders on utilizing the M&E tool effectively • Integrate DRR issues into the sector development policies and programmes	2025-2030

S/N	Recommendation	Comments from PMO	Planned Action(s)	Implementation Timeline(s)
7.	Develop stormwater management plans collaboratively with relevant ministries and Basin Water Boards and align local and regional water management strategies to enhance flood resilience;	PMO supports collaborative efforts for integrated water management to reduce flood risks	• Organize workshops with relevant stakeholders. • Coordinate with the Ministry of Water on the development and implementation of a stormwater management plan • Monitor and evaluate the effectiveness of implemented strategies	2026-2030
8.	In collaboration with relevant ministries and stakeholders, develop resource mobilization strategies, conduct comprehensive needs and damage assessments, and adopt best practices for prevention and mitigation, preparedness, response, and recovery; and	• Resource mobilization and systematic assessments are necessary for effective disaster management.	• Develop Disaster Risk Financing Framework • Develop a resource mobilization strategy • Conduct comprehensive needs and damage assessments • Conduct After Action Review and document best practices for disaster management phases.	2025-2027

S/N	Recommendation	Comments from PMO	Planned Action(s)	Implementation Timeline(s)
9.	Coordinate the establishment of disaster management post/Employment Cadre (Disaster Management professional) at the Ward, District, Regional and National levels.	The establishment of disaster management posts is crucial for the efficient coordination of disaster activities at all levels. Moreover, capacitating the Disaster Management Department with more technical staff will enhance the coordination of disaster management activities at MDAs and LGAs.	• Coordinate with the President's Office - Public Service Management and Good Governance on the establishment of disaster management post/employment cadre at the Ward, District, Regional and National level. • Capacitate Disaster Management Department by employing/adding relevant technical staff/professionals as stated in IKAMA	2025/2026

Appendix 1(b): Responses from the Management of President's Office, Regional Administration and Local Government (PO-RALG)

Specific Comments

S/N	Recommendation	Comments from PO-LARG	Planned Action(s)	Implementation Timeline(s)
President's Office - Regional Administration and Local Government (PO-RALG) is urged to:				
1.	Coordinate with the Ministry of Finance to establish a specific budget code for Disaster Management Activities.	Agree	Submit a letter to Request the Ministry of Finance to provide a budget code for disaster management.	June 2025
2.	Establish Regional and Sectoral Emergency Operations Centres (EOCs) and Rapid Response Teams in all Regions.	Build regional capacity for flood management.	• Allocate office (space/building) for the establishment of Regional and Local Government Emergency Operations Centres (EOCs) • Appoint Rapid Response Teams in all Regions and Local Government. • Provide Training to Regional and Local Government Rapid Response Teams on disaster preparedness, response, and recovery. • Strengthen technical and logistical capacity at regional and local teams to handle emergencies effectively. • Support regional and local teams in the preparation of effective disaster management plans and emergency response for an organization.	June 2026

S/N	Recommendation	Comments from PO-LARG	Planned Action(s)	Implementation Timeline(s)
3.	Ensure Local Government Authorities (LGAs) prepare and implement Storm Water Management Master Plans (SWMPs) by integrating them into their respective Master Plans and Town Planning Schemes.	Provide guidelines for Master Plan and Development control, which includes management of stormwater (SWMP) in their respective Master Plans and Town Planning Schemes.	Issue guidelines for the Master Plan and Development control, which includes management of stormwater (SWMP) in their respective Master Plans and Town Planning Schemes.	July 2025 to June 2026
4.	Ensure LGAs identify, demarcate, and prohibit areas prone to hazardous disasters from being used for socio-economic activities.	Provide instructions to LGAs on how to develop a disaster plan and implement the same by demarcating and prohibiting areas prone to hazardous disasters from other economic activities.	• Provide instructions to LGAs on how to develop disaster plans and implement them by demarcating and prohibiting areas prone to hazardous disasters from other economic activities. • Issue instructions to LGAs to set aside from their own sources for demarcation and prohibition of areas prone to hazardous disasters	July 2025 to June 2026

Appendix 2: Detailed Main Audit Questions with Sub-questions

This part provides details on the main audit question and sub audit questions which were formulated to arrive at intended audit objectives.

Audit Question No.	Audit question
Audit Question 1	**To what extent does the PMO plan and implement flood preparedness activities at the National, Regional, and Local Government levels?**
Sub - Question 1.1	Does the PMO budget support the allocation of sufficient funds for all flood preparedness activities?
Sub- Question 1.2	Are flood preparedness activities such as budgeting, emergency preparedness, designing flood controls, capacity building, and awareness effectively coordinated among key stakeholders before flood incidents occur?
Sub- Question 1.3	Does the PMO's flood early warning system function well in notifying all key stakeholders in a timely manner?
Sub- Question 1.4	Are awareness and practical training for flood preparedness among communities adequately conducted?
Sub- Question 1.5	Are key flood preparedness activities, including the development of emergency plans, design of flood controls, and measures for community and crop safety, adequately developed and implemented?
Sub- Question 1.6	Does the PMO ensure that the recovery plans developed for flood preparedness are practical for managing flood effects?
Audit Question 2	**Does PMO adequately monitor the planning and implementation of stormwater management master plans as a proactive measure for flood prevention?**
Sub- Question 2.1	Does the PMO, in collaboration with other sectoral ministries, effectively identify, map, demarcate, and protect flood-prone areas?
Sub- Question 2.2	Does the PMO ensure that a Stormwater Master Plan (SWMMP) is developed, shared with all relevant sectors, and effectively used to manage stormwater runoff, mitigate floods, reduce pollution, and protect water quality in local water bodies?
Sub-Question 2.3	Does the PMO conduct regular reviews of stormwater management measures to ensure their resilience and effectiveness in addressing unexpected flood incidents due to climate change?
Sub- Question 2.4	Does the PMO ensure that LGAs, in consultation with Basin Water Boards, develop and implement localised stormwater management guidelines and plans based on the customised Stormwater Master Plan (SWMMP)?

Audit Question No.	Audit question
Sub- Question 2.5	Does the PMO have a mechanism to ensure that the Basin Water Boards effectively promote rainwater harvesting technologies to reduce stormwater runoff?
Audit Question 3	**Does PMO ensure that flood preparedness capacity-building activities are effectively implemented at the National, Regional and Local Government Authorities (LGAs)**
Sub- Question 3.1	Does the PMO ensure that LGAs develop and maintain geological maps that identify flood-prone areas?
Sub- Question 3.2	Does PMO ensure that LGAs adhere to their land use plans to protect flood-prone areas and prevent construction development in these flood-sensitive zones?
Sub- Question 3.3	Does the PMO capacitate LGAs to develop and implement emergency plans, including evacuation routes, temporary shelters, and communication strategies, to manage the impact of floods during emergencies?
Sub- Question 3.4	To what extent are information-sharing practices, Geographic Information System (GIS)-based data collection systems, and the implementation of flood disaster directives effectively coordinated across all levels of government and local authorities?
Audit Question 4	**Does PMO effectively implement prevention, response, and emergency recovery measures and timely conduct valuations for loss of life, damaged properties, and infrastructure?**
Sub- Question 4.1	Do the PMO and PO-RALG have the capacity to mobilize resources and provide immediate support to affected communities in a timely manner to recover losses, damaged properties, and infrastructure?
Sub- Question 4.2	Does the PMO effectively conduct loss and damage valuation for damaged buildings, infrastructure, and public utilities and estimate the associated economic losses?
Sub- Question 4.3	Does the PMO ensure that the Disaster Management Fund is financed and that the funds are only utilised for disaster-related activities?
Sub- Question 4.4	Does the reporting and decision-making structure across local, regional, and national levels, as well as with other sector ministries, create bottlenecks that delay the timely mobilisation of resources required to recover losses, damaged properties, and infrastructures?
Sub- Question 4.5	Does the PMO effectively enforce strong quality control during post-flood rebuilding and adopt best practices to mitigate future flood risks before the return period?
Audit Question 5	**Does PMO effectively coordinate, monitor, and evaluate disaster management activities carried out**

Audit Question No.	Audit question
	by the PMO-DMD in collaboration with PO-RALG and LGAs?
Sub- Question 5.1	Does PMO adequately plan for the evaluation of flood management activities?
Sub- Question 5.2	Does the PMO receive reports from all sector ministries, assess them, and effectively evaluate the implementation of flood management activities at all levels?
Sub- Question 5.3	Does the PMO adequately document lessons learned, conduct follow-up actions, take corrective measures on issues identified during flood management evaluations, and provide feedback?

Appendix 3: Officials who were Interviewed and Reasons for their Interviews

This part provides details on the officials who were interviewed and the reason for selecting them as interviewees.

Entity	Department/ Division/ Section	Designation of Interviewed Official	Department /Section	Reason for Interview
Prime Minister's Office under the Disaster Management Department (PMO-DMD)	Disaster Management Department	Assistant Director	Disaster Research	To understand national disaster preparedness, response coordination, and the execution of rapid damage assessment and recovery activities
		Assistant Director	Emergence Operation and Communication Centre	To understand the Overseeing of disaster preparedness and response by planning, coordinating with agencies and stakeholders, developing resource mobilisation strategies, managing funds and relief supplies, conducting post-disaster trauma assessments, and ensuring accountability for relief resources.
		Assistant Director	Operations and Coordination	To understand the overall disaster management operations and how they are coordinated between government and private sectors and entities.
		Assistant Director	One Health	To understand how to research disaster-prone areas, advise the government and develop mitigation strategies, professionals should coordinate with MDAs and stakeholders, conduct damage assessments, manage disaster data, and

Entity	Department/ Division/ Section	Designation of Interviewed Official	Department /Section	Reason for Interview
				provide hazard maps. They must also monitor global trends and lead public awareness campaigns.
		Director or assistant director of finance	Finance and Accounts Unit	To understand how disaster information is received, analysed, and disseminated in Tanzania; provide early warning and assess incidents; offer command and control for national disaster operations; develop protocols for emergency management; and coordinate sub-centres and information dissemination.
President's Office – Regional Administration and Local Government (PO-RALG)	Selected Local Government Authorities (LGAs)	Assistant Regional Administrative Secretary	Planning and Coordination	To understand how activities resulting from disasters in the Region are managed.
		District Disaster Management Committee (DIDMAC)	Disaster Focal Personnel at the District, Ward, and Village Levels	To gain an understanding of the issues of management of floods at the level of LGAs, including associated challenges.

Appendix 4: Documents that were Reviewed and Reasons for Reviewing them

This part provides details on the documents which were selected for review during the audit and the reason for their selection.

Reviewed Document	Reason for Review
Itemized Expenditure Report 2020/21-2023/24	To assess the planning and Budgeting for the preparedness, prevention, response and emergence recovery mitigations of flood disaster activities in the country.
Strategic Plan of (2016/17-2020/21)	To assess the planned activities for the financial years 2020/21
Strategic Plan 2020/21-2025/16	To assess the planned activities for the financial years 2021/22-2023/24 and their key performance indicators.
Compliance, monitoring, and Evaluation Reports for the financial year 2020/21 to 2023/24	To assess the extent of performance of planned disaster management activities with respect to set targets and Key Performance Indicators (KPIs)
Fourth Quarter Progress Reports (2021/20-2023/24)	To assess the trend of performance of flood management activities for the past four financial years
Internal Auditor Annual Reports (2020/21 – 2023/24)	To understand areas of concern and risk areas highlighted in the Internal audit report
General Correspondence files for Flood Disaster Management for the FY 2020/21-2023/24	To ascertain the extent and timely response of emergency response and coordination of Disaster activities executed by PMO-DMD
Received Funds from Stakeholders and Expenditure Report	To assess the extent of contributions made by stakeholders in the management of flood activities.
Disaster Management Fund Expenditure Reports (Cashbooks)	To assess the received and utilisation of disaster management funds for the past four financial years
Letters shared with Stakeholders Concerning Storm Water Harvesting (2020/21-2023/24)	To ascertain the extent of coordination activities conducted by PMO-DMD to ensure the stormwater is harvested and utilised to minimise floods
Issued early warning letters and their correspondences (2020/21-2023/24)	To ascertain the timeliness of response to warnings and emergency actions taken by stakeholders

Reviewed Document	Reason for Review
Issued directives to prepare a contingency plan to RAS + Sector Ministries (2020/21-2023/24)	To assess the effective coordination of PMO-DMD to ensure Stakeholders Plan for Emergency response for anticipated disasters
Prepared contingency plans from RAS offices + Sector Ministries (2020/21-2023/24)	To assess the content and coverage of contingency plans prepared by LGAs and other key stakeholders
Monitoring and Evaluation Reports (2020/21-2023/24)	To ascertain the extent of monitoring activities conducted by the PMO and their performances
Status of Disaster Management Fund	To assess the availability Funds and effectiveness of Funds in DMF
Disaster Management Fund Expenditure Reports (Cashbooks)	To assess the capacity of PMO to mobilise funds for the management of disaster activities in the country

Source: Auditors' Analysis on the List of Reviewed Documents, 2024

Appendix 5: Construction of Dams in the Financial Year 2022/23 and 2023/24

This part provides details on the availability of dams in various areas across the country, showing their capacity and their implementation status for audited financial years, which were 2020/21 to 2023/24.

No.	Region	District	Name of the Dam	Volume (m3)	Implementation Status (%)
Completed dam projects in the financial year 2022/23					
1	Dodoma	Chamwino	Manda	755,720	100%
2	Dodoma	Mpwawa	Mtamba	1,943,751	100%
3	Dodoma	Chemba	Paranga	12,300	100%
4	Dodoma	Chemba	Karema kuu	18,900	100%
5	Dodoma	Chemba	Kambi ya Nyasa	11,740	100%
6	Dodoma	Chemba	Haneti	25,057	100%
7	Iringa	Iringa DC	Masaka	200,000	100%
8	Mbeya	Mbarali	Itamboleo	4,6998	100%
9	Simiyu	Maswa	Zebeya	45,803	100%
10	Songwe	Momba	Muko	148,228	100%
Ongoing dam projects constructed in the financial year 2022/23					
1	Arusha	Monduli	Engukument II	32,145	85%
2	Dodoma	Bahi	Uhelera	15,000	85%
3	Dodoma	Bahi	Mpamantwa	26,418	5%
4	Mwanza	Magu	Iseni	34,004	0%
5	Mwanza	Magu	Mwabayanda	11,515	0%
6	Mwanza	Magu	Nyang'hanga	30,503	0%
7	Shinyanga	Shinyanga DC	Ng'walukwa	114,507	85%
8	Shinyanga	Kishapu	Kiloleli	702,407	5%
9	Shinyanga	Kishapu	Ngofila	52,994	5%
10	Simiyu	Maswa	Ilambambasa	200,313	80%
11	Songwe	Momba	Chiwanda	379,502	5%
12	Tabora	Tabora Municipal	Kazima	2,938,599	0%
13	Tabora	Tabora Municipal	Igombe	25,201,694	90%
14	Tanga	Mkinga	Horohoro	70,442	90%
15	Katavi	Mlele	Nsenkwa	2,500,000	95%

No.	Region	District	Name of the Dam	Volume (m3)	Implementation Status (%)
16	Rukwa	Kalambo	Kalemesha	259,357	20%
17	Tanga	Mkinga	Mbuta	425,893	95%
18	Mtwara	Nanyumbu	Senyenya	699,956	0%
19	Arusha	Monduli	Soimineni	1,112,778	8%
20	Tabora	Urambo	Kalemela	4,644,159	0%
21	Dodoma	Kondoa	Itaswi-Kisaki	19,008,662	0%
22	Pwani	Chalinze	Mjembe	665,983	43%
23	Tanga	Handeni	Msomera	705,435	66%
24	Dodoma	Chemba	Kidoka	52,636,801	0%
25	Dodoma	Bahi	Chikopelo	3,356,721	0%
26	Tanga	Kilindi	Lombouti	1,050,000	0%
27	Tanga	Handeni	Manga	5,623,949	0%
Dams' projects constructed in the financial year 2023/24					
1	Singida	Mkalama	Kilenge	79,261	-
2	Singida	Mkalama	Mabambasi	55,276	-
3	Singida	Mkalama	Magauyu	34,886	-
4	Singida	Mkalama	Mnung'una	275,542	-
5	Singida	Mkalama	Mwabunda	398,128	-
6	Singida	Mkalama	Kwanjile	323,122	-
7	Tabora	Nzega	Mwanzobe	25,791	-
8	Tabora	Nzega	Lyamalagwa	47,925	-
9	Tabora	Nzega	Sigili	182,632	-
10	Tabora	Nzega	Iboja	47,139	-
11	Tabora	Kaliua	Ichemba	5,139,263	-
12	Tanga	Handeni	Gendagenda	287,884	-
13	Tanga	Kilindi	Msente	3,009,204	-
14	Manyara	Kiteto	Dosidosi	1,619,696	-
15	Tanga	Mkinga	Mwakijembe	-	-
16	Tabora	Urambo	Izimbili	6,122,335	-
17	Tanga	Kilindi	Mnkonde	988,831	-
18	Tanga	Handeni	Kanga'ata	-	-
19	Arusha	Ngorongoro	Misijo	-	-
20	Katavi	Mpimbwe	Milumba	-	-
21	Morogoro	Morogoro DC	Seregeti	876,339	-
22	Pwani	Kisarawe	Marui Mgwala	-	-
23	Tabora	Igunga	Mwalunili-Mwamapuli	400,418	-
24	Kigoma	Buhigwe	Munanila	-	-

No.	Region	District	Name of the Dam	Volume (m3)	Implementation Status (%)
25	Tanga	Handeni	Kwenkamb ala	4,500,000	-
26	Tabora	Uyui	Kizengi	3,434,328	-
27	Rukwa	Nkasi	Namanyere	4,722,1 64	-
28	Pwani	Chalinze	Kwamsanja	2,419,1 51	-
29	Mara	Bunda	Rakana	-	-
30	Mtwara	Nanyumbu	Namasogo	-	-
31	Songwe	Songwe	Mbangala	-	-
32	Tanga	Handeni	Mandera	807,373	-
33	Tanga	Handeni	Mabanda	1,272,208	-
34	Mtwara	Masasi	Lukuledi	-	-
35	Arusha	Karatu	Endagem	-	-
36	Mara	Bunda	Mihingo	207,145	-
37	Simiyu	Itilima	Mwamapalala	293,000	-
38	Shinyanga	Kishapu	Seke Ididi	119,760	-

Source: Auditors' Analysis of the Strategic Plan for the Construction and Repair of Water Dams in the Country for the Financial Years 2022/23-2025/26

Appendix 6: Strategic Plan for Management of Charco Dams along the Road Infrastructure.

This part provides details on the Strategic Plan for the identification, evaluation and construction of charco dams across the country for the year 2020/21 to 2024/25.

No.	Road Network	Basin Water Board	Respective Region	Implementers	Respective Tasks	Construction Period
A.	**First Phase (2020/21)**					
1.	Dodoma - Mwanza	IDB, LVB,	Dodoma, Singida, Shinyanga ,Tabora, Mwanza	MoW, BWBs, RUWASA	Identifying 20, Evaluating 10 and Constructing 10 Dams	2 Months
2	Dodoma - Iringa	Rufiji, IDB	Dodoma, Iringa	MoW, BWBs, RUWASA	Identifying 20, Evaluating 10 and Constructing 10 Dams	2 Months
3	Dodoma - Morogoro	Wami/Ruvu , IDB	Dodoma, Morogoro	MoW, BWBs, RUWASA	Identifying 20, Evaluating 10 and Constructing 10 Dams	2 Months
B.	**Second Phase (2021/22)**					
4	Dodoma - Manyara	IDB, Pangani	Dodoma, Manyara,	MoW, BWBs, RUWASA	Identifying 20, Evaluating 10 and Constructing 10 Dams	2 Months
5	Morogoro – Dar es Salaam	Wami/Ruvu	Morogoro , Pwani, Dar es Salaam	MoW, MoW, BWBs, RUWASA	Identifying 10, Evaluating 5 and Constructing 5 Dams	1 Month
6	Morogoro - Iringa	Wami/Rufiji	Morogoro , Iringa	MoW, MoW, BWBs, RUWASA	Identifying 10, Evaluating 5 and Constructing 5 Dams	1 Month
7	Dar es Salaaam	Wami/Ruvu ,	Dar es Salaam,	RUWASA	Identifying 20, Evaluating 10, and	2 Months

No.	Road Network	Basin Water Board	Respective Region	Implementers	Respective Tasks	Construction Period
	- Namanga	Pangani, IDB	Pwani, Tanga, Kilimanjaro, Arusha		Constructing 10 Dams	
C.	**Third Phase (2022/23)**					
8	Dar es Salaam - Ruvuma	Wami/Ruvu, Ruvuma	Dar es Salaam, Pwani, Lindi, Mtwara, Ruvuma	MoW, MoW, BWBs, RUWASA	Identifying 20, Evaluating 10 and Constructing 10 Dams	2 Months
9	Kahama - Bukoba	IDB, LVB, LTB	Shinyanga, Kagera, Geita	MoW, MoW, BWBs, RUWASA	Identifying 20, Evaluating 10 and Constructing 10 Dams	2 Months
10	Singida - Kigoma	IDB, LTB,	Singida, Tabora, Kigoma	MoW, MoW, BWBs, RUWASA	Identifying 20, Evaluating 10 and Constructing 10 Dams	2 Months
D.	**Fourth Phase (2023/24)**					
11	Mwanza - Tarime	LVB	Mwanza, Simiyu, Mara	MoW, MoW, BWBs, RUWASA	Identifying 20, Evaluating 10 and Constructing 10 Dams	2 Months
12	Iringa - Ruvuma	Nyasa, Ruvuma	Iringa, Njombe, Ruvuma	MoW, MoW, BWBs, RUWASA	Identifying 20, Evaluating 10 and Constructing 10 Dams	2 Months
13	Iringa - Mbeya	Rufiji, Rukwa	Iringa, Mbeya	MoW, MoW, BWBs, RUWASA	Identifying 20, Evaluating 10 and Constructing 10 Dams	2 Months
E.	**Fifth Phase (2024/25)**					
14	Mbeya - Songwe	Rukwa	Mbeya, Songwe	MoW, MoW, BWBs, RUWASA	Identifying 20, Evaluating 10 and Constructing 10 Dams	2 Months

No.	Road Network	Basin Water Board	Respective Region	Implementers	Respective Tasks	Construction Period
15	Songwe - Rukwa	Rukwa	Songwe, Rukwa	MoW, MoW, BWBs, RUWASA	Identifying 20, Evaluating 10 and Constructing 10 Dams	2 Months
16	Rukwa - Katavi	Rukwa	Rukwa, Katavi	MoW, MoW, BWBs, RUWASA	Identifying 20, Evaluating 10 and Constructing 10 Dams	2 Months

***Source*:** Auditors' Analysis of the Strategic Plan for the Construction of Charco Dams in Villages Located in Dry Areas Along the Main Trunk Roads to Solve the Water Shortages, 2020/21-2024/25

Appendix 7: Identified and Established Flood Prone Areas

This part provides details on the identified and established flood-prone areas under the management of different basin water boards in the country.

Basin Water Boards (BWBs)	Has the Basin Water Boards mapped the flood-prone areas?	List the number of identified Flood prone Areas	Is there a specific flood management plan for each identified flood-prone area?	What is the implementation level of the plan for each identified flood-prone area, including percentages?	What are the prevailing challenges in implementing flood management plans?	Remarks
Pangani						
Wami Ruvu	Yes	41 (find table 1 for areas in annex one Attachment)	Yes	• The Basin developed flood forecasting and early warning systems at river line flood locations, and it's at 98% completion. • For Kilosa and Kinyansungwe catchment, the Basin, in collaboration with TRC, NIRC and WORLD BANK, is rehabilitating six (6) dams to reduce flood impacts to	• Fund for investing in retention structure s (Dam) • Equipment for Dam construction and River training	The government should invest in climate resilience projects, especially flood management and early warning systems.

Basin Water Boards (BWBs)	Has the Basin Water Boards mapped the flood-prone areas?	List the number of identified Flood prone Areas	Is there a specific flood management plan for each identified flood-prone area?	What is the implementation level of the plan for each identified flood-prone area, including percentages?	What are the prevailing challenges in implementing flood management plans?	Remarks
				Railways and communities it's at 10%. • For the Mkondoa catchment, the Basin has received a grant for constructing a retention structure (Dam) and river training work, dyke and other conservation activities to protect Dumila Bridge for the Morogoro - Dodoma Road (B-127) (Key trunk highways it's at 5%. • A detailed feasibility study and design of flood control structures are at 100% complete.	works	

Basin Water Boards (BWBs)	Has the Basin Water Boards mapped the flood-prone areas?	List the number of identified Flood prone Areas	Is there a specific flood management plan for each identified flood-prone area?	What is the implementation level of the plan for each identified flood-prone area, including percentages?	What are the prevailing challenges in implementing flood management plans?	Remarks
Rufiji	Yes	15	Yes	• The Ministry of Water and Basin Water Boards are executing the Hydromet Modernization project, which is at 60% complete. • The Ministry of Water is finalizing the Operating Decision Support System (ODSS) project, which, if completed, will help in flood forecasting and management, among other	Limited financial resources, inadequate technical expertise, resistance in preparing and implementing plans due to lack of community awareness and land-use conflicts	• Specific flood-prone areas such as Kilombero Valley, Ifakara Town, Ikwiriri, and parts of Mlimba are also affected. • **Actions needed include** community sensitization and the installation of early warning

Basin Water Boards (BWBs)	Has the Basin Water Boards mapped the flood-prone areas?	List the number of identified Flood prone Areas	Is there a specific flood management plan for each identified flood-prone area?	What is the implementation level of the plan for each identified flood-prone area, including percentages?	What are the prevailing challenges in implementing flood management plans?	Remarks
						systems.
Lake Tanganyika	Yes	18 (find Table 2 for areas in annex one attachment)	The flood management plan is under development but not yet completed	• The Ministry of Water and Basin Water Boards are executing the Hydromet Modernization project, which is at 60% completion. • Ministry of Water is finalizing the Operating Decision Support System (ODSS) project, which, if completed, will help in flood forecasting and management, among others.	• Lower level of awareness of the communities in flood-prone areas, especially on water resource management and environmental management. • Inadequate funds allocated to the flood	**Actions needed include:** - community sensitization and installation of early warning systems.

Basin Water Boards (BWBs)	Has the Basin Water Boards mapped the flood-prone areas?	List the number of identified Flood prone Areas	Is there a specific flood management plan for each identified flood-prone area?	What is the implementation level of the plan for each identified flood-prone area, including percentages?	What are the prevailing challenges in implementing flood management plans?	Remarks
					management • There is a lack of modern equipment for hydrological data collection and forecasting, such as radar sensors, Acoustic Doppler Current Profiler (ADCP), and current meters.	

Basin Water Boards (BWBs)	Has the Basin Water Boards mapped the flood-prone areas?	List the number of identified Flood prone Areas	Is there a specific flood management plan for each identified flood-prone area?	What is the implementation level of the plan for each identified flood-prone area, including percentages?	What are the prevailing challenges in implementing flood management plans?	Remarks
Lake Victoria	Yes	7	Yes	• The Ministry of Water and Basin Water Boards are executing the Hydromet Modernization project, which is at 60% completion. • Also, the Ministry of Water is finalizing the Operating Decision Support System (ODSS) project, which, if completed, will help flood forecasting and management, among others.	• Inadequate funds allocated to the flood management • Lack of modern technology in flood forecasting and early warning systems	• **Specific flood-prone areas are** Kanoni River, Mirongo River, Simiyu River, Magogo River, Kagera River at Kyaka, Moame River, Mara River near Wetland, • **Actions needed include: -** community sensitization

Basin Water Boards (BWBs)	Has the Basin Water Boards mapped the flood-prone areas?	List the number of identified Flood prone Areas	Is there a specific flood management plan for each identified flood-prone area?	What is the implementation level of the plan for each identified flood-prone area, including percentages?	What are the prevailing challenges in implementing flood management plans?	Remarks
						and installation of early warning systems.

Source: Auditors' Analysis of Hydrological Data from the Ministry of Water through Basin Water Boards, 2024

Appendix 8: Management of Identified and Established Flood Prone Areas by TANROADS Between 2020/21 and 2023/24

This part provides details on the identified, established flood-prone and intervention areas under TANROADS in the country.

Financial Year	Region	Mapped Flood-Prone Areas within Road Infrastructure	Number of Identified Flood-Prone Areas	Flood Management Plans for Identified Areas	Interventions [1]	Implementation Level and Interventions for Each Flood-Prone Area	PMO-DMD Feedback on Mapped Flood-Prone Areas and Interventions	PMO-DMD Inspections of TANROADS Flood Control Interventions
2020/21	Dar Es Salaam Region	YES	8	YES	Bridges, Pipe, culverts, side drains and Box culverts	100%	YES	YES
	Manyara Region	YES	4		Raising the Embankment, Rock Fill (Boulders), Construction of approach roads and Gabions for bridge protection and construction of box culverts		No	The Implementation has not been completed.

Financial Year	Region	Mapped Flood-Prone Areas within Road Infrastructure	Number of Identified Flood-Prone Areas	Flood Management Plans for Identified Areas	Interventions [1]	Implementation Level and Interventions for Each Flood-Prone Area	PMO-DMD Feedback on Mapped Flood-Prone Areas and Interventions	PMO-DMD Inspections of TANROADS Flood Control Interventions
	Morogoro Region	YES	4	YES	Raise of Embankment and Construction of Box Culverts, raising of Embankment and Construction of Box Culverts	Some sections were raised 20% - 30%	No	No
	Rukwa Region	YES	2	NO	Reconstruction of Washed out embarkment and Construction of new box culvert	100%	No	No
2021/22	Dar Es Salaam Region	YES	6	YES	Bridge, Pipe culverts, side drains and Box culverts	100%	YES	YES
	Morogoro Region	YES	2	YES	Raise of Embankment, Construction of Bridge and Box Culverts, Raise of Embankment and Box Culverts	Some sections were raised -60%	NO	NO

Financial Year	Region	Mapped Flood-Prone Areas within Road Infrastructure	Number of Identified Flood-Prone Areas	Flood Management Plans for Identified Areas	Interventions [1]	Implementation Level and Interventions for Each Flood-Prone Area	PMO-DMD Feedback on Mapped Flood-Prone Areas and Interventions	PMO-DMD Inspections of TANROADS Flood Control Interventions
	Mbeya Region	YES	1	YES	The stormwater drain was installed	100%	NO	NO
	Rukwa Region	YES	2	No	Reconstruction of Washed-out embarkment and construction of new box culvert.	Implementation was completed by 100%	NO	NO
2022/23	Dar Es Salaam Region	YES	9	YES	Bridges, Pipe culverts, Side drains and Box culverts.	70%	YES	YES
	Mtwara Region	YES	4	YES	Construction of bridges and box culverts, installation of pipe culverts, raising of embankment, and construction of protections by masonry.	Maintaining current drainage structures	NO	NO

Financial Year	Region	Mapped Flood-Prone Areas within Road Infrastructure	Number of Identified Flood-Prone Areas	Flood Management Plans for Identified Areas	Interventions [1]	Implementation Level and Interventions for Each Flood-Prone Area	PMO-DMD Feedback on Mapped Flood-Prone Areas and Interventions	PMO-DMD Inspections of TANROADS Flood Control Interventions
	Morogoro Region	YES	7	YES	Raise of Embankment, Construction of bridge and Construction of Box Culverts	Some sections were raised (20% - 40%) Box Culvert Constructed - 100%	NO	NO
	Rukwa Region	YES	2	NO	Reconstruction of the washed-out embankment and construction of a new box culvert	Implementation was completed by 100%	NO	NO
2023/24	Dar Es Salaam Region	YES	24	YES	Bridges Pipe culverts, side drains and Box culverts	30%	YES	YES
	Manyara Region	YES	11	YES	Construction of Bridges, Removal of Boulders, Raising of the Embankment, Construction of Box Culverts, River Training, and Construction	0	YES	The Implementation has not been completed

Financial Year	Region	Mapped Flood-Prone Areas within Road Infrastructure	Number of Identified Flood-Prone Areas	Flood Management Plans for Identified Areas	Interventions [1]	Implementation Level and Interventions for Each Flood-Prone Area	PMO-DMD Feedback on Mapped Flood-Prone Areas and Interventions	PMO-DMD Inspections of TANROADS Flood Control Interventions
					of stormwater drains			
	Mbeya Region	YES	2	YES	Rise of road embankment and construction of pipe culverts from km 13+200 – 14+700 (1.5km)	30%	NO	NO
			2		Rise of road embarkment from km 10+500 to km 13+100 (3.5km)	50%		
			1		Construction of Box culvert	100%		
			2		Protection facilities were provided to protect road embarkment, i.e., Installation of Gabion Boxes	100%		

Financial Year	Region	Mapped Flood-Prone Areas within Road Infrastructure	Number of Identified Flood-Prone Areas	Flood Management Plans for Identified Areas	Interventions [1]	Implementation Level and Interventions for Each Flood-Prone Area	PMO-DMD Feedback on Mapped Flood-Prone Areas and Interventions	PMO-DMD Inspections of TANROADS Flood Control Interventions
	Mtwara Region	YES	3	YES	Construction of Bridge and Box Culverts, Installation of pipe culverts, raising the embankment, and construction of protections by masonry.	Maintaining current drainage structures	NO	NO
	Rukwa Region	YES	2	NO	Reconstruction of Washed-out embarkment and Construction of New Solid drift and 3 vented drifts	Implementation was completed by 100%	NO	NO

Source: Auditors' Analysis of Hydrology Data from TANROADS, 2024

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